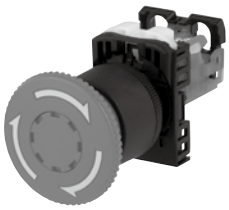
e-Front runners

AR22
Pushbutton switches



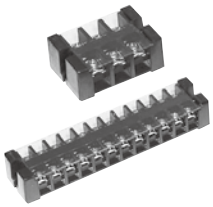
AR22
Emergency stop pushbutton

AR30
Selector switches

DR30
Pilot lights

Multi display lights

- PUSHBUTTON SWITCHES
- SELECTOR SWITCHES
- EMERGENCY STOP PUSHBUTTON SWITCHES
- PILOT LIGHTS
- MULTI DISPLAY LIGHTS
- TERMINAL BLOCKS



Terminal blocks

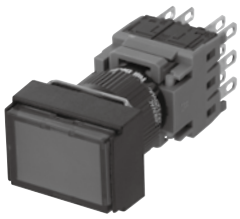
LOW VOLTAGE EQUIPMENT
Up to 600 Volts

minico

AR16
Illuminated pushbutton

minico

AR16
Selector switches(Key)



AH164, AH165
Pushbutton switches

INDIVIDUAL CATALOG 04

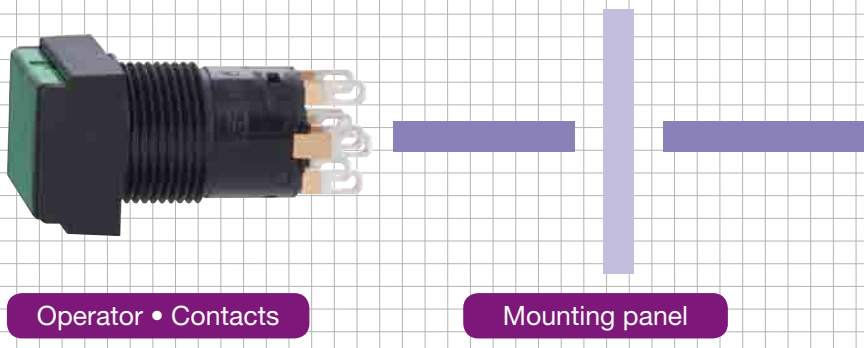
from D&C CATALOG 20th Edition

01 02 03 **04** 05 06 07 08 09 10 11 12

Fuji Electric FA Components & Systems Co., Ltd.

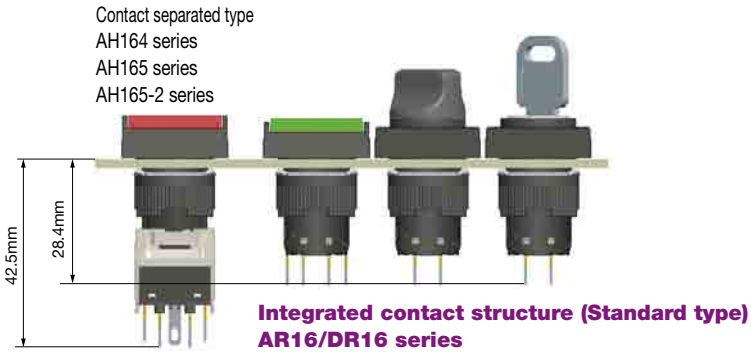
minico Ø16
Command Switches
AR16•DR16, AF16•DF16

- An integrated structure with built-in contacts that can reduce control panel depth.
- A wide variety of sockets are available to simplify wiring.



Supporting smaller and thinner operator's panels

A structure that integrates operator and contacts to reduce panel-mounting depth. Terminals extending to the rear of the switch ensure easy wiring work.

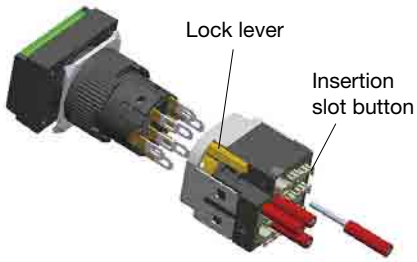


Integrated contact structure (Standard type)
AR16/DR16 series

A wide variety of sockets reduce wiring work

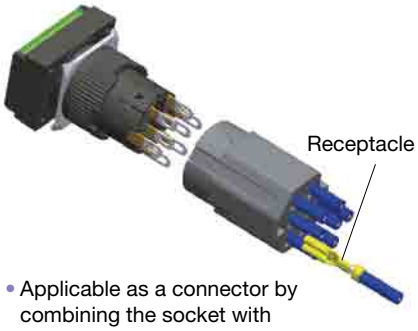
Switches combine with a variety of sockets to simplify wiring.

Fast-connection socket



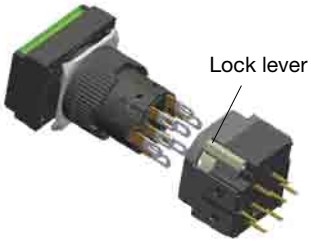
- Applicable as a fast-connection terminal switch by combining the socket with a switch.
- Easily wired by simply removing the wire sheath and inserting the wires while pressing the insertion slot button (no soldering required).
- Incorporates a branch terminal for easy branching.

Connector socket



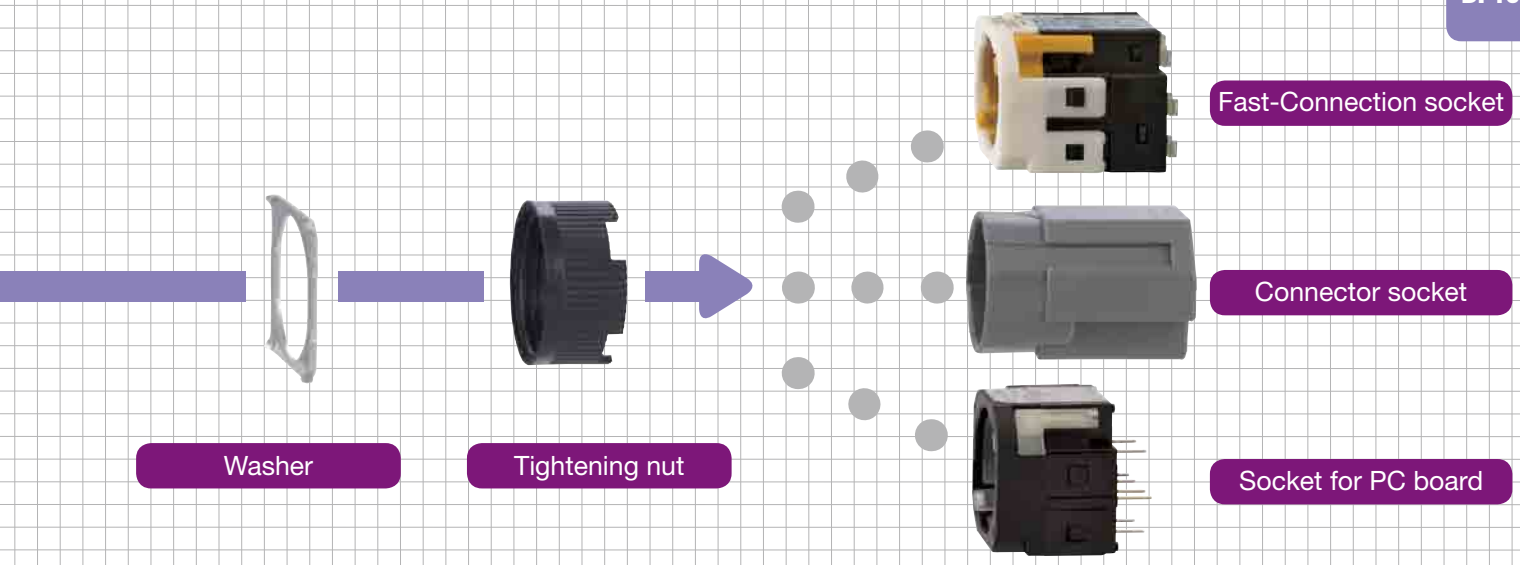
- Applicable as a connector by combining the socket with receptacles.
- The socket holds the receptacles, making it easy to connect the receptacle to the switch with a single operation.

Socket for PC board



- Applicable as a switch for PC board by combining the socket with a switch.
- Pattern wiring reduces the number of wiring man-hour and helps prevent faulty wiring.

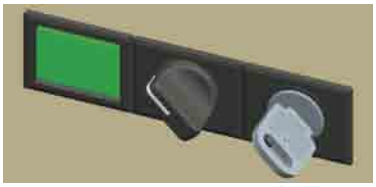
minico is a nickname for the AR16/AF16 series of integrated command switches with built-in contacts.



Contributes to attractive panel designs

In addition to the standard type, a thin type with a panel protrusion of only 2 mm is available, allowing high-density mounting for attractive panel designs.

Integrated contact structure(Thin type) AF16/DF16 series



- Keep in mind that the panel cutout size for the thin type depends on the operator shape. See page 04/167 for details.
- The panel depth is unified to 35.9mm.

Brighter illuminated surface

Less power consumption helps to save energy. A longer service life helps to reduce maintenance costs.

Dedicated LED lamp

Degrees of protection IP65

The operator has IP65 protection for smooth operation without adverse effects from oil, water, or dusts. Applicable to a wide variety of equipment, from machine tools to OA equipment.

Highly reliable contact mechanism

Gold-plated contacts and a snap-action mechanism enables IC-level applications (with a switching current of 1 mA at 5 V).

Meets EU RoHS requirements

Standard models meet RoHS requirements (EU Directive 2002/95/C).

Standard models meet international standards

Standard models meet UL/CSA requirements, China Compulsory Certification (CCC) standards, and TÜV EN standards, making them ideal for equipment for export.

Note: Command switches shipped as single articles to China must conform to the Product Quality Law. Check with your Fuji Electric representative.

The insertion/extraction life of the key is greatly extended

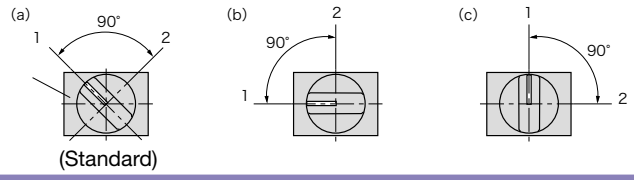
The key selector switch incorporates a pin tumbler type key (reversible type) to improve the insertion/extraction performance of the key.

- Six key types are available.
- The pin tumbler construction improves security.

The operating angle position of the selector switch can be easily changed.

The bezel is separate from the knob (key), so the operating angle position can be easily changed in 45° increments (with the AR16 series rectangular or square type only). The following figure shows a knob type example. Same applies to the key type.

- Two-position model example.



Ø22 (Ø25) AR22 and DR22 Command Switches

The use of a release arm enables easy mounting.

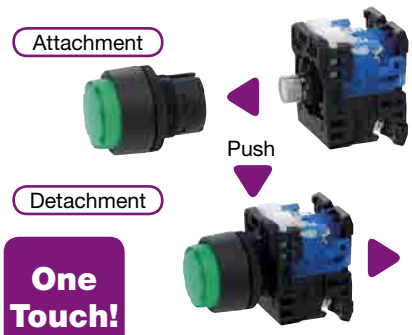
Operator • Contacts

Mounting panel

Easy attachment and detachment with a release arm

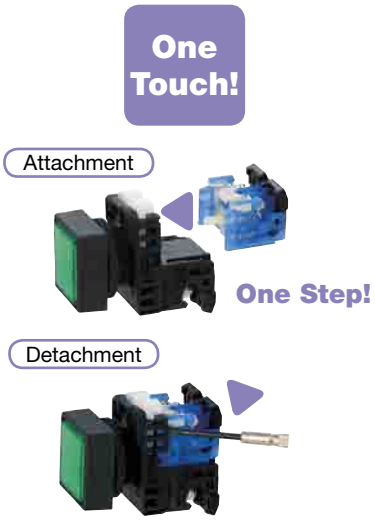
The separate structure with a unique wedge mechanism enables one-step attachment and detachment of the operating section and contact section, without the use of any tool.

One-step lock!



Contact block and transformer unit can also be added or replaced in a single step

All contact block and transformer unit are designed with snap-on mounting, so no tools are required.



Improved work efficiency through bi-directional wiring

Terminals can be wired from two directions. This is ideal for wiring crossovers or wiring in narrow spaces. Square washers are used to enable wiring with solid wires.

Utility

Wiring from two directions

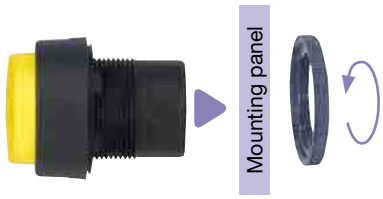
1NO	1NC	Lamp terminals and Transformer Unit
Blue	Red	Black

Color coding of contact blocks, lamp terminal and transformer unit makes wiring and checking easy.

Panel thickness need not be adjusted

Because the back surface of the operating section is mounted with a tightening nut, there is absolutely no need to adjust the panel thickness. Also, the operator can be mounted on the panel along with a previously installed button and knob.

Easy

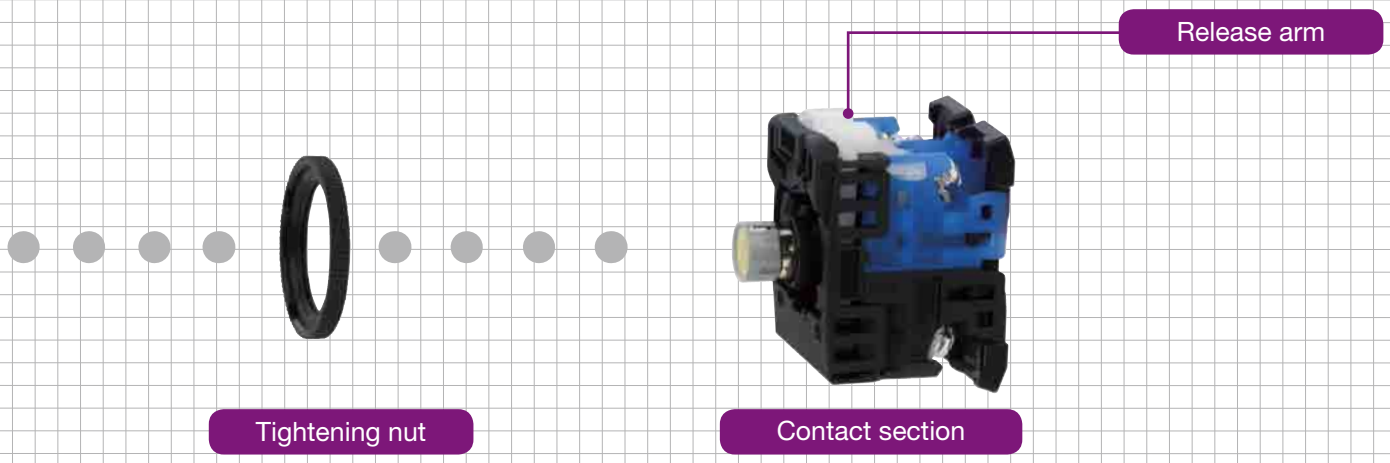


Superior contact reliability

All the contacts are double break type and feature self-cleaning action. Every time the switch is operated, the contact surfaces are wiped with a sliding movement, thus ensuring high contact reliability even at low voltage and small current levels (5V, 5mA).

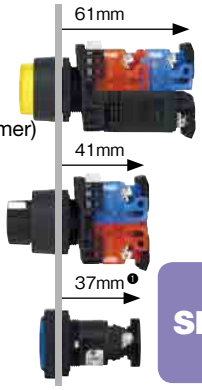
Buzzers are also available

Electronic or electromagnetic buzzers provide audible feedback on the status of the equipment. Splash-proof buzzers that conform to EN 60204-1 (degrees of protection) are also available (enclosure used in general industry: IP54).



Depth of the short body

A short design enables full use of the available depth of the equipment.



Short

❶ The Short-body Pilot light is 21.5mm long.

Terminal cover for charged parts provided as a standard accessory

A terminal cover that covers the terminals is provided as a standard accessory to help prevent electric shock by reducing exposure to charged parts.

Note: Not provided on all models.

Standard models meet international standards

Standard models meet UL/CSA requirements and TÜV EN standards, making them ideal for equipment for export.
Chinese CCC-compliant models are also available.

Note: For details, refer to List of Models.
See page 04/3 to 04/6

Global Standardization

Switches with IP2X -compliant terminals are also available

Switches with IP2X-compliant terminals with a finger protection structure conforming to EN 60204-1 (Protection against electric shock) are available.
(A test finger that simulates a human finger does not come into contact with live parts.)

Safety

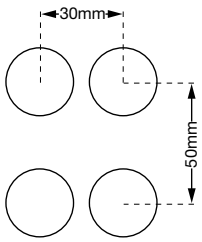
Contacts

Transformer unit

Lamp terminal for pilot light

Note: For details, refer to AR22 and DR22-series Special Products.

Features 30 × 50 mm tight mounting



Note: Not applicable to all models.

High brightness LED illuminated model, "PIKARI-KUN"

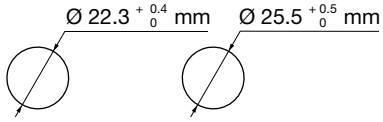
1. Standard models feature
   (1) higher equipment grade,
   (2) enhanced safety that enables easy identification of the status, and
   (3) adoption of pure green illumination color through a major improvement in visibility (Luminance) through the adoption of four elements LED.
2. Along with a significant improvement in Luminance, energy is saved through a reduction in power consumption.
3. The maintenance cost is also reduced by increasing the service life.

Lamp base shape facilitates easy replacement

The same lamp base shape of BA9s/13 for both high brightness LED lamps and incandescent lamps facilitates application.

Panel cutout dimensions of 22.3 mm and 25.5 mm diameter

By providing a projection on the tightening nut, one switch can be mounted on two different panel cutout dimensions. Therefore, switches do not need to be purchased to match the panel cutout dimensions.



Units can be mounted on a 25.5-mm diameter hole simply by turning over the tightening nut.

Safety equipment

16 to 30 mm diameter

Command Switch Emergency Stop (Illuminated) Pushbutton Switches

These pushbutton switches comply with various international standards, so they can be reliably used as emergency stop devices.

Ø16 (AH165, AR16)

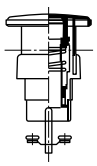
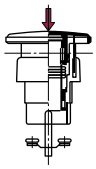
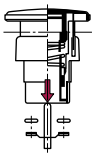
minico

AR16V0R

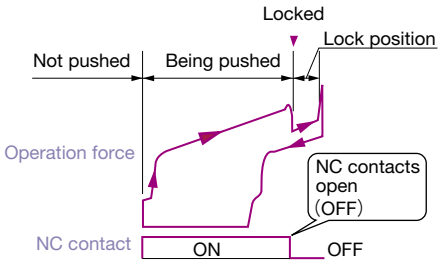
Compliance with International Standards

The emergency stop pushbuttons employ FUJI's original Trigger Action mechanism.
They are suitable for emergency stop and safety.
This mechanism prevents the contacts from moving until the button is pushed and locked.

- Provided with a Trigger Action mechanism conforming to EN 480.
- Provided with direct opening action (approved by TÜV) conforming to EN60947-5-1 and EN60947-5-5.

Button section	Not pushed	Being pushed	Locked
Contact operation transitions			
NC contacts	Closed	Closed	Open

Operation characteristics and contact operation for NC contacts



Emergency stop pushbutton switches available with an integrated contact structure

Emergency stop pushbutton switches are available with an integrated contact structure in which the operating section and contact section are combined into one unit (AH165-V, AR16V, and AR22VG).By arranging the contacts in an integrated structure, the reliability of the safety protection function is increased.

- The AR16V types feature a panel depth dimension of 28 mm for non-illuminated models and can have up to four sets of contacts.
- The AR22VGF types are equipped with a lamp circuit interlocking structure in which a lamp lights when the switch is locked.

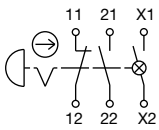
Non-illuminated

AR16V0R

Illuminated

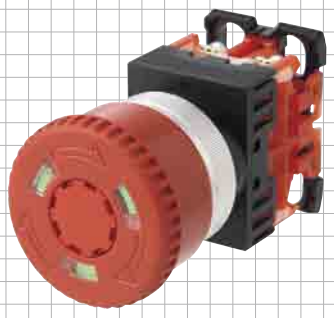
AR16V0L

AR22VGF



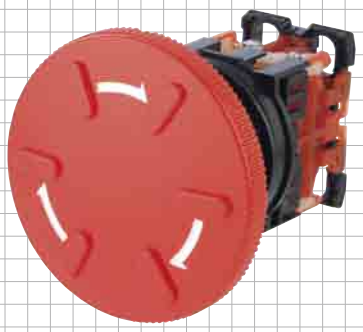
Ø22（AR22，AM22）

AR22V0L



AM22VME

Ø30（AR30）



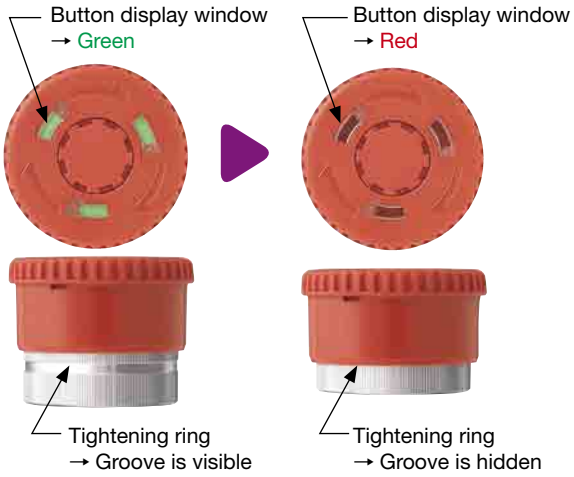
AR30V1R

A mechanical indicator mechanism by which the operating status can be seen at a single glance is available.

In AM22VME types, the operating status is indicated mechanically in the form of green and red colors in three button display windows

Reset status
(no operation being performed): Green

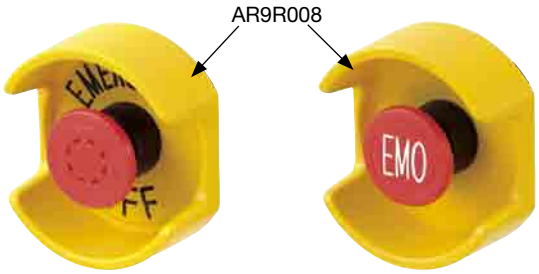
Locked status
(during operation): Red



- Ideal for mechanical control panels in which display power supply is difficult to ensure.

SEMI-compliant guard rings are also available

This guard ring can be combined with our emergency stop switches to comply with the SEMI standards required for semiconductor manufacturing devices.



Combination of
an AR9R008 guard ring
with an AR22V2R switch

Combination of
an AR9R008 guard ring
with an AR22V3R Z286 switch

- Emergency stop switches with the “EMO” mark are available (AR22V3R Z286).
- EMERGENCY OFF labels are available.

AR22V3R Z286

Note: For details, refer to SEMI-compliant guard rings.

Standard models meet international standards

Standard models meet UL/CSA requirements and TÜV, EN Standard are available and exhibit CE marking.
Chinese CCC-compliant models are also available.

Note: For details, refer to the list of models.

Emergency stop pushbutton switches with IP2X -compliant terminals are also available

Emergency stop pushbutton switches with IP2X-compliant terminals with a finger protection structure conforming to EN 60204-1 (protection against electric shock) are available. (A test finger that simulates a human finger does not come in contact with live parts.)

Note: The AR16V types is IP2X compliant when used with a terminal cover for charged parts (AR9Y262, sold separately). Switches from the AH165-V types are not IP2types compliant. For details on the AR22, 30V, Q, and AM22V types, refer to Special Products.The standard AR22VG types are IP2X compliant.

Series	Type	Features
Command Series	**AR22 and DR22** 	• Standard models feature illumination with high brightness LEDs. • No adjusting of panel thickness is necessary. • The button and lens can be mounted on a panel while the operator is engaged. • Easy replacing contact block and transformer. • Wiring from two directions is possible. • The shortest among industrial pushbuttons. The transformer now occupies far less space. • A terminal cover are provided, assuring safety and security. • The emergency stop pushbuttons employ FUJI's original Trigger Action mechanism. They are suitable for emergency stop and safety. • Mountable even on panel cutout 25mm diameter. • AR22 and DR22 series of the ø22 Command Switches are approved by UL/CSA CCC and TÜV (EN standard). • Bearing CE markings.
	AR30 and DR30 	• Standard models feature illumination with high brightness LEDs. • Easy replacing contact block and transformer. • The shortest among industrial pushbuttons. The transformer now occupies far less space. • A terminal cover are provided, assuring safety and security. • The emergency stop pushbuttons employ FUJI's original Trigger Action mechanism. They are suitable for emergency stop and safety. • AR30 and DR30 series of the ø30 Command Switches are approved by UL/CSA, CCC and TÜV (EN standard). • Bearing CE markings.
	AR16 and AF16 	• An integrated operator component and contact mechanism that reduces control panel's depth. A unified depth of 28.4mm for the Standard type and 35.9mm for the Thin type. • Thin type and Standard types available for your control panel design. Select an optimum one to match your control panel design. • A wide variety of sockets help to reduce wiring. • Incorporating a gold-flashed SPDT or 2PDT contact mechanism with a snap-action structure that makes and breaks 1mA at 5V. • A key selector switch with a pin tumbler key and reversible type mechanism provides improved key insertion and removal (extraction) performance. • Complies with RoHS (EU Directive 2002/95/EC). • The standard AR16 and DR16, AF16 and DF16 series of the ø16 Command Switches are approved by UL/CSA, CCC and TÜV (EN standard). • Bearing CE markings.
	AH164 and AH165 **AH165-2** 	• Standard models feature illumination with high brightness LEDs. • Unified depth dimension of 24 mm for type with indicator and 42.5 mm for other types. • Application possible at 1 mA, 5 V due to gold-plated contacts and sliding structure. • Incandescent, neon and LED lamps are available. • Easy replacing contact block. • AH165-2 series are about twice as large as the AH165 series. • AH164 and AH165, AH165-2 series of the ø16 Command Switches are approved by UL/CSA, CCC and TÜV (EN standard). • Bearing CE markings.
	AM22 and DM22 	• Standard models feature illumination with high brightness LEDs. • Easy addition or replacement of text plates with front tightening nut mounting system. • Easy replacing contact block and transformer. • The shortest among industrial pushbuttons. The transformer now occupies far less space. • A terminal cover are provided, assuring safety and security. • The emergency stop pushbuttons employ FUJI's original Trigger Action mechanism. They are suitable for emergency stop and safety. • AM22 and DM22 series of the ø22 Command Switches are approved by UL/CSA, CCC and TÜV (EN standard). • Bearing CE markings.

	Page
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Type	AR22	DR22
Degree of protection	IP65	
Illuminated pushbutton switches	●	
Pushbutton switches	●	—
Emergency stop pushbutton switches	●	—
Emergency stop illuminated pushbutton switches	●	—
Selector switches	●	—
Illuminated selector switches	●	—
Joy stick selector switches	●	—
Buzzer	—	● (IP00, IP54)
Pilot lights	—	●

	Page
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Type	AR30	DR30
Degree of protection	IP65	
Illuminated pushbutton switches	●	—
Pushbutton switches	●	—
Emergency stop pushbutton switches	●	—
Emergency stop illuminated pushbutton switches	●	—
Selector switches	●	—
Illuminated selector switches	●	—
Joy stick selector switches	●	—
Buzzer	—	● (IP00, IP54)
Pilot lights	—	●

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Type	AR16	DR16	AF16	DF16
Degree of protection	IP65			
Illuminated pushbutton switches	●	—	●	—
Pushbutton switches	●	—	●	—
Emergency stop pushbutton switches	●	—	—	—
Emergency stop illuminated pushbutton switches	●	—	—	—
Selector switches	●	—	●	—
Pilot lights	—	●	—	●

	Page
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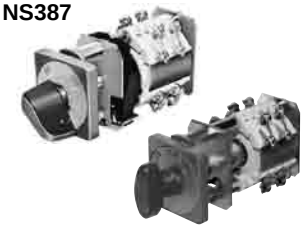
Type	AH164	AH165	AH165-2
Degree of protection	IP40	IP65	IP65
Illuminated pushbutton switches	●	●	●
Pushbutton switches	●	●	●
Emergency stop pushbutton switches	—	●	—
Selector switches	●	●	●
Pilot lights	●	●	●
Buzzer	● (IP00)	● (IP54)	—

	Page
	04CD/2/1

Type	AM22	DM22
Degree of protection	IP65	
Illuminated pushbutton switches	●	—
Pushbutton switches	●	—
Emergency stop pushbutton switches	●	—
Emergency stop illuminated pushbutton switches	●	—
Selector switches	●	—
Illuminated selector switches	●	—
Pilot lights	—	●

Series	Type	Features
Command Series	**AH25**	• Standard models feature illumination with high brightness LEDs. • Easy replacing contact block and transformer. • A terminal cover are provided, assuring safety and security. • The standard AH25 series of the ø25 Command Switches are approved by UL/CSA.
	AG22 and AG23	• Application possible at 1 mA, 5 V due to gold-plated contacts and sliding structure. • Easy replacing contact block. • Compact design with a short depth. • Solder/tab terminals. • The standard AG22 and AG23 series are approved by UL/CSA.
Multi Display	**AP30F and AP40F**	• High brightness for more vivid colors • Newly added blue and pure white LEDs improve visibility. • Transformer-free design for lighter structure and shorter depth (for 100-V and 200-V models) • Easy color and voltage changes. • Wide window size selection. A wide selection, including half-size windows. • UL/CSA-compliant models also available.
Rotary Switches	**AB09, AB16 and AB32**	• Rotary switches with code output. • Three types of code output are available. • Select either soldered or connector connections.
Cam Type	**RC310**	• A wide range of models available for control, instrumentation, and motor starting and with bifurcated contacts, keys, and indicators.
Panel Switches	**NS387** 	• Ideal for switching all types of electric circuits.
Terminal Blocks		• FUJI can supply a variety of terminal blocks for switchboard or switchgear use.

	Page

Type	AH25	
Degree of protection	IP40	IP65
Illuminated pushbutton switches	● (Square type)	●
Pushbutton switches	● (Square type)	●
Selector switches	● (Square type)	●
Pilot lights	● (Square type)	●
Mechanical interlocked pushbutton switches	—	●

04CD/3/1

Mounting hole dimensions	23.5×22.5	23.5×30.5
Type	AG22	AG23
Degree of protection	IP40	IP40
Illuminated pushbutton switches	● (Square type)	●
Pilot lights	● (Square type)	●
Illuminated lever switches	● (Square type)	●
Illuminated rocker switches	● (Square type)	●

04CD/1/1

Type	Illuminated face	Face size
AP30F	Half size (H)	15×30
	Square (S)	30×30
	Rectangular horizontally long (T)	30×60
	Rectangular vertical long (V)	60×30
	Mixtture of S, T, V (X)	—

Type	Illuminated face	Face size
AP40F	Half size (H)	20×40
	Square (S)	40×40
	Rectangular horizontally long (T)	40×80
	Rectangular vertical long (V)	80×40
	Mixtture of S, T, V (X)	—

04/235

Type	Type of code		
	Real binary code	Complementary binary code	Real gray code
AC09	●	●	●
AC16			
AC32			

04/256

Type	Mounting	Rated insulation voltage	Rated thermal current	Remarks
RC310-1	40 x 40, mounted with 4 screws	600V	10A	The following are also available: Keys, indicators, bifurcated contacts, case covers, etc.

04/263

Type	Rated thermal current	Application
NS387	15A	Voltmeter changeover switches
		Ammeter changeover switches
		Industrial control switches

04/272

Type	Rated insulation voltage	Rated thermal current	Application
AYBN	600V	15 to 600A	General purpose terminal blocks
AYBS	600V	49 to 115A	High quality terminal blocks
LT4D	660V	20A	Rail mounted terminal blocks with isolating switch
SKT	600V	50 to 200A	Terminal block with pressure solderless box lug type connector on one side and screw type connector on the other
LT2E	600V	22 to 600A	Rail mounted terminal blocks
LT5	250V	30A	Testing terminal and link for VT and CT circuit

04/276

04 Pushbuttons, Selector Switches Pilot Lights, Control Selector Switches Panel Switches, Terminal Blocks

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MINIMUM ORDERS
Orders amounting to **less than ¥10,000** net per order will be charged as ¥10,000 net per order plus freight and other charges.

WEIGHTS AND DIMENSIONS
Weights and dimensions appearing in this catalog are the best information available at the time of going to press. FUJI ELECTRIC FA has a policy of continuous product improvement, and design changes may make this information out of date.
Please confirm such details before planning actual construction.

INFORMATION IN THIS CATALOG IS SUBJECT TO CHANGE WITHOUT NOTICE.

■ Command series

AR22/DR22

AF94-320

- 22mm diameter hole
- Mountable even on panel cutout 25mm in diameter.
- Provided with newly developed release arm
- Provided with terminal cover for safety and security
- UL, CSA, TÜV and CCC approved

AF94-310

AF98-88

AH164, 165

SK-1103

- 16mm diameter hole, finger-sized button
- Incandescent, neon and LED lamps are available.
- Block type contact
- AH165 series is oil-tight
- UL, CSA, TÜV and CCC approved

SK-1138

AR30/DR30

AF95-4

- 30mm diameter hole
- Provided with terminal cover for safety and security
- UL, CSA, TÜV and CCC approved

AF95-6

AF98-195

AH165-2

AF87-211

- 16mm diameter hole
- AH165-2 series are about twice as large as the AH165 series
- Incandescent, neon and LED lamps are available.
- Block type contact
- AH165-2 series is oil-tight
- UL, CSA, TÜV and CCC approved

AF87-208

AR16/DR16, AF16/DF16

KKD07-157

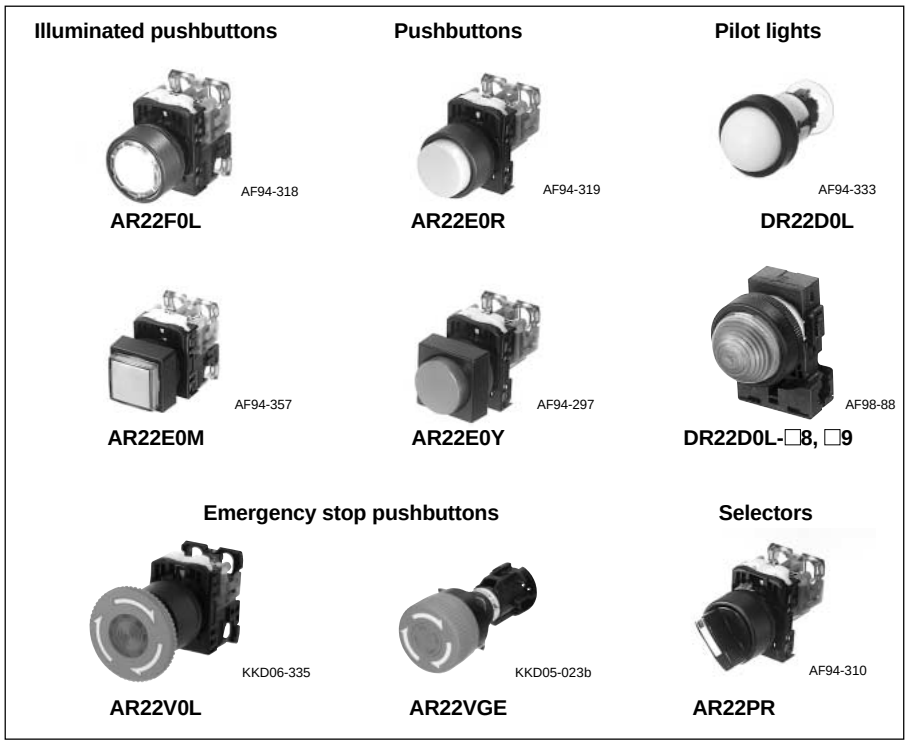
- 16mm diameter hole, finger-sized button
- Integrated contact structure
- AR16 series is standard type.
- AF16 series is thin type.
- UL, CSA, TÜV and CCC approved

KKD07-171

KKD07-183

AR22 and DR22
General information

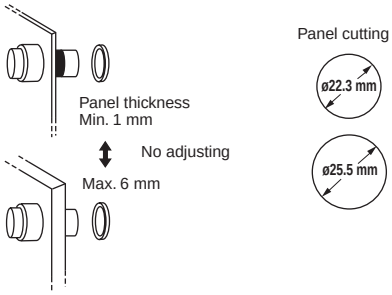
The AR22 now uses a release arm with a wedge mechanism developed by Fuji Electric FA. This enables you to mount or remove the operator and contact block without using any tools. When fitting the switch to a panel, you can ignore the panel thickness.
You have only to secure the operator with a locking nut from behind the panel without any need for adjustment. The improved locking nut is capable of mounting the operator in both 22.3mm and 25.5mm dia. panel cutout holes.



■ Features

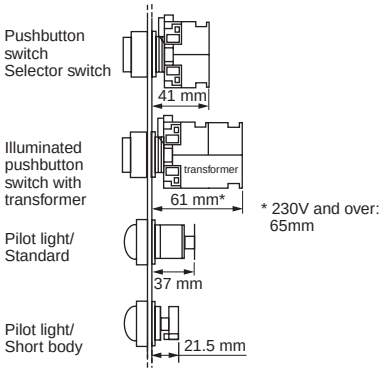
Facilitated mounting

- No adjusting of panel thickness is necessary.
- The button and lens can be mounted on a panel while the operator is engaged.
- Mountable even on a panel cutout 25.5mm in diameter.



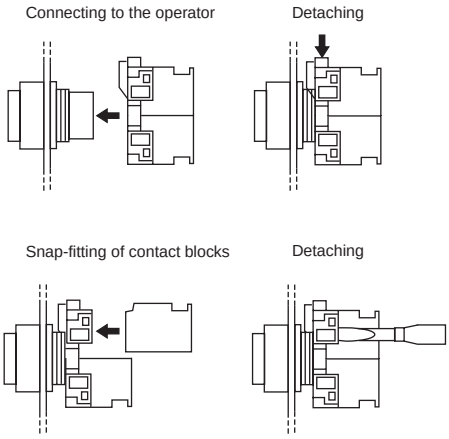
Miniaturization

- Pushbuttons and selector switches with 1NO+1NC: 41mm deep
  Pilot lights: 37mm deep
- The transformer now occupies far less space.



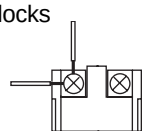
Easy replacing contact block and transformer

- Because of a snap-on mounting, replacement or addition of the contact block and transformer unit is very simple.
- The contact block is common to all the pushbuttons of this series.
- Contact block is easily replaced even when the pushbuttons are mounted closely together.
- Replacement of the contact block can be done with a screwdriver, without the need for any special tool.



Wiring

- Wiring from two directions is possible.
- Wiring in both vertical and lateral directions facilitates wiring in narrow spaces.
- Color coding of contact blocks makes wiring easy.
  1NO: Blue, 1NC: Red
  Lamp terminal and transformer unit: Black



Safety

- A terminal cover is provided, assuring safety and security.
- FUJI's original Trigger Action mechanism is used in the emergency stop pushbuttons. They are suitable for emergency stop and safety. This mechanism prevents the contacts from moving until the button is pushed and locked.
- Reliability of safety functions increased by integrated operator and contact block construction. (AR22VG)

Protection

- Excellent oil-tight construction (IP65) of the operator.
- Closure of the contact block has been improved.

■ Approvals

For further information related to approved type, *see page 04/3 to 04/06.*

■ Illuminated pushbutton switches

Operator	Type	Operator	Type	Operator	Type
Flush round head *See page 04/17, 04/40*	**AR22F0L, F5L** AF94-318	Extended with full guard (24mm dia. with openings) *See page 04/17, 04/40*	**AR22G2L, G7L** AF99-319	Flush round head with square bezel *See page 04/18, 04/40*	**AR22F0P, F5P** AF94-315
Extended round head *See page 04/17, 04/40*	**AR22E0L, E5L** AF94-317	Extended with full guard (24mm dia.) *See page 04/18, 04/40*	**AR22G1L, G6L** AF02-70	Extended round head with square bezel *See page 04/18, 04/40*	**AR22E0P, E5P** AF94-314
Mushroom head (40mm dia.) *See page 04/17, 04/40*	**AR22M0L, M5L** AF94-367	Push-lock, turn-reset (40mm dia. with white arrow) *See page 04/18, 04/40*	**AR22V5L** KKD06-335	Mushroom head with square bezel (29mm dia.) *See page 04/19, 04/40*	**AR22M4P** AF94-440
Mushroom head (29mm dia.) *See page 04/17, 04/40*	**AR22M4L, M9L** AF94-369	Flush square head *See page 04/18, 04/40*	**AR22F0M, F5M** AF97-68		
Extended with transparent full guard (24mm dia.) *See page 04/17, 04/40*	**AR22G4L, G9L** AF94-294	Extended square head *See page 04/18, 04/40*	**AR22E0M, E5M** AF94-357		

■ Pushbutton switches

Operator	Type	Operator	Type	Operator	Type
Flush round head *See page 04/20, 04/41*	**AR22F0R, F5R** AF94-320	Flush round head Symbol mark type *See page 04/20, 04/41*	**AR22FAR, FBR** AF98-193	Mushroom head (40mm dia.) *See page 04/20, 04/41*	**AR22M0R, M5R** AF94-293
Extended round head *See page 04/20, 04/41*	**AR22E0R, E5R** AF94-319	Extended round head Symbol mark type *See page 04/20, 04/41*	**AR22EAR, EBR** AF98-192	Mushroom head (29mm dia.) *See page 04/20, 04/41*	**AR22M4R, M9R** AF94-321

Note (CCC) : *See page 04/289*

AR22 and DR22
Quick reference guide

■ Pushbutton switches

Operator	Type	Operator	Type	Operator	Type
Extended with full guard (24mm dia.) *See page 04/20, 04/41*	**AR22G3R, G8R** AF94-292	Pushbutton with selector ring (2-position) *See page 04/22, 04/41*	**AR22S1R, S2R, S3R, S6R** AF97-507	Flush round head with square bezel *See page 04/20, 04/41*	**AR22F0Y, F5Y** AF94-295
Flush with full guard (24mm dia.) *See page 04/20, 04/41*	**AR22G2R, G7R** AF02-68	Push-lock, turn-reset (40mm dia. with white arrow) *See page 04/20, 04/41*	**AR22V5R** KKD08-042	Extended round head with square bezel *See page 04/21, 04/41*	**AR22E0Y, E5Y** AF94-297
Extended with half guard *See page 04/20, 04/41*	**AR22G0R, G5R** AF96-236	Flush square head *See page 04/20, 04/41*	**AR22F0S, F5S** AF94-316	Mushroom head with square bezel (29mm dia.) *See page 04/21, 04/41*	**AR22M4Y** AF94-298
Mushroom head with full guard (40mm dia.) *See page 04/20, 04/41*	**AR22M3R, M8R** AF94-372	Extended square head *See page 04/20, 04/41*	**AR22E0S, E5S** AF94-296		

Note: AR22M8R: Not approved standard

■ Emergency stop pushbutton switches (conform to EN418)

Operator	Type	Operator	Type	Operator	Type
Push-lock, turn-reset (Soft-touch 40mm dia. with white arrow) *See page 04/23, 04/42*	**AR22V0R** KKD08-042	Push-lock, turn-reset (29mm dia.) *See page 04/23, 04/42*	**AR22V4R** KKD06-339	Unibody push-lock, turn-reset (Soft-touch 40mm dia. with white arrow) *See page 04/23, 04/42*	**AR22VGE** KKD05-023b
Push-lock, turn-reset (40mm dia.) *See page 04/23, 04/42*	**AR22V2R** KKD05-020b	Key release push-lock, turn-reset (40mm dia.) *See page 04/23, 04/42*	**AR22V7R** KKD09-020	Push-lock, turn-reset (40mm dia. with "EMO" charactor) *See page 04/120*	**AR22V3R-■■RZ286** KKD05-261
Push-lock, turn-reset (Soft-touch 29mm dia. with white arrow) *See page 04/23, 04/42*	**AR22VSR** KKD06-346	Push-lock, pull-reset (35mm dia.) *See page 04/23, 04/42*	**AR22Q2R** KKD06-334		

Notes: Provided with the (Direct opening action) : *See page 04/289*

■ Emergency stop illuminated pushbutton switches (conform to EN418)

Operator	Type	Operator	Type	Operator	Type
Push-lock, turn-reset (Soft-touch 40mm dia. with white arrow) *See page 04/24, 04/43*	**AR22V0L** KKD06-335	Push-lock, turn-reset (Soft-touch 40mm dia. transparent in all colors with white arrow) *See page 04/24, 04/43*	**AR22VDL** KKD06-342	Push-lock, turn-reset (Soft touch 29mm dia. with white arrow) *See page 04/24, 04/43*	**AR22VSL** KKD06-344
Push-lock, turn-reset (40mm dia.) *See page 04/24, 04/43*	**AR22V2L** KKD06-337	Push-lock, turn-reset (40mm dia. transparent in all colors) *See page 04/24, 04/43*	**AR22VAL** KKD06-340	Unibody push-lock, turn-reset (Soft-touch 40mm dia. with white arrow) *See page 04/24, 04/43*	**AR22VGF** KKD05-150

Note: Provided with the (Direct opening action)

■ Selector switches

Operator	Type	Operator	Type	Operator	Type
Knob *See page 04/25, 04/44*	**AR22PR, PCR** AF94-310	Key *See page 04/25, 04/44*	**AR22JR, JCR** KKD09-018	Lever with square bezel *See page 04/25, 04/44*	**AR22WY, WCY** AF94-323
Lever *See page 04/25, 04/44*	**AR22WR, WCR** AF94-324	Key (Long durability) *See page 04/25, 04/44*	**AR22JAR** KKD09-015	Cylindrical knob with square bezel *See page 04/25, 04/44*	**AR22RY, RCY** AF94-362
Cylindrical knob *See page 04/25, 04/44*	**AR22RR, RCR** AF94-308	Knob with square bezel *See page 04/25, 04/44*	**AR22PY, PCY** AF94-309	Key with square bezel *See page 04/25, 04/44*	**AR22JY, JCY** KKD09-019

■ Illuminated selector switches

Operator	Type	Operator	Type
Knob *See page 04/32, 04/45*	**AR22PL** AF94-306	Knob with square bezel *See page 04/32, 04/45*	**AR22PP** AF94-318

Note : *See page 04/289*

■ Pilot lights

Lens	Type	Lens	Type	Lens	Type
Dome *See page 04/34, 04/45*	**DR22D0L** AF94-333	Flush square *See page 04/34, 04/47*	**DR22F3M** AF94-330	Extended square *See page 04/34, 04/46*	**DR22E3M** AF94-380
Extended round *See page 04/34, 04/46*	**DR22E3L** AF94-332	Flush square (Transparent lens) *See page 04/34, 04/47*	**DR22F4M** AF94-443	Flush rectangular *See page 04/34, 04/48*	**DR22E3N** AF96-237
Faceted *See page 04/34, 04/46*	**DR22K0L** AF96-189	Flush square (12mm high frame) *See page 04/34, 04/47*	**DR22F5M** AF95-658	Extended round with square bezel *See page 04/34, 04/46*	**DR22E3P** AF94-331

Note: With resistor unit type: Not approved standard

■ Joy stick selector switches

Handle	Type	Handle	Type	Handle	Type
Ball type *See page 04/38, 04/48*	**AR22A0, A5** AF97-49	Ball type with lock *See page 04/38, 04/48*	**AR22A1, A6** AF97-45	Rubber cap type *See page 04/38, 04/49*	**AR22A2, A7** AF97-56

■ Buzzers

Sound	Type	Sound	Type	Sound	Type
Electronic sound *See page 04/39, 04/49*	**DR22B5 *** KKD08-053	Magnetic sound *See page 04/39, 04/49*	**DR22B3** AF96-376	Electronic sound (IP54) *See page 04/39, 04/49*	**DR22B8 *** AF96-244

Note: * 6V AC, 110V DC types: Not approved standard

Note : *See page 04/289*

Illuminated pushbuttons

AR22 E0L – 10 E3 R □
① ② ③ ④ ⑤ ⑥

① **Product category**
AR22: 22mm-dia. illuminated pushbutton
22mm-dia. emergency stop illuminated pushbutton

② **Operator**
• Illuminated pushbutton
F0L: Flush round head
F5L: Flush round head (Alternate)
E0L: Extended round head
E5L: Extended round head (Alternate)
M0L: Mushroom head (40mm dia.)
M5L: Mushroom head (40mm dia. alternate)
M4L: Mushroom head (29mm dia.)
M9L: Mushroom head (29mm dia. alternate)
G4L: Extended with transparent full guard (24mm dia.)
G9L: Extended with transparent full guard (24mm dia. alternate)
G2L: Extended with full guard (24mm dia. with openings)
G7L: Extended with full guard (24mm dia. with openings, alternate)
G1L: Extended with full guard (24mm dia.)
G6L: Extended with full guard (24mm dia. alternate)
V5L: Push-lock, turn-reset (40mm dia. with white arrow) *1
F0M: Flush square head
F5M: Flush square head (Alternate)
E0M: Extended square head
E5M: Extended square head (Alternate)
F0P: Flush round head with square bezel
F5P: Flush round head with square bezel (Alternate)
E0P: Extended round head with square bezel
E5P: Extended round head with square bezel (Alternate)
M4P: Mushroom head with square bezel (29mm dia.)
• Emergency stop illuminated pushbutton
V0L: Push-lock, turn-reset (Soft-touch 40mm dia. with white arrow)
V2L: Push-lock, turn-reset (40mm dia.)
VDL: Push-lock, turn-reset (Soft-touch 40mm dia. transparent in all colors with white arrow)
VAL: Push-lock, turn-reset (40mm dia. transparent in all colors)
VSL: Push-lock, turn-reset (Soft-touch 29mm dia. with white arrow)
VGF: Unibody push-lock, turn-reset (Soft-touch 40mm dia. with white arrow)

③ **Contact arrangement**

10:	1NO	30:	3NO
01:	1NC	03:	3NC
11:	1NO+1NC	40:	4NO
20:	2NO	04:	4NC
02:	2NC	50:	5NO
22:	2NO+2NC	05:	5NC

④ **Lamp voltage**
• Incandescent lamp
54: 5.5V AC/DC, without transformer
C4: 15V AC/DC, without transformer
D4: 20V AC/DC, without transformer
E4: 24V AC/DC, without transformer
H4: 100-110V AC, with transformer
L4: 115-127V AC, with transformer
M4: 200-220V AC, with transformer
Q4: 230-254V AC, with transformer
S4: 350-380V AC, with transformer
T4: 400-440V AC, with transformer
V4: 480V AC, with transformer
W4: 500-550V AC, with transformer
• LED lamp
A3: 6V AC, without transformer
63: 6V DC, without transformer
B3: 12V AC/DC, without transformer
C3: 15V AC/DC, without transformer
E3: 24V AC/DC, without transformer
H3: 100-110V AC, with transformer
L3: 115-127V AC, with transformer
M3: 200-220V AC, with transformer
Q3: 230-254V AC, with transformer
S3: 350-380V AC, with transformer
T3: 400-440V AC, with transformer
V3: 480V AC, with transformer
W3: 500-550V AC, with transformer
• Neon lamp (For AR22VGF)
H1: 110V AC, without transformer
K1: 120V AC, without transformer
M1: 220V AC, without transformer
P1: 240V AC, without transformer

⑤ **Color of lens**

G:	Green	Y:	Yellow
R:	Red *2	A:	Orange
W:	White	S:	Blue

⑥ **Special product**
Z9: Resisting water-soluble cutting oils and heat
Z8: With a contact protection cover
Z4: Resisting sulfuration gas
ZB: Meeting IP2X finger-protection standards

Notes: *1 Products with no trigger action mechanism. These products cannot be used as emergency stop switches that comply with EN standards.
*2 Button color of emergency stop illuminated switches are Red only.
• The manufacturing range varies depending on the model. For details, refer to the contents of this catalog.

AR22 and DR22
Type number nomenclature

Pushbuttons

AR22 E0R – 10 R □ □
① ② ③ ④ ⑤ ⑥

① Product category
AR22: 22mm-dia. pushbutton
22mm-dia. emergency stop pushbutton

② Operator
- Pushbutton switch

F0R: Flush round head
F5R: Flush round head (Alternate)
E0R: Extended round head
E5R: Extended round head (Alternate)
FAR: Flush round head (Symbol mark type)
FBR: Flush round head (Symbol mark type, alternate)
EAR: Extended round head (Symbol mark type)
EBR: Extended round head (Symbol mark type, alternate)
M0R: Mushroom head (40mm dia.)
M5R: Mushroom head (40mm dia. Alternate)
M4R: Mushroom head (29mm dia.)
M9R: Mushroom head (29mm dia. Alternate)
G3R: Extended with full guard (24mm dia.)
G8R: Extended with full guard (24mm dia. Alternate)
G2R: Flush with full guard (24mm dia.)
G7R: Flush with full guard (24mm dia. Alternate)
G0R: Extended with half guard
G5R: Extended with half guard (Alternate)
M3R: Mushroom head with full guard (40mm dia.)
M8R: Mushroom head with full guard (40mm dia. Alternate)
S1R: Push-button with selector ring (2-position)
S2R: Push-button with selector ring (2-position)
S3R: Push-button with selector ring (2-position)
S6R: Push-button with selector ring (2-position)
V5R: Push-lock, turn-reset (40mm dia. with white arrow) *1
F0S: Flush square head
F5S: Flush square head (Alternate)
E0S: Extended square head
E5S: Extended square head (Alternate)
F0Y: Flush round head with square bezel
F5Y: Flush round head with square bezel (Alternate)
E0Y: Extended round head with square bezel
E5Y: Extended round head with square bezel (Alternate)
M4Y: Mushroom head with square bezel (29mm dia.)

- Emergency stop pushbutton switch

V0R: Push-lock, turn-reset (Soft-touch 40mm dia. with white arrow)
V2R: Push-lock, turn-reset (40mm dia.)
VSR: Push-lock, turn-reset (Soft-touch 29mm dia. with white arrow)
V4R: Push-lock, turn-reset (29mm dia.)
V7R: Key-release push-lock, turn-reset (40mm dia.)
Q2R: Push-lock, pull-reset (35mm dia.)
VGE: Unibody push-lock, turn-reset (Soft-touch 40mm dia. with white arrow)

③ Contact arrangement

10:	1NO	30:	3NO
01:	1NC	03:	3NC
11:	1NO+1NC	33:	3NO+3NC
20:	2NO	40:	4NO
02:	2NC	04:	4NC
22:	2NO+2NC	50:	5NO
		05:	5NC

④ Color of button

G: Green
R: Red*2
B: Black
W: White
T: Green, Red, Black (For AR22F0R)
Y: Yellow
A: Orange
S: Blue
C: Clear (For AR22FAR, FBR, EAR, EBR)

⑤ Symbol mark (For AR22FAR, FBR, EAR, EBR)

Symbol mark	◯		I		Ⓣ		◯	I	Ⓣ
Color of button	White	Black	White	Black	White	Black	Clear		
Color of mark	Red		Green		Green		Black		
Code	01	02	03	04	11	12	02B	04B	12B

⑥ Special product
Z9: Resisting water-soluble cutting oils and heat
Z8: With a contact protection cover
Z4: Resisting sulfuration gas
ZB: Meeting IP2X finger-protection standards

Notes: *1 Products with no trigger action mechanism. These products cannot be used as emergency stop switches that comply with EN standards.
*2 Button color of emergency stop switches are Red only.
- The manufacturing range varies depending on the model. For details, refer to the contents of this catalog.

Selector and illuminated selector switches

AR22 PL – 2 □ 10 E3 G □ □
① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

① **Product category**
AR22: 22mm dia. selector switch and illuminated selector switch

② **Operator**
- Selector switch

PR: Knob
PCR: Knob operated control type
WR: Lever
WCR: Lever operated control type
RR: Cylindrical knob
RCR: Cylindrical knob operated control type
JR: Key
JCR: Key operated control type
JAR: Key (Long durability)
PY: Knob with square bezel
PCY: Knob operated control type with square bezel
WY: Lever with square bezel
WCY: Lever operated control type with square bezel
RY: Cylindrical knob with square bezel
RCY: Cylindrical knob operated control type with square bezel
JY: Key with square bezel
JCY: Key operated control type with square bezel

- Illuminated selector switch

PL: Knob
PP: Knob with square bezel

③ **Operation**
2: 2-position, maintained
0: 2-position, spring return
3: 3-position, maintained
6: 3-position, spring/manual return (Left to center)
7: 3-position, spring/manual return (Right to center)
1: 3-position, spring return
4: 4-position, maintained (For AR22PCR, WCR, RCR)
5: 5-position, maintained (For AR22PCR, WCR, RCR)

④ **Key removable position**
A: Left
B: Left and right
C: Left, right and center
D: Right
E: Center
F: Right and center
G: Left and center

⑤ **Contact arrangement**

10:	1NO	30:	3NO
01:	1NC	03:	3NC
11:	1NO+1NC	33:	3NO+3NC
20:	2NO	40:	4NO
02:	2NC	04:	4NC
22:	2NO+2NC	50:	5NO
		05:	5NC

Note: Control type: *See page 04/29 to 04/31*

⑥ **Lamp voltage**
- Incandescent lamp

54: 5.5V AC/DC, without transformer
C4: 15V AC/DC, without transformer
D4: 20V AC/DC, without transformer
E4: 24V AC/DC, without transformer
H4: 100-110V AC, with transformer
L4: 115-127V AC, with transformer
M4: 200-220V AC, with transformer
Q4: 230-254V AC, with transformer
S4: 350-380V AC, with transformer
T4: 400-440V AC, with transformer
V4: 480V AC, with transformer
W4: 500-550V AC, with transformer

- LED lamp

A3: 6V AC, without transformer
63: 6V DC, without transformer
B3: 12V AC/DC, without transformer
C3: 15V AC/DC, without transformer
E3: 24V AC/DC, without transformer
H3: 100-110V AC, with transformer
L3: 115-127V AC, with transformer
M3: 200-220V AC, with transformer
Q3: 230-254V AC, with transformer
S3: 350-380V AC, with transformer
T3: 400-440V AC, with transformer
V3: 480V AC, with transformer
W3: 500-550V AC, with transformer

⑦ **Color of knob**
B: Black (Not available for illuminated selector switch)
G: Green
R: Red
W: White (Not available for selector switch)
Y: Yellow (Not available for selector switch)
A: Orange (Not available for selector switch)
S: Blue (Not available for selector switch)

⑧ **Key type No.**
A, B, C, D, E or F
("A" is standard)

⑨ **Special product**
Z9: Resisting water-soluble cutting oils and heat
Z8: With a contact protection cover
Z4: Resisting sulfuration gas
ZB: Meeting IP2X finger-protection standards

Note: • The manufacturing range varies depending on the model. For details, refer to the contents of this catalog.

AR22 and DR22
Type number nomenclature

Pilot lights

DR22 D0L – E3 W □
① ② ③ ④ ⑤

① **Product category**
DR22: 22mm dia. pilot light

② **Lens**
D0L: Dome
E3L: Extended round
K0L: Faceted
F3M: Flush square
F4M: Flush square (Transparent lens)
F5M: Flush square (12mm high frame)
E3M: Extended square
E3N: Flush rectangular
E3P: Extended round with square bezel

③ **Lamp voltage**
- Incandescent lamp

54: 5.5V AC/DC, without transformer
C4: 15V AC/DC, without transformer
D4: 20V AC/DC, without transformer
E4: 24V AC/DC, without transformer
H4: 100-110V AC, with transformer
L4: 115-127V AC, with transformer
M4: 200-220V AC, with transformer
Q4: 230-254V AC, with transformer
S4: 350-380V AC, with transformer
T4: 400-440V AC, with transformer
V4: 480V AC, with transformer
W4: 500-550V AC, with transformer

58: 5.5V AC/DC, short-body without transformer
C8: 15V AC/DC, short-body without transformer
D8: 20V AC/DC, short-body without transformer
E8: 24V AC/DC, short-body without transformer
H8: 100-110V AC, short-body with transformer
L8: 115-127V AC, short-body with transformer
M8: 200-220V AC, short-body with transformer

- LED lamp

A3: 6V AC, without transformer
63: 6V DC, without transformer
B3: 12V AC/DC, without transformer
C3: 15V AC/DC, without transformer
E3: 24V AC/DC, without transformer
H3: 100-110V AC, with transformer
L3: 115-127V AC, with transformer
M3: 200-220V AC, with transformer
Q3: 230-254V AC, with transformer
S3: 350-380V AC, with transformer
T3: 400-440V AC, with transformer
V3: 480V AC, with transformer
W3: 500-550V AC, with transformer
H7: 110V DC, with resistor unit

A9: 6V AC, short-body without transformer
69: 6V DC, short-body without transformer
B9: 12V AC/DC, short-body without transformer
C9: 15V AC/DC, short-body without transformer
E9: 24V AC/DC, short-body without transformer
H9: 100-110V AC, short-body with transformer
L9: 115-127V AC, short-body with transformer
M9: 200-220V AC, short-body with transformer

④ **Color of lens**
G: Green
R: Red
W: White
Y: Yellow
A: Orange
S: Blue

⑤ **Special product**
Z9: Resisting water-soluble cutting oils and heat
Z4: Resisting sulfuration gas
ZB: Meeting IP2X finger-protection standards

Note: • The manufacturing range varies depending on the model. For details, refer to the contents of this catalog.

Joy stick selector switches

AR22A 0 N – A0A0 B
① ②③ ④ ⑤

① **Product category**
AR22A: 22mm-dia. Joy stick selector switch

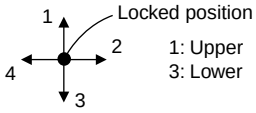
② **Handle**
0: Ball type (without lock, manual return)
1: Ball type with lock (manual return)
2: Rubber cap type (without lock, manual return)
5: Ball type (without lock, spring return)
6: Ball type with lock (spring return)
7: Rubber cap type (without lock, spring return)

③ **Terminal**
N: Screw
H: Solder/tab

④ **Contact arrangement**

Contact arrangement		Blank	1NO	1NC	1NO+1NC	2NO	2NC	2NO+2NC
Code	Screw	0	A	B	1	D	E	–
	Solder/tab	0	–	–	1	–	–	2

Operating direction code of contacts



1: Upper 2: Right
3: Lower 4: Left

Ex. AR22A0N-A0A0B
1 2 3 4

⑤ **Handle color**
B: Black

Buzzers

DR22B 5 – E B
① ② ③④

① **Product category**
DR22B: 22mm-dia. buzzer

② **Sound**
5: Electronic sound
3: Magnetic sound
8: Electronic sound (IP54)

③ **Operating voltage**
A: 6V AC (Type “5”, “8”)
6: 6V DC (Type “5”, “8”)
E: 12-24V AC/DC (Type “3” : 24V AC/DC)
F: 35-48V AC/DC (Type “5”, “8”)
H: 100-110V AC
M: 200-220V AC
1: 100-110V DC (Type “5”, “8”)

④ **Color of head**
B: Black

■ Ordering information

Specify the following:
1. Type number
   For the CCC approved product, add the suffix **(CCC)** to the type number

   Example: Pushbutton switch **AR22F0R-11B(CCC)**

■ Standards approved

UL508	File No. E44592
CSA C22.2 No.14	File No. LR20479 cUL File No. E44592 (For AR22VG)
TÜV: EN60947-5-1	Pushbutton, Illuminated pushbutton: R9551062, Selector, Illuminated selector: R9551060 Pilot lights: R9551061 Joy stick selector switch: R2050803 (Lever switch) Buzzer: J9950091
TÜV: EN60947-5-1 EN60947-5-5	Emergency stop pushbutton Emergency stop illuminated pushbutton : R50028146, R50028137 (For AR22VG)

■ Specifications (Indoor use)

Description	Pushbutton switch Illuminated pushbutton switch Emergency stop pushbutton switch Emergency stop illuminated pushbutton switch Selector switch Illuminated selector switch	Joy stick selector (Lever switch)	Pilot light
Rated insulation voltage	600V AC/DC *1	250V AC/DC	250V AC/DC *2
Mechanical durability	*See page 04/13*	250,000 operations	–
Electrical durability	500,000 operations at 220V AC 6A 1 million operations at 220V AC 3A (AR22VG type: 100,000 operations)	100,000 operations at 220V AC 1A (Res. load)	–
Operating frequency	1200 operations/hour (On-load factor: 40%) AR22VG type: 1800 operations/hour (On-load factor: 40%)		–
Dielectric strength	2500V AC, 1 minute *3	2000V AC, 1 minute *4	
Insulation resistance	100MΩ or more (500V DC megger)		
Rated impulse dielectric strength	6kV (AR22VG type: 4kV)	–	6kV
Conditional short-circuit current	1000A	1000A	–
Short-circuit protective device	Fuse 15A	Fuse 1A	–
Pollution degree	3		
Vibration	Resonance: 10 to 55Hz, double amplitude 0.1mm *5 Constant: 16.7Hz, double amplitude 3mm		
Shock	Malfunction durability: 100m/s² *6 Mechanical durability: 500m/s²		Mechanical durability : 500m/s²
Ambient temperature (No condensation or no icing)	-20 to +70℃ *7	-5 to +70℃	-20 to +50℃
Storage temperature	-40 to +80℃		
Humidity	45 to 85% RH (within -5 to +40℃)		
Degree of protection	IP65		

Notes: *1 Illuminated type without transformer and AR22VG type: 250V AC/DC
*2 Pilot light with transformer: 600V AC
*3 Illuminated type without transformer: 2000V AC, 1 minute (except AR22VGF type)
*4 Pilot light with transformer: 2500V AC, 1 minute
*5 Emergency stop type: 10 to 500Hz, double amplitude 0.7mm (acceleration 50m/s²), according to the test condition of EN60947-5-5 (1997)
*6 Emergency stop type: 150m/s²
*7 AR22VGE type: -20 to +60℃, illuminated type: -20 to +50℃

● Mechanical durability

Description		Operations
Pushbutton switch Illuminated pushbutton switch Emergency stop pushbutton switch Emergency stop illuminated pushbutton	Momentary action Alternate action With selector ring Push-lock, turn-reset Push-lock, pull-reset	5 million 1 million 100,000 100,000 30,000
Selector switch	Maintained 1, 2, 3, 4-contact Maintained 5, 6-contact Control type, spring return, spring/manual return	1 million 500,000 200,000
Illuminated selector switch	Maintained Without transformer 1, 2, 3-contact 4-contact With transformer 1, 2-contact 3-contact Spring return, spring/manual return	 1 million 500,000 1 million 500,000 200,000

Note: Key insertion/removal durability for selector switch key types
- Key type 10,000
- Key (Long durability) type 20,000

● Buzzers

Item	DR22B5	DR22B3	DR22B8
Rated insulation voltage	Without transformer: 60V AC/DC With transformer: 250V AC		
Sound level	90dB (0.1m) 70dB (1m)	80 to 90dB (0.1m) 60 to 70dB (1m)	80dB (0.1m) 60dB (1.0m)
Durability	1000h	200h	1000h
Frequency	2.4 to 3.3kHz		
Intermittent cycle	Approx. 170-cycle/min		
Current consumption	See the table below		
Dielectric strength	Without transformer: 1000V AC 1 minute With transformer: 2000V AC 1 minute		
Insulation resistance	100MΩ or more (500V DC megger)		
Pollution degree	3		
Vibration	Resonance: 10 to 55Hz, double amplitude 0.1mm Constant: 16.7Hz, double amplitude 3.0mm		
Shock	Mechanical durability: 500m/s^2		
Ambient temperature	–20 to +60˚C (No condensation or no icing) (with resistor unit: –20 to +40˚C)		
Storage temperature	–30 to +70˚C		
Humidity	45 to 85%RH (within –5 to 40˚C)		
Degree of protection	IP00		IP54

• Current consumption

Operational voltage	Current consumption	
	DR22B5, DR22B8	DR22B3
6V AC	70mA AC	–
6V DC	35mA DC	–
24V AC/DC	40mA AC, 25mA DC	30mA AC, 20mA DC
48V AC/DC	65mA AC, 20mA DC	–
110V AC	30mA AC	30mA AC
110V DC	30mA DC	–
220V AC	15mA AC	15mA AC

■ Contact ratings

● UL/CSA standards

AC (COS ø=0.35)

Contact rated code	120V		240V		480V		600V	
	Making current	Breaking current	Making current	Breaking current	Making current	Breaking current	Making current	Breaking current
A600	60A	6.0A	30A	3.0A	15A	1.5A	12A	1.2A
B300 (AR22VG)	30A	3.0A	15A	1.5A	–	–	–	–

DC $T_{0.95}$= 6P (Max. 300ms)

Description	Contact rated code	Making current · Breaking current		
		125V	250V	301V–600V
Illuminated pushbutton switch Pushbutton (Ring type selector switch: AR22S2R only) Emergency stop pushbutton switch	P600	1.1A	0.55A	0.2A
Emergency stop illuminated pushbutton switch (Except the overlap contact types)	Q300 (AR22VG)	0.55A	0.27A	–
Overlap contact types of products shown above Pushbutton (Ring type selector switch: AR22S1R, S6R only) Selector switch (2-position only, except the overlap contact types) Illuminated selector switch (2-position only, except the overlap contact types)	Q600	0.55A	0.27A	0.1A
Pushbutton (Ring type selector switch: AR22S3R only) Selector switch (2-pos./overlap contact type, 3-, 4-, 5-pos. type) Illuminated selector switch (2-pos./overlap contact type, 3-pos. type)	R300	0.22A	0.11A	–

Note: Joy stick selector switches (Lever switches): 250V AC, 5A (Res. load) 125V DC, 0.2A 24V DC, 1A (Res. load)

● EN standard/TÜV approved

Description	Rated operational current			
	Rated thermal current	Rated operational voltage	AC15 (Ind. load) Rated operational current	DC13 (Ind. load) Rated operational current
Illuminated pushbutton switch	10A	24V	6.0A	4.0A (AR22VG: 1.5A)
Pushbutton (Except the selector ring type)		120V	6.0A (AR22VG: 3A)	–
Emergency stop pushbutton switch		125V	–	1.3A (AR22VG: 0.3A)
Emergency stop illuminated pushbutton switch		240V	6.0A (AR22VG: 3A)	–
Selector switch (2-position)		250V	–	0.45A(AR22VG: 0.15A)
Illuminated selector switch (2-position)		480V	2.5A (AR22VG: –)	–
		600V	2.0A (AR22VG: –)	–
Selector switch (3, 4, 5-position)	10A	24V	6.0A	2.0A
Illuminated selector switch (3-position)		120V	6.0A	–
Pushbutton with selector ring		125V	–	0.65A
		240V	6.0A	–
		250V	–	0.23A
		480V	2.5A	–
		600V	2.0A	–
Joy stick selector switch (Lever switch)	5A	24V	–	0.7A
		120V	0.3A	–
		125V	–	0.15A
		240V	0.3A	–

Lamp rated voltage UL/CSA standards, TÜV approved

	LED lamp	Incandescent lamp	Neon lamp
Full-voltage (without transformer)	Max. 24V AC/DC	Max. 30V AC/DC	Max. 240V AC
With transformer	Max. 550V AC (Short-body type: Max. 220V AC)		–

■ **Operating characteristic** (1NO+1NC)

Description	Pushbutton Illuminated pushbutton	Emergency stop pushbutton Emergency stop illuminated pushbutton		Selector *2 Illuminated selector		
		Push-lock type	Push-pull type	Maintained	Spring/manual return	Spring return
Ave. required operating force	9N (Push-lock type: 20N)	30N (AR22VG: 22N)*1	45N	0.15N•m	0.13N•m	0.1N•m
Operating travel	Approx. 6mm (Push-lock type: Approx. 9mm, operation angle: Approx. 45°)	Approx. 9mm (AR22VG: Approx. 10mm, operation angle: Approx. 45°)	Approx. 9mm	2-position: Approx. 90° 3-position: Approx. 45° 4-position: Approx. 40° 5-position: Approx. 30°	3-position: Approx. 45°	2-position: Approx. 60° 3-position: Approx. 45°
Required return force	– (Push-lock type: 0.6N•m)	0.6N•m (AR22VG: 0.2N•m)	30N (pull)	0.15N•m	0.13N•m	–

Notes: *1 AR22V2R, V4R, V7R, VAL types: 45N
*2 4-position, 5-position: 2NO+2NC

■ **Lamp ratings**

• **Illuminated pushbuttons, illuminated selectors, pilot lights**

Transformer	Lamp voltage	LED			Incandescent		
		Type	Rated voltage	Consumption	Type	Rated voltage	Consumption
Without transformer	5.5V AC/DC	–	–	–	AHX135	6.3V AC/DC	0.9W
	6V AC	APX510-6□	6V AC	Green, red, orange, amber, blue: 7mA AC Yellow: 50mA AC	–	–	–
	6V DC	APX510-D6□	6V DC	Green, red, orange, amber, blue: 11mA DC Yellow: 33mA DC	–	–	–
	12V AC/DC	APX510-12□	12V AC/DC	Green, red, orange, amber, blue: 14mA AC,11mA DC Yellow: 28mA AC, 22mA DC	–	–	–
	15V AC/DC	APX510-15□	15V AC/DC	Green, red, orange, amber, blue: 13mA AC,11mA DC Yellow: 26mA AC, 22mA DC	AHX279	18V AC/DC	0.8W
	20V AC/DC	–	–	–	AHX144	24V AC/DC	0.9W
	24V AC/DC	APX510-24□	24V AC/DC	12mA AC, 11mA DC	AHX129	30V AC/DC	0.8W
With transformer (Standard type: AR9T511)	110V AC	APX510-6□	6V AC	1.5VA	AHX135	6.3V AC/DC	2VA
	127V AC						2VA
	220V AC						2VA
	254V AC	APX510-6□	6V AC	2.5VA	AHX135	6.3V AC/DC	2.5VA
	380V AC						2.5VA
	440V AC						2.5VA
	480V AC						2.5VA
	550V AC						2.5VA
With resistor unit (AR9T519-H)	110V DC	APX510-24□	24V AC/DC	1.2W	–	–	–

Notes: • Short body pilot lights: 110V AC, 127V AC, 220V AC only
• Replace the □ mark by the lamp luminous color code, *see page 04/16*
• Except AR22VGF type

• **Emergency stop illuminated pushbuttons (AR22VGF type)**

Transformer	Lamp	Voltage	Type	Rated voltage	Consumption
Without transformer	LED	24V AC/DC	AR9L002-ER	24V AC/DC	12mA AC 11mA DC
	Neon	110V AC	AR9N001-HA	110V AC	0.19VA
		120V AC	AR9N001-KA	120V AC	0.21VA
		220V AC	AR9N001-MA	220V AC	0.30VA
		240V AC	AR9N001-PA	240V AC	0.30VA

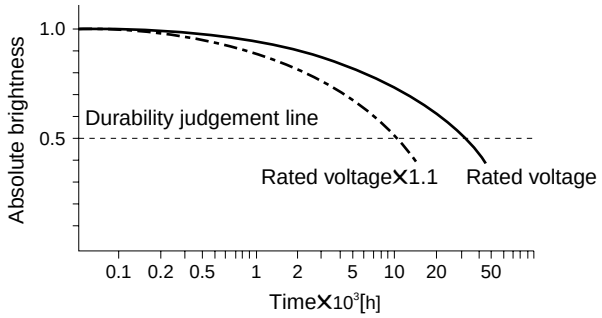
Notes: Lamp base: BA9S/13

■ Lamp durability

Lamp	Durability (reference)	Judgement criterion
LED	Approx. 30000h	When brightness is less than 50% of initial value
Incandescent	Approx. 5000h (AC)	When the bulb burns out
Neon	Approx. 5000h	When a remarkable blackening appears in the glass bulb and the using becomes improper

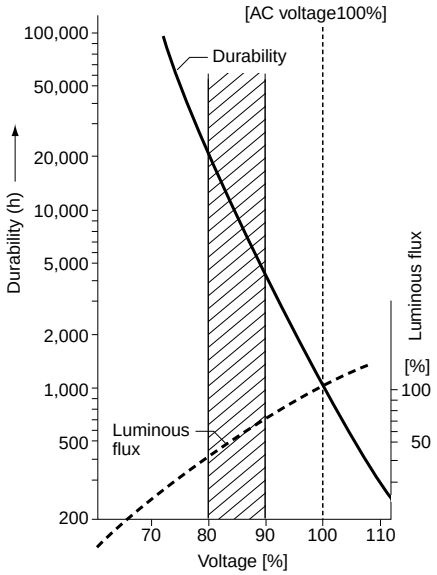
Notes: • The operating voltage for incandescent lamps is set at 80 to 90% of the lamp's rated voltage.
• The durability of LED lamp is a mean value in all colors.

Estimated durability for LED lamps



Notes: • Durability at Ta=25˚C
• Durability is affected by temperature, humidity, and voltage fluctuation.

Incandescent lamp voltage characteristics



■ Combination of lens color and LED or neon lamp luminous color

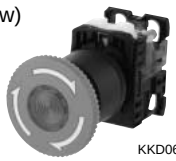
Lens Color	Code	LED or neon lamp Luminous color	Type
Green	G	Green	APX510-■G
Red	R	Red	APX510-■R
White	W	Orange	APX510-■O
Yellow	Y	Yellow	APX510-■Y
Orange *	A	Amber	APX510-■A
Blue	S	Blue	APX510-■S
Red (AR22VGF)	R	Red	AR9L002-ER
		Orange (Neon lamp)	AR9N001-■A

Notes: * DR22F4M: LED lamp color is orange. (APX510-■O)
• Replace the ■ mark by the lamp voltage code

■ Illuminated pushbutton switches

Operator	Trans-former	Contact	LED lamp Momentary action Type	LED lamp Alternate action Type	Incandescent lamp Momentary action Type	Incandescent lamp Alternate action Type
Flush round head AF94-318	Without	1NO	**AR22F0L-10■3□**	**AR22F5L-10■3□**	**AR22F0L-10■4□**	**AR22F5L-10■4□**
		1NC	**AR22F0L-01■3□**	**AR22F5L-01■3□**	**AR22F0L-01■4□**	**AR22F5L-01■4□**
		1NO+1NC	**AR22F0L-11■3□**	**AR22F5L-11■3□**	**AR22F0L-11■4□**	**AR22F5L-11■4□**
		2NO+2NC	**AR22F0L-22■3□**	**—**	**AR22F0L-22■4□**	**—**
	With	1NO	**AR22F0L-10■3□**	**AR22F5L-10■3□**	**AR22F0L-10■4□**	**AR22F5L-10■4□**
		1NC	**AR22F0L-01■3□**	**AR22F5L-01■3□**	**AR22F0L-01■4□**	**AR22F5L-01■4□**
		1NO+1NC	**AR22F0L-11■3□**	**AR22F5L-11■3□**	**AR22F0L-11■4□**	**AR22F5L-11■4□**
Extended round head AF94-317	Without	1NO	**AR22E0L-10■3□**	**AR22E5L-10■3□**	**AR22E0L-10■4□**	**AR22E5L-10■4□**
		1NC	**AR22E0L-01■3□**	**AR22E5L-01■3□**	**AR22E0L-01■4□**	**AR22E5L-01■4□**
		1NO+1NC	**AR22E0L-11■3□**	**AR22E5L-11■3□**	**AR22E0L-11■4□**	**AR22E5L-11■4□**
		2NO+2NC	**AR22E0L-22■3□**	**—**	**AR22E0L-22■4□**	**—**
	With	1NO	**AR22E0L-10■3□**	**AR22E5L-10■3□**	**AR22E0L-10■4□**	**AR22E5L-10■4□**
		1NC	**AR22E0L-01■3□**	**AR22E5L-01■3□**	**AR22E0L-01■4□**	**AR22E5L-01■4□**
		1NO+1NC	**AR22E0L-11■3□**	**AR22E5L-11■3□**	**AR22E0L-11■4□**	**AR22E5L-11■4□**
Mushroom head (40mm dia.) AF94-367	Without	1NO	**AR22M0L-10■3□**	**AR22M5L-10■3□**	**AR22M0L-10■4□**	**AR22M5L-10■4□**
		1NC	**AR22M0L-01■3□**	**AR22M5L-01■3□**	**AR22M0L-01■4□**	**AR22M5L-01■4□**
		1NO+1NC	**AR22M0L-11■3□**	**AR22M5L-11■3□**	**AR22M0L-11■4□**	**AR22M5L-11■4□**
		2NO+2NC	**AR22M0L-22■3□**	**—**	**AR22M0L-22■4□**	**—**
	With	1NO	**AR22M0L-10■3□**	**AR22M5L-10■3□**	**AR22M0L-10■4□**	**AR22M5L-10■4□**
		1NC	**AR22M0L-01■3□**	**AR22M5L-01■3□**	**AR22M0L-01■4□**	**AR22M5L-01■4□**
		1NO+1NC	**AR22M0L-11■3□**	**AR22M5L-11■3□**	**AR22M0L-11■4□**	**AR22M5L-11■4□**
Mushroom head (29mm dia.) AF94-369	Without	1NO	**AR22M4L-10■3□**	**AR22M9L-10■3□**	**AR22M4L-10■4□**	**AR22M9L-10■4□**
		1NC	**AR22M4L-01■3□**	**AR22M9L-01■3□**	**AR22M4L-01■4□**	**AR22M9L-01■4□**
		1NO+1NC	**AR22M4L-11■3□**	**AR22M9L-11■3□**	**AR22M4L-11■4□**	**AR22M9L-11■4□**
		2NO+2NC	**AR22M4L-22■3□**	**—**	**AR22M4L-22■4□**	**—**
	With	1NO	**AR22M4L-10■3□**	**AR22M9L-10■3□**	**AR22M4L-10■4□**	**AR22M9L-10■4□**
		1NC	**AR22M4L-01■3□**	**AR22M9L-01■3□**	**AR22M4L-01■4□**	**AR22M9L-01■4□**
		1NO+1NC	**AR22M4L-11■3□**	**AR22M9L-11■3□**	**AR22M4L-11■4□**	**AR22M9L-11■4□**
Extended with transparent full guard (24mm dia.) AF94-294	Without	1NO	**AR22G4L-10■3□**	**AR22G9L-10■3□**	**AR22G4L-10■4□**	**AR22G9L-10■4□**
		1NC	**AR22G4L-01■3□**	**AR22G9L-01■3□**	**AR22G4L-01■4□**	**AR22G9L-01■4□**
		1NO+1NC	**AR22G4L-11■3□**	**AR22G9L-11■3□**	**AR22G4L-11■4□**	**AR22G9L-11■4□**
		2NO+2NC	**AR22G4L-22■3□**	**—**	**AR22G4L-22■4□**	**—**
	With	1NO	**AR22G4L-10■3□**	**AR22G9L-10■3□**	**AR22G4L-10■4□**	**AR22G9L-10■4□**
		1NC	**AR22G4L-01■3□**	**AR22G9L-01■3□**	**AR22G4L-01■4□**	**AR22G9L-01■4□**
		1NO+1NC	**AR22G4L-11■3□**	**AR22G9L-11■3□**	**AR22G4L-11■4□**	**AR22G9L-11■4□**
Extended with full guard (24mm dia. with openings) AF99-319	Without	1NO	**AR22G2L-10■3□**	**AR22G7L-10■3□**	**AR22G2L-10■4□**	**AR22G7L-10■4□**
		1NC	**AR22G2L-01■3□**	**AR22G7L-01■3□**	**AR22G2L-01■4□**	**AR22G7L-01■4□**
		1NO+1NC	**AR22G2L-11■3□**	**AR22G7L-11■3□**	**AR22G2L-11■4□**	**AR22G7L-11■4□**
		2NO+2NC	**AR22G2L-22■3□**	**—**	**AR22G2L-22■4□**	**—**
	With	1NO	**AR22G2L-10■3□**	**AR22G7L-10■3□**	**AR22G2L-10■4□**	**AR22G7L-10■4□**
		1NC	**AR22G2L-01■3□**	**AR22G7L-01■3□**	**AR22G2L-01■4□**	**AR22G7L-01■4□**
		1NO+1NC	**AR22G2L-11■3□**	**AR22G7L-11■3□**	**AR22G2L-11■4□**	**AR22G7L-11■4□**

Note: ■ □ *See page 04/19*

Operator	Trans-former	Contact	LED lamp Momentary action Type	LED lamp Alternate action Type	Incandescent lamp Momentary action Type	Incandescent lamp Alternate action Type
Extended with full guard (24mm dia.) KK02-127A	Without	1NO	**AR22G1L-10■3□**	**AR22G6L-10■3□**	**AR22G1L-10■4□**	**AR22G6L-10■4□**
		1NC	**AR22G1L-01■3□**	**AR22G6L-01■3□**	**AR22G1L-01■4□**	**AR22G6L-01■4□**
		1NO+1NC	**AR22G1L-11■3□**	**AR22G6L-11■3□**	**AR22G1L-11■4□**	**AR22G6L-11■4□**
		2NO+2NC	**AR22G1L-22■3□**	**—**	**AR22G1L-22■4□**	**—**
	With	1NO	**AR22G1L-10■3□**	**AR22G6L-10■3□**	**AR22G1L-10■4□**	**AR22G6L-10■4□**
		1NC	**AR22G1L-01■3□**	**AR22G6L-01■3□**	**AR22G1L-01■4□**	**AR22G6L-01■4□**
		1NO+1NC	**AR22G1L-11■3□**	**AR22G6L-11■3□**	**AR22G1L-11■4□**	**AR22G6L-11■4□**
Push-lock, turn-reset (40mm dia. with white arrow)  KKD06-335	Without	1NO	**—**	**AR22V5L-10■3□**	**—**	**AR22V5L-10■4□**
		1NC	**—**	**AR22V5L-01■3□**	**—**	**AR22V5L-01■4□**
		1NO+1NC	**—**	**AR22V5L-11■3□**	**—**	**AR22V5L-11■4□**
		3NC	**—**	**AR22V5L-03■3□**	**—**	**AR22V5L-03■4□**
	With	1NO	**—**	**AR22V5L-10■3□**	**—**	**AR22V5L-10■4□**
		1NC	**—**	**AR22V5L-01■3□**	**—**	**AR22V5L-01■4□**
		1NO+1NC	**—**	**AR22V5L-11■3□**	**—**	**AR22V5L-11■4□**
Flush square head AF97-68	Without	1NO	**AR22F0M-10■3□**	**AR22F5M-10■3□**	**AR22F0M-10■4□**	**AR22F5M-10■4□**
		1NC	**AR22F0M-01■3□**	**AR22F5M-01■3□**	**AR22F0M-01■4□**	**AR22F5M-01■4□**
		1NO+1NC	**AR22F0M-11■3□**	**AR22F5M-11■3□**	**AR22F0M-11■4□**	**AR22F5M-11■4□**
		2NO+2NC	**AR22F0M-22■3□**	**—**	**AR22F0M-22■4□**	**—**
	With	1NO	**AR22F0M-10■3□**	**AR22F5M-10■3□**	**AR22F0M-10■4□**	**AR22F5M-10■4□**
		1NC	**AR22F0M-01■3□**	**AR22F5M-01■3□**	**AR22F0M-01■4□**	**AR22F5M-01■4□**
		1NO+1NC	**AR22F0M-11■3□**	**AR22F5M-11■3□**	**AR22F0M-11■4□**	**AR22F5M-11■4□**
Extended square head AF94-357	Without	1NO	**AR22E0M-10■3□**	**AR22E5M-10■3□**	**AR22E0M-10■4□**	**AR22E5M-10■4□**
		1NC	**AR22E0M-01■3□**	**AR22E5M-01■3□**	**AR22E0M-01■4□**	**AR22E5M-01■4□**
		1NO+1NC	**AR22E0M-11■3□**	**AR22E5M-11■3□**	**AR22E0M-11■4□**	**AR22E5M-11■4□**
		2NO+2NC	**AR22E0M-22■3□**	**—**	**AR22E0M-22■4□**	**—**
	With	1NO	**AR22E0M-10■3□**	**AR22E5M-10■3□**	**AR22E0M-10■4□**	**AR22E5M-10■4□**
		1NC	**AR22E0M-01■3□**	**AR22E5M-01■3□**	**AR22E0M-01■4□**	**AR22E5M-01■4□**
		1NO+1NC	**AR22E0M-11■3□**	**AR22E5M-11■3□**	**AR22E0M-11■4□**	**AR22E5M-11■4□**
Flush round head with square bezel AF94-315	Without	1NO	**AR22F0P-10■3□**	**AR22F5P-10■3□**	**AR22F0P-10■4□**	**AR22F5P-10■4□**
		1NC	**AR22F0P-01■3□**	**AR22F5P-01■3□**	**AR22F0P-01■4□**	**AR22F5P-01■4□**
		1NO+1NC	**AR22F0P-11■3□**	**AR22F5P-11■3□**	**AR22F0P-11■4□**	**AR22F5P-11■4□**
		2NO+2NC	**AR22F0P-22■3□**	**—**	**AR22F0P-22■4□**	**—**
	With	1NO	**AR22F0P-10■3□**	**AR22F5P-10■3□**	**AR22F0P-10■4□**	**AR22F5P-10■4□**
		1NC	**AR22F0P-01■3□**	**AR22F5P-01■3□**	**AR22F0P-01■4□**	**AR22F5P-01■4□**
		1NO+1NC	**AR22F0P-11■3□**	**AR22F5P-11■3□**	**AR22F0P-11■4□**	**AR22F5P-11■4□**
Extended round head with square bezel AF94-314	Without	1NO	**AR22E0P-10■3□**	**AR22E5P-10■3□**	**AR22E0P-10■4□**	**AR22E5P-10■4□**
		1NC	**AR22E0P-01■3□**	**AR22E5P-01■3□**	**AR22E0P-01■4□**	**AR22E5P-01■4□**
		1NO+1NC	**AR22E0P-11■3□**	**AR22E5P-11■3□**	**AR22E0P-11■4□**	**AR22E5P-11■4□**
		2NO+2NC	**AR22E0P-22■3□**	**—**	**AR22E0P-22■4□**	**—**
	With	1NO	**AR22E0P-10■3□**	**AR22E5P-10■3□**	**AR22E0P-10■4□**	**AR22E5P-10■4□**
		1NC	**AR22E0P-01■3□**	**AR22E5P-01■3□**	**AR22E0P-01■4□**	**AR22E5P-01■4□**
		1NO+1NC	**AR22E0P-11■3□**	**AR22E5P-11■3□**	**AR22E0P-11■4□**	**AR22E5P-11■4□**

Note: ■ □ *See page 04/19*

Operator	Trans-former	Contact	LED lamp Momentary action Type	LED lamp Alternate action Type	Incandescent lamp Momentary action Type	Incandescent lamp Alternate action Type
Mushroom head with square bezel (29mm dia.) AF94-440	Without	1NO	**AR22M4P-10■3□**	—	**AR22M4P-10■4□**	—
		1NC	**AR22M4P-01■3□**	—	**AR22M4P-01■4□**	—
		1NO+1NC	**AR22M4P-11■3□**	—	**AR22M4P-11■4□**	—
		2NO+2NC	**AR22M4P-22■3□**	—	**AR22M4P-22■4□**	—
	With	1NO	**AR22M4P-10■3□**	—	**AR22M4P-10■4□**	—
		1NC	**AR22M4P-01■3□**	—	**AR22M4P-01■4□**	—
		1NO+1NC	**AR22M4P-11■3□**	—	**AR22M4P-11■4□**	—

- **Lens color**

Replace the □ mark by the lens color code

Color	Green	Red	White	Blue	Yellow	Orange
Code	G	R	W	S	Y	A

Note: AR22V5L type: Red, yellow only

- **Contact arrangements**

Contact arrangements other than above are available

Contact arrangement	1NO	1NC	1NO+1NC	2NO	2NC	3NO
Code	10	01	11	20	02	30

Contact arrangement	3NC	2NO+2NC	4NO	4NC	5NO	5NC
Code	03	22	40	04	50	05

Available numbers of contact blocks

Operation	Without transformer	With transformer
Momentary action	5-contact block	3-contact block
Alternate action Push-lock, turn-reset	3-contact block	2-contact block

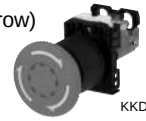
- **Voltage**

Replace the ■ mark by the lamp voltage code

Transformer		Code LED	Code Incandescent
Without transformer	6V DC	6	—
	6V AC	A	—
	5.5V AC/DC	—	5
	12V AC/DC	B	—
	15V AC/DC	C	C
	20V AC/DC	—	D
	24V AC/DC	E	E
With transformer	100-110V AC	H	H
	115-127V AC	L	L
	200-220V AC	M	M
	230-254V AC	Q	Q
	350-380V AC	S	S
	400-440V AC	T	T
	480V AC	V	V
	500-550V AC	W	W

■ Pushbutton switches

Operator	Contact	Momentary action Type	Alternate action Type
Flush round head AF94-320	1NO	**AR22F0R-10□**	**AR22F5R-10□**
	1NC	**AR22F0R-01□**	**AR22F5R-01□**
	1NO+1NC	**AR22F0R-11□**	**AR22F5R-11□**
	2NO	**AR22F0R-20□**	**AR22F5R-20□**
	2NC	**AR22F0R-02□**	**AR22F5R-02□**
	2NO+2NC	**AR22F0R-22□**	**AR22F5R-22□**
Extended round head AF94-319	1NO	**AR22E0R-10□**	**AR22E5R-10□**
	1NC	**AR22E0R-01□**	**AR22E5R-01□**
	1NO+1NC	**AR22E0R-11□**	**AR22E5R-11□**
	2NO	**AR22E0R-20□**	**AR22E5R-20□**
	2NC	**AR22E0R-02□**	**AR22E5R-02□**
	2NO+2NC	**AR22E0R-22□**	**AR22E5R-22□**
Flush round head symbol mark type AF98-193	1NO	**AR22FAR-10C■**	**AR22FBR-10C■**
	1NC	**AR22FAR-01C■**	**AR22FBR-01C■**
	1NO+1NC	**AR22FAR-11C■**	**AR22FBR-11C■**
	2NO	**AR22FAR-20C■**	**AR22FBR-20C■**
	2NC	**AR22FAR-02C■**	**AR22FBR-02C■**
	2NO+2NC	**AR22FAR-22C■**	**AR22FBR-22C■**
Extended round head symbol mark type AF98-192	1NO	**AR22EAR-10C■**	**AR22EBR-10C■**
	1NC	**AR22EAR-01C■**	**AR22EBR-01C■**
	1NO+1NC	**AR22EAR-11C■**	**AR22EBR-11C■**
	2NO	**AR22EAR-20C■**	**AR22EBR-20C■**
	2NC	**AR22EAR-02C■**	**AR22EBR-02C■**
	2NO+2NC	**AR22EAR-22C■**	**AR22EBR-22C■**
Mushroom head (40mm dia.) AF94-293	1NO	**AR22M0R-10□**	**AR22M5R-10□**
	1NC	**AR22M0R-01□**	**AR22M5R-01□**
	1NO+1NC	**AR22M0R-11□**	**AR22M5R-11□**
	2NO	**AR22M0R-20□**	**AR22M5R-20□**
	2NC	**AR22M0R-02□**	**AR22M5R-02□**
	2NO+2NC	**AR22M0R-22□**	**AR22M5R-22□**
Mushroom head (29mm dia.) AF94-321	1NO	**AR22M4R-10□**	**AR22M9R-10□**
	1NC	**AR22M4R-01□**	**AR22M9R-01□**
	1NO+1NC	**AR22M4R-11□**	**AR22M9R-11□**
	2NO	**AR22M4R-20□**	**AR22M9R-20□**
	2NC	**AR22M4R-02□**	**AR22M9R-02□**
	2NO+2NC	**AR22M4R-22□**	**AR22M9R-22□**
Extended with full guard (24mm dia.) AF94-292	1NO	**AR22G3R-10□**	**AR22G8R-10□**
	1NC	**AR22G3R-01□**	**AR22G8R-01□**
	1NO+1NC	**AR22G3R-11□**	**AR22G8R-11□**
	2NO	**AR22G3R-20□**	**AR22G8R-20□**
	2NC	**AR22G3R-02□**	**AR22G8R-02□**
	2NO+2NC	**AR22G3R-22□**	**AR22G8R-22□**

Operator	Contact	Momentary action Type	Alternate action Type
Flush with full guard (24mm dia.) AF02-68	1NO	**AR22G2R-10□**	**AR22G7R-10□**
	1NC	**AR22G2R-01□**	**AR22G7R-01□**
	1NO+1NC	**AR22G2R-11□**	**AR22G7R-11□**
	2NO	**AR22G2R-20□**	**AR22G7R-20□**
	2NC	**AR22G2R-02□**	**AR22G7R-02□**
	2NO+2NC	**AR22G2R-22□**	**AR22G7R-22□**
Mushroom head with full guard (40mm dia.) AF94-372	1NO	**AR22M3R-10□**	**AR22M8R-10□**
	1NC	**AR22M3R-01□**	**AR22M8R-01□**
	1NO+1NC	**AR22M3R-11□**	**AR22M8R-11□**
	2NO	**AR22M3R-20□**	**AR22M8R-20□**
	2NC	**AR22M3R-02□**	**AR22M8R-02□**
	2NO+2NC	**AR22M3R-22□**	**AR22M8R-22□**
Extended with half guard AF96-236	1NO	**AR22G0R-10□**	**AR22G5R-10□**
	1NC	**AR22G0R-01□**	**AR22G5R-01□**
	1NO+1NC	**AR22G0R-11□**	**AR22G5R-11□**
	2NO	**AR22G0R-20□**	**AR22G5R-20□**
	2NC	**AR22G0R-02□**	**AR22G5R-02□**
	2NO+2NC	**AR22G0R-22□**	**AR22G5R-22□**
Push-lock, turn-reset (40mm dia. with white arrow)  KKD08-042	1NO	—	**AR22V5R-10□**
	1NC	—	**AR22V5R-01□**
	1NO+1NC	—	**AR22V5R-11□**
	2NO	—	**AR22V5R-20□**
	2NC	—	**AR22V5R-02□**
	2NO+2NC	—	**AR22V5R-22□**
Flush square head AF94-316	1NO	**AR22F0S-10□**	**AR22F5S-10□**
	1NC	**AR22F0S-01□**	**AR22F5S-01□**
	1NO+1NC	**AR22F0S-11□**	**AR22F5S-11□**
	2NO	**AR22F0S-20□**	**AR22F5S-20□**
	2NC	**AR22F0S-02□**	**AR22F5S-02□**
	2NO+2NC	**AR22F0S-22□**	**AR22F5S-22□**
Extended square head AF94-296	1NO	**AR22E0S-10□**	**AR22E5S-10□**
	1NC	**AR22E0S-01□**	**AR22E5S-01□**
	1NO+1NC	**AR22E0S-11□**	**AR22E5S-11□**
	2NO	**AR22E0S-20□**	**AR22E5S-20□**
	2NC	**AR22E0S-02□**	**AR22E5S-02□**
	2NO+2NC	**AR22E0S-22□**	**AR22E5S-22□**
Flush round head with square bezel AF94-295	1NO	**AR22F0Y-10□**	**AR22F5Y-10□**
	1NC	**AR22F0Y-01□**	**AR22F5Y-01□**
	1NO+1NC	**AR22F0Y-11□**	**AR22F5Y-11□**
	2NO	**AR22F0Y-20□**	**AR22F5Y-20□**
	2NC	**AR22F0Y-02□**	**AR22F5Y-02□**
	2NO+2NC	**AR22F0Y-22□**	**AR22F5Y-22□**

Note: ■ □ *See page 04/21*

Operator	Contact	Momentary action Type	Alternate action Type
Extended round head with square bezel AF94-297	1NO	**AR22E0Y-10□**	**AR22E5Y-10□**
	1NC	**AR22E0Y-01□**	**AR22E5Y-01□**
	1NO+1NC	**AR22E0Y-11□**	**AR22E5Y-11□**
	2NO	**AR22E0Y-20□**	**AR22E5Y-20□**
	2NC	**AR22E0Y-02□**	**AR22E5Y-02□**
	2NO+2NC	**AR22E0Y-22□**	**AR22E5Y-22□**

Operator	Contact	Momentary action Type	Alternate action Type
Mushroom head with square bezel (29mm dia.) AF94-298	1NO	**AR22M4Y-10□**	—
	1NC	**AR22M4Y-01□**	—
	1NO+1NC	**AR22M4Y-11□**	—
	2NO	**AR22M4Y-20□**	—
	2NC	**AR22M4Y-02□**	—
	2NO+2NC	**AR22M4Y-22□**	—

- **Button color**

Replace the □ mark by the button color code

Color	Green	Red	White	Blue	Yellow	Orange	Black
Code	G	R	W	S	Y	A	B

Note: AR22V5R type: Red, yellow, black only

- **Available numbers of contact blocks**

Momentary action	Alternate action Push-lock, turn-reset
6-contact block	4-contact block

- **Contact arrangements**

Contact arrangements other than above are available

Contact arrangement	1NO	1NC	1NO+1NC	2NO	2NC	3NO	3NC
Code	10	01	11	20	02	30	03

Contact arrangement	2NO+2NC	4NO	4NC	5NO	5NC	3NO+3NC
Code	22	40	04	50	05	33

- **Symbol mark** (For AR22FAR, FBR, EAR, EBR)

Replace the ■ mark by the symbol mark code

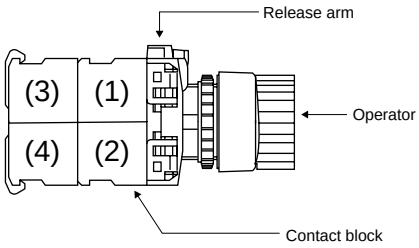
Symbol mark	◯		I		Ⓣ		◯	I	Ⓣ
Color of button	White	Black	White	Black	White	Black	Clear		
Color of mark	Red		Green		Green		Black		
Code	01	02	03	04	11	12	02B	04B	12B

Operator	Contact (The following contact is only available.)	Button color	Type	Contact operation					
				Contact block		Left		Right	
				Mounting position	Type	Free	Depressed	Free	Depressed
Pushbutton with selector ring (2-position) AF94-355	2NO+2NC	Green Red Black White Yellow Orange Blue	**AR22S1R-22G** **AR22S1R-22R** **AR22S1R-22B** **AR22S1R-22W** **AR22S1R-22Y** **AR22S1R-22A** **AR22S1R-22S**	(1)	NC	—	—	●	—
				(2)	NC	—	—	●	—
				(3)	NO	—	●	—	●
				(4)	NO	—	●	—	●
	2NO	Green Red Black White Yellow Orange Blue	**AR22S2R-20G** **AR22S2R-20R** **AR22S2R-20B** **AR22S2R-20W** **AR22S2R-20Y** **AR22S2R-20A** **AR22S2R-20S**	(1)	NO	—	●	—	—
				(2)	NO	—	—	—	●
	2NO+2NC	Green Red Black White Yellow Orange Blue	**AR22S2R-22G** **AR22S2R-22R** **AR22S2R-22B** **AR22S2R-22W** **AR22S2R-22Y** **AR22S2R-22A** **AR22S2R-22S**	(1)	NC	●	—	▬	
				(2)	NC	▬		●	—
				(3)	NO	—	●	—	—
				(4)	NO	—	—	—	●
	2NO+2NC	Green Red Black White Yellow Orange Blue	**AR22S3R-22G** **AR22S3R-22R** **AR22S3R-22B** **AR22S3R-22W** **AR22S3R-22Y** **AR22S3R-22A** **AR22S3R-22S**	(1)	NC	—	—	▬	
				(2)	NC	▬		—	—
				(3)	NO	—	●	—	—
				(4)	NO	—	—	—	●
	2NO+2NC	Green Red Black White Yellow Orange Blue	**AR22S6R-22G** **AR22S6R-22R** **AR22S6R-22B** **AR22S6R-22W** **AR22S6R-22Y** **AR22S6R-22A** **AR22S6R-22S**	(1)	NC	●	—	—	Locked
				(2)	NC	●	—	—	
				(3)	NO	—	●	●	
				(4)	NO	—	●	●	

Note: (1) to (4): Contact block mounting position

● Contact closed
— Contact open

• Position of contact block



■ Emergency stop pushbutton switches

⊖ (Direct opening action), conform to EN418

Operator	Contact	Type
Push-lock, turn-reset (Soft-touch 40mm dia. With white arrow) KKD08-042	1NC 1NO+1NC 2NC 3NC 2NO+2NC 4NC	**AR22V0R-01R** **AR22V0R-11R** **AR22V0R-02R** **AR22V0R-03R** **AR22V0R-22R** **AR22V0R-04R**
Push-lock, turn-reset (40mm dia.) KKD05-020b	1NC 1NO+1NC 2NC 3NC 2NO+2NC 4NC	**AR22V2R-01R** **AR22V2R-11R** **AR22V2R-02R** **AR22V2R-03R** **AR22V2R-22R** **AR22V2R-04R**
Push-lock, turn-reset (Soft-touch 29mm dia. with white arrow) KKD06-346	1NC 1NO+1NC 2NC 3NC 2NO+2NC 4NC	**AR22VSR-01R** **AR22VSR-11R** **AR22VSR-02R** **AR22VSR-03R** **AR22VSR-22R** **AR22VSR-04R**
Push-lock, turn-reset (29mm dia.) KKD06-339	1NC 1NO+1NC 2NC 3NC 2NO+2NC 4NC	**AR22V4R-01R** **AR22V4R-11R** **AR22V4R-02R** **AR22V4R-03R** **AR22V4R-22R** **AR22V4R-04R**

Notes: • Button color : Red only
• Contact arrangements indicated in the table can be supplied.

Operator	Contact	Type
Key release push-lock, turn-reset (40mm dia.) KKD09-020	1NC 1NO+1NC 2NC 3NC 2NO+2NC 4NC	**AR22V7R-01R** **AR22V7R-11R** **AR22V7R-02R** **AR22V7R-03R** **AR22V7R-22R** **AR22V7R-04R**
Push-lock, pull-reset (35mm dia.) KKD06-334	1NC 1NO+1NC 2NC	**AR22Q2R-01R** **AR22Q2R-11R** **AR22Q2R-02R**
Unibody push-lock, turn-reset (Soft-touch 40mm dia. with white arrow) KKD05-023b	1NC 1NO+1NC 2NC	**AR22VGE-01R** **AR22VGE-11R** **AR22VGE-02R**

■ Emergency stop illuminated pushbutton switches

⊖ (Direct opening action), conform to EN418

Operator	Transformer	Contact	LED lamp Type	Incandescent lamp Type	Neon lamp Type
Push-lock, turn-reset (Soft-touch 40mm dia. with white arrow) KKD06-335	Without	1NC	**AR22V0L-01■3R**	**AR22V0L-01■4R**	—
		1NO+1NC	**AR22V0L-11■3R**	**AR22V0L-11■4R**	—
		2NC	**AR22V0L-02■3R**	**AR22V0L-02■4R**	—
		3NC	**AR22V0L-03■3R**	**AR22V0L-03■4R**	—
	With	1NC	**AR22V0L-01■3R**	**AR22V0L-01■4R**	—
		1NO+1NC	**AR22V0L-11■3R**	**AR22V0L-11■4R**	—
		2NC	**AR22V0L-02■3R**	**AR22V0L-02■4R**	—
Push-lock, turn-reset (40mm dia.) KKD06-337	Without	1NC	**AR22V2L-01■3R**	**AR22V2L-01■4R**	—
		1NO+1NC	**AR22V2L-11■3R**	**AR22V2L-11■4R**	—
		2NC	**AR22V2L-02■3R**	**AR22V2L-02■4R**	—
		3NC	**AR22V2L-03■3R**	**AR22V2L-03■4R**	—
	With	1NC	**AR22V2L-01■3R**	**AR22V2L-01■4R**	—
		1NO+1NC	**AR22V2L-11■3R**	**AR22V2L-11■4R**	—
		2NC	**AR22V2L-02■3R**	**AR22V2L-02■4R**	—
Push-lock, turn-reset (Soft-touch 40mm dia. transparent in all colors with white arrow) KKD06-342	Without	1NC	**AR22VDL-01■3R**	**AR22VDL-01■4R**	—
		1NO+1NC	**AR22VDL-11■3R**	**AR22VDL-11■4R**	—
		2NC	**AR22VDL-02■3R**	**AR22VDL-02■4R**	—
		3NC	**AR22VDL-03■3R**	**AR22VDL-03■4R**	—
	With	1NC	**AR22VDL-01■3R**	**AR22VDL-01■4R**	—
		1NO+1NC	**AR22VDL-11■3R**	**AR22VDL-11■4R**	—
		2NC	**AR22VDL-02■3R**	**AR22VDL-02■4R**	—
Push-lock, turn-reset (40mm dia. transparent in all colors) KKD06-340	Without	1NC	**AR22VAL-01■3R**	**AR22VAL-01■4R**	—
		1NO+1NC	**AR22VAL-11■3R**	**AR22VAL-11■4R**	—
		2NC	**AR22VAL-02■3R**	**AR22VAL-02■4R**	—
		3NC	**AR22VAL-03■3R**	**AR22VAL-03■4R**	—
	With	1NC	**AR22VAL-01■3R**	**AR22VAL-01■4R**	—
		1NO+1NC	**AR22VAL-11■3R**	**AR22VAL-11■4R**	—
		2NC	**AR22VAL-02■3R**	**AR22VAL-02■4R**	—
Push-lock, turn-reset (Soft-touch 29mm dia. with white arrow) KKD06-344	Without	1NC	**AR22VSL-01■3R**	**AR22VSL-01■4R**	—
		1NO+1NC	**AR22VSL-11■3R**	**AR22VSL-11■4R**	—
		2NC	**AR22VSL-02■3R**	**AR22VSL-02■4R**	—
		3NC	**AR22VSL-03■3R**	**AR22VSL-03■4R**	—
	With	1NC	**AR22VSL-01■3R**	**AR22VSL-01■4R**	—
		1NO+1NC	**AR22VSL-11■3R**	**AR22VSL-11■4R**	—
		2NC	**AR22VSL-02■3R**	**AR22VSL-02■4R**	—
Unibody push-lock, turn-reset (Soft-touch 40mm dia. with white arrow) KKD05-150	Without	1NC	**AR22VGF-01E3R**	—	**AR22VGF-01■1R**
		1NO+1NC	**AR22VGF-11E3R**	—	**AR22VGF-11■1R**
		2NC	**AR22VGF-02E3R**	—	**AR22VGF-02■1R**

Notes: • Button color: Red only • AR22VGF type: Lamp circuit contacts are provided, see page 04/43. • Contact arrangements indicated in the table can be supplied.

• Voltage

Replace the ■ mark by the lamp voltage code

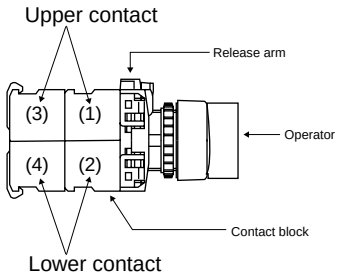
Transformer		Code LED	Incandescent	Neon
Without	6V DC	6	—	—
	6V AC	A	—	—
	5V AC/DC	—	5	—
	12V AC/DC	B	—	—
	15V AC/DC	C	C	—
	20V AC/DC	—	D	—
	24V AC/DC	E	E	—
	110V AC	—	—	H
	120V AC	—	—	K
	220V AC	—	—	M
	240V AC	—	—	P

Notes: AR22VGF: LED 24V AC/DC and neon only

Transformer		Code LED	Incandescent
With	100-110V AC	H	H
	115-127V AC	L	L
	200-220V AC	M	M
	230-254V AC	Q	Q
	350-380V AC	S	S
	400-440V AC	T	T
	480V AC	V	V
	500-550V AC	W	W

■ Selector switches
2-position

Operator	Operation	Knob color or key removable position	Contact	Type: Switch with round bezel	Type: Switch with square bezel	Contact operation (Example): Contact arrangement	Contact operation (Example): Operator position (Left / Right)
Knob AF94-310	Maintained each 90°	Color code: B: Black (Standard) Color other than above are available (G: Green R: Red)	1NO	**AR22PR-210B**	**AR22PY-210B**	1NO (1)	Upper contact ③ ④
			1NC	**AR22PR-201B**	**AR22PY-201B**		
			1NO+1NC	**AR22PR-211B**	**AR22PY-211B**		
			2NO	**AR22PR-220B**	**AR22PY-220B**		
			2NC	**AR22PR-202B**	**AR22PY-202B**		
			2NO+2NC	**AR22PR-222B**	**AR22PY-222B**		
	Spring return 60°		1NO	**AR22PR-010B**	**AR22PY-010B**	1NC (1)	Upper contact ① ②
			1NC	**AR22PR-001B**	**AR22PY-001B**		
			1NO+1NC	**AR22PR-011B**	**AR22PY-011B**		
			2NO	**AR22PR-020B**	**AR22PY-020B**		
			2NC	**AR22PR-002B**	**AR22PY-002B**		
			2NO+2NC	**AR22PR-022B**	**AR22PY-022B**		
Lever AF94-324	Maintained each 90°		1NO	**AR22WR-210B**	**AR22WY-210B**	1NO+1NC (1)	Upper contact ③ ④
			1NC	**AR22WR-201B**	**AR22WY-201B**		
			1NO+1NC	**AR22WR-211B**	**AR22WY-211B**		
			2NO	**AR22WR-220B**	**AR22WY-220B**	(2)	Lower contact ① ②
			2NC	**AR22WR-202B**	**AR22WY-202B**		
			2NO+2NC	**AR22WR-222B**	**AR22WY-222B**		
	Spring return 60°		1NO	**AR22WR-010B**	**AR22WY-010B**	2NO+2NC	Upper contact
			1NC	**AR22WR-001B**	**AR22WY-001B**		
			1NO+1NC	**AR22WR-011B**	**AR22WY-011B**		
			2NO	**AR22WR-020B**	**AR22WY-020B**	(1)	③ ④
			2NC	**AR22WR-002B**	**AR22WY-002B**		
			2NO+2NC	**AR22WR-022B**	**AR22WY-022B**	(3)	③ ④
Cylindrical knob AF94-308	Maintained each 90°		1NO	**AR22RR-210B**	**AR22RY-210B**		Lower contact
			1NC	**AR22RR-201B**	**AR22RY-201B**		
			1NO+1NC	**AR22RR-211B**	**AR22RY-211B**		
			2NO	**AR22RR-220B**	**AR22RY-220B**		
			2NC	**AR22RR-202B**	**AR22RY-202B**	(2)	① ②
			2NO+2NC	**AR22RR-222B**	**AR22RY-222B**		
	Spring return 60°		1NO	**AR22RR-010B**	**AR22RY-010B**	(4)	① ②
			1NC	**AR22RR-001B**	**AR22RY-001B**		
			1NO+1NC	**AR22RR-011B**	**AR22RY-011B**		
			2NO	**AR22RR-020B**	**AR22RY-020B**		
			2NC	**AR22RR-002B**	**AR22RY-002B**		
			2NO+2NC	**AR22RR-022B**	**AR22RY-022B**		
Key KKD09-018	Maintained each 90°	■: Key removable position ( ): Key type *See page 04/27*	1NO	**AR22J□R-2■10( )**	**AR22JY-2■10( )**		
			1NC	**AR22J□R-2■01( )**	**AR22JY-2■01( )**		
			1NO+1NC	**AR22J□R-2■11( )**	**AR22JY-2■11( )**		
			2NO	**AR22J□R-2■20( )**	**AR22JY-2■20( )**		
			2NC	**AR22J□R-2■02( )**	**AR22JY-2■02( )**		
			2NO+2NC	**AR22J□R-2■22( )**	**AR22JY-2■22( )**		
	Spring return 60°		1NO	**AR22J□R-0A10( )**	**AR22JY-0A10( )**		
			1NC	**AR22J□R-0A01( )**	**AR22JY-0A01( )**		
			1NO+1NC	**AR22J□R-0A11( )**	**AR22JY-0A11( )**		
			2NO	**AR22J□R-0A20( )**	**AR22JY-0A20( )**		
			2NC	**AR22J□R-0A02( )**	**AR22JY-0A02( )**		
			2NO+2NC	**AR22J□R-0A22( )**	**AR22JY-0A22( )**		



Notes: • (1) to (4): Contact block mounting position
• ① – ②, ③ – ④: Contact block terminal No.
• Contact arrangements: *See page 04/27*

● Contact closed

• Operator
Replace the □ mark by the cylinder key type code
Standard type: Blank
Long durability type: A

3-position

Operator	Operation	Knob color	Contact	Type: Switch with round bezel	Type: Switch with square bezel	Contact operation (Example): Contact arrangement	Operation position: L C R	Operation position: L C R
Knob AF94-310	Maintained each 45°	Color code: B: Black (Standard) Color other than above are available (G: Green R: Red)	1NO+1NC 2NO 2NC 2NO+2NC	**AR22PR-311B** **AR22PR-320B** **AR22PR-302B** **AR22PR-322B**	**AR22PY-311B** **AR22PY-320B** **AR22PY-302B** **AR22PY-322B**	1NO+1NC (1) (2)	Upper contact ③ ④	Lower contact ① ②
	Spring/manual return each 45°		1NO+1NC 2NO 2NC 2NO+2NC	**AR22PR-611B** **AR22PR-620B** **AR22PR-602B** **AR22PR-622B**	**AR22PY-611B** **AR22PY-620B** **AR22PY-602B** **AR22PY-622B**			
	Spring/manual return each 45°		1NO+1NC 2NO 2NC 2NO+2NC	**AR22PR-711B** **AR22PR-720B** **AR22PR-702B** **AR22PR-722B**	**AR22PY-711B** **AR22PY-720B** **AR22PY-702B** **AR22PY-722B**	1NO+1NC (1) (2)	Upper contact ③ ④	Lower contact ① ②
	Spring return each 45°		2NO+2NC	**AR22PR-122B**	**AR22PY-122B**	2NO+2NC (1) (2) (3) (4)	Upper contact ① ② ③ ④	Lower contact ① ② ③ ④
Lever AF94-324	Maintained each 45°		1NO+1NC 2NO 2NC 2NO+2NC	**AR22WR-311B** **AR22WR-320B** **AR22WR-302B** **AR22WR-322B**	**AR22WY-311B** **AR22WY-320B** **AR22WY-302B** **AR22WY-322B**	1NO+1NC (1) (2)	Upper contact ③ ④	Lower contact ① ②
	Spring/manual return each 45°		1NO+1NC 2NO 2NC 2NO+2NC	**AR22WR-611B** **AR22WR-620B** **AR22WR-602B** **AR22WR-622B**	**AR22WY-611B** **AR22WY-620B** **AR22WY-602B** **AR22WY-622B**			
	Spring/manual return each 45°		1NO+1NC 2NO 2NC 2NO+2NC	**AR22WR-711B** **AR22WR-720B** **AR22WR-702B** **AR22WR-722B**	**AR22WY-711B** **AR22WY-720B** **AR22WY-702B** **AR22WY-722B**	1NO+1NC (1) (2)	Upper contact ③ ④	Lower contact ① ②
	Spring return each 45°		2NO+2NC	**AR22WR-122B**	**AR22WY-122B**	2NO+2NC (1) (2) (3) (4)	Upper contact ① ② ③ ④	Lower contact ① ② ③ ④
Cylindrical knob AF94-308	Maintained each 45°		1NO+1NC 2NO 2NC 2NO+2NC	**AR22RR-311B** **AR22RR-320B** **AR22RR-302B** **AR22RR-322B**	**AR22RY-311B** **AR22RY-320B** **AR22RY-302B** **AR22RY-322B**	1NO+1NC (1) (2)	Upper contact ③ ④	Lower contact ① ②
	Spring/manual return each 45°		1NO+1NC 2NO 2NC 2NO+2NC	**AR22RR-611B** **AR22RR-620B** **AR22RR-602B** **AR22RR-622B**	**AR22RY-611B** **AR22RY-620B** **AR22RY-602B** **AR22RY-622B**			
	Spring/manual return each 45°		1NO+1NC 2NO 2NC 2NO+2NC	**AR22RR-711B** **AR22RR-720B** **AR22RR-702B** **AR22RR-722B**	**AR22RY-711B** **AR22RY-720B** **AR22RY-702B** **AR22RY-722B**	1NO+1NC (1) (2)	Upper contact ③ ④	Lower contact ① ②
	Spring return each 45°		2NO+2NC	**AR22RR-122B**	**AR22RY-122B**	2NO+2NC (1) (2) (3) (4)	Upper contact ① ② ③ ④	Lower contact ① ② ③ ④

Operator	Operation	Key removable position	Contact	Type Switch with round bezel	Switch with square bezel	Contact operation (Example) Contact arrangement	Operator position L C R	 L C R
Key KKD09-018	Maintained each 45°	■: Key removable position ( ): Key type	1NO+1NC 2NO 2NC 2NO+2NC	**AR22J□R-3■11( )** **AR22J□R-3■20( )** **AR22J□R-3■02( )** **AR22J□R-3■22( )**	**AR22JY-3■11( )** **AR22JY-3■20( )** **AR22JY-3■02( )** **AR22JY-3■22( )**	1NO+1NC (1) (2)	Upper contact ③ ④	Lower contact ① ②
	Spring/manual return each 45°		1NO+1NC 2NO 2NC 2NO+2NC	**AR22J□R-6■11( )** **AR22J□R-6■20( )** **AR22J□R-6■02( )** **AR22J□R-6■22( )**	**AR22JY-6■11( )** **AR22JY-6■20( )** **AR22JY-6■02( )** **AR22JY-6■22( )**			
	Spring/manual return each 45°		1NO+1NC 2NO 2NC 2NO+2NC	**AR22J□R-7■11( )** **AR22J□R-7■20( )** **AR22J□R-7■02( )** **AR22J□R-7■22( )**	**AR22JY-7■11( )** **AR22JY-7■20( )** **AR22JY-7■02( )** **AR22JY-7■22( )**	1NO+1NC (1) (2)	Upper contact ③ ④	Lower contact ① ②
	Spring return each 45°		2NO+2NC	**AR22J□R-1E22( )**	**AR22JY-1E22( )**	2NO+2NC (1) (2) (3) (4)	Upper contact ① ② ③ ④	Lower contact ① ② ③ ④

Notes: • Operator position L:Left, C:Center, R:Right
• (1) to (4): Contact block mounting position
• ① – ②, ③ – ④: Contact block terminal No.

● Contact closed

• Contact arrangements

Contact arrangements other than above are available

Contact arrangement	1NO	1NC	1NO+1NC	2NO	2NC	3NO	3NC
Code	10	01	11	20	02	30	03

Contact arrangement	2NO+2NC	4NO	4NC	5NO	5NC	3NO+3NC
Code	22	40	04	50	05	33

• Available numbers of contact blocks

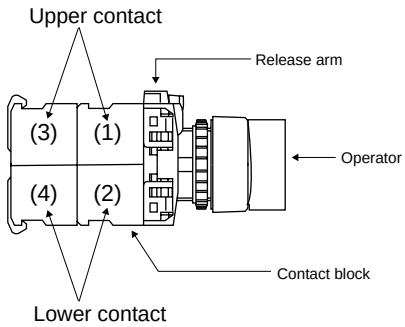
Mainted	Spring return Spring/manual return
6-contact block	4-contact block

• Key removable positions

Code	A	B	C	D	E	F	G
Removable position	45° 45°	45° 45°	45° 45°	45° 45°	45° 45°	45° 45°	45° 45°
AR22J□R-2	●	●	–	●	–	–	–
AR22J□R-0	●	–	–	–	–	–	–
AR22J□R-3	●	●	●	●	●	●	●
AR22J□R-6	–	–	–	●	●	●	–
AR22J□R-7	●	–	–	–	●	–	●
AR22J□R-1	–	–	–	–	●	–	–

●: Available –: Not available

• Position of contact block



• Key code No.

Replace the ( ) mark with one of the following key code.
A, B, C, D, E and F
Standard key code is A.

• Operator

Replace the □ mark by the cylinder key type code
Standard type: Blank
Long durability type: A

■ Selector switches (control type)
3-position

Operator	Operation	Knob color or key removable position	Contact arrangement	Type Switch with round bezel	Switch with square bezel
Knob AF94-435	Maintained each 45°	Color code: B: Black (Standard) Color other than above are available (G: Green R: Red)	Replace the ■ mark by the contact arrangement code (shown on next page).	**AR22PCR-3■B**	**AR22PCY-3■B**
	Spring/manual return each 45°			**AR22PCR-6■B**	**AR22PCY-6■B**
	Spring/manual return each 45°			**AR22PCR-7■B**	**AR22PCY-7■B**
	Spring return each 45°			**AR22PCR-1■B**	**AR22PCY-1■B**
Lever AF94-436	Maintained each 45°		Replace the ■ mark by the contact arrangement code (shown on next page).	**AR22WCR-3■B**	**AR22WCY-3■B**
	Spring/manual return each 45°			**AR22WCR-6■B**	**AR22WCY-6■B**
	Spring/manual return each 45°			**AR22WCR-7■B**	**AR22WCY-7■B**
	Spring return each 45°			**AR22WCR-1■B**	**AR22WCY-1■B**
Cylindrical knob AF94-433	Maintained each 45°		Replace the ■ mark by the contact arrangement code (shown on next page).	**AR22RCR-3■B**	**AR22RCY-3■B**
	Spring/manual return each 45°			**AR22RCR-6■B**	**AR22RCY-6■B**
	Spring/manual return each 45°			**AR22RCR-7■B**	**AR22RCY-7■B**
	Spring return each 45°			**AR22RCR-1■B**	**AR22RCY-1■B**
Key KKD09-016	Maintained each 45°	Replace the □ mark by the key removable position code: A, B, C, D, E F or G	Replace the ■ mark by the contact arrangement code (shown on next page).	**AR22JCR-3□■( )**	**AR22JCY-3■□( )**
	Spring/manual return each 45°			**AR22JCR-6□■( )**	**AR22JCY-6■□( )**
	Spring/manual return each 45°			**AR22JCR-7□■( )**	**AR22JCY-7■□( )**
	Spring return each 45°			**AR22JCR-1E■( )**	**AR22JCY-1E■( )**

- **Key removable positions**

Code	A	B	C	D	E	F	G
Removable position							
AR22JCR-3	●	●	●	●	●	●	●
AR22JCR-6	–	–	–	●	●	●	–
AR22JCR-7	●	–	–	–	●	–	●
AR22JCR-1	–	–	–	–	●	–	–

●: Available –: Not available

- **Key code No.**
  Replace the ( ) mark with one of the following key code.
  A, B, C, D, E and F
  Standard key code is A.

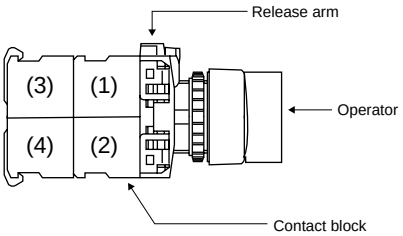
• Contact arrangement code (Typical example)

Contact arrangement	Contact arrangement code	Contact operation: Contact block: Mounting position	Contact block: Type	Operator position: Left	Operator position: Center	Operator position: Right
2NC	01F	(1)	NC	▬	▬	
		(2)	NC		▬	▬
		–	–	–	–	–
		–	–	–	–	–
2NO+2NC	014	(1)	NC	▬	▬	
		(2)	NC		▬	▬
		(3)	NO			●
		(4)	NO	●		
4NC	01J	(1)	NC	▬	▬	
		(2)	NC		▬	▬
		(3)	NC	▬	▬	
		(4)	NC		▬	▬
2NO+2NC	024	(1)	NC	▬	▬	
		(2)	NC		●	
		(3)	NO			●
		(4)	NO	●		●
2NO+2NC	03C* (Maintained only)	(1)	NC	▬	▬	
		(2)	NC			●
		(3)	NO			●
		(4)	NO	●		
2NO+2NC	044*	(1)	NC	▬	▬	
		(2)	NC		●	
		(3)	NO			●
		(4)	NO	●		
2NO+2NC	054	(1)	NC	▬	▬	
		(2)	NC		●	
		(3)	NO			●
		(4)	NO			●

Contact arrangement	Contact arrangement code	Contact operation: Contact block: Mounting position	Contact block: Type	Operator position: Left	Operator position: Center	Operator position: Right
2NO+2NC	064	(1)	NC		▬	▬
		(2)	NC		●	
		(3)	NO	●		
		(4)	NO	●		●
1NO+1NC	07F	(1)	NC		▬	▬
		(2)	NO			●
		–	–	–	–	–
		–	–	–	–	–
2NO+2NC	07C* (Maintained only)	(1)	NC		▬	▬
		(2)	NC			●
		(3)	NO	●		
		(4)	NO	●		
2NO+2NC	084	(1)	NC		▬	▬
		(2)	NC		●	
		(3)	NO	●		
		(4)	NO	●		
2NO+2NC	094*	(1)	NC		▬	▬
		(2)	NC		●	
		(3)	NO	●		
		(4)	NO			●
2NO+2NC	104	(1)	NC		●	
		(2)	NC		●	
		(3)	NO	●		●
		(4)	NO	●		●
2NO+2NC	11C* (Maintained only)	(1)	NC		●	
		(2)	NC			●
		(3)	NO	●		●
		(4)	NO	●		

Notes: ●: Contact closed Blank: Contact open
* There may be some overlap in the contact when switching between notches.

• Position of contact block



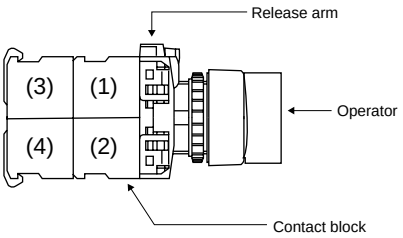
• Contact arrangement code (Typical example)

Contact arrangement	Contact arrangement code	Contact operation				
		Contact block		Operator position		
		Mounting position	Type	Left	Center	Right
2NO+2NC	124*	(1)	NC		●	
		(2)	NC		●	
		(3)	NO	●		●
		(4)	NO	●		
2NO+2NC	134*	(1)	NC		●	
		(2)	NC		●	
		(3)	NO	●		●
		(4)	NO			●
3NO+1NC	14D* (Maintained only)	(1)	NO	●		
		(2)	NC		●	
		(3)	NO	●		
		(4)	NO			●
3NO+1NC	15A*	(1)	NO			●
		(2)	NC		●	
		(3)	NO			●
		(4)	NO	●		
2NO+2NC	164	(1)	NC		●	
		(2)	NC		●	
		(3)	NO	●		
		(4)	NO	●		
2NO+2NC	174*	(1)	NC		●	
		(2)	NC		●	
		(3)	NO	●		
		(4)	NO			●
2NO+2NC	184	(1)	NC		●	
		(2)	NC		●	
		(3)	NO			●
		(4)	NO			●

Contact arrangement	Contact arrangement code	Contact operation				
		Contact block		Operator position		
		Mounting position	Type	Left	Center	Right
2NO+2NC	194	(1)	NC		▬	▬
		(2)	NC	▬	▬	
		(3)	NO	●		
		(4)	NO			●
4NO	20B	(1)	NO			●
		(2)	NO	●		
		(3)	NO			●
		(4)	NO	●		

Notes: ●: Contact closed Blank: Contact open
* There may be some overlap in the contact when switching between notches.

• Position of contact block



4, 5-position

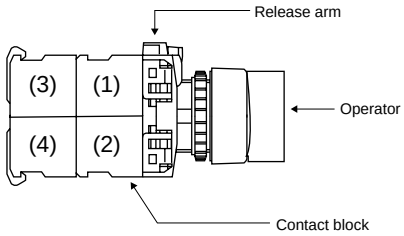
Operator	Contact (The following contact is only available.)	Operation	Knob color	Contact arrangement	Type Switch with round bezel	Switch with square bezel
Knob AF94-435	2NO+2NC	4-position maintained	Color code: B: Black (Standard) Color other than above are available (G: Green R: Red)	Replace the ■ mark by the contact arrangement code (shown below)	**AR22PCR-4■B**	**AR22PCY-4■B**
		5-position maintained			**AR22PCR-5■B**	**AR22PCY-5■B**
Lever AF94-436	2NO+2NC	4-position maintained			**AR22WCR-4■B**	**AR22WCY-4■B**
		5-position maintained			**AR22WCR-5■B**	**AR22WCY-5■B**
Cylindrical knob AF94-433	2NO+2NC	4-position maintained			**AR22RCR-4■B**	**AR22RCY-4■B**
		5-position maintained			**AR22RCR-5■B**	**AR22RCY-5■B**

● Contact arrangement code

Position	Contact arrangement	Contact arrangement code	Contact operation: Contact block: Mounting position	Contact block: Type	Operator position 1	2	3	4	5
4-position	2NO+2NC	41C* (Maintained only)	(1)	NC			●		
			(2)	NC	●				
			(3)	NO		●			
			(4)	NO				●	
5-position	2NO+2NC	51C* (Maintained only)	(1)	NC				●	
			(2)	NC		●			
			(3)	NO	●				
			(4)	NO					●

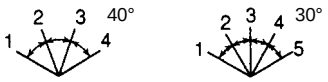
Notes: ●: Contact closed
* There may be some overlap in the contact when switching between notches.

• Position of contact block



Operator position

4-position **5-position**



■ Illuminated selector switches

2-position

Operator	Operation	Contact	LED lamp		Incandescent lamp	
			Transformer	Type	Transformer	Type
Knob AF94-306	Maintained each 90°	1NO 1NC 1NO+1NC 2NO+2NC	Without	**AR22PL-210■3□** **AR22PL-201■3□** **AR22PL-211■3□** **AR22PL-222■3□**	Without	**AR22PL-210■4□** **AR22PL-201■4□** **AR22PL-211■4□** **AR22PL-222■4□**
		1NO 1NC 1NO+1NC 2NO	With	**AR22PL-210■3□** **AR22PL-201■3□** **AR22PL-211■3□** **AR22PL-220■3□**	With	**AR22PL-210■4□** **AR22PL-201■4□** **AR22PL-211■4□** **AR22PL-220■4□**
	Spring return 60°	1NO 1NC 1NO+1NC 2NO	Without	**AR22PL-010■3□** **AR22PL-001■3□** **AR22PL-011■3□** **AR22PL-020■3□**	Without	**AR22PL-010■4□** **AR22PL-001■4□** **AR22PL-011■4□** **AR22PL-020■4□**
		1NO 1NC 1NO+1NC 2NO	With	**AR22PL-010■3□** **AR22PL-001■3□** **AR22PL-011■3□** **AR22PL-020■3□**	With	**AR22PL-010■4□** **AR22PL-001■4□** **AR22PL-011■4□** **AR22PL-020■4□**
Knob with square bezel AF94-360	Maintained each 90°	1NO 1NC 1NO+1NC 2NO+2NC	Without	**AR22PP-210■3□** **AR22PP-201■3□** **AR22PP-211■3□** **AR22PP-222■3□**	Without	**AR22PP-210■4□** **AR22PP-201■4□** **AR22PP-211■4□** **AR22PP-222■4□**
		1NO 1NC 1NO+1NC 2NO	With	**AR22PP-210■3□** **AR22PP-201■3□** **AR22PP-211■3□** **AR22PP-220■3□**	With	**AR22PP-210■4□** **AR22PP-201■4□** **AR22PP-211■4□** **AR22PP-220■4□**
	Spring return 60°	1NO 1NC 1NO+1NC 2NO	Without	**AR22PP-010■3□** **AR22PP-001■3□** **AR22PP-011■3□** **AR22PP-020■3□**	Without	**AR22PP-010■4□** **AR22PP-001■4□** **AR22PP-011■4□** **AR22PP-020■4□**
		1NO 1NC 1NO+1NC 2NO	With	**AR22PP-010■3□** **AR22PP-001■3□** **AR22PP-011■3□** **AR22PP-020■3□**	With	**AR22PP-010■4□** **AR22PP-001■4□** **AR22PP-011■4□** **AR22PP-020■4□**

3-position

Operator	Operation		Contact	LED lamp		Incandescent lamp	
				Transformer	Type	Transformer	Type
Knob AF94-306	Maintained each 45°		1NO+1NC 2NO+2NC	Without	**AR22PL-311■3□** **AR22PL-322■3□**	Without	**AR22PL-311■4□** **AR22PL-322■4□**
			1NO+1NC	With	**AR22PL-311■3□**		**AR22PL-311■4□**
	Spring/manual return each 45°		1NO+1NC 1NO+1NC	Without With	**AR22PL-611■3□** **AR22PL-611■3□**	Without With	**AR22PL-611■4□** **AR22PL-611■4□**
			1NO+1NC 1NO+1NC	Without With	**AR22PL-711■3□** **AR22PL-711■3□**	Without With	**AR22PL-711■4□** **AR22PL-711■4□**
Knob with square bezel AF94-360	Maintained each 45°		1NO+1NC 2NO+2NC	Without	**AR22PP-311■3□** **AR22PP-322■3□**	Without	**AR22PP-311■4□** **AR22PP-322■4□**
			1NO+1NC	With	**AR22PP-311■3□**		**AR22PP-311■4□**
	Spring/manual return each 45°		1NO+1NC 1NO+1NC	Without With	**AR22PP-611■3□** **AR22PP-611■3□**	Without With	**AR22PP-611■4□** **AR22PP-611■4□**
			1NO+1NC 1NO+1NC	Without With	**AR22PP-711■3□** **AR22PP-711■3□**	Without With	**AR22PP-711■4□** **AR22PP-711■4□**

Note: □, ■ *See page 04/33*

- Replace the ■ mark by the following lamp voltage code

Transformer	Voltage	Code LED	Incandescent
Without	5V AC/DC	–	5
	6V DC	6	–
	6V AC	A	–
	12V AC/DC	B	–
	15V AC/DC	C	C
	20V AC/DC	–	D
	24V AC/DC	E	E
With	100-110V AC	H	H
	115-127V AC	L	L
	200-220V AC	M	M
	230-254V AC	Q	Q
	350-380V AC	S	S
	400-440V AC	T	T
	480V AC	V	V
	500-550V AC	W	W

- Replace the □ mark by the following knob color code

Color	Green	Red	White	Blue	Yellow	Orange
Code	G	R	W	S	Y	A

- Up to 4-contact of contact arrangement can be made. Available numbers of contacts are as follow.

No. of position	Operation	Without transformer	With transformer
2-position	Maintained	4-contact	3-contact
	Spring return	3-contact	2-contact
3-position	Maintained	4-contact	3-contact
	Spring/manual return	3-contact	2-contact

04

● Contact arrangement and operator position

2-position

Transformer	Contact arrangement	Contact block		Operator position	
		Mounting position	Type	Left	Right
With/without	1NO	(1)	NO	–	●
With/without	1NC	(1)	NC	●	–
Without	1NO+1NC	(1)	NO	–	●
		(2)	NC	●	–
With	1NO+1NC	(1)	NC	●	–
		(2)	NO	–	●
With/without	2NO	(1)	NO	–	●
		(2)	NO	–	●
Without	2NO+2NC	(1)	NO	–	●
	*1	(2)	NC	●	–
		(3)	NO	–	●
		(4)	NC	●	–

Notes: *1: AR22PL-2, AR22PP-2
●: Contact closed, –: Contact open

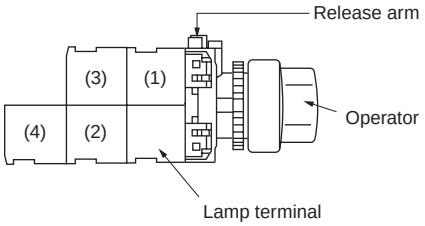
3-position

Transformer	Contact arrangement	Contact block		Operator position		
		Mounting position	Type	Left	Center	Right
Without	1NO+1NC	(1)	NO	●	–	–
	*1	(2)	NC	–	–	●
	1NO+1NC	(1)	NO	–	–	●
	*2	(2)	NC	●	–	–
	2NO+2NC	(1)	NO	●	–	–
	*3	(2)	NC	–	–	●
		(3)	NO	●	–	–
		(4)	NC	–	–	●
With	1NO+1NC	(1)	NC	–	–	●
	*1	(2)	NO	●	–	–
	1NO+1NC	(1)	NC	●	–	–
	*2	(2)	NO	–	–	●

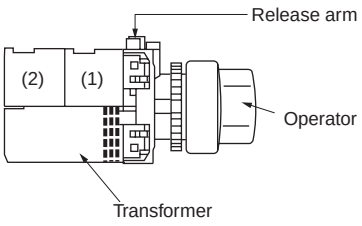
Notes: *1: AR22PL-3, 6 AR22PP-3, 6 *3: AR22PL-3 AR22PP-3
*2: AR22PL-7, AR22PP-7
●: Contact closed, –: Contact open

● Position of contact block

Without transformer



With transformer



■ Pilot lights/standard

Lens	Transformer	LED lamp Lamp voltage	Type	Incandescent lamp Lamp voltage	Type
Dome AF94-333	Without	6V AC	**DR22D0L-A3□**	5.5V AC/DC	**DR22D0L-54□**
		6V DC	**DR22D0L-63□**	—	**—**
		12V AC/DC	**DR22D0L-B3□**	15V AC/DC	**DR22D0L-C4□**
		24V AC/DC	**DR22D0L-E3□**	24V AC/DC	**DR22D0L-E4□**
	With	100–110V AC	**DR22D0L-H3□**	100–110V AC	**DR22D0L-H4□**
		200–220V AC	**DR22D0L-M3□**	200–220V AC	**DR22D0L-M4□**
Extended round AF94-332	Without	6V AC	**DR22E3L-A3□**	5.5V AC/DC	**DR22E3L-54□**
		6V DC	**DR22E3L-63□**	—	**—**
		12V AC/DC	**DR22E3L-B3□**	15V AC/DC	**DR22E3L-C4□**
		24V AC/DC	**DR22E3L-E3□**	24V AC/DC	**DR22E3L-E4□**
	With	100–110V AC	**DR22E3L-H3□**	100–110V AC	**DR22E3L-H4□**
		200–220V AC	**DR22E3L-M3□**	200–220V AC	**DR22E3L-M4□**
Faceted AF96-189	Without	6V AC	**DR22K0L-A3□**	5.5V AC/DC	**DR22K0L-54□**
		6V DC	**DR22K0L-63□**	—	**—**
		12V AC/DC	**DR22K0L-B3□**	15V AC/DC	**DR22K0L-C4□**
		24V AC/DC	**DR22K0L-E3□**	24V AC/DC	**DR22K0L-E4□**
	With	100–110V AC	**DR22K0L-H3□**	100–110V AC	**DR22K0L-H4□**
		200–220V AC	**DR22K0L-M3□**	200–220V AC	**DR22K0L-M4□**
Flush square AF94-330	Without	6V AC	**DR22F3M-A3□**	5.5V AC/DC	**DR22F3M-54□**
		6V DC	**DR22F3M-63□**	—	**—**
		12V AC/DC	**DR22F3M-B3□**	15V AC/DC	**DR22F3M-C4□**
		24V AC/DC	**DR22F3M-E3□**	24V AC/DC	**DR22F3M-E4□**
	With	100–110V AC	**DR22F3M-H3□**	100–110V AC	**DR22F3M-H4□**
		200–220V AC	**DR22F3M-M3□**	200–220V AC	**DR22F3M-M4□**
Flush square (Transparent lens) AF94-443	Without	6V AC	**DR22F4M-A3□**	5.5V AC/DC	**DR22F4M-54□**
		6V DC	**DR22F4M-63□**	—	**—**
		12V AC/DC	**DR22F4M-B3□**	15V AC/DC	**DR22F4M-C4□**
		24V AC/DC	**DR22F4M-E3□**	24V AC/DC	**DR22F4M-E4□**
	With	100–110V AC	**DR22F4M-H3□**	100–110V AC	**DR22F4M-H4□**
		200–220V AC	**DR22F4M-M3□**	200–220V AC	**DR22F4M-M4□**
Flush square (12mm high frame)	Without	6V AC	**DR22F5M-A3□**	5.5V AC/DC	**DR22F5M-54□**
		6V DC	**DR22F5M-63□**	—	**—**
		12V AC/DC	**DR22F5M-B3□**	15V AC/DC	**DR22F5M-C4□**
		24V AC/DC	**DR22F5M-E3□**	24V AC/DC	**DR22F5M-E4□**
	With	100–110V AC	**DR22F5M-H3□**	100–110V AC	**DR22F5M-H4□**
		200–220V AC	**DR22F5M-E3□**	200–220V AC	**DR22F5M-M4□**
Extended square AF95-685 AF94-380	Without	6V AC	**DR22E3M-A3□**	5.5V AC/DC	**DR22E3M-54□**
		6V DC	**DR22E3M-63□**	—	**—**
		12V AC/DC	**DR22E3M-B3□**	15V AC/DC	**DR22E3M-C4□**
		24V AC/DC	**DR22E3M-E3□**	24V AC/DC	**DR22E3M-E4□**
	With	100–110V AC	**DR22E3M-H3□**	100–110V AC	**DR22E3M-H4□**
		200–220V AC	**DR22E3M-M3□**	200–220V AC	**DR22E3M-M4□**
Flush rectangular AF96-237	Without	6V AC	**DR22E3N-A3□**	5.5V AC/DC	**DR22E3N-54□**
		6V DC	**DR22E3N-63□**	—	**—**
		12V AC/DC	**DR22E3N-B3□**	15V AC/DC	**DR22E3N-C4□**
		24V AC/DC	**DR22E3N-E3□**	24V AC/DC	**DR22E3N-E4□**
	With	100–110V AC	**DR22E3N-H3□**	100–110V AC	**DR22E3N-H4□**
		200–220V AC	**DR22E3N-M3□**	200–220V AC	**DR22E3N-M4□**
Extended round with square bezel AF94-331	Without	6V AC	**DR22E3P-A3□**	5.5V AC/DC	**DR22E3P-54□**
		6V DC	**DR22E3P-63□**	—	**—**
		12V AC/DC	**DR22E3P-B3□**	15V AC/DC	**DR22E3P-C4□**
		24V AC/DC	**DR22E3P-E3□**	24V AC/DC	**DR22E3P-E4□**
	With	100–110V AC	**DR22E3P-H3□**	100–110V AC	**DR22E3P-H4□**
		200–220V AC	**DR22E3P-M3□**	200–220V AC	**DR22E3P-M4□**

Note: □ *See page 04/37*

■ Pilot lights/short-body without transformer

Lens	LED lamp Lamp voltage	Type	Incandescent lamp Lamp voltage	Type
Dome AF98-88	5.5V AC/DC	—	5.5V AC/DC	**DR22D0L-58□**
	6V AC 6V DC 12V AC/DC	**DR22D0L-A9□** **DR22D0L-69□** **DR22D0L-B9□**	6V AC 6V DC 15V AC/DC	— — **DR22D0L-C8□**
	24V AC/DC	**DR22D0L-E9□**	24V AC/DC	**DR22D0L-E8□**
Extended round AF98-90	5.5V AC/DC	—	5.5V AC/DC	**DR22E3L-58□**
	6V AC 6V DC 12V AC/DC	**DR22E3L-A9□** **DR22E3L-69□** **DR22E3L-B9□**	6V AC 6V DC 15V AC/DC	— — **DR22E3L-C8□**
	24V AC/DC	**DR22E3L-E9□**	24V AC/DC	**DR22E3L-E8□**
Faceted AF98-89	5.5V AC/DC	—	5.5V AC/DC	**DR22K0L-58□**
	6V AC 6V DC 12V AC/DC	**DR22K0L-A9□** **DR22K0L-69□** **DR22K0L-B9□**	6V AC 6V DC 15V AC/DC	— — **DR22K0L-C8□**
	24V AC/DC	**DR22K0L-E9□**	24V AC/DC	**DR22K0L-E8□**
Flush square AF98-92	5.5V AC/DC	—	5.5V AC/DC	**DR22F3M-58□**
	6V AC 6V DC 12V AC/DC	**DR22F3M-A9□** **DR22F3M-69□** **DR22F3M-B9□**	6V AC 6V DC 15V AC/DC	— — **DR22F3M-C8□**
	24V AC/DC	**DR22F3M-E9□**	24V AC/DC	**DR22F3M-E8□**
Flush square (Transparent lens) AF98-92	5.5V AC/DC	—	5.5V AC/DC	**DR22F4M-58□**
	6V AC 6V DC 12V AC/DC	**DR22F4M-A9□** **DR22F4M-69□** **DR22F4M-B9□**	6V AC 6V DC 15V AC/DC	— — **DR22F4M-C8□**
	24V AC/DC	**DR22F4M-E9□**	24V AC/DC	**DR22F4M-E8□**
Flush square (12mm high frame) AF98-94	5.5V AC/DC	—	5.5V AC/DC	**DR22F5M-58□**
	6V AC 6V DC 12V AC/DC	**DR22F5M-A9□** **DR22F5M-69□** **DR22F5M-B9□**	6V AC 6V DC 15V AC/DC	— — **DR22F5M-C8□**
	24V AC/DC	**DR22F5M-E9□**	24V AC/DC	**DR22F5M-E8□**
Extended square AF98-93	5.5V AC/DC	—	5.5V AC/DC	**DR22E3M-58□**
	6V AC 6V DC 12V AC/DC	**DR22E3M-A9□** **DR22E3M-69□** **DR22E3M-B9□**	6V AC 6V DC 15V AC/DC	— — **DR22E3M-C8□**
	24V AC/DC	**DR22E3M-E9□**	24V AC/DC	**DR22E3M-E8□**
Flush rectangular KK02-234B	5.5V AC/DC	—	5.5V AC/DC	**DR22E3N-58□**
	6V AC 6V DC 12V AC/DC	**DR22E3N-A9□** **DR22E3N-69□** **DR22E3N-B9□**	6V AC 6V DC 15V AC/DC	— — **DR22E3N-C8□**
	24V AC/DC	**DR22E3N-E9□**	24V AC/DC	**DR22E3N-E8□**
Extended round with square bezel AF98-91	5.5V AC/DC	—	5.5V AC/DC	**DR22E3P-58□**
	6V AC 6V DC 12V AC/DC	**DR22E3P-A9□** **DR22E3P-69□** **DR22E3P-B9□**	6V AC 6V DC 15V AC/DC	— — **DR22E3P-C8□**
	24V AC/DC	**DR22E3P-E9□**	24V AC/DC	**DR22E3P-E8□**

Note: □ *See page 04/37*

■ Pilot lights/short-body with transformer

Lens	LED lamp Lamp voltage Type	Incandescent lamp Lamp voltage Type
Dome AF97-137	100–110V AC **DR22D0L-H9□** 200–220V AC **DR22D0L-M9□**	100–110V AC **DR22D0L-H8□** 200–220V AC **DR22D0L-M8□**
Extended round AF97-138	100–110V AC **DR22E3L-H9□** 200–220V AC **DR22E3L-M9□**	100–110V AC **DR22E3L-H8□** 200–220V AC **DR22E3L-M8□**
Faceted KK02-130A	100–110V AC **DR22K0L-H9□** 200–220V AC **DR22K0L-M9□**	100–110V AC **DR22K0L-H8□** 200–220V AC **DR22K0L-M8□**
Flush square AF97-134	100–110V AC **DR22F3M-H9□** 200–220V AC **DR22F3M-M9□**	100–110V AC **DR22F3M-H8□** 200–220V AC **DR22F3M-M8□**
Flush square (Transparent lens) AF97-133	100–110V AC **DR22F4M-H9□** 200–220V AC **DR22F4M-M9□**	100–110V AC **DR22F4M-H8□** 200–220V AC **DR22F4M-M8□**
Flush square (12mm high frame) AF97-136	100–110V AC **DR22F5M-H9□** 200–220V AC **DR22F5M-M9□**	100–110V AC **DR22F5M-H8□** 200–220V AC **DR22F5M-M8□**
Extended square KK02-134A	100–110V AC **DR22E3M-H9□** 200–220V AC **DR22E3M-M9□**	100–110V AC **DR22E3M-H8□** 200–220V AC **DR22E3M-M8□**
Flush rectangular KK02-235B	100–110V AC **DR22E3N-H9□** 200–220V AC **DR22E3N-M9□**	100–110V AC **DR22E3N-H8□** 200–220V AC **DR22E3N-M8□**
Extended round with square bezel AF97-135	100–110V AC **DR22E3P-H9□** 200–220V AC **DR22E3P-M9□**	100–110V AC **DR22E3P-H8□** 200–220V AC **DR22E3P-M8□**

Note: □ *See page 04/37*

- **Lens color**

Replace the ☐ mark by the following lens color code

Color	Green	Red	White	Blue	Yellow	Orange
Code	G	R	W	S	Y	A

- **Lamp voltage**

Available lamp voltage are as follow.

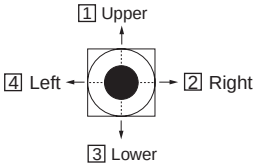
Description	Voltage	Code			
		Standard type		Short-body type	
		LED	Incandescent	LED	Incandescent
Without transformer	5.5V AC/DC	–	54	–	58
	6V AC	A3	–	A9	–
	6V DC	63	–	69	–
	12V AC/DC	B3	–	B9	–
	15V AC/DC	C3	C4	C9	C8
	20V AC/DC	–	D4	–	D8
	24V AC/DC	E3	E4	E9	E8
With transformer	100-110V AC	H3	H4	H9	H8
	115-127V AC	L3	L4	L9	L8
	200-220V AC	M3	M4	M9	M8
	230-254V AC	Q3	Q4	–	–
	350-380V AC	S3	S4	–	–
	400-440V AC	T3	T4	–	–
	480V AC	V3	V4	–	–
	500-550V AC	W3	W4	–	–
With resistor unit	110V DC	H7	–	–	–

■ Joy stick selector switches

Handle	Terminal	Operating directions	Contact arrangement	Type: Manual return	Type: Spring return
Ball type without lock AF97-49	Screw	↕	1NO × 2	**AR22A0N-A0A0B**	**AR22A5N-A0A0B**
			1NO + 1NC × 2	**AR22A0N-1010B**	**AR22A5N-1010B**
		↕↔	1NO × 4	**AR22A0N-AAAAB**	**AR22A5N-AAAAB**
			1NO + 1NC × 4	**AR22A0N-1111B**	**AR22A5N-1111B**
	Solder/tab	↕	1NO + 1NC × 2	**AR22A0H-1010B**	**AR22A5H-1010B**
			2NO + 2NC × 2	**AR22A0H-2020B**	**AR22A5H-2020B**
		↕↔	1NO + 1NC × 4	**AR22A0H-1111B**	**AR22A5H-1111B**
			2NO + 2NC × 4	**AR22A0H-2222B**	**AR22A5H-2222B**
Ball type with lock AF97-45	Screw	↕	1NO × 2	**AR22A1N-A0A0B**	**AR22A6N-A0A0B**
			1NO + 1NC × 2	**AR22A1N-1010B**	**AR22A6N-1010B**
		↕↔	1NO × 4	**AR22A1N-AAAAB**	**AR22A6N-AAAAB**
			1NO + 1NC × 4	**AR22A1N-1111B**	**AR22A6N-1111B**
	Solder/tab	↕	1NO + 1NC × 2	**AR22A1H-1010B**	**AR22A6H-1010B**
			2NO + 2NC × 2	**AR22A1H-2020B**	**AR22A6H-2020B**
		↕↔	1NO + 1NC × 4	**AR22A1H-1111B**	**AR22A6H-1111B**
			2NO + 2NC × 4	**AR22A1H-2222B**	**AR22A6H-2222B**
Rubber cap type without lock AF97-56	Screw	↕	1NO × 2	**AR22A2N-A0A0B**	**AR22A7N-A0A0B**
			1NO + 1NC × 2	**AR22A2N-1010B**	**AR22A7N-1010B**
		↕↔	1NO × 4	**AR22A2N-AAAAB**	**AR22A7N-AAAAB**
			1NO + 1NC × 4	**AR22A2N-1111B**	**AR22A7N-1111B**
	Solder/tab	↕	1NO + 1NC × 2	**AR22A2H-1010B**	**AR22A7H-1010B**
			2NO + 2NC × 2	**AR22A2H-2020B**	**AR22A7H-2020B**
		↕↔	1NO + 1NC × 4	**AR22A2H-1111B**	**AR22A7H-1111B**
			2NO + 2NC × 4	**AR22A2H-2222B**	**AR22A7H-2222B**

• Operating direction

- Directions other than those shown in the table above can be provided.
- For types AR22A□N-1 2 3 4 B, designate the contact arrangement codes for the necessary operating directions (1: Upper, 2: Right, 3: Lower, 4: Left). Designate "0" for unnecessary directions.



• Contact arrangement

Contact arrangement		–	1NO	1NC	1NO+1NC	2NO	2NC	2NO+2NC
Manual return Spring return	Screw	0	A	B	1	D	E	–
	Solder/Tab	0	–	–	1	–	–	2

- Spring/manual return are also available, contact FUJI.

■ Buzzers

Sound	Description	Transformer	Operating voltage	Type
Electronic sound KKD08-053	• LED operation indicator (Red) • Intermittent/continuous sound selection • Sound level: 90dB (0.1m) 70dB (1m)	Without	6V AC 6V DC 12 to 24V AC/DC 35 to 48V AC/DC	**DR22B5-AB** **DR22B5-6B** **DR22B5-EB** **DR22B5-FB**
		With	100 to 110V AC 200 to 220V AC	**DR22B5-HB** **DR22B5-MB**
		With resistor unit	100 to 110V DC	**DR22B5-1B**
Magnetic sound AF96-376	• Sound volume adjustment • Sound level: 80 to 90dB (0.1m) 60 to 70dB (1m)	Without	24V AC/DC	**DR22B3-EB**
		With	100 to 110V AC 200 to 220V AC	**DR22B3-HB** **DR22B3-MB**
Electronic sound (IP54) AF96-244	• Intermittent/continuous sound selection • Sound level: 80dB (0.1m) 60dB (1m)	Without	6V AC 6V DC 12 to 24V AC/DC 35 to 48V AC/DC	**DR22B8-AB** **DR22B8-6B** **DR22B8-EB** **DR22B8-FB**
		With	100 to 110V AC 200 to 220V AC	**DR22B8-HB** **DR22B8-MB**
		With resistor unit	100 to 110V DC	**DR22B8-1B**

Notes: • Intermittent/continuous sound selection (DR22B5, B8)
See the "Short-circuit terminal" in the dimensions diagram on the 04/49 page, and select as follows:
• Short-circuit terminal mounted ⟶ Intermittent sound
• Short-circuit terminal not mounted ⟶ Continuous sound

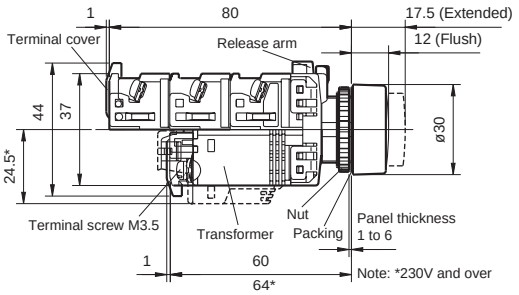
• Sound volume adjustment (DR22B3)
Use a flat-bladed screwdriver with a narrow tip to gently turn "Control knob" shown in the dimensions diagram on the 04/49 page, as follows.
• Clockwise ⟶ Increase sound pressure
• Counterclockwise ⟶ Decrease sound pressure

AR22 and DR22
Dimensions

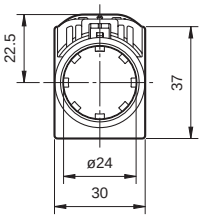
■ Dimensions, mm
• Illuminated pushbutton switches

Flush/Extended

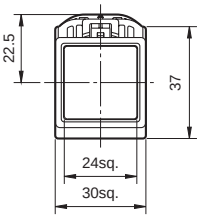
With transformer



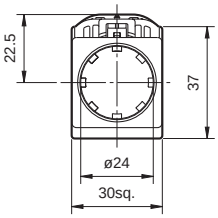
AR22F0L, F5L
AR22E0L, E5L



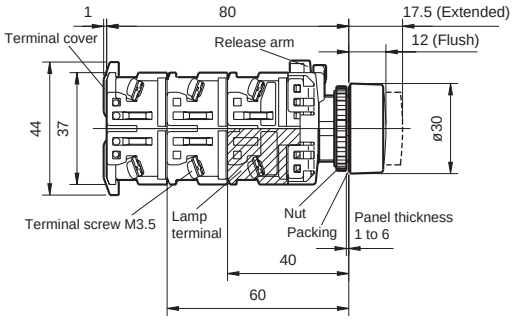
AR22F0M, F5M
AR22E0M, E5M



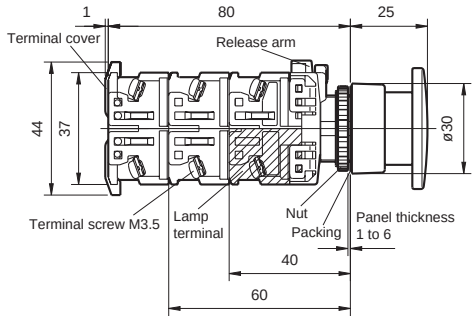
AR22F0P, F5P
AR22E0P, E5P



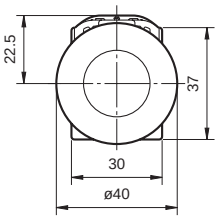
Without transformer



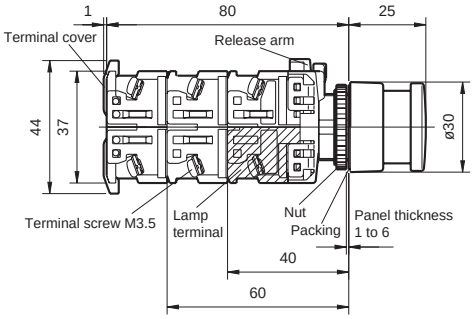
Mushroom (40mm dia.)



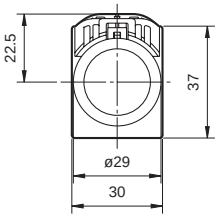
AR22M0L, M5L



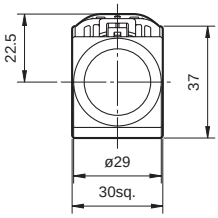
Mushroom (29mm dia.)



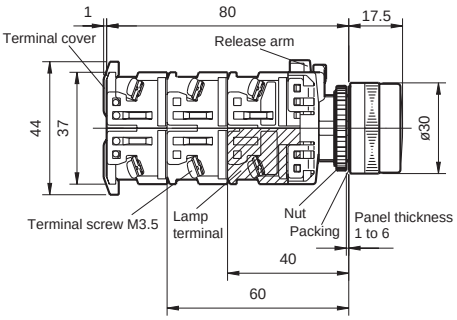
AR22M4L, M9L



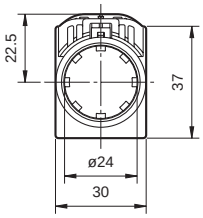
AR22M4P



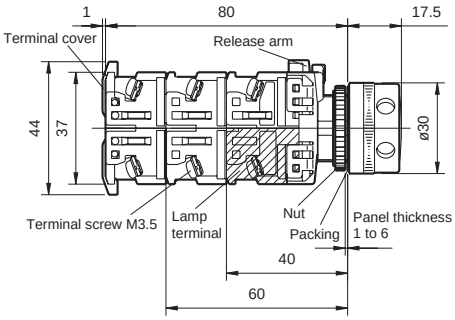
Extended with full guard



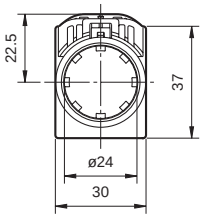
AR22G4L, G9L
AR22G1L, G6L



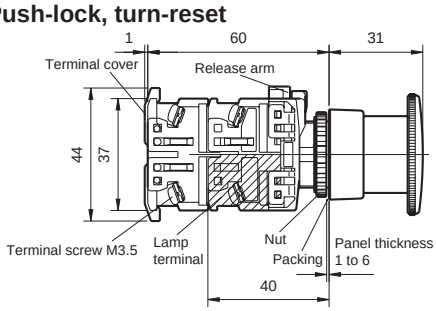
Extended with full guard (with openings)



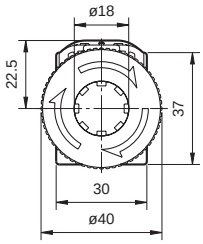
AR22G2L, G7L



Push-lock, turn-reset



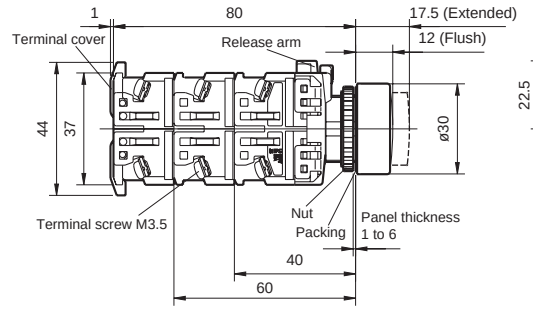
AR22V5L



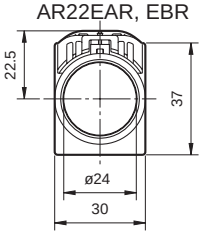
■ **Dimensions, mm**

• **Pushbutton switches**

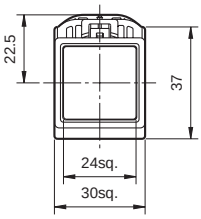
Flush/Extended



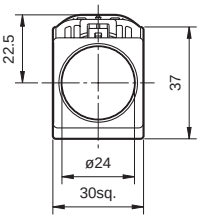
AR22F0R, F5R
AR22E0R, E5R
AR22FAR, FBR
AR22EAR, EBR



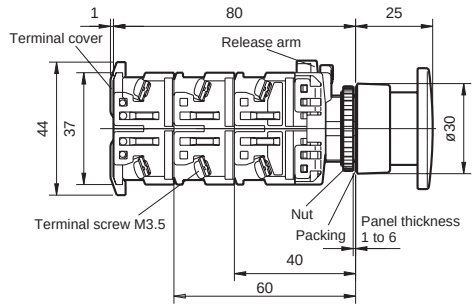
AR22F0S, F5S
AR22E0S, E5S



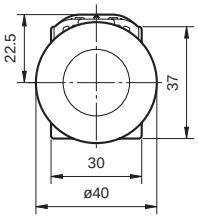
AR22F0Y, F5Y
AR22E0Y, E5Y



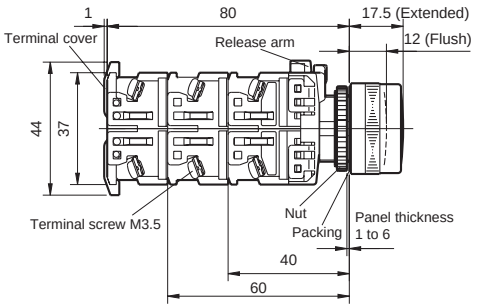
Mushroom (40mm dia.)



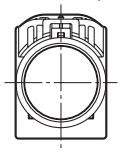
AR22M0R, M5R



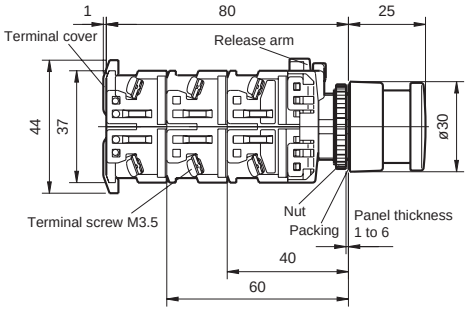
Flush/Extended with full guard



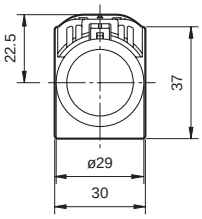
AR22G3R, G8R
AR22G2R, G7R



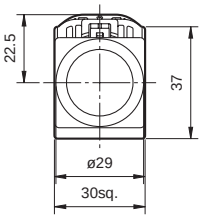
Mushroom (29mm dia.)



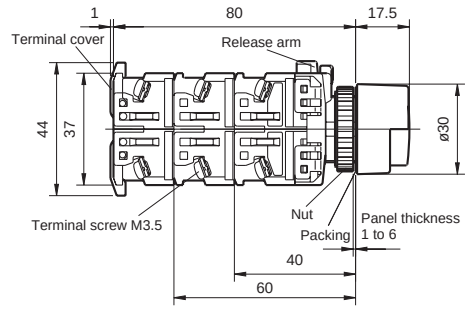
AR22M4R, M9R



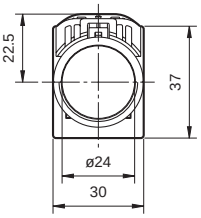
AR22M4Y



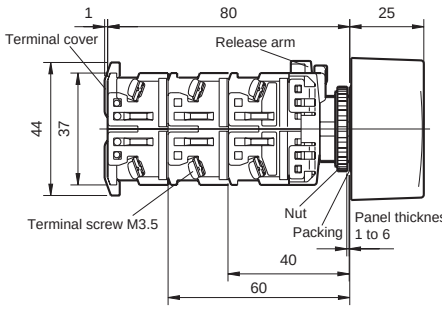
Extended with half guard



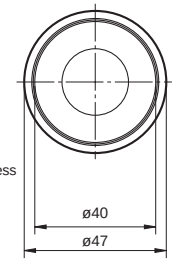
AR22G0R, G5R



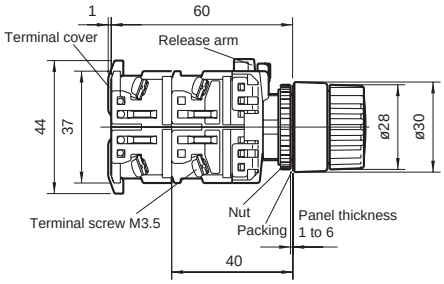
Mushroom with full guard (40mm dia.)



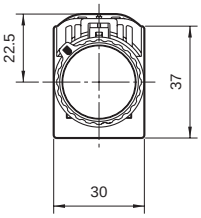
AR22M3R, M8R



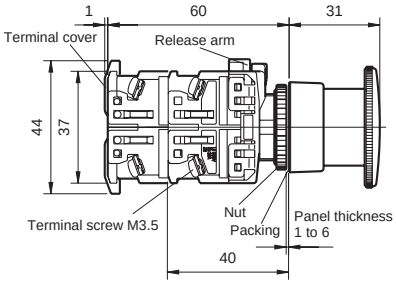
Pushbutton with selector ring



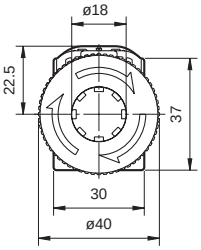
AR22S1R, S2R
AR22S3R, S6R



Push-lock, turn-reset



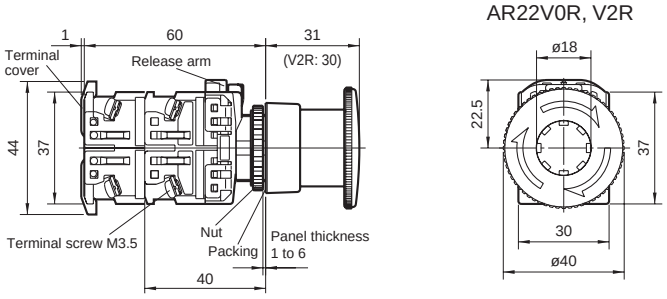
AR22V5R



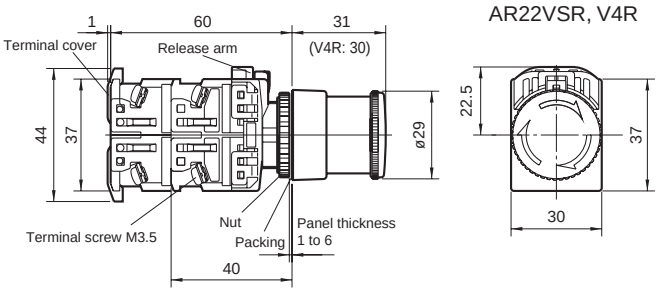
AR22 and DR22
Dimensions

■ Dimensions, mm
• Emergency stop pushbutton switches

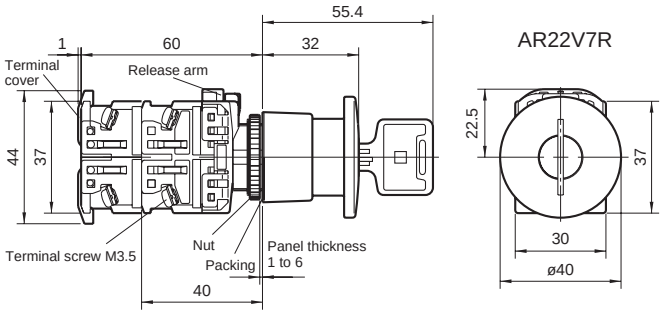
Push-lock, turn-reset (40mm dia.)



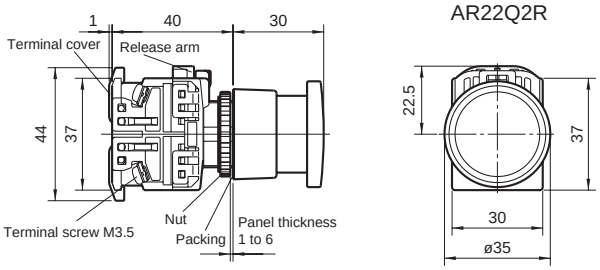
Push-lock, turn-reset (29mm dia.)



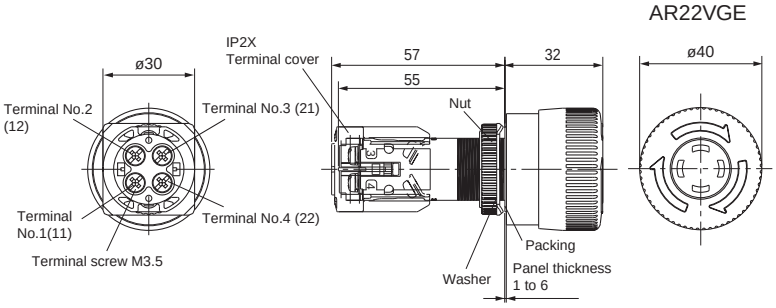
Key release push-lock, turn-reset (40mm dia.)



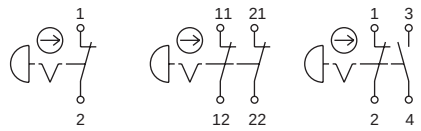
Push-lock, pull-reset (35mm dia.)



Unibody push-lock, turn-reset (40mm dia.)



Wiring diagrams



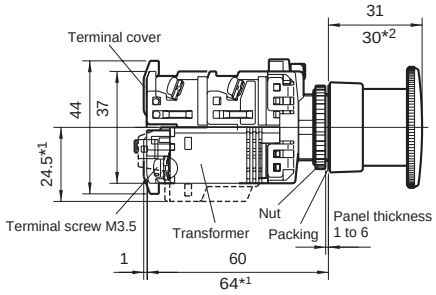
Note: Terminal No. shown in ( ) are for contact arrangement 2NC.

■ Dimensions, mm

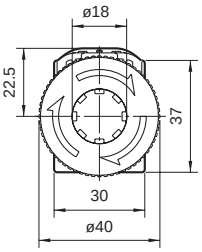
• Emergency stop illuminated pushbutton switches

Push-lock, turn-reset (40mm dia.)

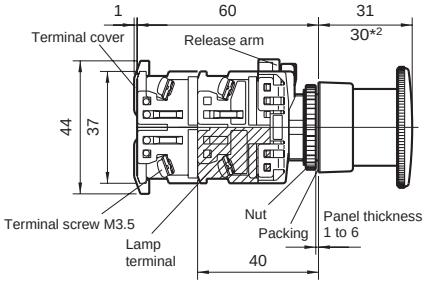
With transformer



AR22V0L, V2L
AR22VDL, VAL



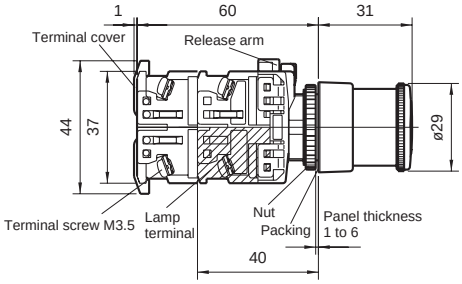
Without transformer



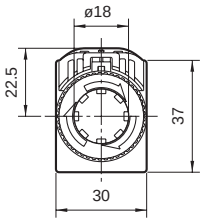
Note: *1 230V and over
*2 AR22V2L and VAL types only

Push-lock, turn-reset (29mm dia.)

Without transformer

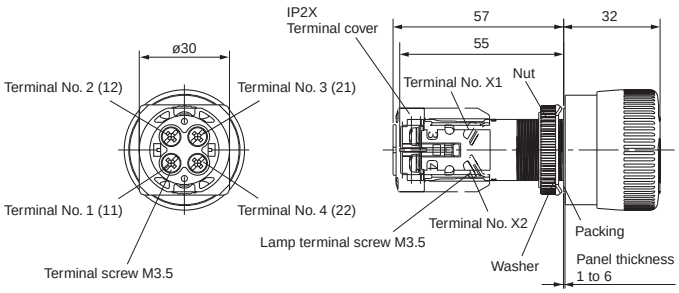


AR22VSL

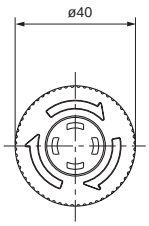


Unibody push-lock, turn-reset (40mm dia.)

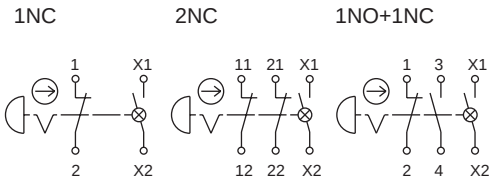
Without transformer



AR22VGF



Wiring diagrams

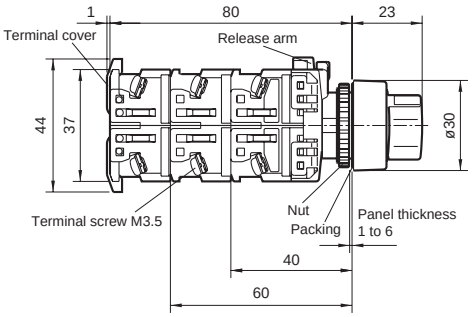


Note: Terminal No. shown in ( ) are for contact arrangement 2NC.

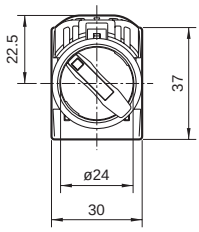
AR22 and DR22
Dimensions

■ Dimensions, mm
• Selector switches

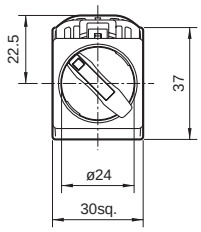
Knob



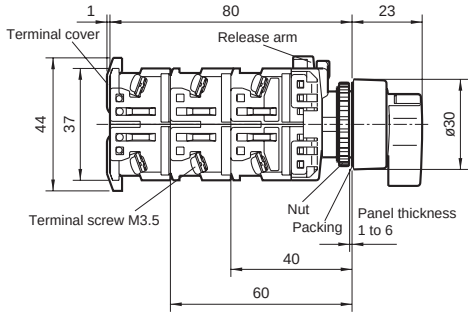
AR22PR, PCR



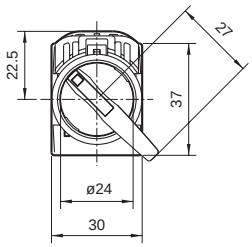
AR22PY, PCY



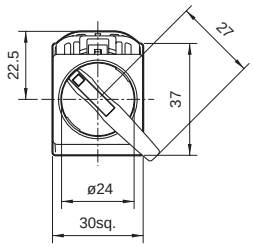
Lever



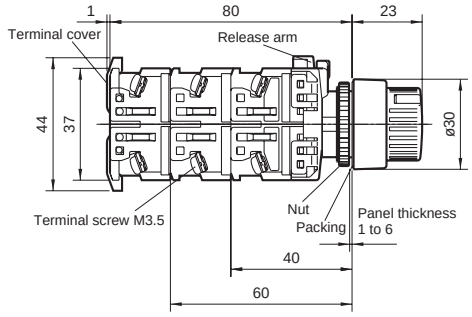
AR22WR, WCR



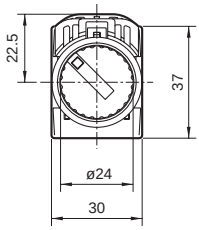
AR22WY, WCY



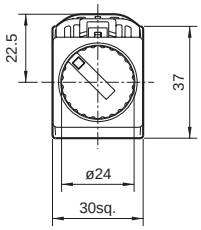
Cylindrical knob



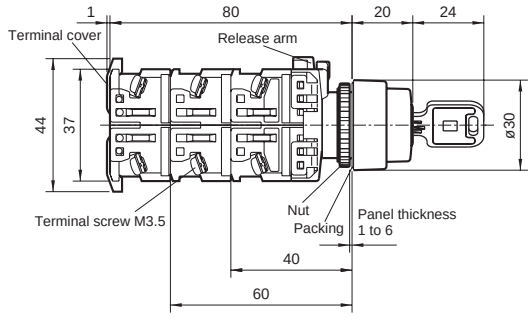
AR22RR, RCR



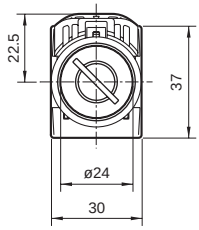
AR22RY, RCY



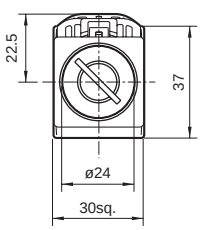
Key



AR22JR, JCR
AR22JAR



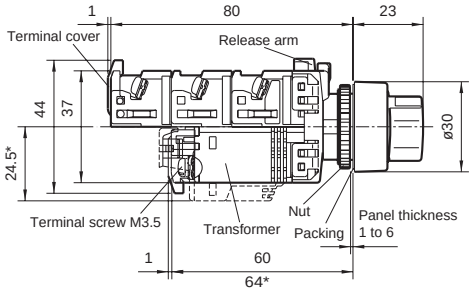
AR22JY, JCY

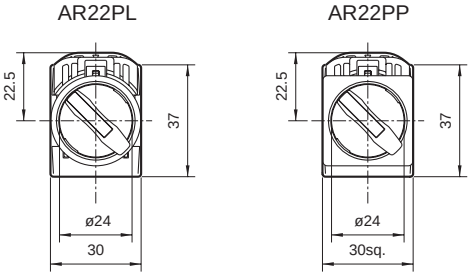


■ Dimensions, mm

• Illuminated selector switches

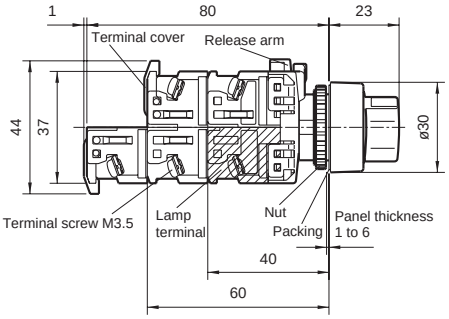
With transformer





Note: * 230V and over

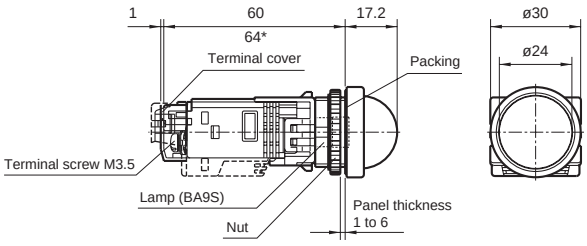
Without transformer



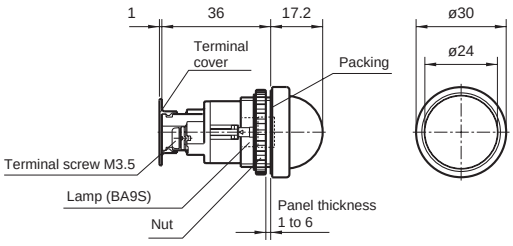
• Pilot lights

Dome

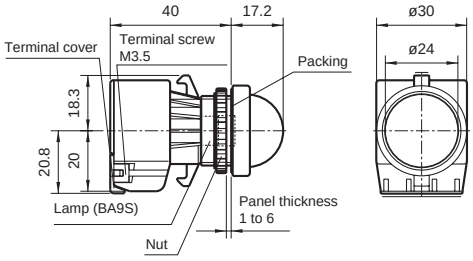
With transformer, with resistor unit



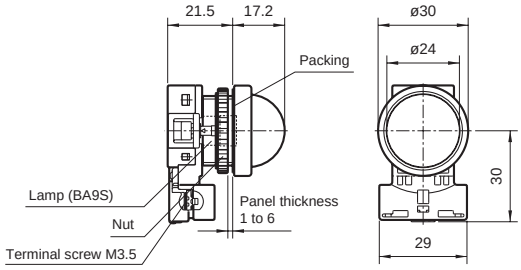
Without transformer



Short body/with transformer



Short body/without transformer



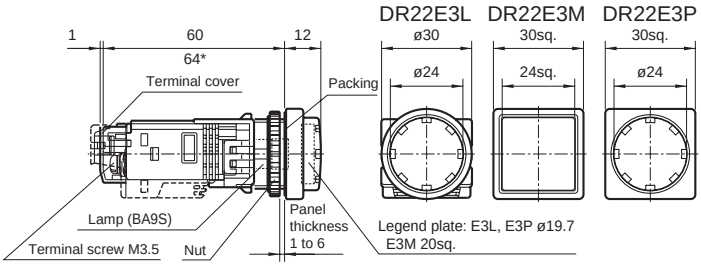
Note: * Except for the types 110V AC, 127V AC and 220V AC.

AR22 and DR22
Dimensions

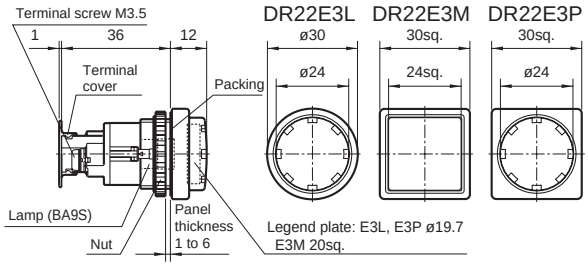
■ Dimensions, mm
• Pilot lights

Extended

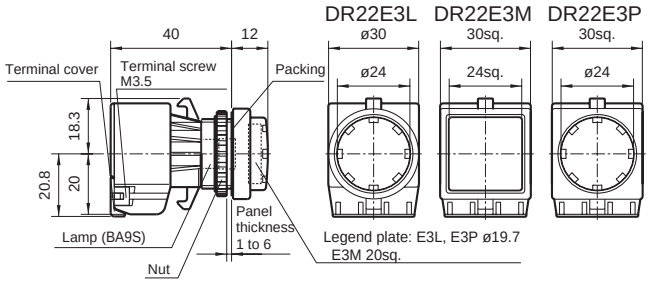
With transformer, with resistor unit



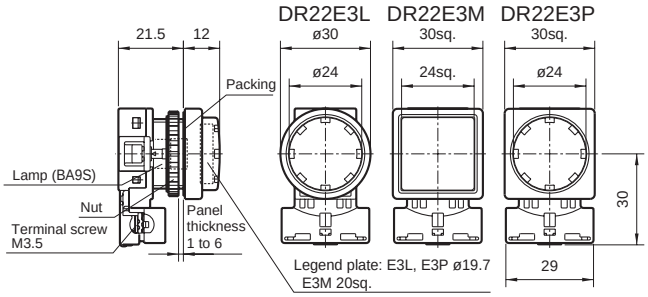
Without transformer



Short body/with transformer



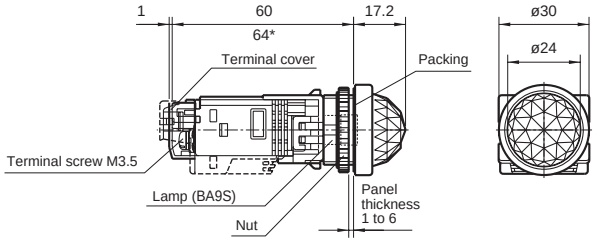
Short body/without transformer



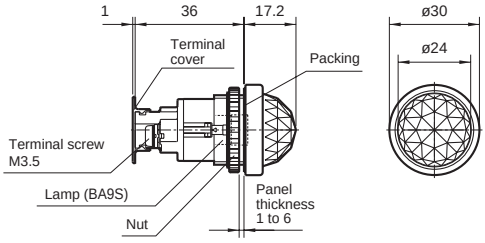
Note: * Except for the types 110V AC, 127V AC and 220V AC.

Faceted

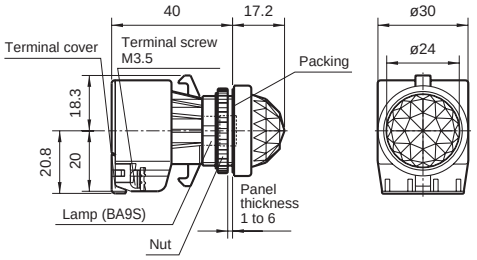
With transformer, with resistor unit



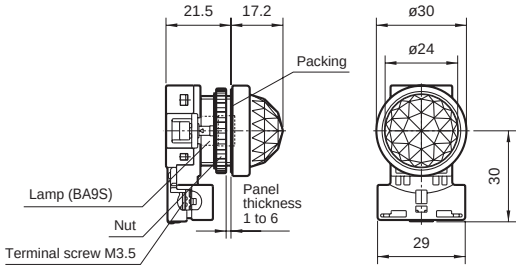
Without transformer



Short body/with transformer



Short body/without transformer

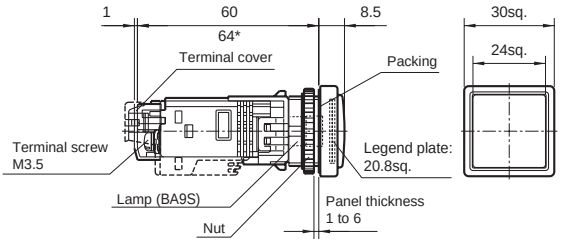


Note: * Except for the types 110V AC, 127V AC and 220V AC.

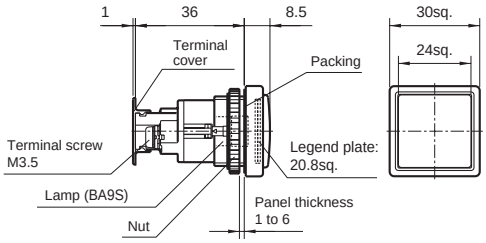
■ Dimensions, mm
• Pilot lights

Flush

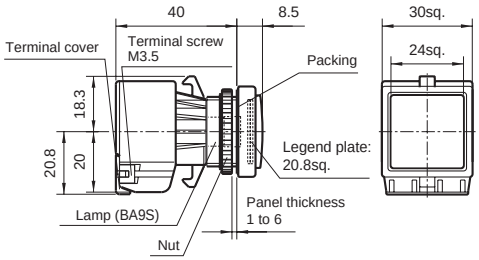
With transformer, with resistor unit DR22F3M, F4M



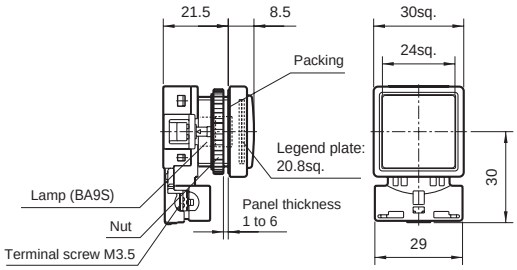
Without transformer DR22F3M, F4M



Short body/with transformer DR22F3M, F4M



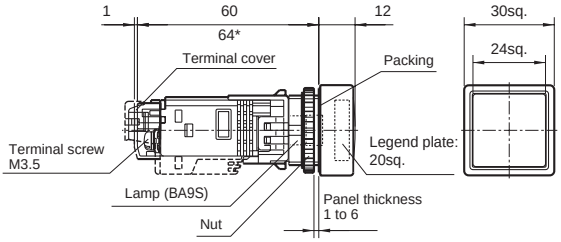
Short body/without transformer DR22F3M, F4M



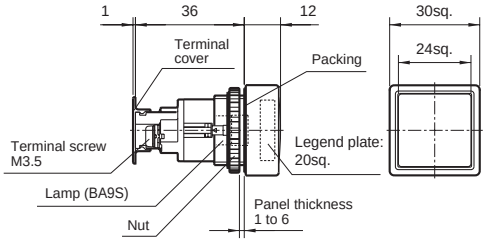
Note: * Except for the types 110V AC, 127V AC and 220V AC.

Flush (12mm high frame)

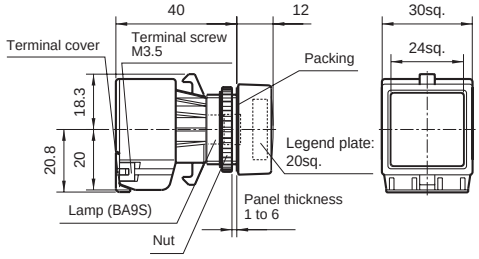
With transformer, with resistor unit DR22F5M



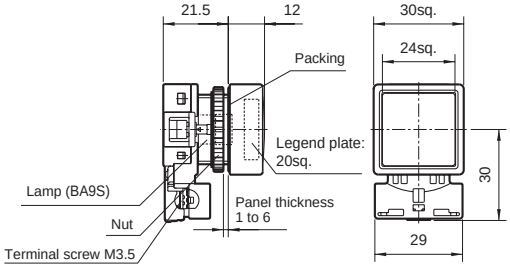
Without transformer DR22F5M



Short body/with transformer DR22F5M



Short body/without transformer DR22F5M



Note: * Except for the types 110V AC, 127V AC and 220V AC.

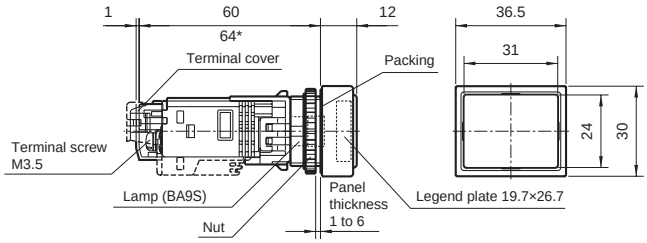
AR22 and DR22
Dimensions

■ Dimensions, mm

• Pilot lights

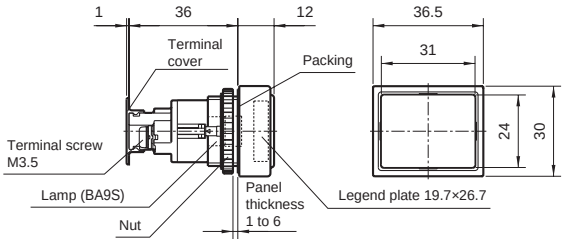
Flush rectangular

With transformer, with resistor unit



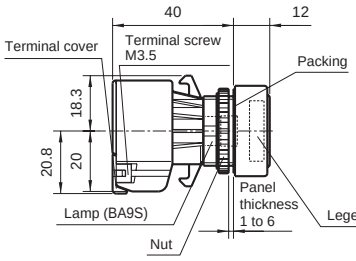
DR22E3N

Without transformer

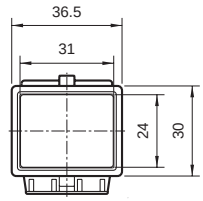


DR22E3N

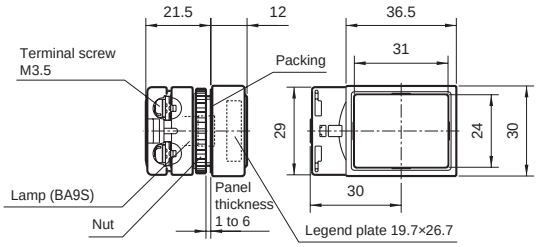
Short body/with transformer



DR22E3N



Short body/without transformer



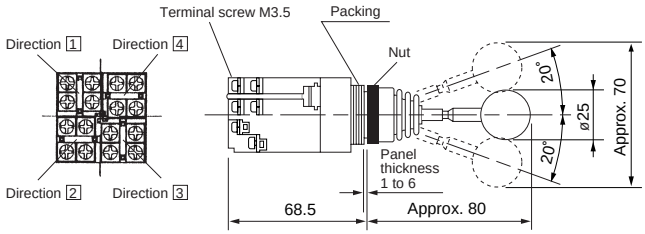
DR22E3N

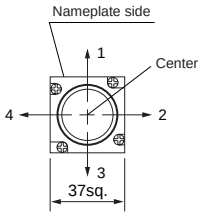
Note: * Except for the types 110V AC, 127V AC and 220V AC.

• Joy stick selector switches

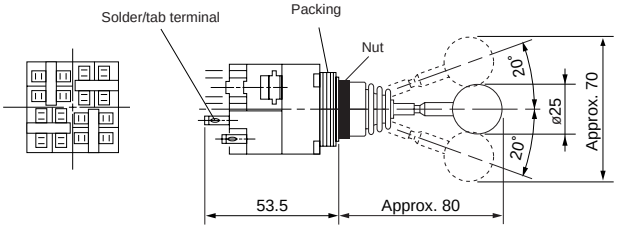
Ball type without lock

Screw terminal AR22A0N, A5N





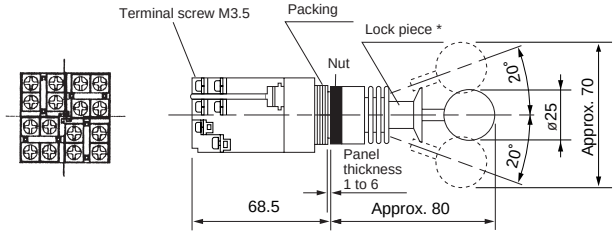
Solder/tab terminal AR22A0H, A5H



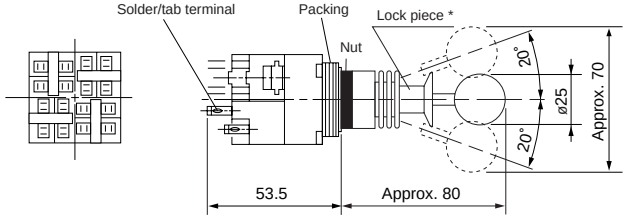
Notes * The contact arrangement is operable in the designated direction by pulling the lock piece in the central position with the fingers. The lock piece will return automatically and locks when the lock piece is released in the central position.
The lock piece locks in the central position only.

Ball type with lock

Screw terminal AR22A1N, A6N



Solder/tab terminal AR22A1H, A6H

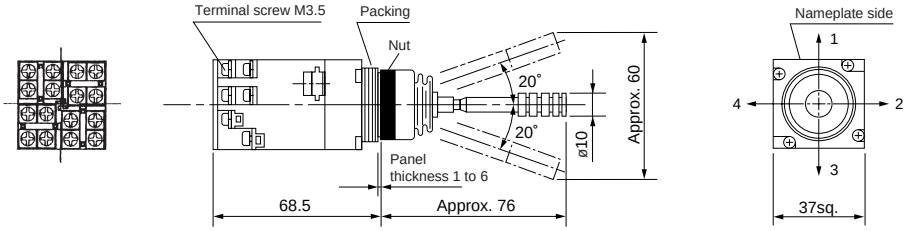


■ Dimensions, mm

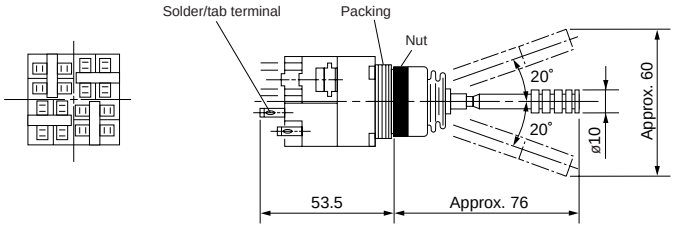
• Joy stick selector switches

Rubber cap type without lock

Screw terminal AR22A2N, A7N



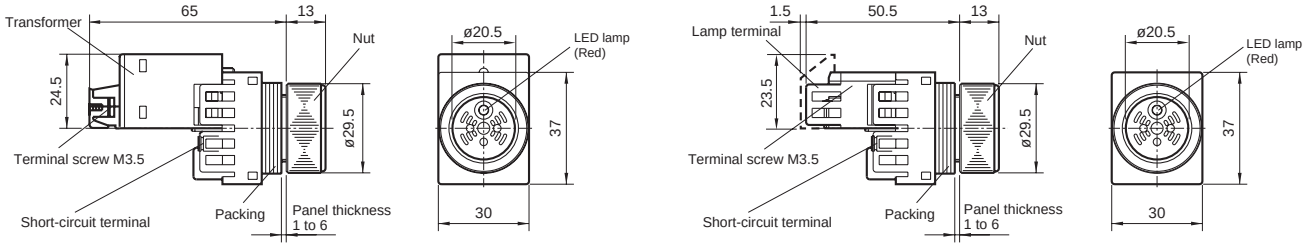
Solder/tab terminal AR22A2H, A7H



• Buzzers

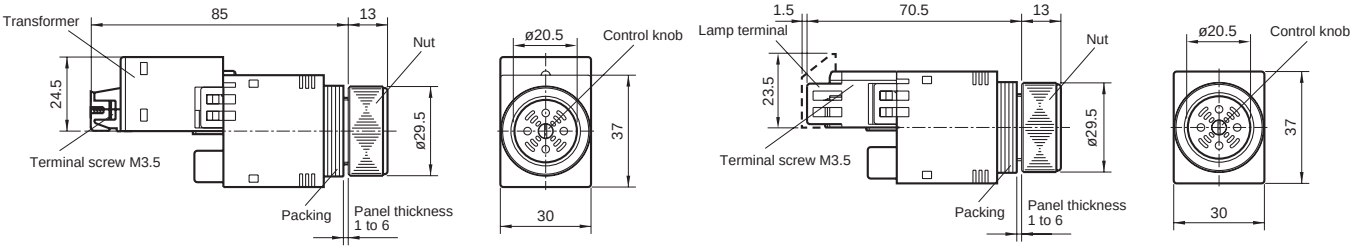
Electronic sound

With transformer DR22B5 Without transformer DR22B5



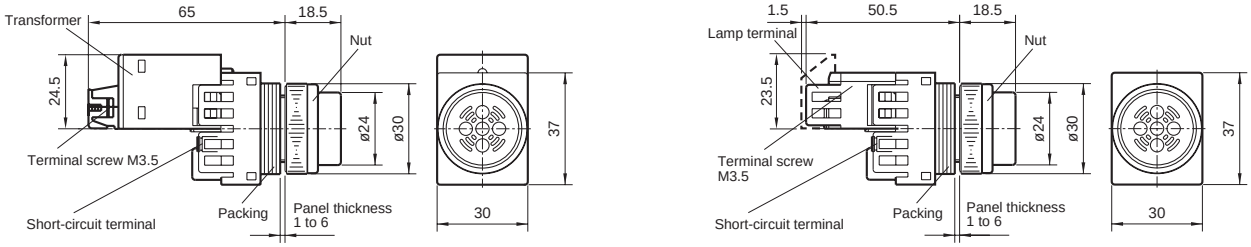
Magnetic sound

With transformer DR22B3 Without transformer DR22B3



Electronic sound (IP54)

With transformer DR22B8 Without transformer DR22B8



Notes on use

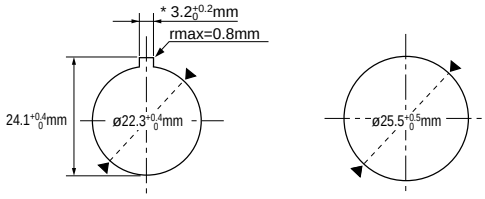
■ Fit two sizes of panel cutout holes

* The unique nut with a step allows switch to be mounted in either 22.3mm- or 25.5mm-dia. holes as shown in Fig. 1 without any extra adapter.

Fig. 1 Panel cutout

The switch mounted as a ϕ22mm diameter unit.

The switch mounted as a ϕ25mm diameter unit.

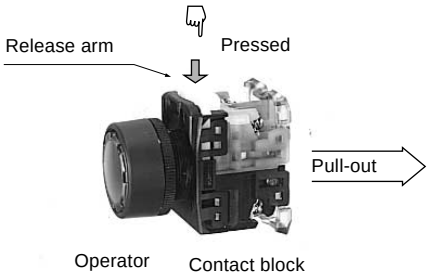


Note: * If key-washer or legend plate are not used, 3.2mm-wide location holes need not be cutout.

■ Detaching contact block from the operator

While keeping the white release arm pressed with one finger, pull-out the contact block in the direction by the arrow.

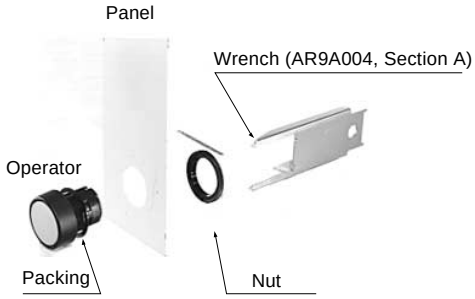
Fig. 2 Detaching contact block from the operator



■ Mounting operator to panel

① In a 22.3mm-dia. panel cutout hole
Insert the operator into the cutout hole from the panel front as shown in the Fig. 3.
Then, fit section "A" of the AR9A004 wrench from behind the panel and secure the operator with nut. *(See page 04/108 for the wrench)*

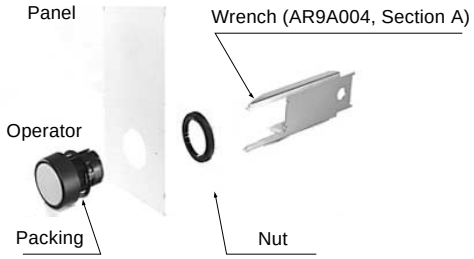
Fig. 3 Mounting an operator in a 22.3mm-dia. hole



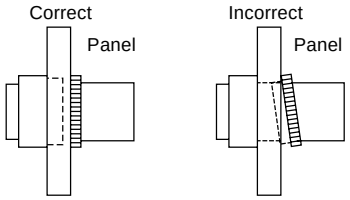
Note: Recommended tightening torque is from 1 to 1.5N•m

② In a 25.5mm-dia. panel cutout hole
As shown in Fig. 4, with the nut step-out side oriented to the panel, use the wrench to tighten the nut and secure the operator.

Fig. 4 Mounting a operator in a 25.5mm-dia. hole

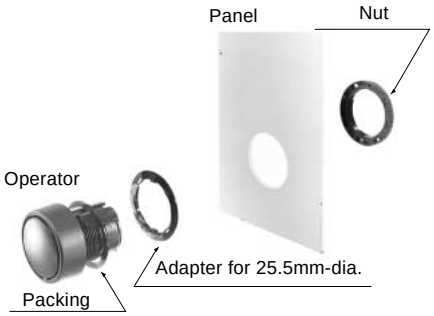


Note: 1. Recommended tightening torque is from 1 to 1.5N•m
2. Ensure that the step-out portion of the nut is correctly fitted in the cutout hole.



For easier mounting in the 25.5mm-dia. hole, the AR9Y718 adapter is also available separately.

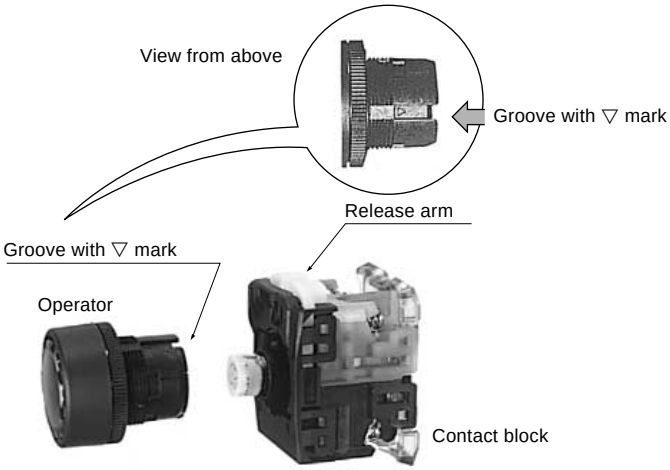
Fig. 5 Mounting with an adapter and locking nut



■ Mounting contact block to the operator

As shown in Fig. 6, align the protruding part of the contact block release arm with the operator groove at the ▽ mark. Then, insert the contact block into the operator until it clicks.

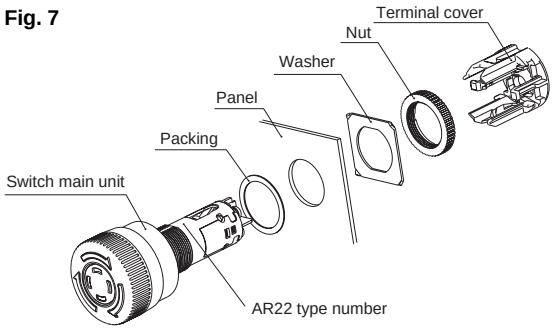
Fig. 6 Mounting the contact block to the operator



■ VG type panel mounting

As shown in the illustration, remove the live section cover, nut, and washer, and insert the main unit into a panel which has been cut from the front side of the panel. Place the type number AR22 facing upward, and secure the main unit with the nut using a wrench AHX701. The appropriate tightening torque is 1 to 1.5N•m.

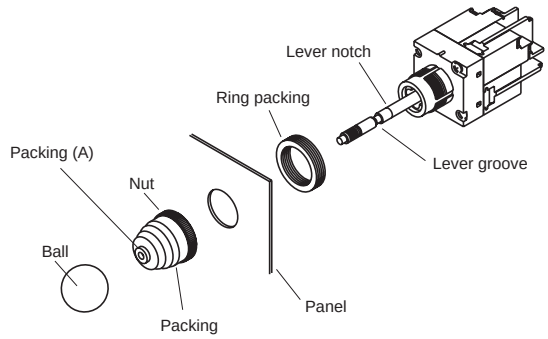
Fig. 7



■ Joy stick selector switch mounting on panel

(1) Twist and remove the ball from the operator.
(2) Loosen the nut and remove the switch if the switch is provided with a lock.
(3) If no locking nut is provided, loosen the nut and remove the switch after the packing part (A) shown in the illustration is stretched to the lever groove.
(4) Mount the switch in the order opposite to removal. Set the packing to the notch on the lever as a reference. Do not separate the nut from the packing.
(5) Use a torque wrench AR9A006 to tighten the nut from the front of the panel.
Note: Recommended tightening a torque is 1 to 1.5N•m.

Fig. 8



■ Buzzer mounting on panel

(1) Remove the nut, and insert the main unit into the mounting hole from the back of the panel.
(2) Tighten the buzzer using a wrench AR9A006 from the front side of the panel.
Note:
- Recommended tightening torque is 1 to 1.5N•m.
- Electronic sound (IP54) type has a all-in-one unit with nut and cap.

■ Applicable panel thickness

The AR22/DR22 series switches are mountable to panels with thickness as given in Table below.

Mounting condition			Applicable panel thickness (mm)
Without accessories			1 to 6
With accesories	Protective cover, water-proof cap, legend plate		1 to 4
	Key washer	without hole	1 to 4
		with hole	1 to 5
	Adapter for a 25.5mm-dia. hole		1 to 5.5

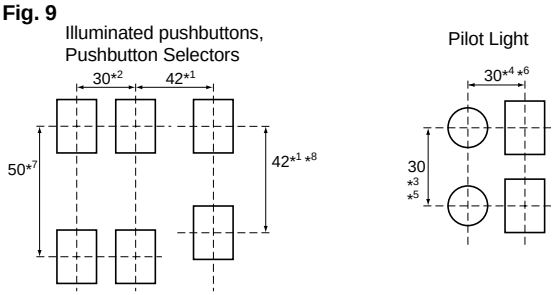
• When using a joy stick selector switch and buzzer
The applicable panel thickness is 1 to 6mm. Five 1.3mm packings (single-piece type) are included as standard equipment. Insert as many as required depending on the panel thickness, using the following table as a guide. When using a key washer, legend plate, or adapter, their thickness will have to be added to the values in the guide.

Panel thickness (mm) (plus key washer, legend plate)	Number of packings (reference)
1.0 to 1.6	5
1.6 to 2.8	4
2.8 to 3.8	3
3.8 to 4.8	2
4.8 to 6.0	1

■ Minimum mounting space, mm

(1) Minimum mounting space

Fig. 9

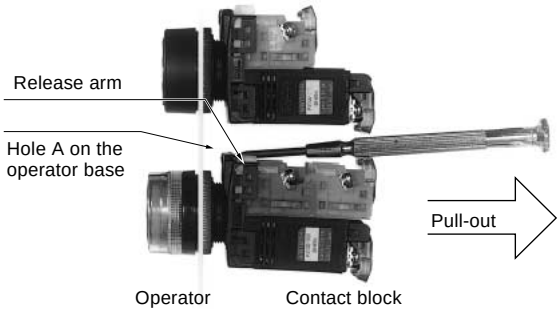


Notes:
- *1 AR22M0□, M5□, V5□, V0□, V2□, V7R, VG□: 42mm
  AR22M3R, M8R: 49mm
  AR22Q2R, WR, W0R, WY, WCY: 40mm
- *2 When mounting contact blocks at 30mm pitch, use it circuit of 380V or less.
- *3 Short body with transformer types: 50mm.
- *4 Rectangular types: 36.5mm (except for short body without transformer types).
- *5 Short body without transformer types: 60mm.
- *6 Rectangular short body without transformer types: 60mm.
- *7 This dimension applies when transformer units or contact blocks face each other.
- *8 This dimension applies when transformer unit or contact block is mounted on only one side.

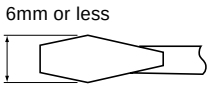
When mounting operators on a panel, orient all ▽ marks on the operator upwards.
(The operator release arms are oriented upwards.) This aligns the terminals of all contact blocks, thus making wiring easy.

(2) Detaching contact blocks from operators
As shown in Fig. 10, insert a flat-head screw driver into the groove of the white release arm on the contact block. Then, while inserting the driver in hole A of the operator base, lower the driver grip and take out the contact block.

Fig. 10



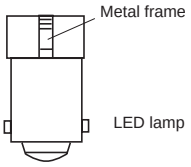
Note: Use a flat head screwdriver as shown at the right.



■ Products with blue and green LEDs

The LED devices on products with high-brightness (blue and green) LEDs are very sensitive to static electricity. When replacing LED lamps do not allow static electricity to come into direct contact with the metal frame on the upper side of the LED lamp. The LED device may be damaged if this part is subjected to static electricity. When installing or removing an LED lamp, it is recommended that you use the lamp changer (AHX790).

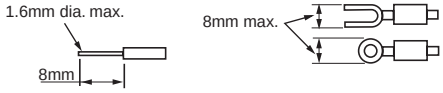
Fig. 11



■ Wiring

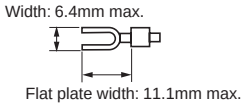
(1) The terminal screws are M3.5 pan head screws. Solid wires, stranded wires, or crimp terminals can be connected.

Fig. 12



(2) Two crimp terminals can be used by putting one of them on top of the other. If fork-type crimp terminals are used in the horizontal direction, however, use ones as shown in the figure below. (i.e., Toei Tanshi's F2-3.5S or an equivalent).

Fig. 13



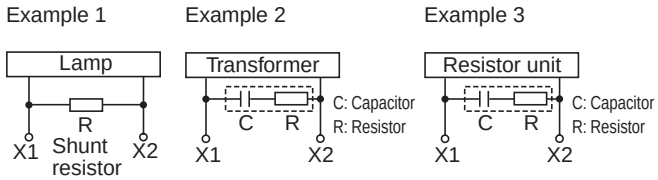
(3) The terminal washers are a self-lifting type.
(4) Tighten the terminal screws to a tightening torque of 0.8 to 1N•m.
(5) Keep the terminals free of external force while wiring or after wiring, or operational failures may result.
(6) Do not use screws other than the provided terminal screws.

Notes:
- If solid wires are connected to the lamp terminals in the horizontal direction (on the side), be sure to insert the solid wires into the square washers.
- Terminal layout., *see page 04/54*
- See page 04/53 for the wiring of the joy stick selector switch and VG type.

■ LED Indicator

(1) LED Lamp Malfunctioning
The LED lamp is lit by a very small level of current.
Therefore, it may be erroneously lit by a leaking current from the surge absorption circuit or semiconductor circuit or due to stray capacitance between cables. In that case, provide a countermeasure (e.g., connect a resistor in parallel with the LED lamp).
• Countermeasure for Malfunctioning
The LED lamp malfunctions can be prevented by connecting a shunt resistor (R) or CR elements (a capacitor and resistor) in parallel with the LED lamp terminal. The resistance and CR values vary depending on the model and the operating conditions.

Fig. 14



Example 1:
- 24V DC
  R: 10kΩ (0.5W)
- 24V AC
  R: 2kΩ (2W)

Example 2:
- 100V AC
  C: 0.33μF (250V AC)
  R: 120Ω (0.25W)
- 220V AC
  C: 0.1μF (250V AC)
  R: 120Ω (0.25W)

Example 3:
- 110V DC
  C: 4700pF (250V DC)
  R: 100Ω (0.5W)

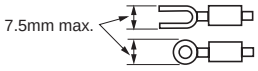
(2) Incoming surge
High luminance LED products use an element sensitive to static electricity. They may not be lit by an abnormal voltage like surge. Please note it.

■ Joy stick selector switch

• Screw terminal wiring

(1) The terminals use M3.5 pan head screws. Use crimp terminals to wire the terminals.

Fig. 15



(2) The terminal washers are a self-lifting type.

(3) Tighten the terminal screws to a tightening torque of 0.8 to 1.0N•m. Keep the terminals free of external force during and after wiring, or operational failures may result.

• Solder (tab terminal) wiring

(1) Pay attention to the following items when soldering the terminals.
Use a soldering iron with a power consumption of 30W.
Use resin-core solder.
If a 30W soldering iron is used, finish soldering the terminals within five seconds. If a 20W soldering iron is used, finish soldering the terminals within 10 seconds. Make sure that the soldering iron tip length is at least 20mm long. Do not apply external force to the terminals. Because lead-free solder's melting point is slightly high, soldering work may be difficult. Use a soldering iron whose tip is rather large or whose calorie is rather high.

(2) When using adjacent terminals, use insulation tubes to prevent the terminals from short-circuiting. Utmost attention must be paid to the solder terminals if especially thick wires are used or if a large quantity of solder is used.

(3) Connectable wires
Solid wire: 2 wires, 0.8mm dia. max.
Stranded wire: 1 wire, 0.75mm^2 max.

(4) Use the 110 (2.8mm) series receptacle for the tab terminals.

(5) Wire the tab terminals with the contact unit connected to the main unit.

• Operation

Operation shall be made after the joy stick operation lever is surely returned to the center position. Do not apply excessive force to the operation lever. The maximum permissible force is 100N.

• Use of contact blocks

If NO and NC contacts are used in the same contact block, check that there is no difference in potential. Do not connect different type of power source different in type.

■ Buzzer

• Noise

If the application circuit is likely to generate excessively strong noise, connect a surge absorber (e.g., FUJI's ENC390D, provided that the switch is a 24V type) in parallel with the buzzer.

• Place of Use

The buzzer does not have a drip-proof construction. Do not use the buzzer in places where oil or water is sprayed or where dust accumulates. If the buzzer is a splash-proof type, it will resist sprays of water.

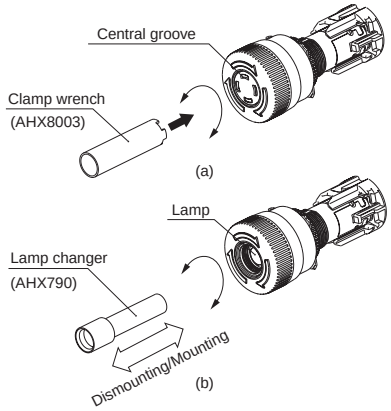
• Do not use the buzzer in places that are subject to an excessive amount of corrosive gas.
• Note that the buzzer is likely to sound erroneously due to leakage current or the like.

■ AR22VG type

• As shown in Fig. 16 (a), engage the tip of the wrench (AHX8003) with the groove in the center to mount or remove the locking unit. The recommended tightening torque is 0.6 to 1N•m.

• As shown in Fig. 16 (b), insert the lamp changer (AHX790) and press the lamp changer to mount or remove the lamp. Turn the lamp changer clockwise when mounting the lamp and counterclockwise when removing it.

Fig. 16

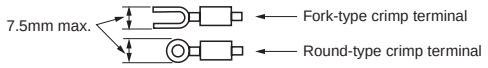


Note: The lamp and neon lamp are special models for the AR22VGF. Use only these special lamps for replacement.

• Wiring

The terminals use M3.5 pan head screws. Use crimp terminals for wiring and cover the crimp terminals with insulation tubes.

Fig. 17

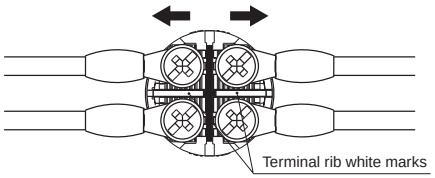


• The terminal washers are a self-lifting type.
• Tighten the terminal screws to a torque of 0.8 to 1N•m. Keep the terminals free of external force during and after wiring, or operational failures may result.
• Wiring precautions

(1) Use of round-type crimp terminal

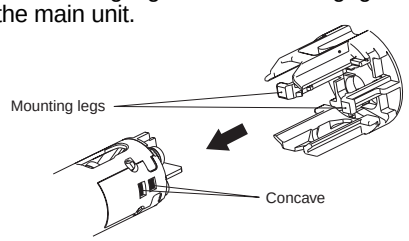
• Remove the live section cover, and half-tighten to the point parallel with the terminal rib white marks in the direction of the arrows as shown in the illustration below.
• Mount the live section cover and tighten the terminals securely.

Fig. 18



As shown in the illustration below, mount the live section cover so that the mounting legs of the cover engage with the concave parts of the main unit.

Fig. 19



(2) If fork-type crimp terminals are used, wiring will be possible without removing the live section cover.

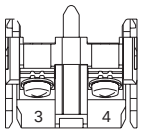
■ Operation

- Do not use a hitting or bouncing action to operate the button, or the switch may break. Always operate the switch by hand. Do not pull mushroom head pushbuttons or alternate buttons other than the Q2.
- Do not rotate the selector ring type while the button is pressed, or the mechanism may break.
- The control type incorporates make-before-break contacts. Prepare a protection circuit for the application.
- The dial of the selector switch rotates with a light force. Do not apply force in excess of 1N•m. Please do not pull out or insert the key forcibly.
- To release the lock of the push-lock type, rotate the button clockwise as shown by the arrow. Do not pull the button, or the latch may break and the lock may fail to work.
- Do not lock the emergency stop pushbutton switch and emergency stop illuminated pushbutton switch in use. Push and lock the switch in case of an emergency only.

■ Terminal layout

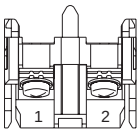
Fig. 20

NO contact (AR9B290)
Blue

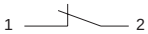


Terminal No.3, 4

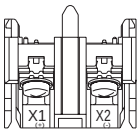
NC contact (AR9B291)
Red



Terminal No.1, 2

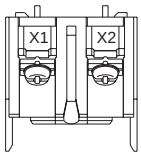


Lamp terminal (AR9B292)
Black



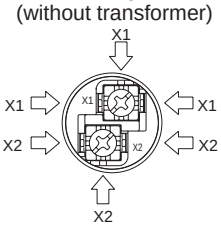
Terminal No.X1 (+), X2 (–)*

Lamp terminal (For buzzer)
(AHX291L) Brown



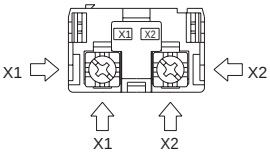
Terminal No.X1 (+), X2 (–)*

Pilot light
(without transformer)



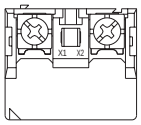
Terminal No.X1 (+), X2 (–)*

Transformer (AR9T511)
(220V or less)



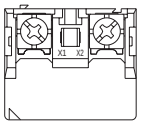
Terminal No.X1, X2

Transformer (AR9T511)
(230V or more)
Transformer (AHX511)
(For buzzer)



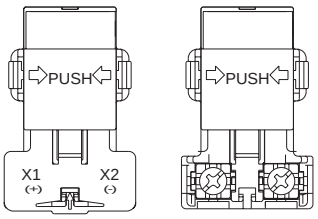
Terminal No.X1, X2

Resistor unit (AR9T519-H)
Voltage stabilizing unit
(AR9T001-E)
Flicker unit (AR9T002)



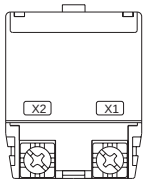
X1 X2
Terminal No.X1 (–), X2 (+)*

Pilot light
(short-body without transformer)



Terminal No.X1 (+), X2 (–)*

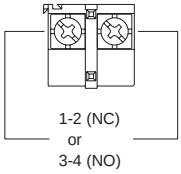
Pilot light
(short-body with transformer)



Terminal No.X1, X2

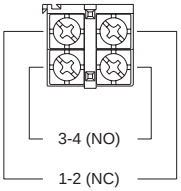
Note: * The positive and negative terminals are used for DC applications where the order of polarity is required.

Joy stick selector switch
(screw)
1NO or 1NC



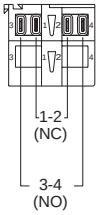
Terminal No. 1-2 or 3-4

Joy stick selector switch
(screw)
1NO + 1NC



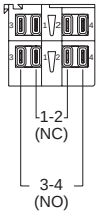
Terminal No. 1-2, 3-4

Joy stick selector switch
(solder/tab)
1NO + 1NC



Terminal No. 1-2, 3-4

Joy stick selector switch
(solder/tab)
2NO + 2NC



Terminal No. 1-2, 3-4

The full range of the contact blocks and transformer units suitable for the AR22 and DR22 series may also be fitted to the AR30 and DR30 series.

Illuminated pushbuttons | **Pushbuttons** | **Pilot lights**

AF95-4
AR30E0L

AF95-10
AR30E0R

AF95-18
DR30D0L

AF95-6
AR30G3L

AF95-12
AR30M0R

Selectors

AF95-13
AR30PR

Emergency stop pushbuttons

KKD06-348
AR30V0L

KKD08-051
AR30V0R

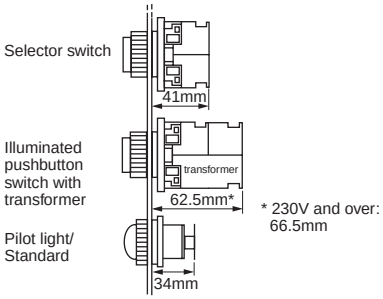
KKD06-052
AR30V1R

■ Features

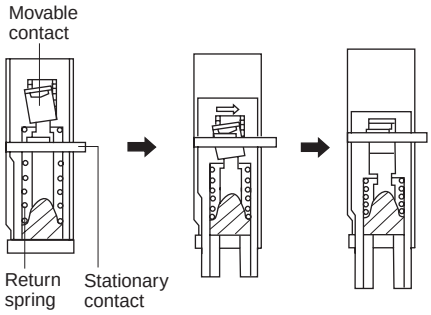
Quick-replacement contact blocks and transformer units
The snap-on construction makes replacement and addition of contact blocks and transformer units very simple and straightforward.

Oil-and dust-proof operator module construction
The protection level of the AR30/DR30 operator modules conforms to IEC Standard IP65. The special seals protect the operator modules and switch mechanisms against oil, dust, and grime, thus ensuring high performance in dusty and moist environments.

Miniaturization
- Selector switches with 1NO+1NC: 41mm deep
  Pilot lights: 34mm deep
- The transformer now occupies far less space.

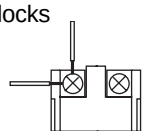


Self-cleaning contacts
All the contacts are double break type and feature self-cleaning action.
Every time the switch is operated, the contact surfaces are wiped with a sliding movement, thus ensuring high contact reliability even at low voltage and small current levels (5V, 5mA).



Metal nut
Safer model with metal nut is also available

Wiring
- Wiring from two directions is possible.
- Wiring in both vertical and lateral directions facilitates wiring in narrow spaces.
- Color coding of contact blocks makes wiring easy.
  1NO: Blue, 1NC: Red
  Lamp terminal and transformer unit: Black



Safety
- A terminal cover is provided, assuring safety and security.
- FUJI's original Trigger Action mechanism is used in the emergency stop pushbuttons. They are suitable for emergency stop and safety. This mechanism prevents the contacts from moving until the button is pushed and locked.

Protection
- Excellent oil-tight construction (IP65) of the operator.
- Closure of the contact block has been improved.

■ Approvals

For further information related to approved type, *see page 04/56 to 04/59.*

AR30 and DR30
Quick reference guide

■ Illuminated pushbutton switches

Operator	Type	Operator	Type	Operator	Type
Extended round head *See page 04/71, 04/94*	**AR30E0L, E5L** AF95-4	Extended with full guard (24mm dia. with openings) *See page 04/71, 04/94*	**AR30G2L, G7L** AF99-328	Push-lock, turn-reset (40mm dia. with white arrow) *See page 04/71, 04/95*	**AR30V5L** KKD06-348
Extended with transparent full guard (24mm dia.) *See page 04/71, 04/94*	**AR30G4L, G9L** KKD05-164	Extended with full guard (24mm dia.) *See page 04/71, 04/94*	**AR30G3L, G8L** AF95-6	Push-pull *See page 04/71, 04/95*	**AR30Q7L** AF96-185

■ Pushbutton switches

Operator	Type	Operator	Type	Operator	Type
Flush round head *See page 04/73, 04/96*	**AR30F0R, F5R** AF95-11	Mushroom head (29mm dia.) *See page 04/73, 04/96*	**AR30M4R** AF95-8	Mushroom head with full guard (35mm dia. metal nut) *See page 04/73, 04/96*	**AR30GSR** AF96-239
Extended round head *See page 04/73, 04/96*	**AR30E0R, E5R** AF95-10	Extended with full guard (24mm dia.) *See page 04/73, 04/96*	**AR30G1R, G6R** AF95-16	Giant head *See page 04/73, 04/97*	**AR30B0R** AF95-579
Flush round head Symbol mark type *See page 04/73, 04/96*	**AR30FAR, FBR** AF98-195	Extended with half guard *See page 04/73, 04/96*	**AR30G0R, G5R** AF95-9	Giant head with guard *See page 04/73, 04/97*	**AR30B1R** AF95-582
Extended round head Symbol mark type *See page 04/73, 04/96*	**AR30EAR, EBR** AF98-194	Pin lock *See page 04/73, 04/96*	**AR30GPR** AF96-240	Giant head with full guard *See page 04/73, 04/97*	**AR30B2R** AF95-580
Mushroom head (40mm dia.) *See page 04/73, 04/96*	**AR30M0R, M5R** AF95-12	Mushroom head with full guard (40mm dia.) *See page 04/73, 04/96*	**AR30M3R, M8R** AF95-17	Giant head with full guard *See page 04/74, 04/97*	**AR30B3R** AF95-581

Note: AR30M8R: Not approved standard (CCC) : *See page 04/289*

■ Pushbutton switches

Operator	Type	Operator	Type	Operator	Type
Pushbutton with selector ring (2-position) *See page 04/75, 04/97*	**AR30S1R, S2R, S3R, S6R** AF97-506	Push-lock, turn-reset (40mm dia. with white arrow) *See page 04/74, 04/97*	**AR30V5R** KKD08-051	Pushbutton with emergency operating cap *See page 04/74, 04/97*	**AR30FVR** AF96-187
Push, turn-lock *See page 04/74, 04/97*	**AR30N0R** AF95-583				

■ Emergency stop pushbutton switches (conform to EN418)

Operator	Type	Operator	Type	Operator	Type
Push-lock, turn-reset (Soft-touch 40mm dia. with white arrow) *See page 04/76, 04/98*	**AR30V0R** KKD08-051	Push-lock, turn-reset (65mm dia.with white arrow) *See page 04/76, 04/98*	**AR30V1R** KKD06-352	Push-lock, pull-reset (35mm dia.) *See page 04/76, 04/98*	**AR30Q2R** KKD06-347
Push-lock, turn-reset (40mm dia.) *See page 04/76, 04/98*	**AR30V2R** KKD06-353				

Notes: Provided with the ⊖ (Direct opening action)

■ Emergency stop illuminated pushbutton switches (conform to EN418)

Operator	Type	Operator	Type
Push-lock, turn-reset (Soft-touch 40mm dia. with white arrow) *See page 04/77, 04/98*	**AR30V0L** KKD06-348	Push-lock, turn-reset (40mm dia.) *See page 04/77, 04/98*	**AR30V2L** KKD06-350

Note: Provided with the ⊖ (Direct opening action)
⊛ : *See page 04/289*

■ Selector switches

Operator	Type	Operator	Type	Operator	Type
Knob *See page 04/78, 04/99*	**AR30PR, PCR** AF95-13	Key *See page 04/78, 04/99*	**AR30JR, JCR** KKD09-023	Key (Long durability) *See page 04/78, 04/99*	**AR30JAR** KKD09-021
Lever *See page 04/78, 04/99*	**AR30WR, WCR** AF95-14				

■ Illuminated selector switches

Operator	Type
Knob *See page 04/87, 04/99*	**AR30PL** AF95-5

■ Lever type selector switches

Operator	Type
Lever (metal type) *See page 04/85, 04/099*	**AR30HR** KKD05-115

■ Pilot lights

Lens	Type	Lens	Type	Lens	Type
Dome *See page 04/89, 04/100*	**DR30D0L** AF95-18	Dome with dimmer control *See page 04/89, 04/101*	**DR30D1L** AF02-63	Flush square (40mm sq. transparent lens) *See page 04/91, 04/102*	**DR30M4M *** AF97-63
Extended round *See page 04/89, 04/100*	**DR30E3L** AF95-20	Flush square (34mm sq. transparent lens) *See page 04/91, 04/102*	**DR30F4M *** AF97-65		
Faceted *See page 04/90, 04/101*	**DR30K0L** AF95-19	Flush rectangular (Transparent lens) *See page 04/91, 04/102*	**DR30F4N *** AF97-64		

Note: With resistor unit and resistor types: Not approved standard
* LED 12V AC type: Not approved standard
: *See page 04/289*

■ Joy stick selector switches

Handle	Type	Handle	Type	Handle	Type
Ball type *See page 04/92, 04/103*	**AR30A0, A5** AF97-48	Ball type with lock *See page 04/92, 04/103*	**AR30A1, A6** AF97-44	Rubber cap type *See page 04/92, 04/103*	**AR30A2, A7** AF97-57

■ Buzzers

Sound	Type	Sound	Type	Sound	Type
Electronic sound *See page 04/93, 04/104*	**DR30B5*** KKD08-058	Magnetic sound *See page 04/93, 04/104*	**DR30B0** AF96-378	Electronic sound (IP54) *See page 04/93, 04/104*	**DR30B8 *** AF96-245
Electronic sound (economy) *See page 04/93, 04/104*	**DR30B6** KK02-17				

Note: * 6V AC, 110V DC types: Not approved standard

AR30 and DR30
Type number nomenclature

Illuminated pushbuttons

AR30 E0L – 10 E3 R □
① ② ③ ④ ⑤ ⑥

① **Product category**
AR30: 30mm-dia. illuminated pushbutton
30mm-dia. emergency stop illuminated pushbutton

② **Operator**
• Illuminated pushbutton
E0L: Extended round head
E5L: Extended round head (Alternate)
G4L: Extended with transparent full guard (24mm dia.)
G9L: Extended with transparent full guard (24mm dia. alternate)
G2L: Extended with full guard (24mm dia. with openings)
G7L: Extended with full guard (24mm dia. with openings, alternate)
G3L: Extended with full guard (24mm dia.)
G8L: Extended with full guard (24mm dia. alternate)
V5L: Push-lock, turn-reset (40mm dia. with white arrow) *1
Q7L: Push-pull
• Emergency stop illuminated pushbutton
V0L: Push-lock, turn-reset (Soft-touch 40mm dia. with white arrow)
V2L: Push-lock, turn-reset (40mm dia.)

③ **Contact arrangement**

10: 1NO	30: 3NO
01: 1NC	03: 3NC
11: 1NO+1NC	33: 3NO+3NC
20: 2NO	40: 4NO
02: 2NC	04: 4NC
22: 2NO+2NC	50: 5NO
	05: 5NC

④ **Lamp voltage**
• Incandescent lamp
54: 5.5V AC/DC, without transformer
C4: 15V AC/DC, without transformer
D4: 20V AC/DC, without transformer
E4: 24V AC/DC, without transformer
H4: 100-110V AC, with transformer
L4: 115-127V AC, with transformer
M4: 200-220V AC, with transformer
Q4: 230-254V AC, with transformer
S4: 350-380V AC, with transformer
T4: 400-440V AC, with transformer
V4: 480V AC, with transformer
W4: 500-550V AC, with transformer
• LED lamp
A3: 6V AC, without transformer
63: 6V DC, without transformer
B3: 12V AC/DC, without transformer
C3: 15V AC/DC, without transformer
E3: 24V AC/DC, without transformer
H3: 100-110V AC, with transformer
L3: 115-127V AC, with transformer
M3: 200-220V AC, with transformer
Q3: 230-254V AC, with transformer
S3: 350-380V AC, with transformer
T3: 400-440V AC, with transformer
V3: 480V AC, with transformer
W3: 500-550V AC, with transformer

⑤ **Color of lens**

G: Green	Y: Yellow
R: Red *2	A: Orange
W: White	S: Blue

⑥ **Special product**
Z9: Resisting water-soluble cutting oils and heat
Z8: With a contact protection cover
Z4: Resisting sulfuration gas
ZB: Meeting IP2X finger-protection standards
ZM: Metal nut

Notes: *1 Products with no trigger action mechanism. These products cannot be used as emergency stop switches that comply with EN standards.
*2 Button color of emergency stop illuminated switches are Red only.
• The manufacturing range varies depending on the model. For details, refer to the contents of this catalog.

Pushbuttons

AR30 E0R – 10 R □ □
① ② ③ ④ ⑤ ⑥

① **Product category**
AR30: 30mm-dia. pushbutton
30mm-dia. emergency stop pushbutton

② **Operator**
- Pushbutton switch

F0R: Flush round head
F5R: Flush round head (Alternate)
E0R: Extended round head
E5R: Extended round head (Alternate)
FAR: Flush round head (Symbol mark type)
FBR: Flush round head (Symbol mark type, alternate)
EAR: Extended round head (Symbol mark type)
EBR: Extended round head (Symbol mark type, alternate)
M0R: Mushroom head (40mm dia.)
M5R: Mushroom head (40mm dia. Alternate)
M4R: Mushroom head (29mm dia.)
G1R: Extended with full guard (24mm dia.)
G6R: Extended with full guard (24mm dia. Alternate)
GPR: Pin lock
G0R: Extended with half guard
G5R: Extended with half guard (Alternate)
M3R: Mushroom head with full guard (40mm dia.)
M8R: Mushroom head with full guard (40mm dia. Alternate)
GSR: Mushroom head with full guard (35mm dia. metal nut)
B0R: Giant head
B1R: Giant head with guard
B2R: Giant head with full guard
B3R: Giant head with full guard
S1R: Pushbutton with selector ring (2-position)
S2R: Pushbutton with selector ring (2-position)
S3R: Pushbutton with selector ring (2-position)
S6R: Pushbutton with selector ring (2-position)
N0R: Push, turn-lock
V5R: Push-lock, turn-reset (40mm dia. with white arrow) *1
FVR: Pushbutton with emergency operating cap

- Emergency stop pushbutton switch

V0R: Push-lock, turn-reset (Soft-touch 40mm dia. with white arrow)
V2R: Push-lock, turn-reset (40mm dia.)
V1R: Push-lock, turn-reset (Soft-touch 65mm dia. with white arrow)
Q2R: Push-lock, pull-reset (35mm dia.)

③ **Contact arrangement**

10: 1NO	30: 3NO
01: 1NC	03: 3NC
11: 1NO+1NC	33: 3NO+3NC
20: 2NO	40: 4NO
02: 2NC	04: 4NC
22: 2NO+2NC	44: 4NO+4NC
	50: 5NO
	05: 5NC

④ **Color of button**

G: Green
R: Red*2
B: Black
W: White
T: Green, Red, Black (For AR30F0R)
Y: Yellow
A: Orange
S: Blue
C: Clear (For AR30FAR, FBR, EAR, EBR)

⑤ **Symbol mark (For AR30FAR, FBR, EAR, EBR)**

Symbol mark	◯		I		Ⓣ		◯	I	Ⓣ
Color of button	White	Black	White	Black	White	Black	Clear		
Color of mark	Red		Green		Green		Black		
Code	01	02	03	04	11	12	02B	04B	12B

⑥ **Special product**
Z9: Resisting water-soluble cutting oils and heat
Z8: With a contact protection cover
Z4: Resisting sulfuration gas
ZB: Meeting IP2X finger-protection standards
ZM: Metal nut

Notes: *1 Products with no trigger action mechanism. These products cannot be used as emergency stop switches that comply with EN standards.
*2 Button color of emergency stop switches are Red only.
- The manufacturing range varies depending on the model. For details, refer to the contents of this catalog.

AR30 and DR30
Type number nomenclature

Selector and illuminated selector switches

AR30 PL – 2 □ 10 E3 G □ □
① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

① **Product category**
AR30: 30mm dia. selector switch and illuminated selector switch

② **Operator**
- Selector switch

PR: Knob
PCR: Knob operated control type
WR: Lever
WCR: Lever operated control type
JR: Key
JCR: Key operated control type
JAR: Key (Long durability)
HR: Lever (Metal type)
- Illuminated selector switch

PL: Knob

③ **Operation**
2: 2-position, maintained
0: 2-position, spring return
3: 3-position, maintained
6: 3-position, spring/manual return (Left to center)
7: 3-position, spring/manual return (Right to center)
1: 3-position, spring return
4: 4-position, maintained (For AR30PCR, WCR)
5: 5-position, maintained (For AR30PCR, WCR)

④ **Key removable position**
A: Left
B: Left and right
C: Left, right and center
D: Right
E: Center
F: Right and center
G: Left and center

⑤ **Contact arrangement**

10:	1NO	30:	3NO
01:	1NC	03:	3NC
11:	1NO+1NC	33:	3NO+3NC
20:	2NO	40:	4NO
02:	2NC	04:	4NC
22:	2NO+2NC	44:	4NO+4NC
		50:	5NO
		05:	5NC

Note: Control type: *See page 04/82 to 04/84*

⑥ **Lamp voltage**
- Incandescent lamp

54: 5.5V AC/DC, without transformer
C4: 15V AC/DC, without transformer
D4: 20V AC/DC, without transformer
E4: 24V AC/DC, without transformer
H4: 100-110V AC, with transformer
L4: 115-127V AC, with transformer
M4: 200-220V AC, with transformer
Q4: 230-254V AC, with transformer
S4: 350-380V AC, with transformer
T4: 400-440V AC, with transformer
V4: 480V AC, with transformer
W4: 500-550V AC, with transformer
- LED lamp

A3: 6V AC, without transformer
63: 6V DC, without transformer
B3: 12V AC/DC, without transformer
C3: 15V AC/DC, without transformer
E3: 24V AC/DC, without transformer
H3: 100-110V AC, with transformer
L3: 115-127V AC, with transformer
M3: 200-220V AC, with transformer
Q3: 230-254V AC, with transformer
S3: 350-380V AC, with transformer
T3: 400-440V AC, with transformer
V3: 480V AC, with transformer
W3: 500-550V AC, with transformer

⑦ **Color of knob**
B: Black (Not available for illuminated selector switch)
G: Green
R: Red
W: White (Not available for selector switch)
Y: Yellow (Not available for selector switch)
A: Orange (Not available for selector switch)
S: Blue (Not available for selector switch)

⑧ **Key type No.**
A, B, C, D, E or F
("A" is standard)

⑨ **Special product**
Z9: Resisting water-soluble cutting oils and heat
Z8: With a contact protection cover
Z4: Resisting sulfuration gas
ZB: Meeting IP2X finger-protection standards
ZM: Metal nut

Note: • The manufacturing range varies depending on the model. For details, refer to the contents of this catalog.

Pilot lights

DR30 D0L – E3 W □
① ② ③ ④ ⑤

① **Product category**
DR30: 30mm dia. pilot light

② **Lens**
D0L: Dome
E3L: Extended round
K0L: Faceted
D1L: Dome with dimmer control
F4M: Flush square (34mm sq. transparent lens)
F4N: Flush rectangular (Transparent lens)
M4M: Flush square (40mm sq. transparent lens)

③ **Lamp voltage**

- Incandescent lamp

54: 5.5V AC/DC, without transformer
C4: 15V AC/DC, without transformer
D4: 20V AC/DC, without transformer
E4: 24V AC/DC, without transformer
H4: 100-110V AC, with transformer
L4: 115-127V AC, with transformer
M4: 200-220V AC, with transformer
Q4: 230-254V AC, with transformer
S4: 350-380V AC, with transformer
T4: 400-440V AC, with transformer
V4: 480V AC, with transformer
W4: 500-550V AC, with transformer
FQ: 50V DC, with resistor*
HQ: 110V DC, with resistor*
MQ: 220V DC, with resistor*
H8: 100-110V AC, short-body with transformer
L8: 115-127V AC, short-body with transformer
M8: 200-220V AC, short-body with transformer

- LED lamp

A3: 6V AC, without transformer
63: 6V DC, without transformer
B3: 12V AC/DC, without transformer
C3: 15V AC/DC, without transformer
E3: 24V AC/DC, without transformer
H3: 100-110V AC, with transformer
L3: 115-127V AC, with transformer
M3: 200-220V AC, with transformer
Q3: 230-254V AC, with transformer
S3: 350-380V AC, with transformer
T3: 400-440V AC, with transformer
V3: 480V AC, with transformer
W3: 500-550V AC, with transformer
H7: 110V DC, with resistor unit
FR: 50V DC, with resistor*
HR: 110V DC, with resistor*
MR: 220V DC, with resistor*
H9: 100-110V AC, short-body with transformer
L9: 115-127V AC, short-body with transformer
M9: 200-220V AC, short-body with transformer

- LED unit

(For DR30F4M, F4N, M4M type)
65: 6V DC, without transformer
25: 12V AC, without transformer
B5: 12V AC/DC, without transformer
E5: 24V AC/DC, without transformer
H5: 100-110V AC, with transformer
L5: 115-127V AC, with transformer
M5: 200-220V AC, with transformer
Q5: 230-254V AC, with transformer
S5: 350-380V AC, with transformer
T5: 400-440V AC, with transformer
V5: 480V AC, with transformer
W5: 500-550V AC, with transformer
HE: 110V DC, with resistor unit

Note: * DR30D0L, K0L type only

④ **Color of lens or color plate**
G: Green
R: Red
W: White
Y: Yellow
A: Orange
S: Blue

⑤ **Special product**
Z9: Resisting water-soluble cutting oils and heat
Z4: Resisting sulfuration gas
ZB: Meeting IP2X finger-protection standards
ZM: Metal nut

Note: • The manufacturing range varies depending on the model. For details, refer to the contents of this catalog.

AR30 and DR30
Type number nomenclature

Joy stick selector switches

AR30A 0 N – A0A0 B
① ②③ ④ ⑤

① **Product category**
AR30A: 30mm-dia. Joy stick selector switch

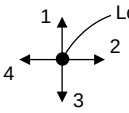
② **Handle**
0: Ball type (without lock, manual return)
1: Ball type with lock (manual return)
2: Rubber cap type (without lock, manual return)
5: Ball type (without lock, spring return)
6: Ball type with lock (spring return)
7: Rubber cap type (without lock, spring return)

③ **Terminal**
N: Screw
H: Solder/tab

④ **Contact arrangement**

Contact arrangement		Blank	1NO	1NC	1NO+1NC	2NO	2NC	2NO+2NC
Code	Screw	0	A	B	1	D	E	–
	Solder/tab	0	–	–	1	–	–	2

Operating direction code of contacts



Locked position

1: Upper 2: Right
3: Lower 4: Left

Ex. AR30A0N-A0A0B
1 2 3 4

⑤ **Handle color**
B: Black

Buzzers

DR30B 5 – E B
① ② ③④

① **Product category**
DR30B: 30mm-dia. buzzer

② **Sound**
5: Electronic sound
6: Electronic sound (economy)
0: Magnetic sound
8: Electronic sound (IP54)

③ **Operating voltage**
A: 6V AC (Type “5”, “8”)
6: 6V DC (Type “5”, “8”)
E: 12-24V AC/DC (Type “6” : 24V DC)
F: 35-48V AC/DC (Type “5”, “8”)
G: 24V AC (Type “6”)
H: 100-110V AC
M: 200-220V AC
1: 100-110V DC (Type “5”, “8”)

④ **Color of head**
B: Black

■ Ordering information

Specify the following:
1. Type number
   For the CCC approved product, add the suffix **(CCC)** to the type number

   Example: Pushbutton switch AR30F0R-11B**(CCC)**

■ Standards approved

UL508	File No. E44592
CSA C22.2 No.14	File No. LR20479
TÜV: EN60947-5-1	Pushbutton, Illuminated pushbutton: R9551062 Selector, Illuminated selector: R9551060 Pilot lights: R9551061 Joy stick selector switch: R2050803 (Lever switch) Buzzer: J9950091
TÜV: EN60947-5-1 EN60947-5-5	Emergency stop pushbutton Emergency stop illuminated pushbutton : R50028146

■ Specifications (Indoor use)

Description	Pushbutton switch Illuminated pushbutton switch Emergency stop pushbutton switch Emergency stop illuminated pushbutton switch Selector switch Illuminated selector switch	Joy stick selector (Lever switch)	Pilot light
Rated insulation voltage	600V AC/DC *1	250V AC/DC	250V AC/DC *2
Mechanical durability	*See page 04/66*	250,000 operations	–
Electrical durability	500,000 operations at 220V AC 6A 1 million operations at 220V AC 3A	100,000 operations at 220V AC 1A (Res. load)	–
Operating frequency	1200 operations/hour (On-load factor: 40%)		–
Dielectric strength	2500V AC, 1 minute *3	2000V AC, 1 minute *4	
Insulation resistance	100MΩ or more (500V DC megger)	100MΩ or more (500V DC megger)	
Rated impulse dielectric strength	6kV	–	6kV
Conditional short-circuit current	1000A	1000A	–
Short-circuit protective device	Fuse 15A	Fuse 1A	–
Pollution degree	3		
Vibration	Resonance: 10 to 55Hz, double amplitude 0.1mm *5 Constant: 16.7Hz, double amplitude 3mm		
Shock	Malfunction durability: 100m/s² *6 Mechanical durability: 500m/s²		Mechanical durability: 500m/s²
Ambient temperature (No condensation or no icing)	-20 to +70°C	-5 to +70°C	-20 to +50°C
Storage temperature	-40 to +80°C		
Humidity	45 to 85% RH (within -5 to +40°C)		
Degree of protection	IP65 *7		

Notes: *1 Illuminated type without transformer: 250V AC/DC
*2 Pilot light with transformer: 600V AC
*3 Illuminated type without transformer: 2000V AC, 1 minute
*4 Pilot light with transformer: 2500V AC, 1 minute
*5 Emergency stop type: 10 to 500Hz, double amplitude 0.7mm (acceleration 50m/s²), according to the test condition of EN60947-5-5 (1998)
*6 Emergency stop type: 150m/s²
*7 AR30Q7L and DR30D1L type: IP40

● Mechanical durability

Description		Operations
Pushbutton switch Illuminated pushbutton switch Emergency stop pusubutton switch Emergency stop illuminated pusubutton	Momentary action Alternate action With selector ring Push-lock, turn-reset Push-lock, pull-reset	5 million 1 million 100,000 100,000 30,000
Selector switch	Maintained 1, 2, 3, 4-contact Maintained 5, 6, 7, 8-contact Control type, spring return, spring/manual return	1 million 500,000 200,000
Illuminated selector switch	Maintained Without transformer 1, 2, 3-contact 4-contact With transformer 1, 2-contact 3-contact Spring return, spring/manual return	 1 million 500,000 1 million 500,000 200,000

Note: Key insertion/removal durability for selector switch key types
- Key type 10,000
- Key (Long durability) type 20,000

● Buzzers

Item	DR30B5	DR30B6	DR30B0	DR30B8
Rated insulation voltage	Without transformer: 60V AC/DC With transformer: 250V AC *1			
Sound level	90dB (0.1m) 70dB (1m)			80dB (0.1m) 60dB (1.0m)
Durability	1000h		80h	1000h
Frequency	2.4 to 3.3kHz	1.9 to 2.5kHz		2.4 to 3.3kHz
Intermittent cycle	Approx. 170-cycle/min	–	–	Approx. 170-cycle/min
Current consumption	See the table below			
Dielectric strength	Without transformer: 1000V AC 1 minute With transformer: 2000V AC 1 minute *2			
Insulation resistance	100MΩ or more (500V DC megger)			
Pollution degree	3			
Vibration	Resonance: 10 to 55Hz, double amplitude 0.1mm Constant: 16.7Hz, double amplitude 3.0mm			
Shock	Mechanical durability: 500m/s^2			
Ambient temperature	–20 to +60˚C (No condensation or no icing) (with resistor unit: –20 to +40˚C)			
Storage temperature	–30 to +70˚C			
Humidity	45 to 85%RH (within –5 to 40˚C)			
Degree of protection	IP00			IP54

Note: *1 DR30B0 (without transformer): 250V AC
*2 DR30B0 (without transformer): 2000V AC 1 minute

• Current consumption

Operational voltage	Current consumption DR30B5, DR30B8	DR30B6	DR30B0
6V AC	70mA AC	–	–
6V DC	35mA DC	25mA AC	–
24V AC	–	45mA AC	–
24V DC	–	30mA DC	–
24V AC/DC	40mA AC, 25mA DC	30mA AC, 20mA DC	–
48V AC/DC	65mA AC, 20mA DC	–	–
110V AC	30mA AC	30mA AC	30mA AC
110V DC	30mA DC	–	–
220V AC	15mA AC	15mA AC	20mA AC

■ Contact ratings

• UL/CSA standards

AC (COS ø=0.35)

Contact rated code	120V		240V		480V		600V	
	Making current	Breaking current	Making current	Breaking current	Making current	Breaking current	Making current	Breaking current
A600	60A	6.0A	30A	3.0A	15A	1.5A	12A	1.2A

DC $T_{0.95}$= 6P (Max. 300ms)

Description	Contact rated code	Making current · Breaking current		
		125V	250V	301V–600V
Illuminated pushbutton switch Pushbutton (Ring type selector switch: AR30S2R only) Emergency stop pushbutton switch Emergency stop illuminated pushbutton switch (Except the overlap contact types)	P600	1.1A	0.55A	0.2A
Overlap contact types of products shown above Pushbutton (Ring type selector switch: AR30S1R, S6R only) Selector switch (2-position only, except the overlap contact types) Illuminated selector switch (2-position only, except the overlap contact types)	Q600	0.55A	0.27A	0.1A
Pushbutton (Ring type selector switch: AR30S3R only) Selector switch (2-pos./overlap contact type, 3-, 4-, 5-pos. type) Illuminated selector switch (2-pos./overlap contact type, 3-pos. type)	R300	0.22A	0.11A	–

Note: Joy stick selector switches (Lever switches): 250V AC, 5A (Res. load) 125V DC, 0.2A 24V DC, 1A (Res. load)

• EN standard/TÜV approved

Description	Rated operational current			
	Rated thermal current	Rated operational voltage	AC15 (Ind. load)	DC13 (Ind. load)
			Rated operational current	Rated operational current
Illuminated pushbutton switch	10A	24V	6.0A	4.0A
Pushbutton (Except the selector ring type)		120V	6.0A	–
Emergency stop pushbutton switch		125V	–	1.3A
Emergency stop illuminated pushbutton switch		240V	6.0A	–
Selector switch (2-position)		250V	–	0.45A
Illuminated selector switch (2-position)		480V	2.5A	–
		600V	2.0A	–
Selector switch (3, 4, 5-position)	10A	24V	6.0A	2.0A
Illuminated selector switch (3-position)		120V	6.0A	–
Pushbutton with selector ring		125V	–	0.65A
		240V	6.0A	–
		250V	–	0.23A
		480V	2.5A	–
		600V	2.0A	–
Joy stick selector switch (Lever switch)	5A	24V	–	0.7A
		120V	0.3A	–
		125V	–	0.15A
		240V	0.3A	–

Lamp rated voltage UL/CSA standards, TÜV approved

	LED lamp	Incandescent lamp
Full-voltage (without transformer)	Max. 24V AC/DC	Max. 30V AC/DC
With transformer	Max. 550V AC (Short-body type: Max. 220V AC)	

■ Operating characteristic (1NO+1NC)

Description	Pushbutton Illuminated pushbutton	Emergency stop pushbutton Emergency stop illuminated pushbutton		Selector *2 Illuminated selector		
		Push-lock type	Push-pull type	Maintained	Spring/manual return	Spring return
Ave. required operating force	9N (Push-lock type: 20N)	30N *1	45N	0.15N•m	0.13N•m	0.1N•m
Operating travel	Approx. 6mm (Push-lock type: Approx. 9mm, operation angle: Approx. 45°)	Approx. 9mm (Operation angle: Approx. 45°)	Approx. 9mm	2-position: Approx. 90° 3-position: Approx. 45° 4-position: Approx. 40° 5-position: Approx. 30°	3-position: Approx. 45°	2-position: Approx. 60° 3-position: Approx. 45°
Required return force	– (Push-lock type: 0.6N•m)	0.6N•m	30N (pull)	0.15N•m	0.13N•m	–

Notes: *1 AR30V2R type: 45N
*2 4-position, 5-position: 2NO+2NC

■ Lamp ratings

• Illuminated pushbuttons, illuminated selectors, pilot lights (round type)

Transformer	Lamp voltage	LED (lamp base: BA9S/13)			Incandescent (lamp base: BA9S/13)		
		Type	Rated voltage	Consumption	Type	Rated voltage	Consumption
Without transformer	5.5V AC/DC	–	–	–	AHX135	6.3V AC/DC	0.9W
	6V AC	APX510-6□	6V AC	Green, red, orange, amber, blue: 7mA AC Yellow: 50mA AC	–	–	–
	6V DC	APX510-D6□	6V DC	Green, red, orange, amber, blue: 11mA DC Yellow: 33mA DC	–	–	–
	12V AC/DC	APX510-12□	12V AC/DC	Green, red, orange, amber, blue: 14mA AC, 11mA DC Yellow: 28mA AC, 22mA DC	–	–	–
	15V AC/DC	APX510-15□	15V AC/DC	Green, red, orange, amber, blue: 13mA AC, 11mA DC Yellow: 26mA AC, 22mA DC	AHX279	18V AC/DC	0.8W
	20V AC/DC	–	–	–	AHX144	24V AC/DC	0.9W
	24V AC/DC	APX510-24□	24V AC/DC	12mA AC, 11mA DC	AHX129	30V AC/DC	0.8W
With transformer (Standard type: AR9T511)	110V AC	APX510-6□	6V AC	1.5VA	AHX135	6.3V AC/DC	2VA
	127V AC						2VA
	220V AC						2VA
	254V AC	APX510-6□	6V AC	2.5VA	AHX135	6.3V AC/DC	2.5VA
	380V AC						2.5VA
	440V AC						2.5VA
	480V AC						2.5VA
	550V AC						2.5VA
With resistor unit (AR9T519-H)	110V DC	APX510-24□	24V AC/DC	1.2W	–	–	–

Notes: • Short body pilot lights: 110V AC, 127V AC, 220V AC only
• Replace the □ mark by the lamp luminous color code, *see page 04/70*

• Pilot lights with resistor

Lamp Voltage	LED (lamp base: E12/15)			Incandescent (lamp base: E12/15)		
	Type	Rated voltage	Consumption	Type	Rated voltage	Consumption
50V DC	APX507-24□ *	24V AC/DC	0.8W	AHX130	18V AC/DC	5W
110V DC			1.7W			10W
220V DC			3.3W			20W

Notes: * White: APX509-24O
• Replace the □ mark by the lamp luminous color code, *see page 04/70*

- **Pilot lights (DR30F4M, F4N, M4M types)**

Transformer	Lamp voltage	LED (lamp base: BA9S/13)			Incandescent (lamp base: BA9S/13)		
		Type	Rated voltage	Consumption	Type	Rated voltage	Consumption
Without transformer	5.5V AC/DC	–	–	–	AHX135	6.3V AC/DC	0.9W
	6V DC	DR9Q005-6□	6V DC	Green, red, amber: 20mA DC White: 33mA DC Yellow: 48mA DC	–	–	–
	12V AC	DR9Q005-2□	12V AC	Red, amber: 18mA AC Green: 10mA AC White: 30mA AC Yellow: 50mA AC	–	–	–
	12V AC/DC	DR9Q005-B□	12V AC/DC	Red, amber: 22mA AC, 20mA DC Green: 13mA AC, 10mA DC White: 36mA AC, 30mA DC Yellow: 54mA AC, 48mA DC	–	–	–
	15V AC/DC	–	–	–	AHX279	20V AC/DC	0.8W
	20V AC/DC	–	–	–	AHX144	24V AC/DC	0.9W
	24V AC/DC	DR9Q005-E□	24V AC/DC	Green, red, amber: 11mA AC, 10mA DC White: 12mA AC, 11mA DC Yellow: 16mA AC, 12mA DC	AHX129	30V AC/DC	0.8W
With transformer unit (LED: AR9T557) (Incandescent: AR9T511)	110V AC	DR9Q005-2□	12V AC	3VA	AHX135	6.3V AC/DC	2VA
	127V AC						2VA
	220V AC						2VA
	254V AC						2.5VA
	380V AC						2.5VA
	440V AC						2.5VA
	480V AC						2.5VA
	550V AC						2.5VA
With resistor unit (AR9T519-H)	110V DC	DR9Q005-E□	24V AC/DC	1.4W	–	–	–

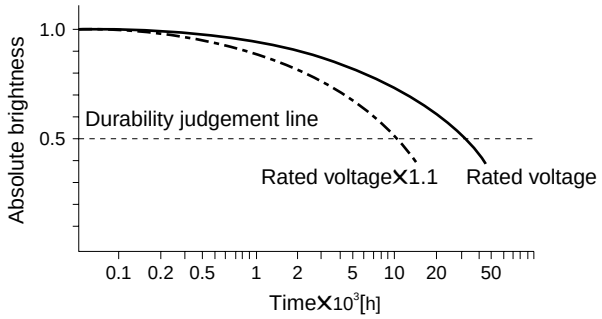
Notes: • Replace the □ mark by the lamp luminous color code, *see page 04/70*

■ Lamp durability

Lamp	Durability (reference)	Judgement criterion
LED	Approx. 30000h	When brightness is less than 50% of initial value
Incandescent	Approx. 5000h (AC)	When the bulb burns out

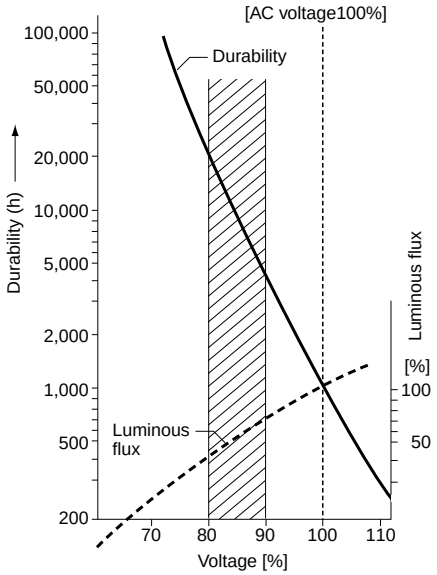
Notes: •The operating voltage for incandescent lamps is set at 80 to 90% of the lamp's rated voltage.
•The durability of LED lamp is a mean value in all colors.

Estimated durability for LED lamps



Notes: • Durability at Ta=25˚C
• Durability is affected by temperature, humidity, and voltage fluctuation.

Incandescent lamp voltage characteristics



■ Combination of lens color and LED luminous color

Button color (lens or color plate)		LED lamp (high-brightness)			LED lamp (high-brightness)	
Color	Code	Luminous color	Type	Type *1	Luminous color	Type *2
Green	G	Green	APX510-■G	APX507-24G	Green	DR9Q005-■G
Red	R	Red	APX510-■R	APX507-24R	Red	DR9Q005-■R
White	W	Orange	APX510-■O	APX509-24O	White	DR9Q005-■W
Yellow	Y	Yellow	APX510-■Y	APX507-24Y	Yellow	DR9Q005-■Y
Orange	A	Amber	APX510-■A	APX507-24A	Amber	DR9Q005-■A
Blue	S	Blue	APX510-■S	APX507-24S	–	–

Notes: *1 For pilot light with resistor
*2 For DR30 F4M, F4N, M4M type
• Replace the ■ mark by the lamp voltage code, *see page 04/68, 04/69*

■ Illuminated pushbutton switches

Operator	Trans-former	Contact	LED lamp Momentary action Type	LED lamp Alternate action Type	Incandescent lamp Momentary action Type	Incandescent lamp Alternate action Type
Extended round head AF95-4	Without	1NO	**AR30E0L-10■3□**	**AR30E5L-10■3□**	**AR30E0L-10■4□**	**AR30E5L-10■4□**
		1NC	**AR30E0L-01■3□**	**AR30E5L-01■3□**	**AR30E0L-01■4□**	**AR30E5L-01■4□**
		1NO+1NC	**AR30E0L-11■3□**	**AR30E5L-11■3□**	**AR30E0L-11■4□**	**AR30E5L-11■4□**
		2NO+2NC	**AR30E0L-22■3□**	**—**	**AR30E0L-22■4□**	**—**
	With	1NO	**AR30E0L-10■3□**	**AR30E5L-10■3□**	**AR30E0L-10■4□**	**AR30E5L-10■4□**
		1NC	**AR30E0L-01■3□**	**AR30E5L-01■3□**	**AR30E0L-01■4□**	**AR30E5L-01■4□**
		1NO+1NC	**AR30E0L-11■3□**	**AR30E5L-11■3□**	**AR30E0L-11■4□**	**AR30E5L-11■4□**
Extended with transparent full guard (24mm dia.) KKD05-164	Without	1NO	**AR30G4L-10■3□**	**AR30G9L-10■3□**	**AR30G4L-10■4□**	**AR30G9L-10■4□**
		1NC	**AR30G4L-01■3□**	**AR30G9L-01■3□**	**AR30G4L-01■4□**	**AR30G9L-01■4□**
		1NO+1NC	**AR30G4L-11■3□**	**AR30G9L-11■3□**	**AR30G4L-11■4□**	**AR30G9L-11■4□**
		2NO+2NC	**AR30G4L-22■3□**	**—**	**AR30G4L-22■4□**	**—**
	With	1NO	**AR30G4L-10■3□**	**AR30G9L-10■3□**	**AR30G4L-10■4□**	**AR30G9L-10■4□**
		1NC	**AR30G4L-01■3□**	**AR30G9L-01■3□**	**AR30G4L-01■4□**	**AR30G9L-01■4□**
		1NO+1NC	**AR30G4L-11■3□**	**AR30G9L-11■3□**	**AR30G4L-11■4□**	**AR30G9L-11■4□**
Extended with full guard (24mm dia. with openings) AF99-328	Without	1NO	**AR30G2L-10■3□**	**AR30G7L-10■3□**	**AR30G2L-10■4□**	**AR30G7L-10■4□**
		1NC	**AR30G2L-01■3□**	**AR30G7L-01■3□**	**AR30G2L-01■4□**	**AR30G7L-01■4□**
		1NO+1NC	**AR30G2L-11■3□**	**AR30G7L-11■3□**	**AR30G2L-11■4□**	**AR30G7L-11■4□**
		2NO+2NC	**AR30G2L-22■3□**	**—**	**AR30G2L-22■4□**	**—**
	With	1NO	**AR30G2L-10■3□**	**AR30G7L-10■3□**	**AR30G2L-10■4□**	**AR30G7L-10■4□**
		1NC	**AR30G2L-01■3□**	**AR30G7L-01■3□**	**AR30G2L-01■4□**	**AR30G7L-01■4□**
		1NO+1NC	**AR30G2L-11■3□**	**AR30G7L-11■3□**	**AR30G2L-11■4□**	**AR30G7L-11■4□**
Extended with full guard (24mm dia.) AF95-6	Without	1NO	**AR30G3L-10■3□**	**AR30G8L-10■3□**	**AR30G3L-10■4□**	**AR30G8L-10■4□**
		1NC	**AR30G3L-01■3□**	**AR30G8L-01■3□**	**AR30G3L-01■4□**	**AR30G8L-01■4□**
		1NO+1NC	**AR30G3L-11■3□**	**AR30G8L-11■3□**	**AR30G3L-11■4□**	**AR30G8L-11■4□**
		2NO+2NC	**AR30G3L-22■3□**	**—**	**AR30G3L-22■4□**	**—**
	With	1NO	**AR30G3L-10■3□**	**AR30G8L-10■3□**	**AR30G3L-10■4□**	**AR30G8L-10■4□**
		1NC	**AR30G3L-01■3□**	**AR30G8L-01■3□**	**AR30G3L-01■4□**	**AR30G8L-01■4□**
		1NO+1NC	**AR30G3L-11■3□**	**AR30G8L-11■3□**	**AR30G3L-11■4□**	**AR30G8L-11■4□**
Push-lock, turn-reset (40mm dia. with white arrow) KKD06-348	Without	1NO	**—**	**AR30V5L-10■3□**	**—**	**AR30V5L-10■4□**
		1NC	**—**	**AR30V5L-01■3□**	**—**	**AR30V5L-01■4□**
		1NO+1NC	**—**	**AR30V5L-11■3□**	**—**	**AR30V5L-11■4□**
		3NC	**—**	**AR30V5L-03■3□**	**—**	**AR30V5L-03■4□**
	With	1NO	**—**	**AR30V5L-10■3□**	**—**	**AR30V5L-10■4□**
		1NC	**—**	**AR30V5L-01■3□**	**—**	**AR30V5L-01■4□**
		1NO+1NC	**—**	**AR30V5L-11■3□**	**—**	**AR30V5L-11■4□**
Push-pull (35mm dia.) AF96-185	Without	1NO+1NC	**AR30Q7L-11■3□**	**—**	**AR30Q7L-11■4□**	**—**
	With	1NO+1NC	**AR30Q7L-11■3□**	**—**	**AR30Q7L-11■4□**	**—**

Note: ■ □ *See page 04/72*

• Lens color

Replace the □ mark by the lens color code

Color	Green	Red	White	Blue	Yellow	Orange
Code	G	R	W	S	Y	A

Note: AR30V5L type: Red, yellow only

• Contact arrangements

Contact arrangements other than above are available

Contact arrangement	1NO	1NC	1NO+1NC	2NO	2NC	3NO
Code	10	01	11	20	02	30

Contact arrangement	3NC	2NO+2NC	4NO	4NC	5NO	5NC
Code	03	22	40	04	50	05

Note: AR30Q7L type: 1NO + 1NC only

Available numbers of contact blocks

Operation	Without transformer	With transformer
Momentary action	6-contact block	4-contact block
Alternate action Push-lock, turn-reset	3-contact block	2-contact block

• Voltage

Replace the ■ mark by the lamp voltage code

Transformer		Code LED	Incandescent
Without transformer	6V DC	6	—
	6V AC	A	—
	5.5V AC/DC	—	5
	12V AC/DC	B	—
	15V AC/DC	C	C
	20V AC/DC	—	D
	24V AC/DC	E	E
With transformer	100-110V AC	H	H
	115-127V AC	L	L
	200-220V AC	M	M
	230-254V AC	Q	Q
	350-380V AC	S	S
	400-440V AC	T	T
	480V AC	V	V
	500-550V AC	W	W

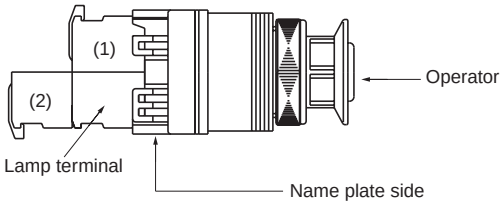
• Contact operation (AR30Q7L)

Contact block		Button position		
No.	Type	Pull	Free	Push
(1)	NC	●		
(2)	NC	▬	▬	

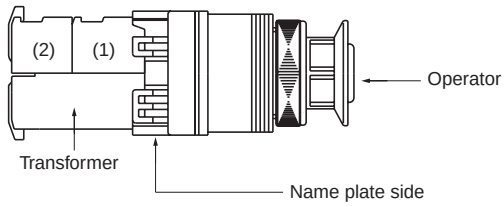
● Contact closed

• Position of contact block

AR30Q7L (without transformer)



AR30Q7L (with transformer)



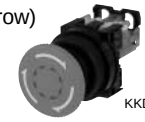
■ Pushbutton switches

Operator	Contact	Momentary action Type	Alternate action Type
Flush round head AF95-11	1NO	**AR30F0R-10□**	**AR30F5R-10□**
	1NC	**AR30F0R-01□**	**AR30F5R-01□**
	1NO+1NC	**AR30F0R-11□**	**AR30F5R-11□**
	2NO	**AR30F0R-20□**	**AR30F5R-20□**
	2NC	**AR30F0R-02□**	**AR30F5R-02□**
	2NO+2NC	**AR30F0R-22□**	**AR30F5R-22□**
Extended round head AF95-10	1NO	**AR30E0R-10□**	**AR30E5R-10□**
	1NC	**AR30E0R-01□**	**AR30E5R-01□**
	1NO+1NC	**AR30E0R-11□**	**AR30E5R-11□**
	2NO	**AR30E0R-20□**	**AR30E5R-20□**
	2NC	**AR30E0R-02□**	**AR30E5R-02□**
	2NO+2NC	**AR30E0R-22□**	**AR30E5R-22□**
Flush round head symbol mark type AF98-195	1NO	**AR30FAR-10C■**	**AR30FBR-10C■**
	1NC	**AR30FAR-01C■**	**AR30FBR-01C■**
	1NO+1NC	**AR30FAR-11C■**	**AR30FBR-11C■**
	2NO	**AR30FAR-20C■**	**AR30FBR-20C■**
	2NC	**AR30FAR-02C■**	**AR30FBR-02C■**
	2NO+2NC	**AR30FAR-22C■**	**AR30FBR-22C■**
Extended round head symbol mark type AF98-194	1NO	**AR30EAR-10C■**	**AR30EBR-10C■**
	1NC	**AR30EAR-01C■**	**AR30EBR-01C■**
	1NO+1NC	**AR30EAR-11C■**	**AR30EBR-11C■**
	2NO	**AR30EAR-20C■**	**AR30EBR-20C■**
	2NC	**AR30EAR-02C■**	**AR30EBR-02C■**
	2NO+2NC	**AR30EAR-22C■**	**AR30EBR-22C■**
Mushroom head (40mm dia.) AF95-12	1NO	**AR30M0R-10□**	**AR30M5R-10□**
	1NC	**AR30M0R-01□**	**AR30M5R-01□**
	1NO+1NC	**AR30M0R-11□**	**AR30M5R-11□**
	2NO	**AR30M0R-20□**	**AR30M5R-20□**
	2NC	**AR30M0R-02□**	**AR30M5R-02□**
	2NO+2NC	**AR30M0R-22□**	**AR30M5R-22□**
Mushroom head (29mm dia.) AF95-8	1NO	**AR30M4R-10□**	—
	1NC	**AR30M4R-01□**	—
	1NO+1NC	**AR30M4R-11□**	—
	2NO	**AR30M4R-20□**	—
	2NC	**AR30M4R-02□**	—
	2NO+2NC	**AR30M4R-22□**	—
Extended with full guard (24mm dia.) AF95-16	1NO	**AR30G1R-10□**	**AR30G6R-10□**
	1NC	**AR30G1R-01□**	**AR30G6R-01□**
	1NO+1NC	**AR30G1R-11□**	**AR30G6R-11□**
	2NO	**AR30G1R-20□**	**AR30G6R-20□**
	2NC	**AR30G1R-02□**	**AR30G6R-02□**
	2NO+2NC	**AR30G1R-22□**	**AR30G8R-22□**

Operator	Contact	Momentary action Type	Alternate action Type
Extended with half guard AF95-9	1NO	**AR30G0R-10□**	**AR30G5R-10□**
	1NC	**AR30G0R-01□**	**AR30G5R-01□**
	1NO+1NC	**AR30G0R-11□**	**AR30G5R-11□**
	2NO	**AR30G0R-20□**	**AR30G5R-20□**
	2NC	**AR30G0R-02□**	**AR30G5R-02□**
	2NO+2NC	**AR30G0R-22□**	**AR30G5R-22□**
Pin lock AF96-240	1NO	**AR30GPR-10□**	—
	1NC	**AR30GPR-01□**	—
	1NO+1NC	**AR30GPR-11□**	—
	2NO	**AR30GPR-20□**	—
	2NC	**AR30GPR-02□**	—
	2NO+2NC	**AR30GPR-22□**	—
Mushroom head with full guard (40mm dia.) AF95-17	1NO	**AR30M3R-10□**	**AR30M8R-10□**
	1NC	**AR30M3R-01□**	**AR30M8R-01□**
	1NO+1NC	**AR30M3R-11□**	**AR30M8R-11□**
	2NO	**AR30M3R-20□**	**AR30M8R-20□**
	2NC	**AR30M3R-02□**	**AR30M8R-02□**
	2NO+2NC	**AR30M3R-22□**	**AR30M8R-22□**
Mushroom head with full guard (35mm dia. metal nut) AF96-239	1NO	**AR30GSR-10□**	—
	1NC	**AR30GSR-01□**	—
	1NO+1NC	**AR30GSR-11□**	—
	2NO	**AR30GSR-20□**	—
	2NC	**AR30GSR-02□**	—
	2NO+2NC	**AR30GSR-22□**	—
Giant head AF95-579	1NO	**AR30B0R-10□**	—
	1NC	**AR30B0R-01□**	—
	1NO+1NC	**AR30B0R-11□**	—
	2NO	**AR30B0R-20□**	—
	2NC	**AR30B0R-02□**	—
	2NO+2NC	**AR30B0R-22□**	—
Giant head with guard AF95-582	1NO	**AR30B1R-10□**	—
	1NC	**AR30B1R-01□**	—
	1NO+1NC	**AR30B1R-11□**	—
	2NO	**AR30B1R-20□**	—
	2NC	**AR30B1R-02□**	—
	2NO+2NC	**AR30B1R-22□**	—
Giant head with full guard AF95-580	1NO	**AR30B2R-10□**	—
	1NC	**AR30B2R-01□**	—
	1NO+1NC	**AR30B2R-11□**	—
	2NO	**AR30B2R-20□**	—
	2NC	**AR30B2R-02□**	—
	2NO+2NC	**AR30B2R-22□**	—

Note: ■ □ *See page 04/74*

Operator	Contact	Momentary action Type	Alternate action Type
Giant head with full guard AF95-581	1NO	**AR30B3R-10**□	—
	1NC	**AR30B3R-01**□	—
	1NO+1NC	**AR30B3R-11**□	—
	2NO	**AR30B3R-20**□	—
	2NC	**AR30B3R-02**□	—
	2NO+2NC	**AR30B3R-22**□	—
Push, turn-lock AF95-583	1NO	**AR30N0R-10**□	—
	1NC	**AR30N0R-01**□	—
	1NO+1NC	**AR30N0R-11**□	—
	2NO	**AR30N0R-20**□	—
	2NC	**AR30N0R-02**□	—
	2NO+2NC	**AR30N0R-22**□	—

Operator	Contact	Momentary action Type	Alternate action Type
Push-lock, turn-reset (40mm dia. with white arrow)  KKD08-051	1NO	—	**AR30V5R-10**□
	1NC	—	**AR30V5R-01**□
	1NO+1NC	—	**AR30V5R-11**□
	2NO	—	**AR30V5R-20**□
	2NC	—	**AR30V5R-02**□
	2NO+2NC	—	**AR30V5R-22**□
Pushbutton with emergency operating cap AF96-187	1NO	**AR30FVR-10** □	—
	1NC	**AR30FVR-01** □	—
	1NO+1NC	**AR30FVR-11** □	—
	2NO	**AR30FVR-20** □	—
	2NC	**AR30FVR-02** □	—
	2NO+2NC	**AR30FVR-22** □	—

• Button color

Replace the □ mark by the button color code

Color	Green	Red	White	Blue	Yellow	Orange	Black
Code	G	R	W	S	Y	A	B

Note: AR30V5R type: Red, yellow, black only

• Available numbers of contact blocks

Momentary action	Alternate action Push-lock, turn-reset
8-contact block	4-contact block

• Contact arrangements

Contact arrangements other than above are available

Contact arrangement	1NO	1NC	1NO+1NC	2NO	2NC	3NO	3NC
Code	10	01	11	20	02	30	03

Contact arrangement	2NO+2NC	4NO	4NC	5NO	5NC	3NO+3NC	4NO+4NC
Code	22	40	04	50	05	33	44

• Symbol mark (For AR30FAR, FBR, EAR, EBR)

Replace the ■ mark by the symbol mark code

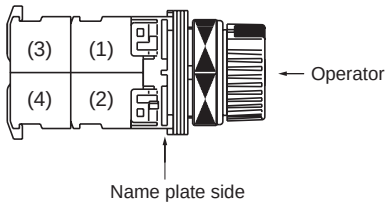
Symbol mark	◯		I		Ⓣ		◯	I	Ⓣ
Color of button	White	Black	White	Black	White	Black	Clear		
Color of mark	Red		Green		Green		Black		
Code	01	02	03	04	11	12	02B	04B	12B

Operator	Contact (The following contact is only available.)	Button color	Type	Contact operation					
				Contact block		Left		Right	
				Mounting position	Type	Free	Depressed	Free	Depressed
Pushbutton with selector ring (2-position) AF97-506	2NO+2NC	Green Red Black White Yellow Orange Blue	**AR30S1R-22G** **AR30S1R-22R** **AR30S1R-22B** **AR30S1R-22W** **AR30S1R-22Y** **AR30S1R-22A** **AR30S1R-22S**	(1)	NC	—	—	●	—
				(2)	NC	—	—	●	—
				(3)	NO	—	●	—	●
				(4)	NO	—	●	—	●
	2NO	Green Red Black White Yellow Orange Blue	**AR30S2R-20G** **AR30S2R-20R** **AR30S2R-20B** **AR30S2R-20W** **AR30S2R-20Y** **AR30S2R-20A** **AR30S2R-20S**	(1)	NO	—	●	—	—
				(2)	NO	—	—	—	●
	2NO+2NC	Green Red Black White Yellow Orange Blue	**AR30S2R-22G** **AR30S2R-22R** **AR30S2R-22B** **AR30S2R-22W** **AR30S2R-22Y** **AR30S2R-22A** **AR30S2R-22S**	(1)	NC	●	—	▬	
				(2)	NC	▬		●	—
				(3)	NO	—	●	—	—
				(4)	NO	—	—	—	●
	2NO+2NC	Green Red Black White Yellow Orange Blue	**AR30S3R-22G** **AR30S3R-22R** **AR30S3R-22B** **AR30S3R-22W** **AR30S3R-22Y** **AR30S3R-22A** **AR30S3R-22S**	(1)	NC	—	—	▬	
				(2)	NC	▬		—	—
				(3)	NO	—	●	—	—
				(4)	NO	—	—	—	●
	2NO+2NC	Green Red Black White Yellow Orange Blue	**AR30S6R-22G** **AR30S6R-22R** **AR30S6R-22B** **AR30S6R-22W** **AR30S6R-22Y** **AR30S6R-22A** **AR30S6R-22S**	(1)	NC	●	—	—	Locked
				(2)	NC	●	—	—	
				(3)	NO	—	●	●	
				(4)	NO	—	●	●	

Note: (1) to (4): Contact block mounting position

● Contact closed
— Contact open

- **Position of contact block**



■ Emergency stop pushbutton switches

⊖ (Direct opening action), conform to EN418

Operator	Contact	Type
Push-lock, turn-reset (Soft-touch 40mm dia. with white arrow) KKD08-051	1NC 1NO+1NC 2NC 3NC 2NO+2NC 4NC	**AR30V0R-01R** **AR30V0R-11R** **AR30V0R-02R** **AR30V0R-03R** **AR30V0R-22R** **AR30V0R-04R**
Push-lock, turn-reset (40mm dia.) KKD06-353	1NC 1NO+1NC 2NC 3NC 2NO+2NC 4NC	**AR30V2R-01R** **AR30V2R-11R** **AR30V2R-02R** **AR30V2R-03R** **AR30V2R-22R** **AR30V2R-04R**
Push-lock, turn-reset (Soft-touch 65mm dia. with white arrow) KKD06-352	1NC 1NO+1NC 2NC 3NC 2NO+2NC 4NC	**AR30V1R-01R** **AR30V1R-11R** **AR30V1R-02R** **AR30V1R-03R** **AR30V1R-22R** **AR30V1R-04R**
Push-lock, pull-reset (35mm dia.) KKD06-347	1NC 1NO+1NC 2NC	**AR30Q2R-01R** **AR30Q2R-11R** **AR30Q2R-02R**

Notes: • Button color: Red only
• Contact arrangements indicated in the table can be supplied.

■ Emergency stop illuminated pushbutton switches

⊖ (Direct opening action), conform to EN418

Operator	Transformer	Contact	LED lamp Type	Incandescent lamp Type
Push-lock, turn-reset (Soft-touch 40mm dia. with white arrow) KKD06-348	Without	1NC	**AR30V0L-01■3R**	**AR30V0L-01■4R**
		1NO+1NC	**AR30V0L-11■3R**	**AR30V0L-11■4R**
		2NC	**AR30V0L-02■3R**	**AR30V0L-02■4R**
		3NC	**AR30V0L-03■3R**	**AR30V0L-03■4R**
	With	1NC	**AR30V0L-01■3R**	**AR30V0L-01■4R**
		1NO+1NC	**AR30V0L-11■3R**	**AR30V0L-11■4R**
		2NC	**AR30V0L-02■3R**	**AR30V0L-02■4R**
Push-lock, turn-reset (40mm dia.) KKD06-350	Without	1NC	**AR30V2L-01■3R**	**AR30V2L-01■4R**
		1NO+1NC	**AR30V2L-11■3R**	**AR30V2L-11■4R**
		2NC	**AR30V2L-02■3R**	**AR30V2L-02■4R**
		3NC	**AR30V2L-03■3R**	**AR30V2L-03■4R**
	With	1NC	**AR30V2L-01■3R**	**AR30V2L-01■4R**
		1NO+1NC	**AR30V2L-11■3R**	**AR30V2L-11■4R**
		2NC	**AR30V2L-02■3R**	**AR30V2L-02■4R**

Notes: • Button color: Red only
• Contact arrangements indicated in the table can be supplied.

• Voltage

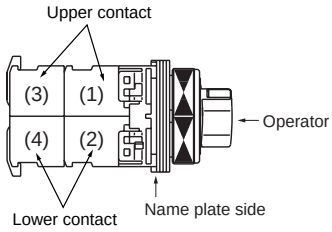
Replace the ■ mark by the lamp voltage code

Transformer		Code LED	Incandescent
Without	6V DC	6	—
	6V AC	A	—
	5V AC/DC	—	5
	12V AC/DC	B	—
	15V AC/DC	C	C
	20V AC/DC	—	D
	24V AC/DC	E	E

Transformer		Code LED	Incandescent
With	100-110V AC	H	H
	115-127V AC	L	L
	200-220V AC	M	M
	230-254V AC	Q	Q
	350-380V AC	S	S
	400-440V AC	T	T
	480V AC	V	V
	500-550V AC	W	W

■ Selector switches
2-position

Operator	Operation	Knob color or key removable position	Contact	Type Switch with round bezel	Contact operation (Example)	
					Contact arrangement	Operator position (Left ↖ / Right ↗)
Knob AF95-13	Maintained each 90°	Color code: B: Black (Standard) Color other than above are available (G: Green R: Red)	1NO 1NC 1NO+1NC 2NO 2NC 2NO+2NC	**AR30PR-210B** **AR30PR-201B** **AR30PR-211B** **AR30PR-220B** **AR30PR-202B** **AR30PR-222B**	1NO (1)	Upper contact ③ ④
	Spring return ↖ 60°		1NO 1NC 1NO+1NC 2NO 2NC 2NO+2NC	**AR30PR-010B** **AR30PR-001B** **AR30PR-011B** **AR30PR-020B** **AR30PR-002B** **AR30PR-022B**	1NC (1)	Upper contact ① ②
Lever AF95-14	Maintained each 90°		1NO 1NC 1NO+1NC 2NO 2NC 2NO+2NC	**AR30WR-210B** **AR30WR-201B** **AR30WR-211B** **AR30WR-220B** **AR30WR-202B** **AR30WR-222B**	1NO+1NC (1) (2)	Upper contact ③ ④ Lower contact ① ②
	Spring return ↖ 60°		1NO 1NC 1NO+1NC 2NO 2NC 2NO+2NC	**AR30WR-010B** **AR30WR-001B** **AR30WR-011B** **AR30WR-020B** **AR30WR-002B** **AR30WR-022B**	2NO+2NC (1) (3) (2) (4)	Upper contact ③ ④ ③ ④ Lower contact ① ② ① ②
Key KKD09-023	Maintained each 90°	■: Key removable position ( ): Key type *See page 04/80*	1NO 1NC 1NO+1NC 2NO 2NC 2NO+2NC	**AR30J□R-2■10( )** **AR30J□R-2■01( )** **AR30J□R-2■11( )** **AR30J□R-2■20( )** **AR30J□R-2■02( )** **AR30J□R-2■22( )**		
	Spring return ↖ 60°		1NO 1NC 1NO+1NC 2NO 2NC 2NO+2NC	**AR30J□R-0A10( )** **AR30J□R-0A01( )** **AR30J□R-0A11( )** **AR30J□R-0A20( )** **AR30J□R-0A02( )** **AR30J□R-0A22( )**		



Notes: • (1) to (4): Contact block mounting position
• ① – ②, ③ – ④: Contact block terminal No.
• Contact arrangements: *See page 04/80*

● Contact closed

• Operator
Replace the □ mark by the cylinder key type code
Standard type: Blank
Long durability type: A

3-position

Operator	Operation	Knob color	Contact	Type Switch with round bezel	Contact operation (Example)		
					Contact arrange-ment	Operation position L C R	Operation position L C R
Knob AF95-13	Maintained each 45°	Color code: B: Black (Standard) Color other than above are available (G: Green R: Red)	1NO+1NC 2NO 2NC 2NO+2NC	**AR30PR-311B** **AR30PR-320B** **AR30PR-302B** **AR30PR-322B**	1NO+1NC (1) (2)	Upper contact ③ ④	Lower contact ① ②
	Spring/manual return each 45°		1NO+1NC 2NO 2NC 2NO+2NC	**AR30PR-611B** **AR30PR-620B** **AR30PR-602B** **AR30PR-622B**			
	Spring/manual return each 45°		1NO+1NC 2NO 2NC 2NO+2NC	**AR30PR-711B** **AR30PR-720B** **AR30PR-702B** **AR30PR-722B**	1NO+1NC (1) (2)	Upper contact ③ ④	Lower contact ① ②
	Spring return each 45°		2NO+2NC	**AR30PR-122B**	2NO+2NC (1) (2) (3) (4)	Upper contact ① ② ③ ④	Lower contact ① ② ③ ④
Lever AF95-14	Maintained each 45°		1NO+1NC 2NO 2NC 2NO+2NC	**AR30WR-311B** **AR30WR-320B** **AR30WR-302B** **AR30WR-322B**	1NO+1NC (1) (2)	Upper contact ③ ④	Lower contact ① ②
	Spring/manual return each 45°		1NO+1NC 2NO 2NC 2NO+2NC	**AR30WR-611B** **AR30WR-620B** **AR30WR-602B** **AR30WR-622B**			
	Spring/manual return each 45°		1NO+1NC 2NO 2NC 2NO+2NC	**AR30WR-711B** **AR30WR-720B** **AR30WR-702B** **AR30WR-722B**	1NO+1NC (1) (2)	Upper contact ③ ④	Lower contact ① ②
	Spring return each 45°		2NO+2NC	**AR30WR-122B**	2NO+2NC (1) (2) (3) (4)	Upper contact ① ② ③ ④	Lower contact ① ② ③ ④

Note: • Contact arrangements: *See page 04/80*

● Contact closed

Operator	Operation	Key removable position	Contact	Type Switch with round bezel	Contact operation (Example)		
					Contact arrange-ment	Operator position L C R	Operator position L C R
Key KKD09-023	Maintained each 45°	■: Key removable position ( ): Key type	1NO+1NC 2NO 2NC 2NO+2NC	**AR30J□R-3■11( )** **AR30J□R-3■20( )** **AR30J□R-3■02( )** **AR30J□R-3■22( )**	1NO+1NC (1) (2)	Upper contact ③ ④	Lower contact ① ②
	Spring/manual return each 45°		1NO+1NC 2NO 2NC 2NO+2NC	**AR30J□R-6■11( )** **AR30J□R-6■20( )** **AR30J□R-6■02( )** **AR30J□R-6■22( )**			
	Spring/manual return each 45°		1NO+1NC 2NO 2NC 2NO+2NC	**AR30J□R-7■11( )** **AR30J□R-7■20( )** **AR30J□R-7■02( )** **AR30J□R-7■22( )**	1NO+1NC (1) (2)	Upper contact ③ ④	Lower contact ① ②
	Spring return each 45°		2NO+2NC	**AR30J□R-1E22( )**	2NO+2NC (1) (2)	Upper contact ① ②	Lower contact ① ②
					(3) (4)	③ ④	③ ④

Notes: • Operator position L: Left, C: Center, R: Right
• (1) to (4): Contact block mounting position
• ① – ②, ③ – ④: Contact block terminal No.

● Contact closed

• Contact arrangements

Contact arrangements other than above are available

Contact arrangement	1NO	1NC	1NO+1NC	2NO	2NC	3NO	3NC
Code	10	01	11	20	02	30	03

Contact arrangement	2NO+2NC	4NO	4NC	5NO	5NC	3NO+3NC	4NO+4NC
Code	22	40	04	50	05	33	44

• Available numbers of contact blocks

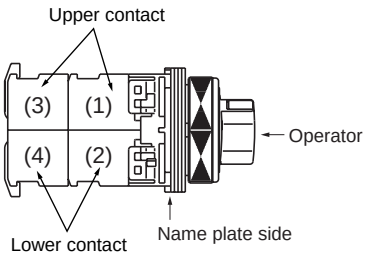
Mainted	Spring return Spring/manual return
8-contact block	4-contact block

• Key removable positions

Code	A	B	C	D	E	F	G
Removable position	45° 45°	45° 45°	45° 45°	45° 45°	45° 45°	45° 45°	45° 45°
AR30J□R-2	●	●	–	●	–	–	–
AR30J□R-0	●	–	–	–	–	–	–
AR30J□R-3	●	●	●	●	●	●	●
AR30J□R-6	–	–	–	●	●	●	–
AR30J□R-7	●	–	–	–	●	–	●
AR30J□R-1	–	–	–	–	●	–	–

●: Available –: Not available

• Position of contact block



• Key code No.

Replace the ( ) mark with one of the following key code.
A, B, C, D, E and F
Standard key code is A.

• Operator

Replace the □ mark by the cylinder key type code
Standard type: Blank
Long durability type: A

■ Selector switches (control type)
3-position

Operator	Operation	Knob color or key removable position	Contact arrangement	Type Switch with round bezel
Knob AF95-475	Maintained each 45°	Color code: B: Black (Standard) Color other than above are available (G: Green R: Red)	Replace the ■ mark by the contact arrangement code (shown on next page).	**AR30PCR-3■B**
	Spring/manual return each 45°			**AR30PCR-6■B**
	Spring/manual return each 45°			**AR30PCR-7■B**
	Spring return each 45°			**AR30PCR-1■B**
Lever KK02-140A	Maintained each 45°		Replace the ■ mark by the contact arrangement code (shown on next page).	**AR30WCR-3■B**
	Spring/manual return each 45°			**AR30WCR-6■B**
	Spring/manual return each 45°			**AR30WCR-7■B**
	Spring return each 45°			**AR30WCR-1■B**
Key KKD09-022	Maintained each 45°	Replace the □ mark by the key removable position code: A, B, C, D, E F or G	Replace the ■ mark by the contact arrangement code (shown on next page).	**AR30JCR-3□■( )**
	Spring/manual return each 45°			**AR30JCR-6□■( )**
	Spring/manual return each 45°			**AR30JCR-7□■( )**
	Spring return each 45°			**AR30JCR-1E■( )**

- **Key removable positions**

Code	A	B	C	D	E	F	G
Removable position							
AR30JCR-3	●	●	●	●	●	●	●
AR30JCR-6	–	–	–	●	●	●	–
AR30JCR-7	●	–	–	–	●	–	●
AR30JCR-1	–	–	–	–	●	–	–

●: Available –: Not available

- **Key code No.**
  Replace the ( ) mark with one of the following key code.
  A, B, C, D, E and F
  Standard key code is A.

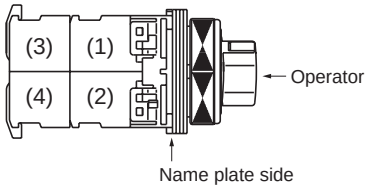
• Contact arrangement code (Typical example)

Contact arrangement	Contact arrangement code	Contact operation: Contact block: Mounting position	Contact block: Type	Operator position: Left	Center	Right
2NC	01F	(1)	NC	▬	▬	
		(2)	NC		▬	▬
		–	–	–	–	–
		–	–	–	–	–
2NO+2NC	014	(1)	NC	▬	▬	
		(2)	NC		▬	▬
		(3)	NO			●
		(4)	NO	●		
4NC	01J	(1)	NC	▬	▬	
		(2)	NC		▬	▬
		(3)	NC	▬	▬	
		(4)	NC		▬	▬
2NO+2NC	024	(1)	NC	▬	▬	
		(2)	NC		●	
		(3)	NO			●
		(4)	NO	●		●
2NO+2NC	03C* (Maintained only)	(1)	NC	▬	▬	
		(2)	NC			●
		(3)	NO			●
		(4)	NO	●		
2NO+2NC	044*	(1)	NC	▬	▬	
		(2)	NC		●	
		(3)	NO			●
		(4)	NO	●		
2NO+2NC	054	(1)	NC	▬	▬	
		(2)	NC		●	
		(3)	NO			●
		(4)	NO			●

Contact arrangement	Contact arrangement code	Contact operation: Contact block: Mounting position	Contact block: Type	Operator position: Left	Center	Right
2NO+2NC	064	(1)	NC		▬	▬
		(2)	NC		●	
		(3)	NO	●		
		(4)	NO	●		●
1NO+1NC	07F	(1)	NC		▬	▬
		(2)	NO			●
		–	–	–	–	–
		–	–	–	–	–
2NO+2NC	07C* (Maintained only)	(1)	NC		▬	▬
		(2)	NC			●
		(3)	NO	●		
		(4)	NO	●		
2NO+2NC	084	(1)	NC		▬	▬
		(2)	NC		●	
		(3)	NO	●		
		(4)	NO	●		
2NO+2NC	094*	(1)	NC		▬	▬
		(2)	NC		●	
		(3)	NO	●		
		(4)	NO			●
2NO+2NC	104	(1)	NC		●	
		(2)	NC		●	
		(3)	NO	●		●
		(4)	NO	●		●
2NO+2NC	11C* (Maintained only)	(1)	NC		●	
		(2)	NC			●
		(3)	NO	●		●
		(4)	NO	●		

Notes: ●: Contact closed Blank: Contact open
* There may be some overlap in the contact when switching between notches.

• Position of contact block



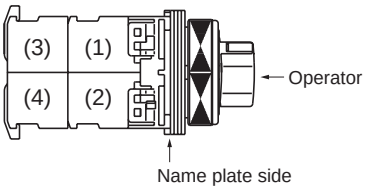
- **Contact arrangement code (Typical example)**

Contact arrangement	Contact arrangement code	Contact operation				
		Contact block		Operator position		
		Mounting position	Type	Left	Center	Right
2NO+2NC	124*	(1)	NC		●	
		(2)	NC		●	
		(3)	NO	●		●
		(4)	NO	●		
2NO+2NC	134*	(1)	NC		●	
		(2)	NC		●	
		(3)	NO	●		●
		(4)	NO			●
3NO+1NC	14D* (Maintained only)	(1)	NO	●		
		(2)	NC		●	
		(3)	NO	●		
		(4)	NO			●
3NO+1NC	15A*	(1)	NO			●
		(2)	NC		●	
		(3)	NO			●
		(4)	NO	●		
2NO+2NC	164	(1)	NC		●	
		(2)	NC		●	
		(3)	NO	●		
		(4)	NO	●		
2NO+2NC	174*	(1)	NC		●	
		(2)	NC		●	
		(3)	NO	●		
		(4)	NO			●
2NO+2NC	184	(1)	NC		●	
		(2)	NC		●	
		(3)	NO			●
		(4)	NO			●

Contact arrangement	Contact arrangement code	Contact operation				
		Contact block		Operator position		
		Mounting position	Type	Left	Center	Right
2NO+2NC	194	(1)	NC		▬	▬
		(2)	NC	▬	▬	
		(3)	NO	●		
		(4)	NO			●
4NO	20B	(1)	NO			●
		(2)	NO	●		
		(3)	NO			●
		(4)	NO	●		

Notes: ●: Contact closed Blank: Contact open
* There may be some overlap in the contact when switching between notches.

- **Position of contact block**



4, 5-position

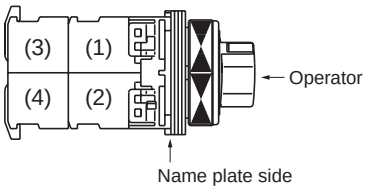
Operator	Contact (The following contact is only available.)	Operation	Knob color	Contact arrangement	Type Switch with round bezel
Knob AF95-475	2NO+2NC	4-position maintained	Color code: B: Black (Standard) Color other than above are available (G: Green R: Red)	Replace the ■ mark by the contact arrangement code (shown below)	**AR30PCR-4■B**
		5-position maintained			**AR30PCR-5■B**
Lever KK02-140A	2NO+2NC	4-position maintained			**AR30WCR-4■B**
		5-position maintained			**AR30WCR-5■B**

● Contact arrangement code

Position	Contact arrange-ment	Contact arrange-ment code	Contact operation: Contact block: Mounting position	Contact block: Type	Operator position 1	2	3	4	5
4-position	2NO+2NC	41C* (Main-tained only)	(1)	NC			●		
			(2)	NC	●				
			(3)	NO		●			
			(4)	NO				●	
5-position	2NO+2NC	51C* (Main-tained only)	(1)	NC				●	
			(2)	NC		●			
			(3)	NO	●				
			(4)	NO					●

Notes: ●: Contact closed
* There may be some overlap in the contact when switching between notches.

• Position of contact block



Operator position

4-position **5-position**

■ Lever type selector switches
2-position

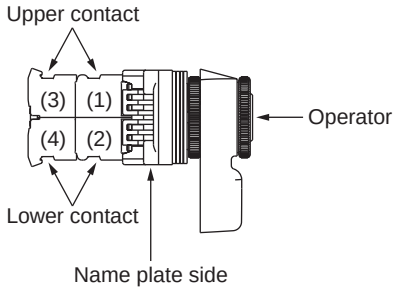
Operator	Operation	Contact	Type	Contact operation	
				Contact arrangement	Operator position Left ↖ Right ↗
Lever (metal type)	Maintained each 90°	1NO	**AR30HR-210**	1NO (1)	Upper contact ③ ④
		1NC	**AR30HR-201**	1NC (1)	Upper contact ① ②
		1NO+1NC	**AR30HR-211**	1NO (1) 1NC (2)	Upper contact ③ ④ Lower contact ① ②
		2NO	**AR30HR-220**	1NO (1) 1NO (2)	Upper contact ③ ④ Lower contact ③ ④
		2NC	**AR30HR-202**	1NC (1) 1NC (2)	Upper contact ① ② Lower contact ① ②
		2NO+2NC	**AR30HR-222**	1NO (1) 1NO (3) 1NC (2) 1NC (4)	Upper contact ③ ④ ③ ④ Lower contact ① ② ① ②

KKD05-115

Notes: • Contact arrangements in the table can be supplied.

● Contact closed

• Position of contact block



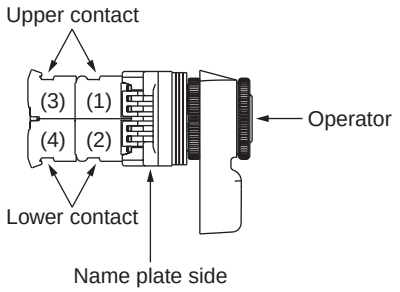
3-position

Operator	Operation	Contact	Type	Contact operation	
				Contact arrangement	Operator position Left ↖ Center ↑ Right ↗
Lever (metal type) KKD05-114	Maintained each 45°	1NO+1NC	**AR30HR-311**	1NO (1) 1NC (2)	Upper contact ③ ● ④ Lower contact ① ● ②
		2NO+2NC	**AR30HR-322**	1NO (1) 1NO (3) 1NC (2) 1NC (4)	Upper contact ③ ● ④ ③ ● ④ Lower contact ① ● ② ① ● ②
	Spring return each 60°	2NO+2NC	**AR30HR-122**	1NC (1) 1NO (3) 1NC (2) 1NO (4)	Upper contact ① ▬ ② ③ ● ④ Lower contact ① ▬ ② ③ ● ④

Notes: • Contact arrangements in the table can be supplied.
• Contact arrangements. The NO contacts at (1) and (2) use special parts. Do not interchange these parts.

● Contact closed

• Position of contact block



■ Illuminated selector switches

2-position

Operator	Operation	Contact	LED lamp		Incandescent lamp	
			Transformer	Type	Transformer	Type
Knob	Maintained	1NO 1NC 1NO+1NC 2NO+2NC	Without	**AR30PL-210■3□** **AR30PL-201■3□** **AR30PL-211■3□** **AR30PL-222■3□**	Without	**AR30PL-210■4□** **AR30PL-201■4□** **AR30PL-211■4□** **AR30PL-222■4□**
	each 90°	1NO 1NC 1NO+1NC 2NO	With	**AR30PL-210■3□** **AR30PL-201■3□** **AR30PL-211■3□** **AR30PL-220■3□**	With	**AR30PL-210■4□** **AR30PL-201■4□** **AR30PL-211■4□** **AR30PL-220■4□**
	Spring return	1NO 1NC 1NO+1NC 2NO	Without	**AR30PL-010■3□** **AR30PL-001■3□** **AR30PL-011■3□** **AR30PL-020■3□**	Without	**AR30PL-010■4□** **AR30PL-001■4□** **AR30PL-011■4□** **AR30PL-020■4□**
AF95-5	60°	1NO 1NC 1NO+1NC 2NO	With	**AR30PL-010■3□** **AR30PL-001■3□** **AR30PL-011■3□** **AR30PL-020■3□**	With	**AR30PL-010■4□** **AR30PL-001■4□** **AR30PL-011■4□** **AR30PL-020■4□**

3-position

Operator	Operation		Contact	LED lamp		Incandescent lamp	
				Transformer	Type	Transformer	Type
Knob	Maintained		1NO+1NC 2NO+2NC	Without	**AR30PL-311■3□** **AR30PL-322■3□**	Without	**AR30PL-311■4□** **AR30PL-322■4□**
	each 45°		1NO+1NC	With	**AR30PL-311■3□**	With	**AR30PL-311■4□**
	Spring/manual return		1NO+1NC 1NO+1NC	Without With	**AR30PL-611■3□** **AR30PL-611■3□**	Without With	**AR30PL-611■4□** **AR30PL-611■4□**
AF95-5	each 45°		1NO+1NC 1NO+1NC	Without With	**AR30PL-711■3□** **AR30PL-711■3□**	Without With	**AR30PL-711■4□** **AR30PL-711■4□**

Note: □, ■ *See page 04/88*

- Replace the ■ mark by the following lamp voltage code

Transformer	Voltage	Code LED	Incandescent
Without	5V AC/DC	–	5
	6V DC	6	–
	6V AC	A	–
	12V AC/DC	B	–
	15V AC/DC	C	C
	20V AC/DC	–	D
	24V AC/DC	E	E
With	100-110V AC	H	H
	115-127V AC	L	L
	200-220V AC	M	M
	230-254V AC	Q	Q
	350-380V AC	S	S
	400-440V AC	T	T
	480V AC	V	V
	500-550V AC	W	W

- Replace the □ mark by the following knob color code

Color	Green	Red	White	Blue	Yellow	Orange
Code	G	R	W	S	Y	A

- Up to 4-contact of contact arrangement can be made. Available numbers of contacts are as follow.

No. of position	Operation	Without transformer	With transformer
2-position	Maintained	6-contact	4-contact
	Spring return	3-contact	2-contact
3-position	Maintained	6-contact	4-contact
	Spring/manual return	3-contact	2-contact

● Contact arrangement and operator position

2-position

Transformer	Contact arrangement	Contact block		Operator position	
		Mounting position	Type	Left	Right
With/without	1NO	(1)	NO	–	●
With/without	1NC	(1)	NC	●	–
Without	1NO+1NC	(1)	NO	–	●
		(2)	NC	●	–
With	1NO+1NC	(1)	NC	●	–
		(2)	NO	–	●
With/without	2NO	(1)	NO	–	●
		(2)	NO	–	●
Without	2NO+2NC	(1)	NO	–	●
	*1	(2)	NC	●	–
		(3)	NO	–	●
		(4)	NC	●	–
With	2NO+2NC	(1)	NC	●	–
	*1	(2)	NC	●	–
		(3)	NO	–	●
		(4)	NO	–	●

Notes: *1 : AR30PL-2
● : Contact closed, – : Contact open

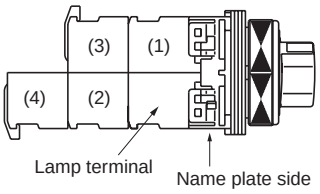
3-position

Transformer	Contact arrangement	Contact block		Operator position		
		Mounting position	Type	Left	Center	Right
Without	1NO+1NC	(1)	NO	●	–	–
	*1	(2)	NC	–	–	●
	1NO+1NC	(1)	NO	–	–	●
	*2	(2)	NC	●	–	–
	2NO+2NC	(1)	NO	●	–	–
	*3	(2)	NC	–	–	●
		(3)	NO	●	–	–
		(4)	NC	–	–	●
With	1NO+1NC	(1)	NC	–	–	●
	*1	(2)	NO	●	–	–
	1NO+1NC	(1)	NC	●	–	–
	*2	(2)	NO	–	–	●
	2NO+2NC	(1)	NC	–	–	●
	*3	(2)	NC	–	–	●
		(3)	NO	●	–	–
		(4)	NO	●	–	–

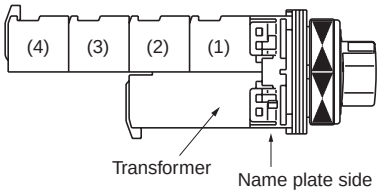
Notes: *1 : AR30PL-3, 6 *3 : AR30PL-3
*2 : AR30PL-7
● : Contact closed, – : Contact open

● Position of contact block

Without transformer



With transformer



■ Pilot lights/standard

Lens	Transformer	LED lamp Lamp voltage	Type	Incandescent lamp Lamp voltage	Type
Dome AF95-18	Without	6V AC 6V DC 12V AC/DC 24V AC/DC	**DR30D0L-A3□** **DR30D0L-63□** **DR30D0L-B3□** **DR30D0L-E3□**	5.5V AC/DC — 15V AC/DC 24V AC/DC	**DR30D0L-54□** **—** **DR30D0L-C4□** **DR30D0L-E4□**
	With	100–110V AC 200–220V AC	**DR30D0L-H3□** **DR30D0L-M3□**	100–110V AC 200–220V AC	**DR30D0L-H4□** **DR30D0L-M4□**
Dome AF97-674	With resistor	50V DC 110V DC 220V DC	**DR30D0L-FR□** **DR30D0L-HR□** **DR30D0L-MR□**	50V DC — —	**DR30D0L-FQ□** **—** **—**
Dome AF97-672	With resistor	— —	**—** **—**	110V DC 220V DC	**DR30D0L-HQ□** **DR30D0L-MQ□**
Extended round AF95-20	Without	6V AC 6V DC 12V AC/DC 24V AC/DC	**DR30E3L-A3□** **DR30E3L-63□** **DR30E3L-B3□** **DR30E3L-E3□**	5.5V AC/DC — 15V AC/DC 24V AC/DC	**DR30E3L-54□** **—** **DR30E3L-C4□** **DR30E3L-E4□**
	With	100–110V AC 200–220V AC	**DR30E3L-H3□** **DR30E3L-M3□**	100–110V AC 200–220V AC	**DR30E3L-H4□** **DR30E3L-M4□**
Faceted AF95-19	Without	6V AC 6V DC 12V AC/DC 24V AC/DC	**DR30K0L-A3□** **DR30K0L-63□** **DR30K0L-B3□** **DR30K0L-E3□**	5.5V AC/DC — 15V AC/DC 24V AC/DC	**DR30K0L-54□** **—** **DR30K0L-C4□** **DR30K0L-E4□**
	With	100–110V AC 200–220V AC	**DR30K0L-H3□** **DR30K0L-M3□**	100–110V AC 200–220V AC	**DR30K0L-H4□** **DR30K0L-M4□**
Faceted AF97-673	With resistor	50V DC 110V DC 220V DC	**DR30K0L-FR□** **DR30K0L-HR□** **DR30K0L-MR□**	50V DC — —	**DR30K0L-FQ□** **—** **—**
Faceted AF97-671	With resistor	— —	**—** **—**	110V DC 220V DC	**DR30K0L-HQ□** **DR30K0L-MQ□**
Dome with dimmer control KK02-144A	Without	6V AC 6V DC 12V AC/DC 15V AC/DC 24V AC/DC	**DR30D1L-A3□** **DR30D1L-63□** **DR30D1L-B3□** **DR30D1L-C3□** **DR30D1L-E3□**	5.5V AC/DC — — 15V AC/DC 24V AC/DC	**DR30D1L-54□** **—** **—** **DR30D1L-C4□** **DR30D1L-E4□**
	With	100V–110V AC 200V–220V AC	**DR30D1L-H3□** **DR30D1L-M3□**	100V–110V AC 200V–220V AC	**DR30D1L-H4□** **DR30D1L-M4□**

Note: □ *See page 04/90*

■ Pilot lights/short-body with transformer

Lens	LED lamp		Incandescent lamp	
	Lamp voltage	Type	Lamp voltage	Type
Dome KK02-141A	100–110V AC 200–220V AC	**DR30D0L-H9□** **DR30D0L-M9□**	100–110V AC 200–220V AC	**DR30D0L-H8□** **DR30D0L-M8□**
Extended round KK02-142A	100–110V AC 200–220V AC	**DR30E3L-H9□** **DR30E3L-M9□**	100–110V AC 200–220V AC	**DR30E3L-H8□** **DR30E3L-M8□**
Faceted KK02-143A	100–110V AC 200–220V AC	**DR30K0L-H9□** **DR30K0L-M9□**	100–110V AC 200–220V AC	**DR30K0L-H8□** **DR30K0L-M8□**

• Lens color

Replace the □ mark by the following lens color code

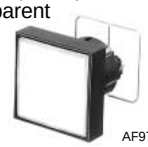
Color	Green	Red	White	Blue	Yellow	Orange
Code	G	R	W	S	Y	A

• Lamp voltage

Available lamp voltage are as follow.

Description	Voltage	Code Standard type LED	 Incandescent	Code Short-body type LED	 Incandescent
Without transformer	5.5V AC/DC	–	54	–	–
	6V AC	A3	–	–	–
	6V DC	63	–	–	–
	12V AC/DC	B3	–	–	–
	15V AC/DC	C3	C4	–	–
	20V AC/DC	–	D4	–	–
	24V AC/DC	E3	E4	–	–
With transformer	100-110V AC	H3	H4	H9	H8
	115-127V AC	L3	L4	L9	L8
	200-220V AC	M3	M4	M9	M8
	230-254V AC	Q3	Q4	–	–
	350-380V AC	S3	S4	–	–
	400-440V AC	T3	T4	–	–
	480V AC	V3	V4	–	–
	500-550V AC	W3	W4	–	–
With resistor unit	110V DC	H7	–	–	–
With resistor	50V DC	FR	FQ	–	–
	110V DC	HR	HQ	–	–
	220V DC	MR	MQ	–	–

■ Pilot lights/standard

Lens	Transformer	LED unit Lamp voltage	Type	Incandescent lamp Lamp voltage	Type
Flush square (34mm sq. transparent lens) AF97-65	Without	6V DC 15V AC/DC 24V AC/DC	**DR30F4M-65□** **DR30F4M-C5□** **DR30F4M-E5□**	5.5V AC/DC 15V AC/DC 24V AC/DC	**DR30F4M-54□** **DR30F4M-C4□** **DR30F4M-E4□**
	With	100–110V AC 200–220V AC	**DR30F4M-H5□** **DR30F4M-M5□**	100–110V AC 200–220V AC	**DR30F4M-H4□** **DR30F4M-M4□**
Flush rectangular (Transparent lens) AF97-61	Without	6V DC 15V AC/DC 24V AC/DC	**DR30F4N-65□** **DR30F4N-C5□** **DR30F4N-E5□**	5.5V AC/DC 15V AC/DC 24V AC/DC	**DR30F4N-54□** **DR30F4N-C4□** **DR30F4N-E4□**
	With	100–110V AC 200–220V AC	**DR30F4N-H5□** **DR30F4N-M5□**	100–110V AC 200–220V AC	**DR30F4N-H4□** **DR30F4N-M4□**
Flush square (40mm sq. transparent lens)  AF97-63	Without	6V DC 15V AC/DC 24V AC/DC	**DR30M4M-65□** **DR30M4M-C5□** **DR30M4M-E5□**	5.5V AC/DC 15V AC/DC 24V AC/DC	**DR30M4M-54□** **DR30M4M-C4□** **DR30M4M-E4□**
	With	100–110V AC 200–220V AC	**DR30M4M-H5□** **DR30M4M-M5□**	100–110V AC 200–220V AC	**DR30M4M-H4□** **DR30M4M-M4□**

• Color plate

Replace the □ mark by the following color plate color code

Color	Green	Red	White	Blue*	Yellow	Orange
Code	G	R	W	S	Y	A

Note: * Incandescent lamp only

• Lamp voltage

Available lamp voltage are as follow.

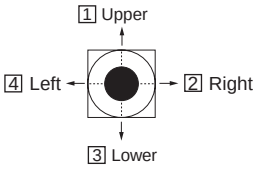
Description	Voltage	Code Standard type LED	Incandescent
Without transformer	5.5V AC/DC	–	54
	6V AC	A5	–
	6V DC	65	–
	12V AC	25	–
	12V AC/DC	B5	–
	15V AC/DC	C5	C4
	20V AC/DC	–	D4
	24V AC/DC	E5	E4
With transformer	100-110V AC	H5	H4
	115-127V AC	L5	L4
	200-220V AC	M5	M4
	230-254V AC	Q5	Q4
	350-380V AC	S5	S4
	400-440V AC	T5	T4
	480V AC	V5	V4
	500-550V AC	W5	W4
With resistor unit	110V DC	HE	–

■ Joy stick selector switches

Handle	Terminal	Operating directions	Contact arrangement	Type: Manual return	Type: Spring return
Ball type without lock AF97-48	Screw	↕	1NO × 2	**AR30A0N-A0A0B**	**AR30A5N-A0A0B**
			1NO + 1NC × 2	**AR30A0N-1010B**	**AR30A5N-1010B**
		↕↔	1NO × 4	**AR30A0N-AAAAB**	**AR30A5N-AAAAB**
			1NO + 1NC × 4	**AR30A0N-1111B**	**AR30A5N-1111B**
	Solder/tab	↕	1NO + 1NC × 2	**AR30A0H-1010B**	**AR30A5H-1010B**
			2NO + 2NC × 2	**AR30A0H-2020B**	**AR30A5H-2020B**
		↕↔	1NO + 1NC × 4	**AR30A0H-1111B**	**AR30A5H-1111B**
			2NO + 2NC × 4	**AR30A0H-2222B**	**AR30A5H-2222B**
Ball type with lock AF97-44	Screw	↕	1NO × 2	**AR30A1N-A0A0B**	**AR30A6N-A0A0B**
			1NO + 1NC × 2	**AR30A1N-1010B**	**AR30A6N-1010B**
		↕↔	1NO × 4	**AR30A1N-AAAAB**	**AR30A6N-AAAAB**
			1NO + 1NC × 4	**AR30A1N-1111B**	**AR30A6N-1111B**
	Solder/tab	↕	1NO + 1NC × 2	**AR30A1H-1010B**	**AR30A6H-1010B**
			2NO + 2NC × 2	**AR30A1H-2020B**	**AR30A6H-2020B**
		↕↔	1NO + 1NC × 4	**AR30A1H-1111B**	**AR30A6H-1111B**
			2NO + 2NC × 4	**AR30A1H-2222B**	**AR30A6H-2222B**
Rubber cap type without lock AF97-57	Screw	↕	1NO × 2	**AR30A2N-A0A0B**	**AR30A7N-A0A0B**
			1NO + 1NC × 2	**AR30A2N-1010B**	**AR30A7N-1010B**
		↕↔	1NO × 4	**AR30A2N-AAAAB**	**AR30A7N-AAAAB**
			1NO + 1NC × 4	**AR30A2N-1111B**	**AR30A7N-1111B**
	Solder/tab	↕	1NO + 1NC × 2	**AR30A2H-1010B**	**AR30A7H-1010B**
			2NO + 2NC × 2	**AR30A2H-2020B**	**AR30A7H-2020B**
		↕↔	1NO + 1NC × 4	**AR30A2H-1111B**	**AR30A7H-1111B**
			2NO + 2NC × 4	**AR30A2H-2222B**	**AR30A7H-2222B**

• Operating direction

- Directions other than those shown in the table above can be provided.
- For types AR30A□N-1 2 3 4 B, designate the contact arrangement codes for the necessary operating directions (1: Upper, 2: Right, 3: Lower, 4: Left). Designate "0" for unnecessary directions.



• Contact arrangement

Contact arrangement		–	1NO	1NC	1NO+1NC	2NO	2NC	2NO+2NC
Manual return Spring return	Screw	0	A	B	1	D	E	–
	Solder/Tab	0	–	–	1	–	–	2

- Spring/manual return are also available, contact FUJI .

■ Buzzers

Sound	Description	Transformer	Operating voltage	Type
Electronic sound KKD08-058	• LED operation indicator (Red) • Intermittent/continuous sound selection • Sound level: 90dB (0.1m) 70dB (1m)	Without	6V AC 6V DC 12 to 24V AC/DC 35 to 48V AC/DC	**DR30B5-AB** **DR30B5-6B** **DR30B5-EB** **DR30B5-FB**
		With	100 to 110V AC 200 to 220V AC	**DR30B5-HB** **DR30B5-MB**
		With resistor unit	100 to 110V DC	**DR30B5-1B**
Electronic sound (economy) KK02-145A	• Sound level: 90dB (0.1m) 70dB (1m)	Without	6V DC 24V AC 24V DC	**DR30B6-6B** **DR30B6-GB** **DR30B6-EB**
		With	100 to 110V AC 200 to 220V AC	**DR30B6-HB** **DR30B6-MB**
Magnetic sound AF96-378	• Sound level: 90dB (0.1m) 70dB (1m)	Without	100 to 110V AC 200 to 220V AC	**DR30B0-HB** **DR30B0-MB**
Electronic sound (IP54) AF96-245	• Intermittent/continuous sound selection • Sound level: 80dB (0.1m) 60dB (1m)	Without	6V AC 6V DC 12 to 24V AC/DC 35 to 48V AC/DC	**DR30B8-AB** **DR30B8-6B** **DR30B8-EB** **DR30B8-FB**
		With	100 to 110V AC 200 to 220V AC	**DR30B8-HB** **DR30B8-MB**
		With resistor unit	100 to 110V DC	**DR30B8-1B**

Notes: • Intermittent/continuous sound selection (DR30B5, B8)
See the "Short-circuit terminal" in the dimensions diagram on the *04/104.* page, and select as follows:
• Short-circuit terminal mounted → Intermittent sound
• Short-circuit terminal not mounted → Continuous sound

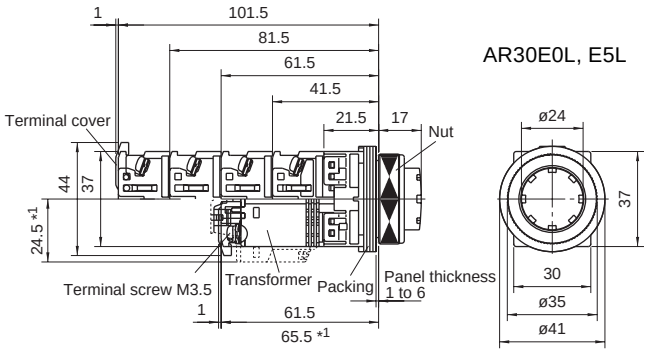
AR30 and DR30
Dimensions

■ Dimensions, mm

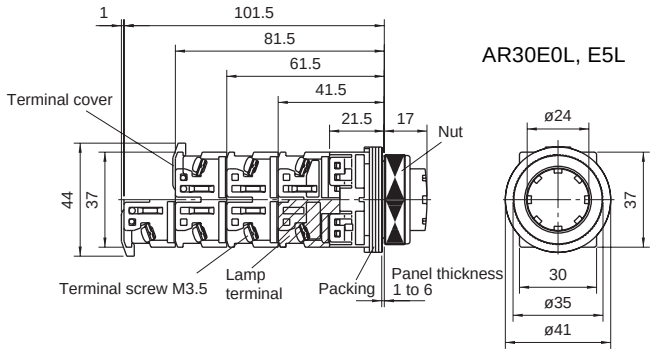
● Illuminated pushbuttons

Extended

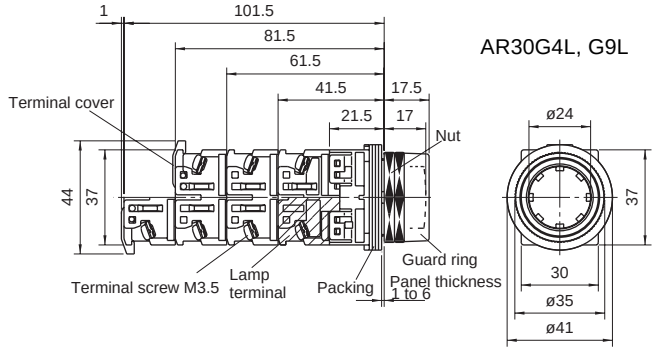
With transformer



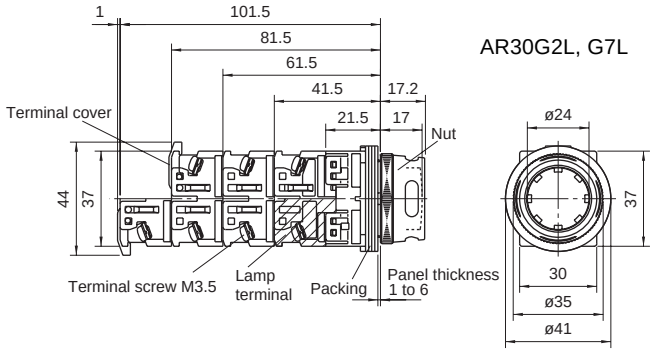
Without transformer



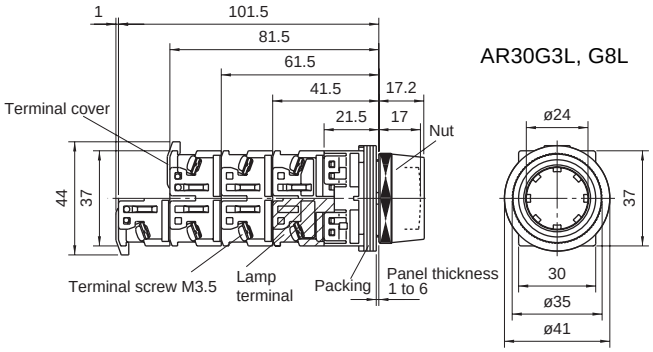
Extended with transparent full guard (24mm dia.)



Extended with full guard (24mm dia. with openings)



Extended with full guard (24mm dia.)



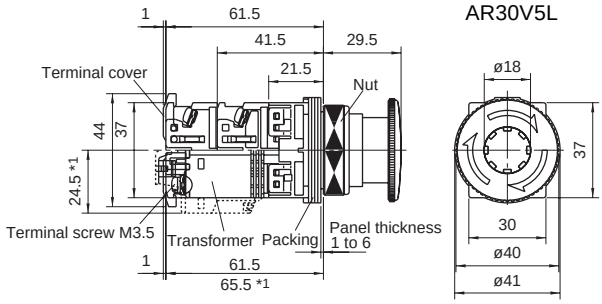
Note: *1 Except for the types 110V AC, 127V AC and 220V AC.

■ Dimensions, mm

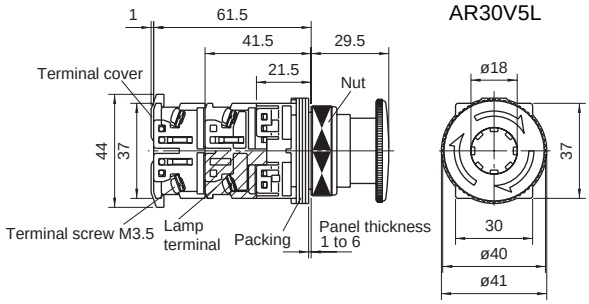
● Illuminated pushbuttons

Push-lock, turn-reset (40mm dia. with white arrow)

With transformer

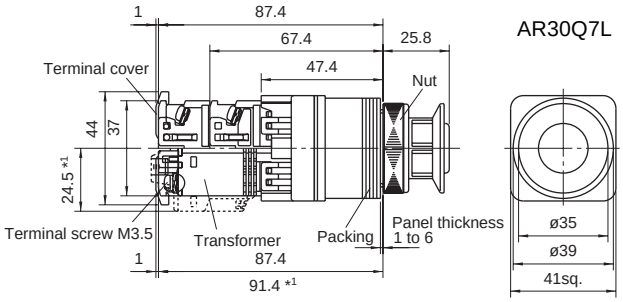


Without transformer

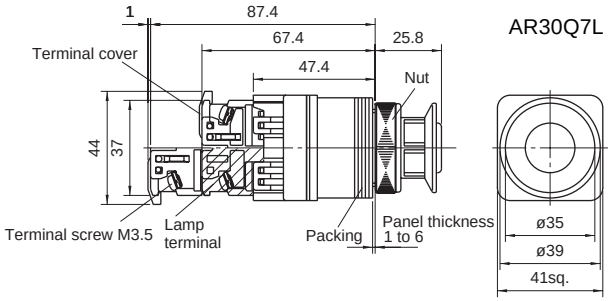


Push-pull

With transformer



Without transformer



Note: *1 Except for the types 110V AC, 127V AC and 220V AC.

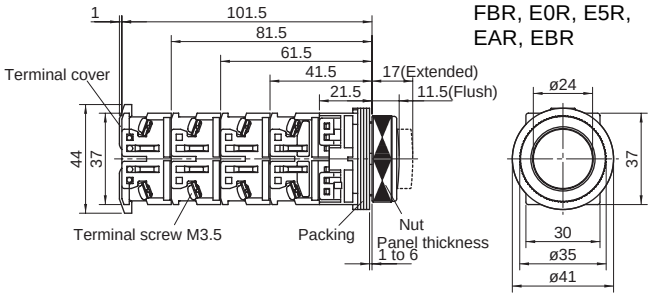
AR30 and DR30
Dimensions

■ Dimensions, mm

● Pushbuttons

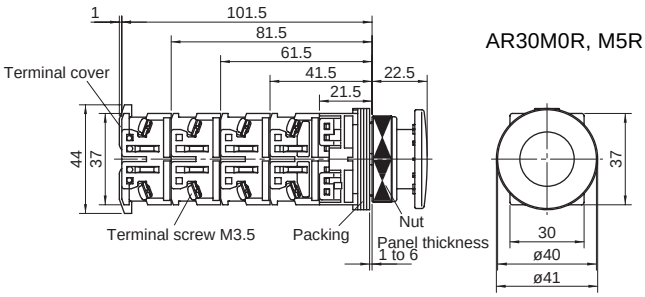
Flush/Extended

AR30F0R, F5R, FAR, FBR, E0R, E5R, EAR, EBR



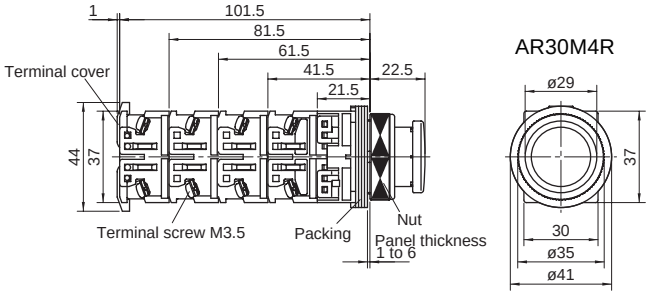
Mushroom (40mm dia.)

AR30M0R, M5R



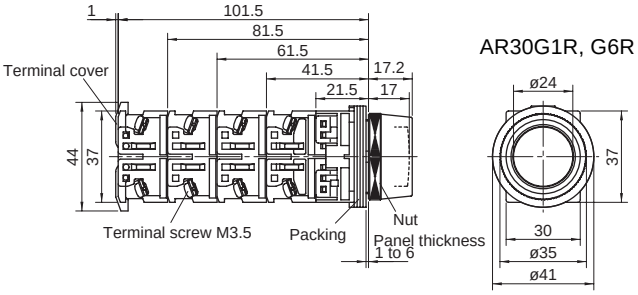
Mushroom (29mm dia.)

AR30M4R



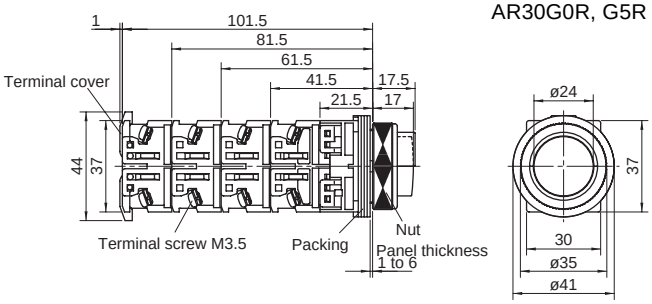
Extended with full guard (24mm dia.)

AR30G1R, G6R



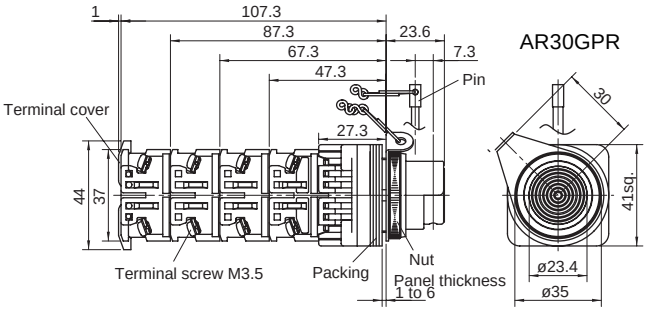
Extended with half guard

AR30G0R, G5R



Pin lock

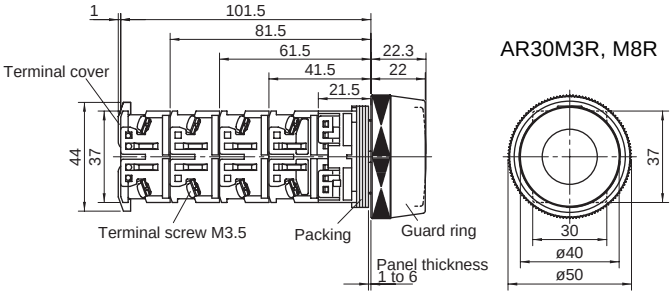
AR30GPR



Note:
The enclosed pin can be inserted to lock the pushbutton in a pushed or not pushed state.

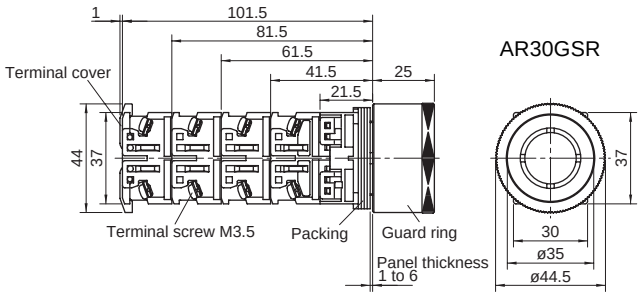
Mushroom with full guard (40mm dia.)

AR30M3R, M8R



Mushroom with full guard (35mm dia. metal nut)

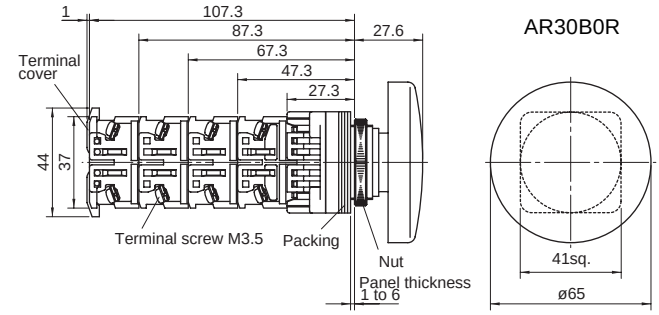
AR30GSR



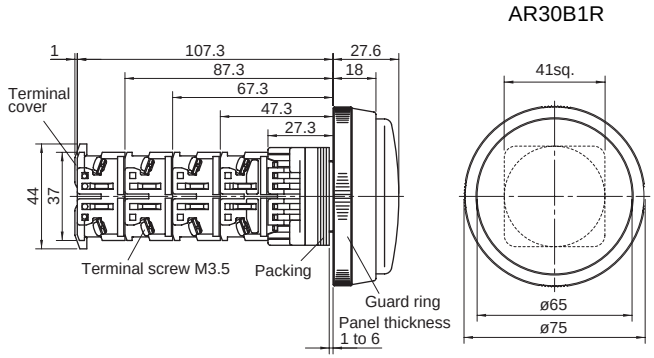
■ Dimensions, mm

● Pushbuttons

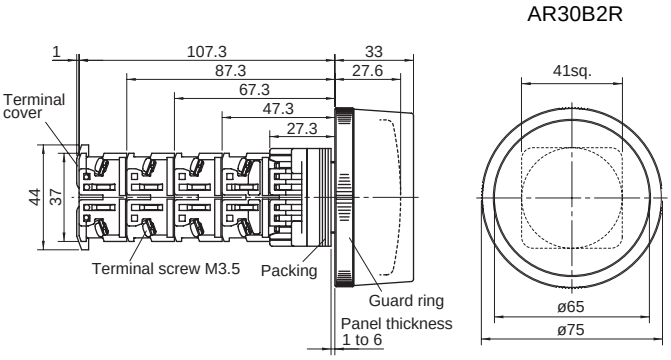
Giant



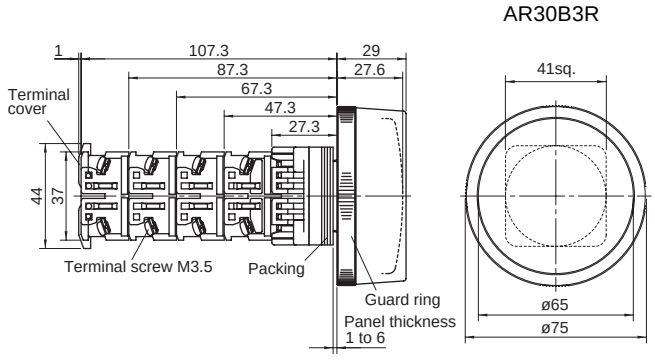
Giant with guard



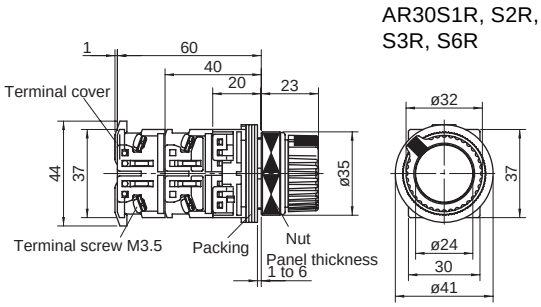
Giant with full guard



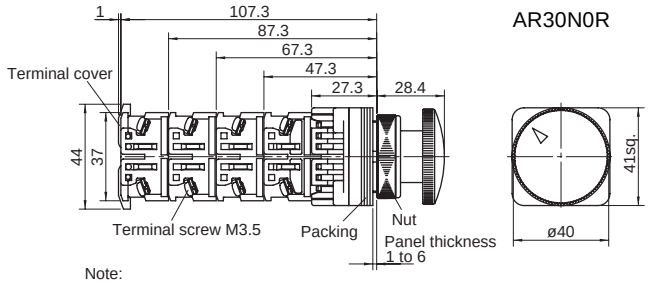
Giant with full guard



Pushbutton with selector ring (2-position)

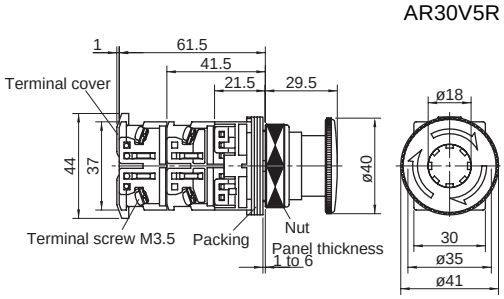


Push, turn-lock

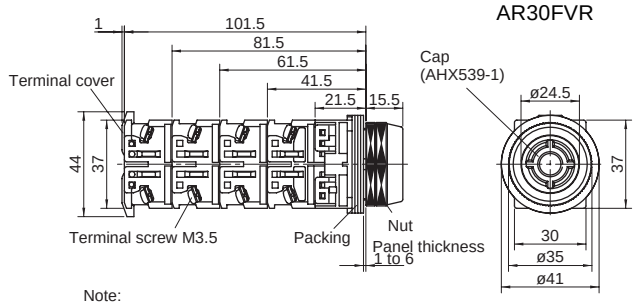


Note:
When the push button is pressed in the left position, it resets automatically (momentary operation).
When pressed and turned to the right it locks, and to the left it resets.

Push-lock, turn-reset (40mm dia. with white arrow)



Emergency operating cap



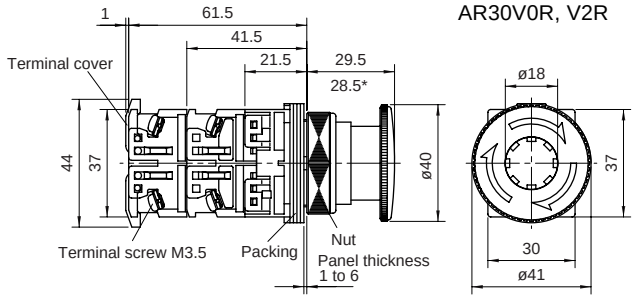
Note:
This is pushbutton switch is operated while holding the cap with the fingertips.
The cap (AHX539) can be exchanged.

AR30 and DR30
Dimensions

■ Dimensions, mm

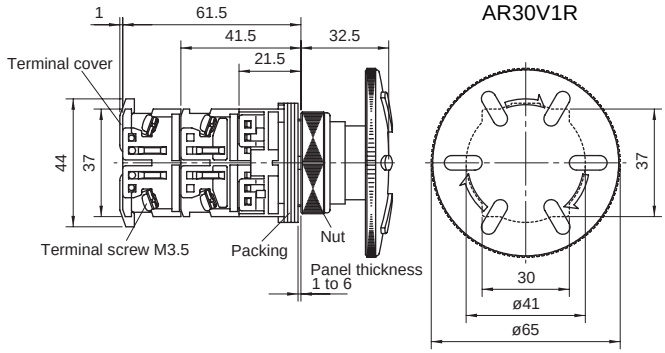
● Emergency stop pushbuttons

Push-lock, turn-reset (40mm dia.)

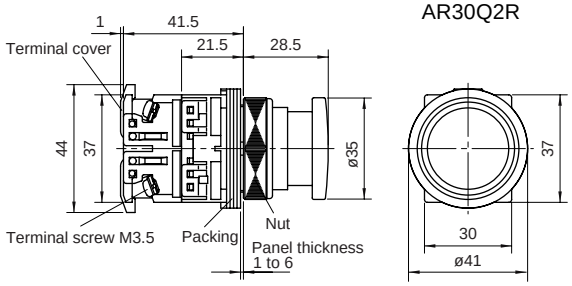


Note: * AR30V2R type

Push-lock, turn-reset (65mm dia. with white allow)



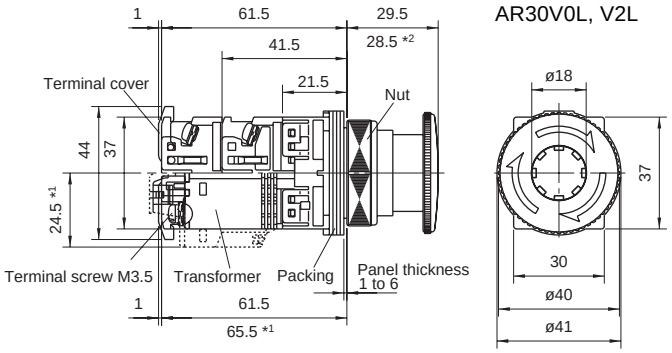
Push-lock, pull-reset (35mm dia.)



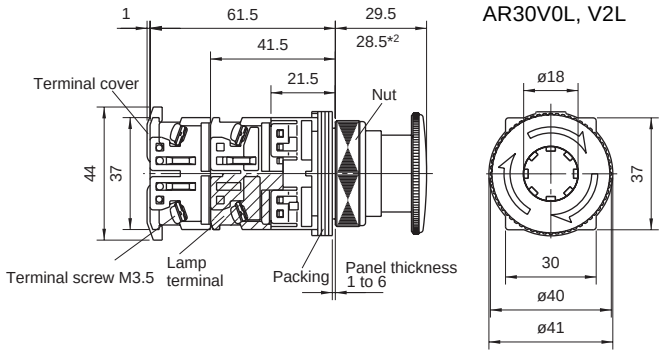
● Emergency stop illuminated pushbuttons

Push-lock, turn-reset (40mm dia.)

With transformer



Without transformer

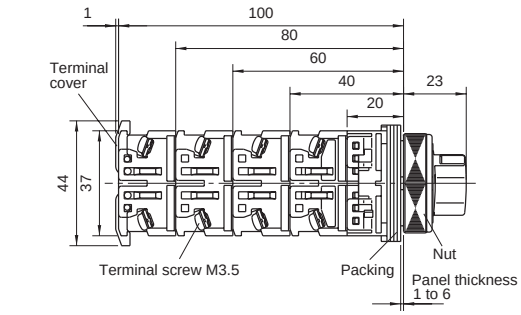


Notes: *1 Except for the types 110V AC, 127V AC and 220V AC.
*2 AR30V2L type

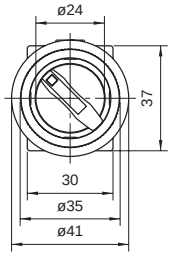
■ Dimensions, mm

● Selector switches

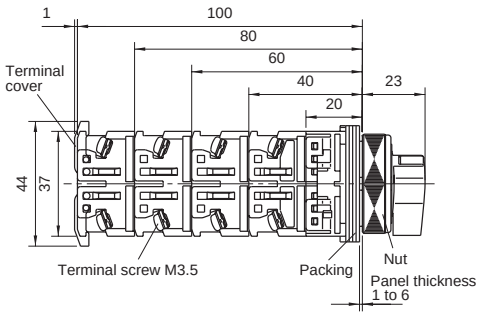
Knob



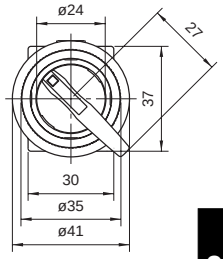
AR30PR, PCR



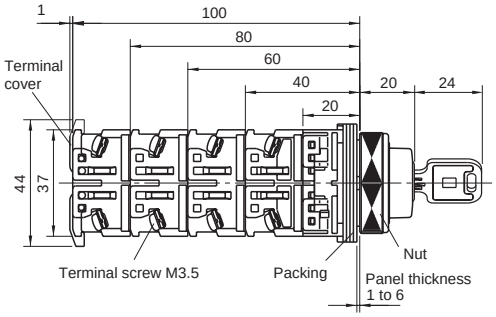
Lever



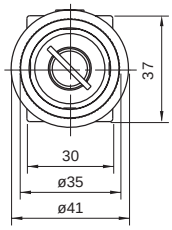
AR30WR, WCR



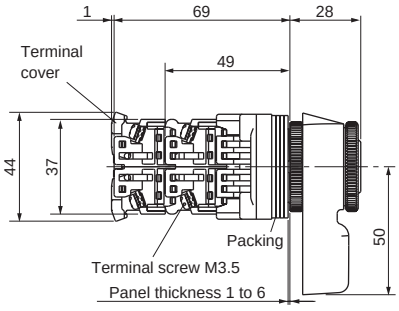
Key



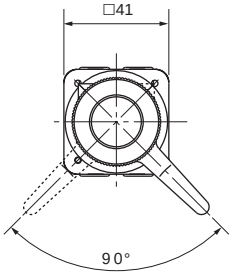
AR30JR, JCR, JAR



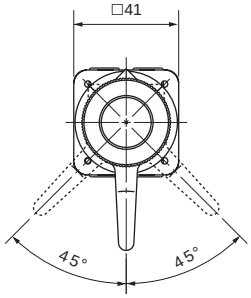
● Lever type selector switches



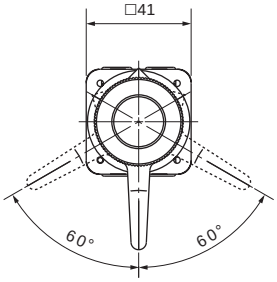
AR30HR-2



AR30HR-3



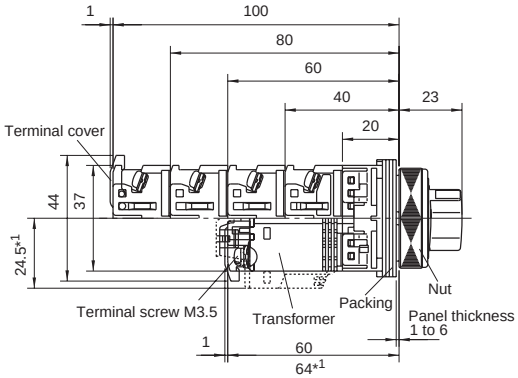
AR30HR-1



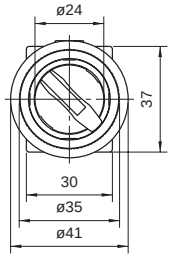
● Illuminated selector switches

Knob

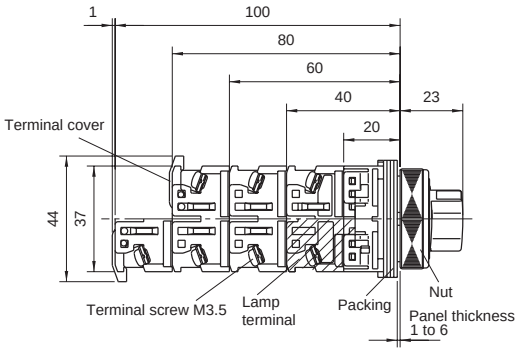
With transformer



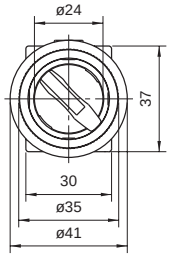
AR30PL



Without transformer



AR30PL



Notes: *1 Except for the types 110V AC, 127V AC and 220V AC.

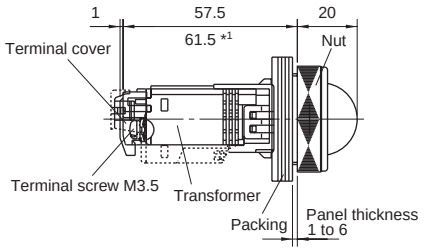
AR30 and DR30
Dimensions

■ Dimensions, mm

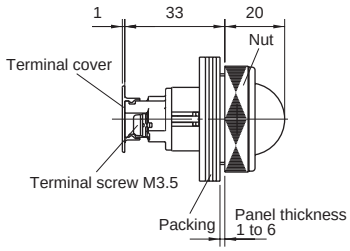
● Pilot lights

Dome

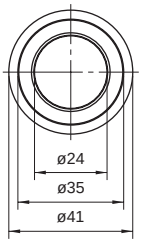
With transformer, with resistor unit



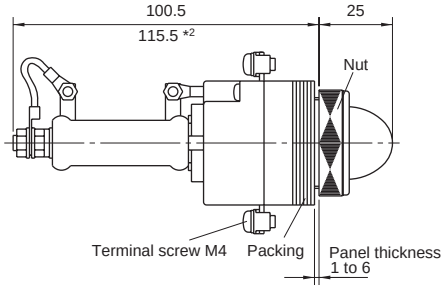
Without transformer



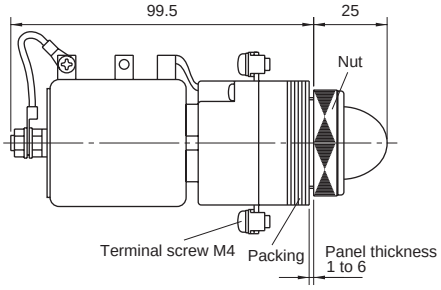
DR30D0L



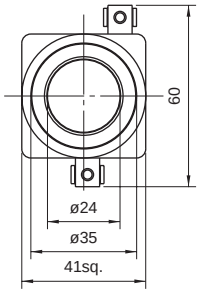
With resistor LED, incandecent (50V DC)



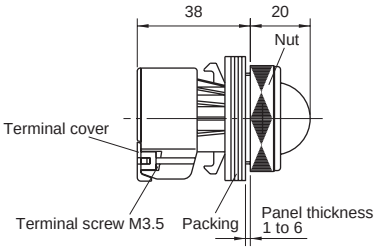
With resistor Incandescent (110, 220V DC)



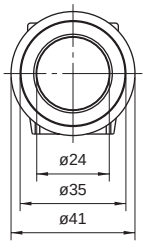
DR30D0L



Short-body / with transformer

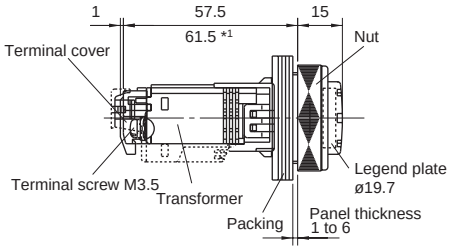


DR30D0L

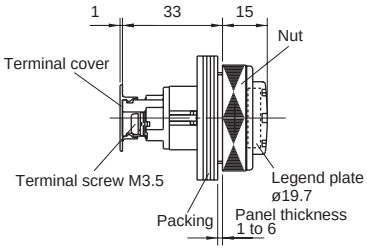


Extended

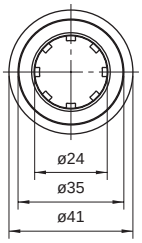
With transformer, with resistor unit



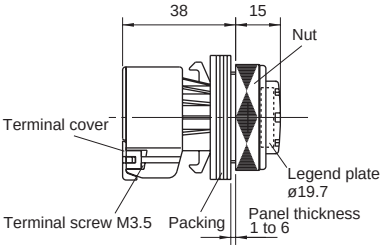
Without transformer



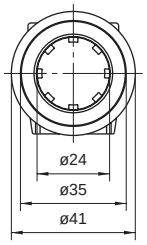
DR30E3L



Short-body / with transformer



DR30E3L



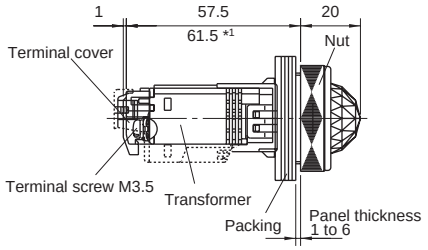
Notes: *1 Except for the types 110V AC, 127V AC and 220V AC.
*2 Incandecent (50V DC) type only

■ Dimensions, mm

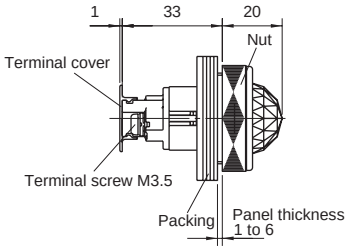
● Pilot lights

Faceted

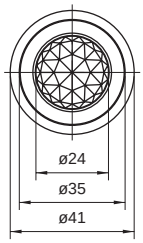
With transformer, with resistor unit



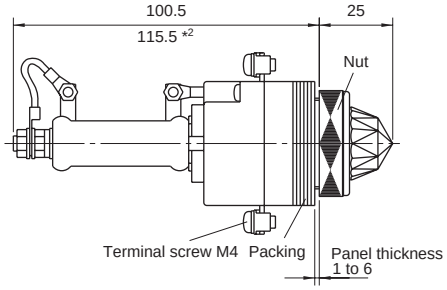
Without transformer



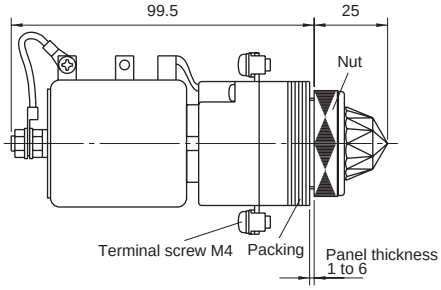
DR30K0L



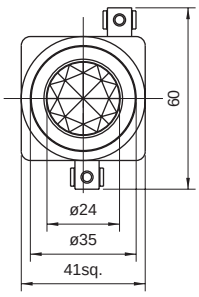
With resistor LED, incandescent (50V DC)



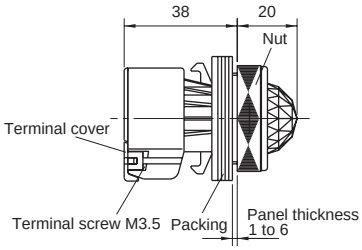
With resistor LED, incandescent (110, 220V DC)



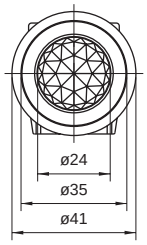
DR30K0L



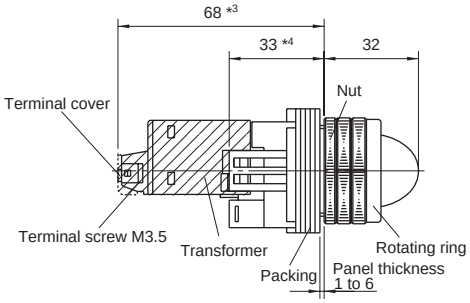
Short-body / with transformer



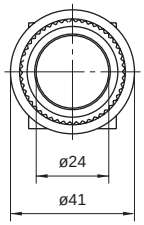
DR30K0L



Dome with dimmer control



DR30D1L



Notes: *1 Except for the types 110V AC, 127V AC and 220V AC.
*2 Incandecent (50V DC) type only
*3 With transformer, with resistor unit type only
*4 For without transformer types, add 1 mm when mounting the terminal cover.

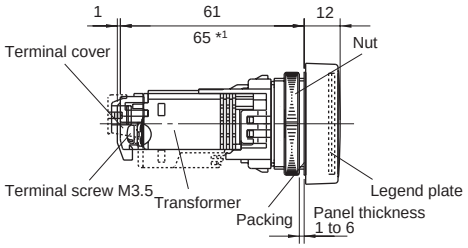
AR30 and DR30
Dimensions

■ Dimensions, mm

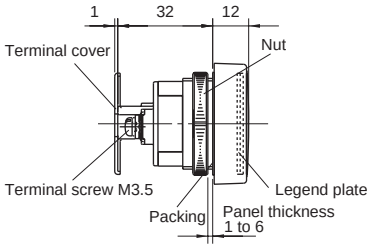
● Pilot lights

Flush square (34mm sq. transparent lens)

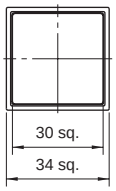
With transformer, with resistor unit



Without transformer

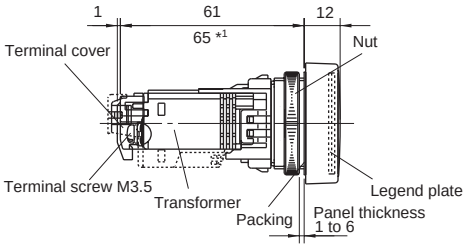


DR30F4M

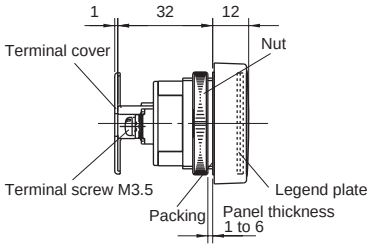


Flush rectangular (Transparent lens)

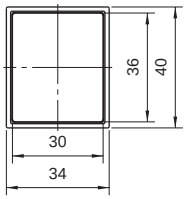
With transformer, with resistor unit



Without transformer

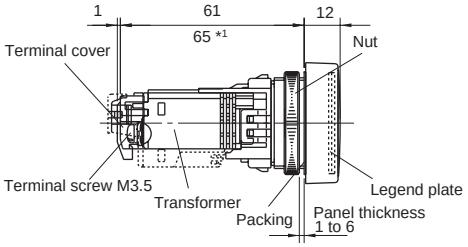


DR30F4N

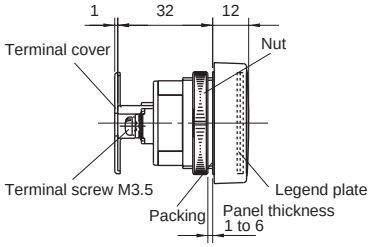


Flush square (40mm sq. transparent lens)

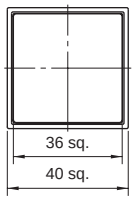
With transformer, with resistor unit



Without transformer



DR30M4M

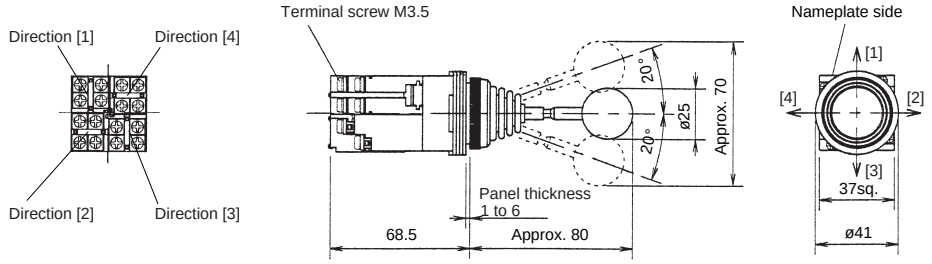


Note: *1 Except for the types 110V AC, 127V AC and 220V AC.

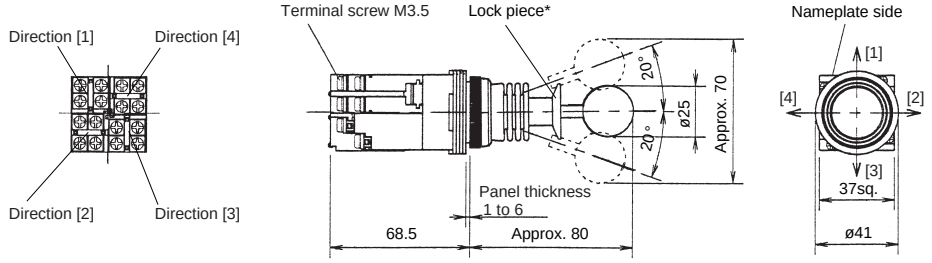
■ Dimensions, mm

● Joy stick selector switches

Ball type (without lock)
AR30A0N, A5N: Screw terminal

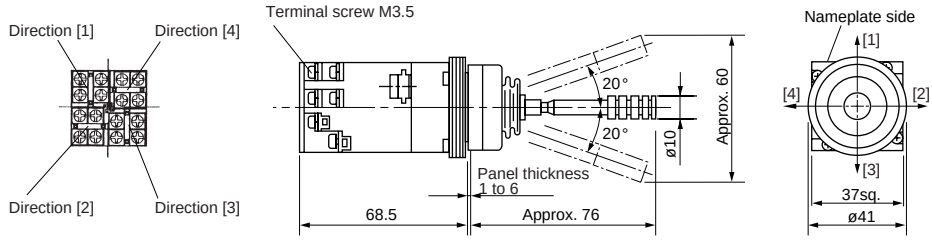


Ball type with lock
AR30A1N, A6N: Screw terminal

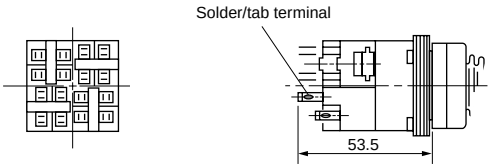


Notes * The contact arrangement is operable in the designated direction by pulling the lock piece in the central position with the fingers. The lock piece will return automatically and locks when the lock piece is released in the central position.
The lock piece locks in the central position only.

Rubber cap type (without lock)
AR30A2N, A7N: Screw terminal



Solder/tab terminal: **AR30A□H**



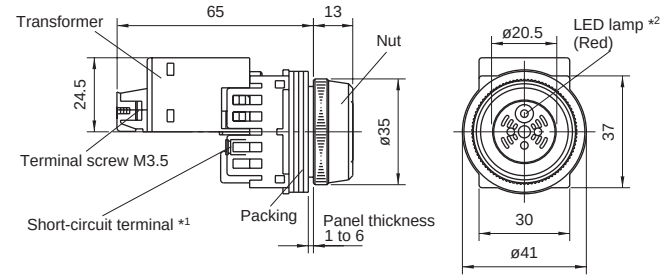
AR30 and DR30
Dimensions

■ Dimensions, mm

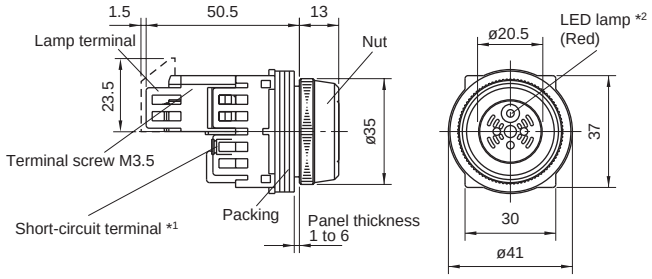
● Buzzers

Electronic sound

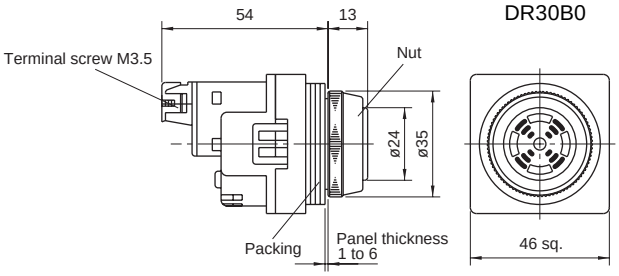
With transformer



Without transformer

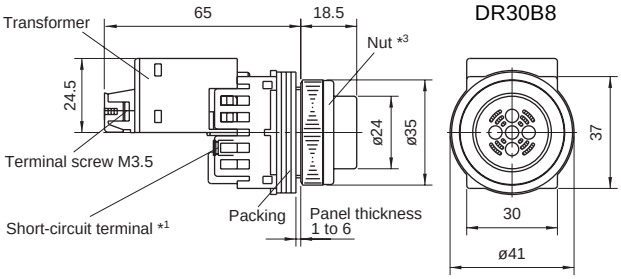


Magnetic sound

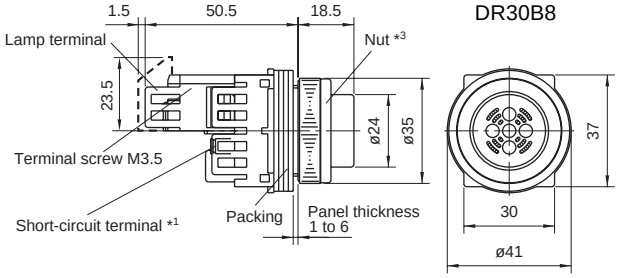


Electronic sound (IP54)

With transformer



Without transformer

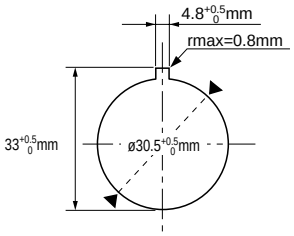


Notes: *1 There are no short-circuit terminals with DR30B6. (Continuous sound only)
*2 There are no LED lamps with DR30B6.
*3 The nut and cap are united with DR30B8.

Notes on use

■ Panel cutout hole

Fig. 1 Panel cutout hole dimensions, mm



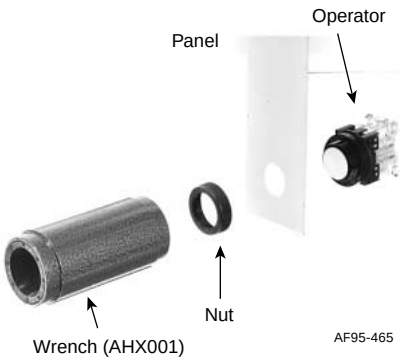
Note : If key-washer or legend plate are not used, 4.8mm-wide. location holes shown in Fig. 1 need not be cutout.

■ Mounting operator to panel

1. Pushbutton with a round bezel (ordinary mounting)

Insert the operator into the cutout hole from the back of the panel, and tighten the nut with the AHX001 wrench from the front of the panel to secure the operator as shown in Fig.2.

Fig. 2 Pushbutton with a round bezel

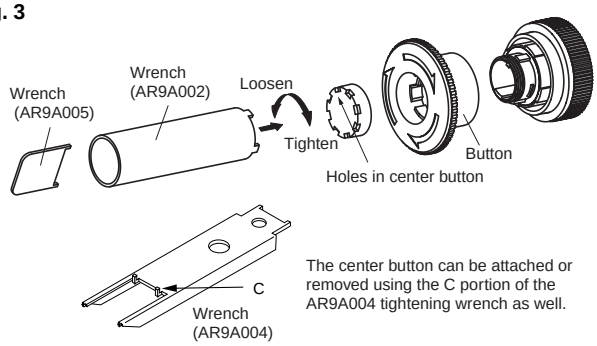


Note : Recommended tightening torque is from 1.5 to 2N·m.

2. AR30V0R, V0L, V2R, V2L, V5R, V5L

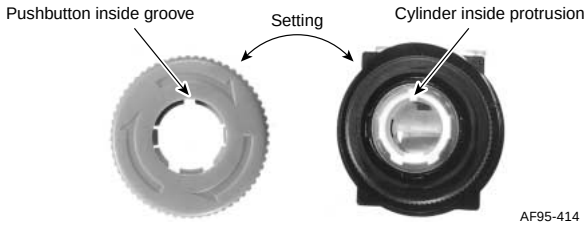
(1) The button is removed after loosening the center button by inserting the end of the AR9A002 tightening wrench or the AR9A005 wrench (enclosed with pushbutton) into the holes in the center button and turning counterclockwise, as shown in Fig.3.
(2) Attach the operator in the same manner as described in step 1.

Fig. 3



Insert the operator into the cutout hole from the back of the panel, and as shown in Fig.4, insert the pushbutton into the operator cylinder while aligning the grooves inside the pushbutton with the protrusions on the operator.

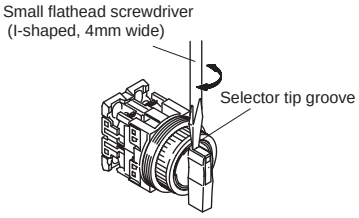
Fig. 4 Setting pushbutton to operator cylinder



3. AR30WR, WCR

(1) As shown in the following figure, insert the tip of a flathead screwdriver into the selector tip groove. Rotate the screwdriver in the direction indicated by the arrow until the selector tip rises, and draw out the knob.
(2) Attach the operator in the same manner as described in step 1.
(3) Insert the knob, with the selector tip in the floated state, into the original position of the rotation tube, and push the selector tip into place.

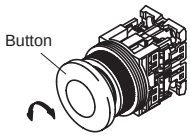
Fig. 5



4. AR30M0R, M4R, M5R, B0R, Q7L

(1) Loosen the button by hand.
(2) Attach the operator in the same manner as described in step 1.
(3) Screw in the button by hand, making sure that the button is screwed in all the way. (Recommended tightening torque: 0.3 to 0.5 N•m)

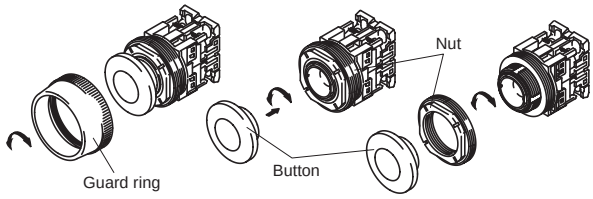
Fig. 6



5. AR30M3R, M8R, B1R, B2R and B3R

The outer circumference of the nut is threaded, so be careful not to cut your hand on it.
(1) Loosen and remove the guard ring by hand.
(2) Loosen and remove the button and nut by hand.
(3) Insert the operator into the cutout hole from the back of the panel, and tighten the nut to secure it in place.
(Recommended tightening torque: 0.3 to 0.5 N•m)
(4) Screw in the button by hand, making sure that it is screwed in all the way.
(Recommended tightening torque: 0.3 to 0.5 N•m)
(5) Loosen and remove the guard ring by hand. (Recommended tightening torque: 1.5 to 2.5 N•m)

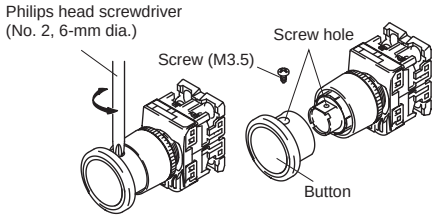
Fig. 7



6. AR30N0R, V1R, Q2R

(1) Loosen and remove the screw on the side of the button, taking care not to loosen the screw.
(2) Attach the operator in the same manner as described in step 1.
(3) Attach and secure the button in place with the screw, making sure that the head of the screw does not protrude from the side.
(4) Recommended tightening torque: N0R, V1R 0.5 to 1.0N•m
Q2R 0.3 to 0.5N•m

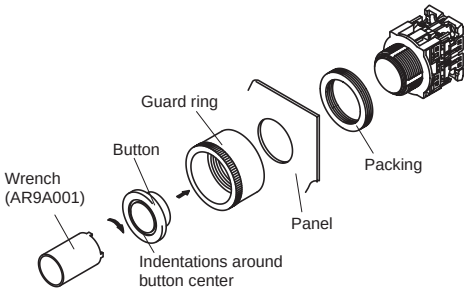
Fig. 8



7. AR30GSR

(1) Insert the tips of the AR9A001 wrench into the indentations around the button center, and turn the wrench to loosen and remove the button.
(2) Loosen and remove the guard ring by hand.
(3) Insert the switch operator into the cutout hole from the back of the panel, and secure it with the guard ring from the front of the panel. (Recommended tightening torque: 1.5 to 2.5 N•m)
(4) Attach and secure the button with the AR9A001 wrench. (Recommended tightening torque: 0.3 to 0.5 N•m)

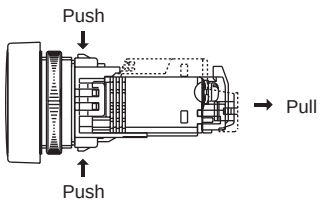
Fig. 9



8. DR30F4M, F4N, M4M

Insert the pilot lights from the front of the panel and fix it with the AHX536 tightening wrench from the back of the panel.
(1) Recommended tightening torque: 1 to 1.5N•m
(2) For pilot lights with transformers and resistance units, remove the transformer or resistance unit in advance. (Fig.10)

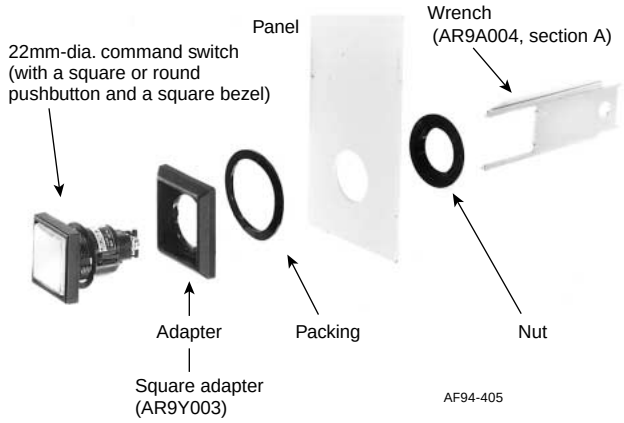
Fig. 10



9. Mounting a 22mm-dia. command switch with a square button and a square bezel, or with a round button and a square bezel, to a panel cutout hole for a 30mm-dia. command switch using an adapter

As shown in Fig. 11, mount an adapter and packing onto a 22mm-dia. command switch (AR22, DR22 series) with a square button and a square bezel or one with a round button and a square bezel. Then, insert the switch operator into the panel cutout hole from the front of the panel. Use AR9A004 wrench section A to tighten the locking nut from behind the panel to secure the switch.
Use the adapter accessory nut for this purpose. Do not use the command switch accessory nut.

Fig. 11 Command switch with a square button and a square bezel, and command switch with a round button and a square bezel



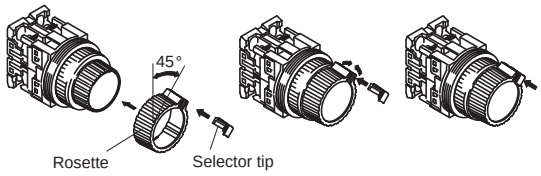
Note : • Recommended tightening torque is from 1 to 1.5N•m.
• Panel thickness: 2.5 to 5mm

This adapter can be used with the following 22mm-dia. Command switches :
- AR22F0M, F5M, E0M, E5M, F0P, F5P, E0P, E5P, M4P
- AR22F0S, F5S, E0S, E5S, F0Y, F5Y, E0Y, E5Y, M4Y
- AR22PY, PCY, WY, WCY, RY, RCY, JY, JCY, PP
- DR22F3M, F4M, F5M, E3M, E3P

10. AR30S1R, S2R, S3R, S6R

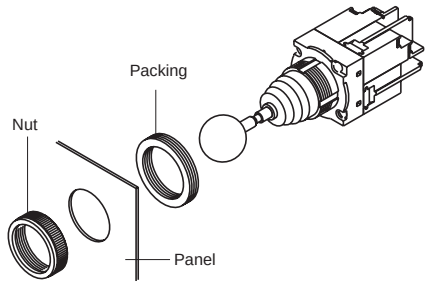
(1) Attach the operator in the same manner as described in step 1.
(2) Attach the rosette assembly to the operator.
(3) Pressing the rosette from the directions indicated by the arrows, insert the selector tip in the groove.
(4) Make sure that the selector tip is inserted completely.
(5) To remove the rosette, use a small flathead screwdriver to remove the selector tip as described in step 3, and then remove the rosette.

Fig. 12



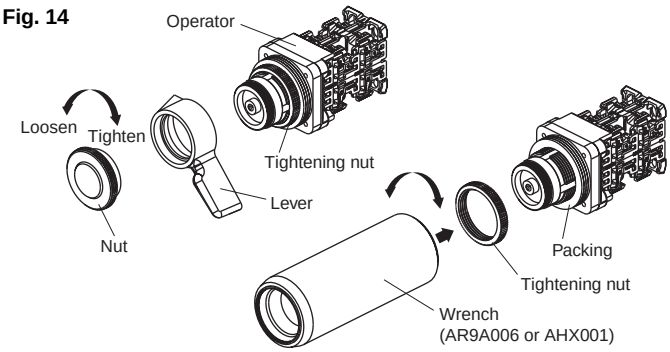
11. AR30A (joy stick selector)
(1) Remove the clamp ring as shown in the following figure.
(2) Attach the operator in the same manner as described in step 1.
Note: Even if a lock type is used, remove the clamp ring in the same manner.

Fig. 13



12. AR30HR
(1) The lever is removed after loosening the nut by hand.
(2) Loosen and remove the tightening nut by hand.
(3) Insert the operator into the cutout hole from the back of the panel, and tighten the tightening nut with the AHX001 wrench or AR9A006 wrench from the front of panel to secure the operator as shown in Fig. 14.
(Recommended tightening torque : 1.5 to 2.5N • m)
(4) Attach the lever assembly to the operator.
(5) Screw in the nut by hand, making sure that it is screwed in all the way.

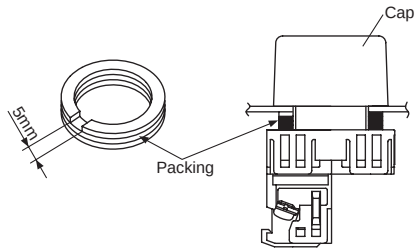
Fig. 14



■ Water-proof and dust-proof cap
Applicable type: Water-proof cap AHX052
Dust-proof cap AHX032, 033, 034, 113, 157

When attached to the panel in combination with a water-proof or dust-proof cap, the water-proof cap or dust-proof cap may sink downward and prevent the depressed button from returning to its original position.
As shown in the following figure, cut an approximately 5-mm air outlet in the portion of the ring packing touching the panel surface. Also, reduce the number of packing rings by one below the standard number. The clamp ring tightening torque is 1.5 to 2.5 N•m.

Fig. 15



Degree of protection
The water-proof cap or dust-proof cap seals the panel surface to provide IP65 protection.

■ Applicable panel thickness
The AR30/DR30 series switches are mountable to panels with the thickness given in the table below.

Switch mounting condition		Applicable panel thickness
Without accessories		1 to 6mm
With accessories	AR9Y003 adapter	2.5 to 5mm

■ Using accessory ring-packings
Use the required number of ring-packings (1.6mm-thick, 4 pieces, resin mold).
Table below is a guideline for using the packings.
If a locking nut or legend plate is used, the thickness must be counted as an additional panel thickness.

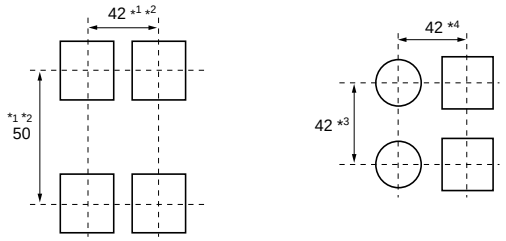
Panel thickness vs. number of packings (reference data)

Effective panel thickness including lock-ring and legend plate thicknesses	Number of packings
1.0mm to less than 2.0mm	
2.0mm to less than 3.6mm	
3.6mm to less than 5.0mm	
5.0mm to less than 6.0mm	

■ Minimum mounting space, mm
The minimum mounting spaces required for AR30/DR30 command switches are given below. (Fig. 16)

Fig. 16

- Illuminated pushbutton and pushbutton
- Emergency stop illuminated pushbutton and emergency stop pushbutton
- Illuminated and non-illuminated selectors
- Pilot light

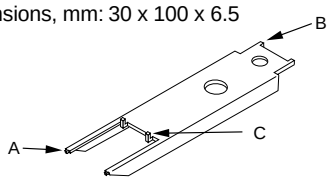


Notes: *1 AR30M3R, M8R, GSR: 55mm
*2 AR30B□R, GPR, V1R: 80mm

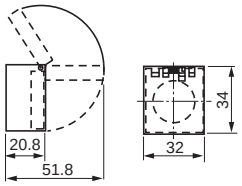
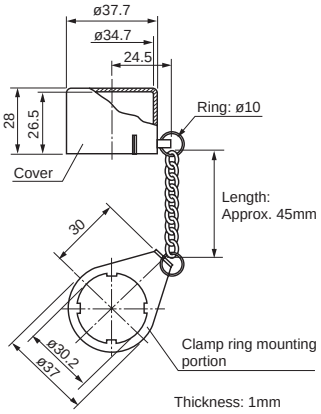
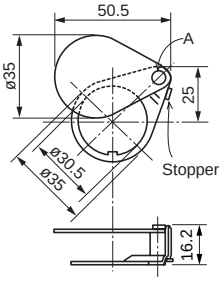
Type	*3	*4
F4M	34	34
F4N (Vertical lengthwise mounting)	40	34
(Horizontal lengthwise mounting)	34	40
M4M	40	40
Pilot lights short-body with transformer	50	42
Pilot lights with resistor	80	42

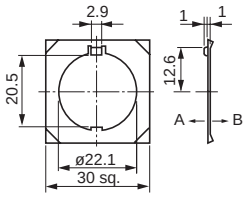
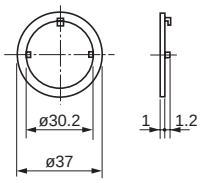
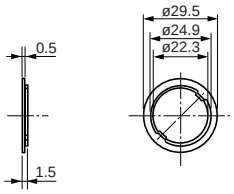
Other items are the same as for the AR22 and DR22 series, *see page 04/50 to 04/54*.

■ Accessories

Description	Type
Wrench KK02-261	**AR9A004** Dimensions, mm: 30 x 100 x 6.5  Remarks Section “A” Use this section to tighten the nut for mounting the operator on a panel. Section “B” Use this section to tighten or remove the lens. Applicable type: AR22F0L, F5L, E0L, E5L, F0P, F5P, E0P, E5P AR22G1L, G2L, G4L, G6L, G7L, G9L DR22E3L, E3P AR30E0L, E5L, G2L, G3L, G4L, G7L, G8L, G9L DR30E3L Section “C” Fit the tabs on the section “C” in the center button, and turn the wrench to tighten or remove the button. Applicable type: AR22V (except V4R, VG type) AR30V (except V1R type)
Wrench for AR22, DR22 	**AR9A701** Dimensions, mm: ø28 x 70 Application: AR22, DR22 nut tightening
Wrench KK02-097A	**AHX536** Dimensions, mm: ø32 x 76 Application: DR30F4M, F4N, M4M, N1, N2 nut tightening
Wrench KK02-098A	**AR9A001** Dimensions, mm: ø22 x 35 Application: AR22, DR22 round-type lens tightening AR22E0M, E5M oil-proof cap tightening AR30, DR30 round-type lens tightening AR30GSR button tightening
Wrench (for center button) 	**AR9A002** Dimensions, mm: ø18 x 60 Application: AR22V center button tightening (except V4R, VG type) AR30V center button tightening (except V1R type)
Wrench AF03-5	**AHX701** Dimensions, mm: ø25 x 72.5 Application: DR22N, AR22VG nut tightening

Description	Type
Wrench (for center button) AF93-6	**AHX8003** Dimensions, mm: ø14 x 50 Attaching and removing the center button of the AR22VGF type.
Wrench for AR22,30 and DR22, 30 For ø30 For ø22 AF96-241	**AR9A006** Dimensions, mm: ø40 x 100 To mount an AR22, 30 or DR22, 30 command switch to a panel, use this wrench to tighten the nut securely. It is very easy to fit this wrench onto the nut. The wrench with an inside rubber-lining can be easily used with either your right or left hand.
Wrench for AR30, DR30 AF95-467	**AHX001** Dimensions, mm: ø47 x 100 To mount an AR30 or DR30 command switch to a panel, use this wrench to tighten the nut securely.
Special tool AHX321 SG-873 DR9A321-T AF95-21	**AHX321** Dimensions, mm: 42 x 130 x 6.5 For all types except pilot lights **DR9A321-T** Dimensions, mm: 57 x 130 x 30 For pilot lights • This tool is used to remove contact blocks and transformer units. • The AHX321 can remove round color lens of switches.
Wrench/Lamp changer SI-1030	**AHX702** Dimensions, mm: ø36 x 55 Use this wrench to tighten or remove the lens and lamp. Used with: Lens of DR22D0L, K0L and DR30D0L, K0L Incandescent lamp of pilot lights and illuminated pushbuttons
Lamp changer For BA9S/13 lamp For E12/15 lamp AF95-22	**AHX790** Dimensions, mm: ø14 x 55 • Use this rubber wrench for mounting or removing lamps from pilot lights and illuminated pushbutton switches. • This wrench can be used for both LED and incandescent lamps. • One end is for the BA9S/13 lamp, and the other is for the E12/15 lamp (for use with 30mm dia. pilot lights with resistor). • For 30mm dia. pilot lights with resistor, this tool can also be used to attach or remove incandescent lamps.

Description	Type
Protection cover AF95-29	**AR9E760** This cover protects against accidental operation. The cover lid is returned home with a spring force. (Packing is provided) Used with: AR22F0L, F5L, E0L, E5L, F0M, F5M, E0M, E5M, F0P, F5P, E0P, E5P AR22F0R, F5R, E0R, E5R, F0S, F5S, E0S, E5S, E0Y, E5Y, F0Y, F5Y, FAR, FBR, EAR, EBR Dimensions, mm: 
Cover for preventing operating errors with 30mm dia. types AF91-671	**AR9E538** Inadvertent operation can be prevented by fitting a transparent cover with chain in the clamp ring. Used with: AR30F0R, F5R, E0R, E5R, E0L, E5L Dimensions, mm: 
Cover for preventing operating errors with 30mm dia. types .AF93-420	**AHX408** This is a metallic cover for preventing inadvertent operation. Used with: AR30F0R, F5R Dimensions, mm:  When attaching the cover to a vertical panel, if you attach it so that the portion indicated by an "A" is at the upper right, the stopper causes the cover to stop above the push button to halt further rotation. The material is steel (zinc plated).

Description	Type
Key washer for AR22, DR22 AF95-25	**AR9Y715** Use this metal washer when securing a operator in a 22.3mm dia. panel cutout hole. Dimensions, mm:  • When the periphery of the panel cutout has a hole to stop rotation, use with side A contacting the panel (except for Joy stick selector types). • Even when the periphery of the panel cutout does not have a hole to stop rotation, if used with side B contacting the panel it can serve as a washer for eliminating play (except for Joy stick selector types).
Key washer for ø30 SC-1016	**AHX082** Use this metal washer when securing an operator in a 30.5mm dia. panel cutout hole. Dimension, mm: 
Operator base cover AF95-26	**AR9Y002** Attach this cover to the operator base of a pushbutton switch with only one contact block (1NO or 1NC) to protect against dust.
Adapter for AR22, DR22 .AF95-28	**AR9Y718** Use this resin adapter to mount the AR22/DR22 (switch/pilot light) in a 25.5mm dia. cutout hole on a panel. Dimensions, mm: 

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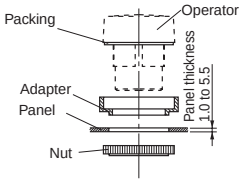
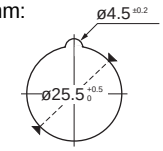
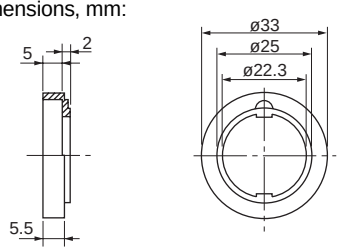
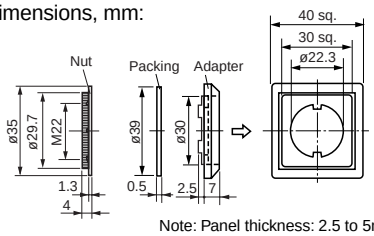
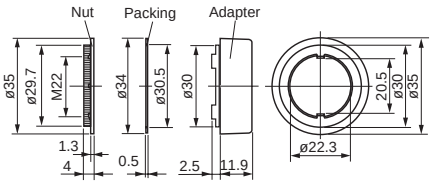
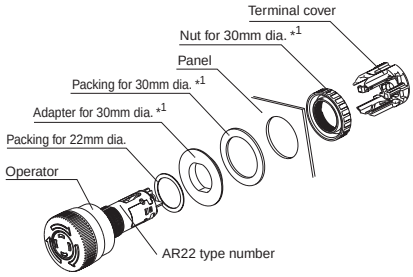
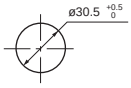
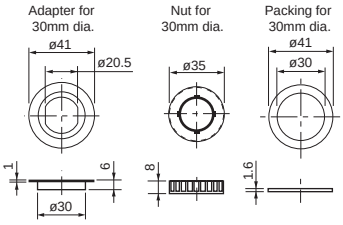
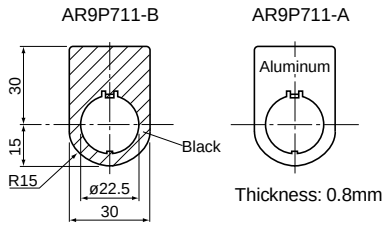
Description	Type
Adapter for AR22 and DR22	**AR9Y008** Use this resin adapter to mount the AR22/DR22 (switch/pilot light) in a 25.5mm dia. cutout hole on a panel. Mounting, mm:  Panel cutout, mm:  Equipped with device for stopping rotation Used with: AR22, DR22 round head types (except for M3R, M8R, VG□, joy stick selectors and buzzers) Dimensions, mm:  AF98-198
Adapter for AR30 and DR30	**AR9Y003** Mount this adapter onto a 22mm dia. command switch with a square button and a square bezel to obtain a 30mm dia. command switch with a square/round button and a square bezel. A resin ring-packing and a nut are accessories of the adapter. Dimensions, mm:  Note: Panel thickness: 2.5 to 5mm AF95-416

Description	Type
Round-frame adapter for 30mm dia. types	**AR9Y004** By using this adapter in combination with the round type 22mm dia. command switch, the 22mm dia. command switch can be used as a 30mm dia. command switch/ round frame type. Used with: AR22, DR22 round types (except for M3R, M8R,VG□, Joy stick selectors, buzzers) Dimensions, mm  KK02-100A Note: Panel thickness: 2.5 to 5mm
Round-frame adapter for 30mm dia. type VG	**AHX958** Using this adapter in combination with model AR22VG (22mm dia.) allows mounting to a 30.5mm panel cutout hole. The attachment method is as follows. • The washer and nut (22.3mm dia.) originally attached to the operator will not be used, so remove them. • Attach the 22mm dia. packing (included), the 30mm dia. adapter and the 30mm dia. packing to the operator in that order, and insert the operator into the cutout hole. • From the back of the panel cutout hole, fasten the 30mm-dia. nut using the AHX701 wrench. The correct tightening torque is 1 to 1.5 N•m.  *1 Adapter for 30mm dia. (AHX958) Panel cutout, mm:  Dimensions, mm:  AF93-4 Note: Panel thickness: 1 to 6mm

Description	Type
Legend plate for AR22	**AR9P711-**①②③ ① Color B: Black A: Aluminum This aluminum legend plate is for a 22.3mm dia. panel cutout hole. (Packing provided)

Legend	Code ②	Code ③
Blank	0	0
ON	0	A
OFF	0	B
START	0	C
STOP	0	D
OFF-ON	2	A

Dimensions, mm:

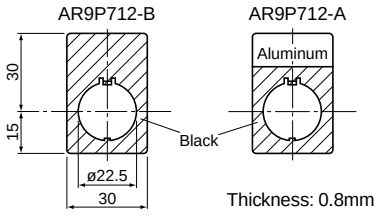


SI-1033

Description	Type
Legend plate for AR22	**AR9P712-**①②③ ① Color B: Black A: Partially black This aluminum legend plate is for a 22.3mm dia. panel cutout hole. (Packing provided)

Legend	Code ②	Code ③
Blank	0	0
ON	0	A
OFF	0	B
START	0	C
STOP	0	D
OFF-ON	2	A

Dimensions, mm:

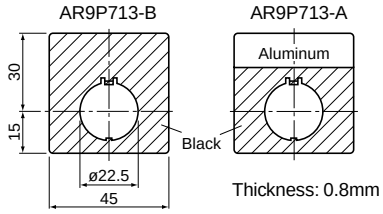


SI-1032

Description	Type
Legend plate for AR22	**AR9P713-**①②③ ① Color B: Black A: Partially black This aluminum legend plate is for a 22.3mm dia. panel cutout hole. (Packing provided)

Legend	Code ②	Code ③
Blank	0	0
ON	0	A
OFF	0	B
START	0	C
STOP	0	D
OFF-ON	2	A

Dimensions, mm:



AF95-114

Description	Type
Legend plate for AR22 emergency stop	**AR9P719-**①② Plate color: Yellow Letter color: Black This aluminum legend plate is for a 22.3mm dia. panel cutout hole. (Packing provided)

Legend	Code ①	Code ②	Letter hight
Blank	0	0	–
EMERGENCY STOP	5	A	7mm
	5	B	13mm
EMERGENCY OFF	5	C	13mm

Dimensions, mm:

AR9P719

Thickness: 0.8mm

KK02-265A

Note: Engraving for making letters is not available.

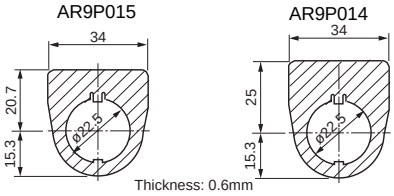
Description	Type
Legend plate for AR22 (width: 34mm)	**AR9P015-B**①② : Hight 36mm **AR9P014-B**①② : Hight 40.3mm Color: black

Legend	code ①	②
Blank	0	0
ON	0	A
OFF	0	B
START	0	C
STOP	0	D
OFF-ON	2	A

.AF96-190

Optimal for use in combination with a 3-position selector switch.
Legend plates are available in two types: short, 36 mm; and long, 40.3mm.

Dimensions, mm:

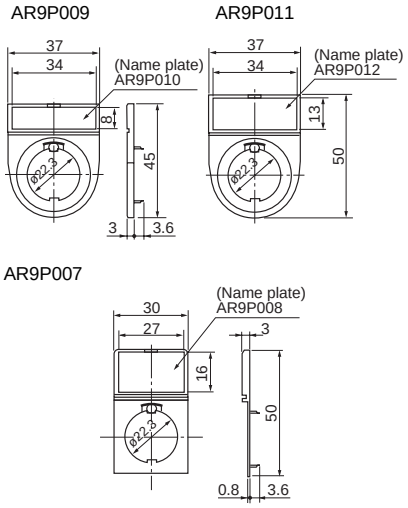


Description	Type
Legend plate with name plate for AR22	Legend plate **AR9P009-B** Name plate **AR9P010-B** ①② (34 × 8mm) Legend plate **AR9P011-B** Name plate **AR9P012-B** ①② (34 × 13mm) Legend plate **AR9P007-B** Name plate **AR9P008-B** ①② (27 × 16mm)

Name plate	Code ①	②
ON	0	A
OFF	0	B
START	0	C
STOP	0	D
OFF-ON	2	A

.AF96-190

Dimensions, mm:



Description	Type
Legend plate for AR30	**AHX177-**①②③④ ① Material and color This legend plate is for a 30.5mm dia. panel cutout hole.

Code	Material	Color
S	Brass	Silver
B	Aluminum	Black
A		Aluminum

Y-1545

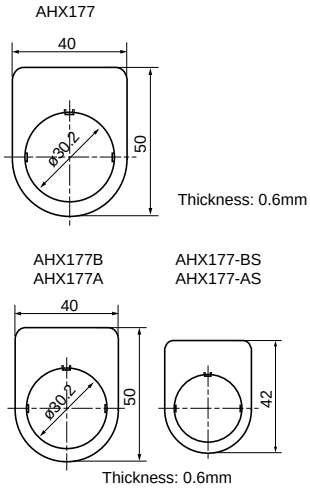
② Size
H: Standard
S: Short size

Legend	Code ③	④
Blank	0	0
ON	0	A
OFF	0	B
START	0	C
STOP	0	D
OFF-ON	2	A

AF89-466

Dimensions, mm:

AF87-49

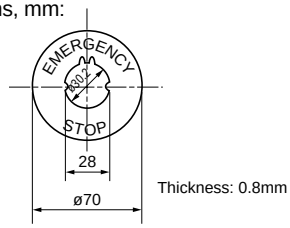


Description	Type
Legend plate for AR30 emergency stop	**AHX720-**①② Plate color: Yellow Letter color: Black This aluminum legend plate is for a 30.5mm dia. panel cutout hole.

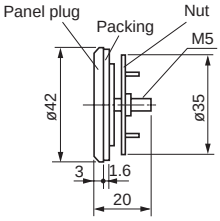
Legend	Code ①	②	Letter hight
Blank	0	0	–
EMERGENCY STOP	5	A	7mm

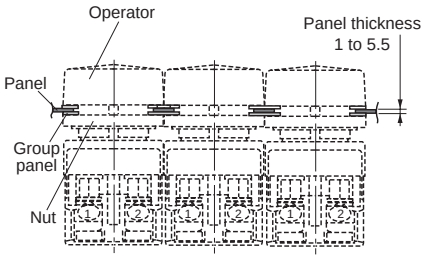
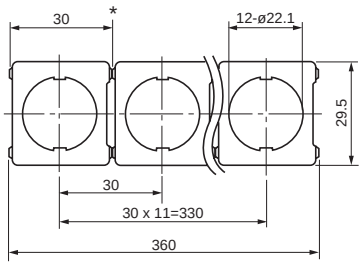
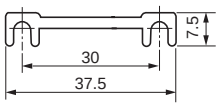
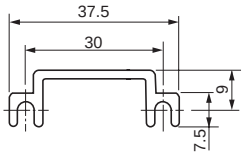
SK-598

Dimensions, mm:



Note: Engraving for making letters is not available.

Description	Type
Panel plug for AR22 and DR22 SI-1027	Round: **AHX725-B** Black **AHX725-H** Gray Square: **AHX726-B** Black **AHX726-H** Gray Dimensions, mm: ø29.5 x 17 (AHX725) 29.5 sq. x 17 (AHX726) Use this plug to cover up unused panel cutout holes. For oil proof usage, use together with packing (AR9Y730) and a nut (AR9R744).
Panel plug for AR30 and DR30 T-1993	**AHX004** Color: Silver (metal) This plug is used to cover up unused panel cutout hole. Dimensions, mm: 

Description	Type
Group panel for 22mm dia. type AF97-233	**DR9Y004** These new 22mm dia. command switch/ square types can be neatly aligned side by side on this group panel at a 30mm pitch to form a uniform panel face with no misalignment between mounted switches. Depending on the number of switches to be grouped (maximum 12), the panel can be divided (by cutting at the portion indicated by an asterisk (*)). Mounting, mm: (example showing a group of three)  Dimensions, mm:  Thickness: 0.8mm
Jumper AF95-153 AF95-27	**APCX029** (For pilot light without transformer) **DR9Y001** (For pilot light with transformer) Use this jumper to connect terminals allocated in a 30mm pich. Rated current is 3A Dimensions, mm: APCX029  DR9Y001  Thickness: 0.5mm

Description	Type

Lens for illuminated pushbutton switch and pilot lights

AF94-458

Type	Used with
AR9C011-□[*1]	AR22F0L, F5L, F0P, F5P
AR9C012-□[*1]	AR22E0L, E5L, E0P, E5P AR22G1L, G2L, G4L, G6L, G7L, G9L DR22E3L, E3P AR30E0L, E5L, G2L, G3L, G4L, G7L, G8L, G9L DR30E3L
AR9C013-□[*1]	AR22F0M, F5M
AR9C014-□[*1]	AR22E0M, E5M DR22E3M, F5M
AR9C015-□	AR22M4L, M4P
AR9C016-□	AR22M0L, M5L
DR9C001-□	DR22D0L DR30D0L*[2]
DR9C002-□	DR22K0L DR30K0L*[2]
DR9C120-C	DR30M4M
DR9C121-C	DR30F4N
DR9C122-C	DR30F4M
DR9C126-□[*1]	DR22F3M
DR9C126-C	DR22F4M
DR9C127-□[*1]	DR22E3N

Replace the □ mark by the lens color code

Color	Green	Red	Clear	Yellow
Code	G	R	C	Y

Color	Orange	Blue	White
Code	A	S	W

Notes: *[1] When the main unit code is "W" (white), use a lens of clear color.
*[2] Except for pilot lights with resistor

Button for pushbutton switch

AF94-461

KK02-101A

KK02-102A

KK02-103A

Type	Used with
AR9C001-□	AR22F0R, F5R, F0Y, F5Y, G2R, G7R AR30F0R, F5R, FVR AR22S1R, S2R, S3R, S6R AR30S1R, S2R, S3R, S6R
AR9C003-□	AR22E0R, E5R, G0R, G3R, G5R, G8R AR22E0Y, E5Y AR30E0R, E5R, G0R, G1R, G5R, G6R
AR9C004-□	AR22F0S, F5S
AR9C005-□	AR22E0S, E5S
AR9C006-□	AR22M4R, M9R, M4Y AR30M4R
AR9C007-□	AR22M0R, M5R AR30M0R, M3R, M5R, M8R
AR9C024-□	AR30B0R, B1R, B2R, B3R
AR9C027-C	AR22FAR, FBR, AR30FAR, FBR
AR9C028-C	AR22EAR, EBR, AR30EAR, EBR
AR9C041-R	AR30N0R
AHX539	Cap for AR30FVR

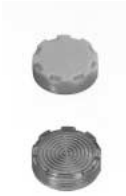
Replace the □ mark by the button color code

Color	Green	Red	Black	White
Code	G	R	B	W

Color	Yellow	Orange	Blue
Code	Y	A	S

Description	Type

Center button (For V type)



AF95-32

Type	Used with
AR9C020-R	AR22V0R, V2R, VSR AR30V0R, V2R
AR9C020-□	AR22V5R, AR30V5R
AR9C018-R	AR22V0L, V2L, VDL, VAL, VSL AR30V0L, V2L
AR9C018-□	AR22V5L*, AR30V5L*

Replace the □ mark by the button color code

Color	Red	Black	Yellow
Code	R	B	Y

Note: * V5L: Red and yellow only

Push-lock, turn-reset button (V and Q types)

AF95-31

KK02-104A

Type	Used with
AR9C008-R	AR22V4R
AR9C010-R	AR22Q2R, AR30Q2R
AR9C017-R	AR22V2R, V2L, AR30V2R, V2L
AR9C019-R	AR22VAL
AR9C021-R	AR22V0R, V0L, AR30V0R, V0L
AR9C021-□	AR22V5R, V5L*, AR30V5R, V5L*
AR9C026-R	AR22VDL
AR9C029-R	AR30V1R
AR9C040-R	AR22VSR, VSL

Replace the □ mark by the button color code

Color	Red	Black	Yellow
Code	R	B	Y

Note: * V5L: Red and yellow only

Knob

AF95-43

Type	Used with
AR9M006-□	AR22PR, PCR, PY, PCY AR30PR, PCR

Replace the □ mark by the knob color code

Color	Black	Green	Red
Code	B	G	R

Lever

AF95-42

Type	Used with
AR9M007-□	AR22WR, WCR, WY, WCY AR30WR, WCR

Replace the □ mark by the lever color code

Color	Black	Green	Red
Code	B	G	R

Cylindrical knob

AF95-44

Type	Used with
AR9M008-□	AR22RR, RCR, RY, RCY

Replace the □ mark by the knob color code

Color	Black	Green	Red
Code	B	G	R

Description	Type
Knob (for illuminated selector switch) AF94-465	Type / Used with **AR9M005-□** AR22PL, PP AR30PL Replace the □ mark by the knob color code Color: Green, Red, White Code: G, R, W Color: Yellow, Orange, Blue Code: Y, A, S
Key KKD09-012	Type / Used with **AR9C022-□** AR22JR, JCR, AR30JR, JCR, **AR9C025-□** AR22JAR, AR30JAR Replace the □ mark by the key type code. Code: A, B, C, D, E or F, 6 types.
Legend plate (for F type with round bezel) AF94-459	**AR9P001-W** This part is made of acrylic resin. Use paint or thinner compatible with resin. Dimensions, mm: ø17.8 x 0.9
Legend plate (for E type with round bezel) AF94-459	**AR9P002-W** This part is made of acrylic resin. Use paint or thinner compatible with resin. Dimensions, mm: ø19.7 x 4.2
Symbol mark plate AF98-197	Type / Used with **AR9P019-□□■** AR22FAR, FBR, AR30FAR, FBR **AR9P020-□□■** AR22EAR, EBR, AR30EAR, EBR □□■:

Symbol	○		I		Ⓣ		○	I	Ⓣ
Plate	W	B	W	B	W	B	Clear		
Symbol	Red		Green		Green		Black		
Code	01	02	03	04	11	12	02B	04B	12B

W: White, B: black

Description	Type
Legend plate and color plate (for F type with square bezel) AF94-460 KK02-105A KK02-106A KK02-107A	• Legend plate Type / Used with **DR9P241-W** AR22F0M, F5M DR22F3M, F4M **DR9P242-WP** DR30M4M **DR9P242-W** DR30M4M, LED(W) **DR9P243-WP** DR30F4N **DR9P243-W** DR30F4N, LED(W) **DR9P244-WP** DR30F4M **DR9P244-W** DR30F4M, LED(W) Types DR9P242, 243 and 244-W are LED illuminated, and used exclusively with operators having a "W" in the type number. • color plate Type / Used with **DR9P241-□** DR22F3M, F4M **DR9P242-□** DR30M4M **DR9P243-□** DR30F4N **DR9P244-□** DR30F4M Replace the □ mark by the color code Color: Green, Red, White Code: G, R, W Color: Yellow, Orange, Blue Code: Y, A, S This part is made of acrylic resin. Use paint or thinner compatible with resin. Dimensions, mm: DR9P241: 20.8 sq. x 0.8 DR9P242: 33.4 sq. x 1 DR9P243: 33.4 x 27.4 x 1 DR9P244: 27.4 sq. x 1
Legend plate (for E type with square bezel) AF94-460 AF94-460	Type / Used with **AR9P003-W** AR22E0M, E5M DR22F5M, E3M **DR9P001-W** DR22E3N This part is made of acrylic resin. Use paint or thinner compatible with resin. Dimensions, mm: AR9P003-W: 20 sq. x 4.8 DR9P001-W: 19.7 x 26.7 x 4.5
Legend sheet AF95-34	**AHX727** Affix this seal to the DR9P241-□/AR9P003 legend plate for marking or labeling. Dimensions, mm: 20 sq. x 0.025

Description	Type

LED lamp

KKD06-208

Type	Lamp voltage
APX510-6 ☐	6V AC
APX510-D6 ☐	6V DC
APX510-12 ☐	12V AC/DC
APX510-15 ☐	15V AC/DC
APX510-24 ☐	24V AC/DC

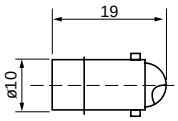
Replace the ☐ mark by the luminous color code

Luminous color	Yellow	Red	Green
Code	Y	R	G
Lens color	Y	R	G

Luminous color	Amber	Orange	Blue
Code	A	O	S
Lens color	A	W, A*	S

* Orange is available only for the DR22F4M pilot light.

Dimensions, mm:



Lamp base: BA9s/13

LED lamp (for DR30 with resistor)

KK02-110A

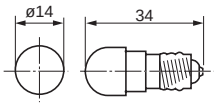
KK02-111A

Type	Lamp voltage
APX507-24 ☐	24V AC/DC
APX509-24O	

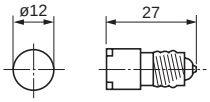
Note:
The symbol in the box indicates the color of light emitted. (See note APX510.)
When the code is “W” (white), use an LED lamp ((APX.509-24O)

Dimensions, mm:

APX507



APX509



Lamp base: E12/15

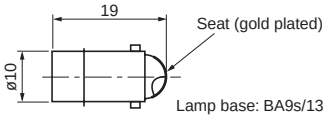
LED lamp (for AR22VGF type)

KK02-109A

Type	Lamp voltage
AR9L002-ER	24V AC/DC

Luminous color: Red

Dimensions, mm:



Lamp base: BA9s/13

Do not use the LED lamp for other types.

Description	Type

Neon lamp (for AR22VGF type)

KK03-038

Type	Lamp voltage
AR9N001-HA	110V AC
AR9N001-KA	120V AC
AR9N001-MA	220V AC
AR9N001-PA	240V AC

Luminous color: Orange

Dimensions, mm:

Do not use the LED lamp for other types.

LED lamp for DR30 (square type)

KKD06-208

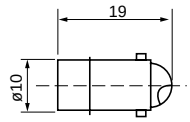
Type	Lamp voltage
DN6Q005-6 ☐	6V DC
DN6Q005-2 ☐	12V AC
DN6Q005-B ☐	12V AC/DC
DN6Q005-E ☐	24V AC/DC

Replace the ☐ mark by the luminous color code

Luminous color	Yellow	Red	Green
Code	Y	R	G
Lens color	Y	R	G

Luminous color	Amber	Orange
Code	Y	W
Lens color	Y	W

Dimensions, mm:



Lamp base: BA9s/13

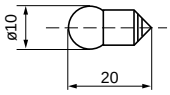
Do not use the LED lamp for other types.

Incandescent lamp

AF89-427

Type	Lamp voltage	Rated voltage, consumption
AHX135	5.5V AC/DC	6.3V AC/DC, 1W
AHX279	15V AC/DC	18V AC/DC, 1W
AHX144	20V AC/DC	24V AC/DC, 1W
AHX129	24V AC/DC	30V AC/DC, 1W

Dimensions, mm:



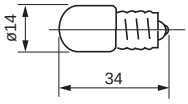
Lamp base: BA9s/13

Incandescent lamp (for DR30 with resistor)

KK02-115A

Type	Lamp voltage	Rated voltage, consumption
AHX130	15V AC/DC	18V AC/DC, 2W

Dimensions, mm:



Lamp base: E12/15

Contact block (1NO)

AF94-455

AR9B290 Standard
AR9B290-S Overlap

Color: Blue
Dimensions, mm: 19.3 x 29 x 27

Note: Terminal cover is not supplied with this.

Contact block (1NC)

AF94-455

AR9B291 Standard
AR9B291-S Overlap

Color: Red
Dimensions, mm: 19.3 x 29 x 27

Note: Terminal cover is not supplied with this.

Lamp terminal

AF94-456

AR9B292

Color: Black
Dimensions, mm: 19.3 x 29 x 27

Note: Terminal cover is not supplied with this.

Contact protection cover

KK02-117A

KK02-118A

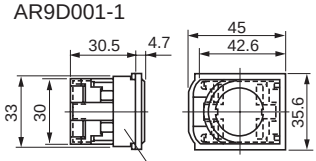
Type	Used with *
AR9D001-1	AR22, 1-step contact
AR9D001-2	AR22, 2-step contact
AR9D002-1	AR30, 1-step contact
AR9D002-2	AR30, 2-step contact

- The contact is covered with a silicon rubber cover to keep out foreign matter such as dust, etc.
- Section A of the AR9D001 is separate.

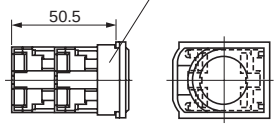
* *See page 04/122*, "AR22 □ Z8, AR30 □ Z8"

Dimensions, mm:

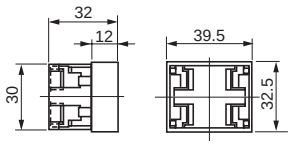
AR9D001-1



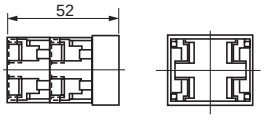
AR9D001-2



AR9D002-1



AR9D002-2



Transformer unit

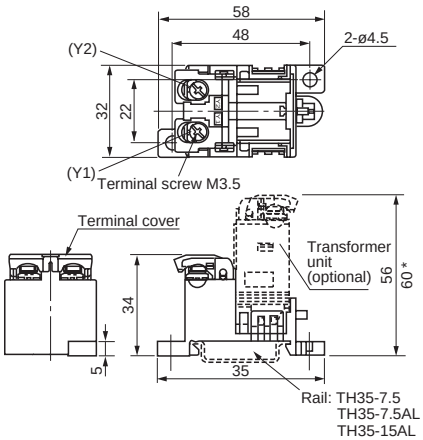
AF94-457

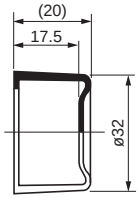
AF95-33

Type	Primary voltage	Used with
AR9T511-H	100-110V AC	Standard type (except buzzers)
AR9T511-L	115-127V AC	
AR9T511-M	200-220V AC	
AR9T511-Q	230-254V AC	
AR9T511-S	350-380V AC	
AR9T511-T	400-440V AC	
AR9T511-V	480V AC	
AR9T511-W	500-550V AC	
AR9T557-H	100-110V AC	DR30F4N, F4M, M4M
AR9T557-L	115-127V AC	
AR9T557-M	200-220V AC	
AR9T557-Q	230-254V AC	
AR9T557-S	350-380V AC	
AR9T557-T	400-440V AC	
AR9T557-V	480V AC	
AR9T557-W	500-550V AC	

Dimensions, mm:
Up to 220 V 22.4 x 30 x 45
Over 220 V 25.3 x 29 x 48

Note: With terminal cover

Description	Type
Base unit for transformer separate mounting KK02-118A	**AR9T003** Use this base in combination with a transformer unit. This base unit can be mounted using screws or rails. Dimensions, mm  * Except for the types 110V AC, 127V AC and 220V AC.
Resistor Voltage stabilizer Device for LED lamp flickering AF95-33	Resistor: **AR9T519-H** (110V DC) Fit this resistor when using LED of 24V DC rating with 110V DC power. Voltage stabilizer: **AR9T001-E** This unit allows an LED lamp of 24V DC rating to be used in a circuit with voltage from 27V to 35V (AC or DC). Flickering device: 6V AC: **AR9T002-A** 6V DC: **AR9T002-6** 12 to 24V AC: **AR9T002-G *** 12 to 24V DC: **AR9T002-E *** * Used in combination with 12V, 15V, or 24V rated LED lamp. Note: With terminal cover
Nut AF94-462 KK2-119A	Type / Used with / Dimensions, mm **AR9R744** — AR22, DR22* — ø29.7 x 4 **DR9R001** — DR30F4M, DR30F4N, DR30M4M — ø33.8 x 5 * Except AR22VG□, Joy stick selectors, buzzers and numerical indicators

Description	Type
Nut for 30mm dia. types (Resin types are black, metallic types are silver.) KK2-120A KK2-121A KK2-122A KK2-123A	**AR9R001:** Resin types are black (standard) **AHX088:** Metallic types are silver Used with: AR30F0R, F5R, FAR, FBR, E0R, E5R, EAR, EBR, E0L, E5L, Q7L DR30D0L, E3L, K0L **AR9R002:** Resin types are black (standard) **AHX093 :** Metallic types are silver Used with: AR30M0R, M5R, M4R, G0R, G5R, N0R, S□R, V□R, Q2R, V□L, PR, PCR, WR, WCR, JR, JCR, JAR, PL, A□N, A□H
Water-tight cap for 22mm dia. types KK2-124A	**AR9D797-□** This rubber cap protects the operator and switch mechanism against dust and water. Use this cap in a dusty or moist environment. Used with: AR22E0L,E5L AR22E0R, E5R Replace the □ mark by the luminous color code. Code / Color G — Green R — Red B — Black Y — Yellow Blank — Clear (standard) Dimensions, mm: 
Water-tight cap for 30mm dia. types Y-1559	**AHX052** This rubber cap protects the operator and switch mechanism against dust and water. Use this cap in a dusty or moist environment. The only color available is transparent. Used with: AR30E□R, E□L Dimensions, mm: ø36 x 22.5

Dust-proof cap for 30mm dia. types

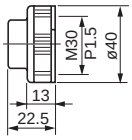
SC-993

AF89-772

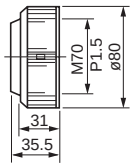
Type	Color	Used with	Spec.
AHX032	Red	AR30E0R	Oil-proof
AHX033	Green		
AHX034	Black		
AHX041	Red	AR30F0R	Oil-proof
AHX042	Green		
AHX043	Black		
AHX157-R	Red	AR30B2R, B3R	Oil-proof
AHX157-G	Green		
AHX157-B	Black		
AHX113-R	Red	AR30E0R	Weather resistance
AHX113-G	Green		
AHX113-B	Black		
AHX111-R	Red	AR30F0R	Weather resistance
AHX111-G	Green		
AHX111-B	Black		

Dimensions, mm:

AHX032 to 034, 041 to 043
AHX111, 113



AHX157



Used for sealing the operator from foreign debris such as dust, oil (oil-proof), and water (weather resistance) in environments where the unit is in contact with such elements.

Packing

AF94-462

KK2-125A

AR9Y730:
AR22 and DR22 (Rubber)

Note: Except for joystick selector switches, buzzers

AHX282:
AR30 and DR30 (Resin-standerd)

Note: Except for DR30F4M, F4N, M4M, numerical indicators

AHX149:
AR30 and DR30 (Rubber)

Note: Except for DR30F4M, F4N, M4M, numerical indicators

Terminal cover

AF94-466

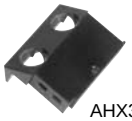
KK2-126A

Type	Used with	Dimensions, mm
AR9Y305	Contact unit Lamp terminal Transformer unit *1	18.4 x 29 x 8.4
DR9Y320	Pilot lights *2 (without transformer)	ø22 x 5.8
DR9Y321	DR30F4M, F4N, M4M (without transformer)	34 sq. x 8.7

*1 Applicable up to 220V.
*2 DR22D0L, E3L, K0L, F□M, E3M, E3N, E3P, DR30D0L, E3L, K0L

The terminal cover is provided as standard with the applicable types listed above. (Except for joy stick selector switches, numerical indicators, pilot lights with resistors, contact block alone and lamp terminal alone)

Terminal cover



AHX305

SG-842

AHX426

AF92-339

AHX376

SG-5

Type	Used with	Dimensions, mm
AHX305	Buzzers (without transformer)	23.5 x 27.5 x 16
AHX426	DR30D1L (without transformer)	27.5 x 31 x 8
AHX376	DR30D1L (with transformer) Buzzers (B0 type) With transformer * With short-body transformer With resistor unit	13 x 29 x 6.5

* 230V and over

The terminal cover is provided as standard with the applicable types listed above.

AR22 Special products

Semi standard compliant guardring

■ Features

- Combine a guard ring with a Fuji electric emergency stop pushbutton switches to comply with SEMI (SEMI-S2, SEMATECH Application Guide for SEMI S2-93).
- EMERGENCY OFF legend plates are available.
- Emergency stop pushbutton switches labeled with “EMO” are available.

Combination with the AR22V2R Emergency stop pushbutton switch

Combination with the AR22V3R Emergency stop pushbutton switch (labeled with EMO).

■ Accessories

Description	Type	Color
Guardring (KKD05-263)	**AR9R008**	Yellow
Legend plate for AR9R008 emergency off (KKD05-262)	**AR9P721-5C**	Yellow (Black legend)

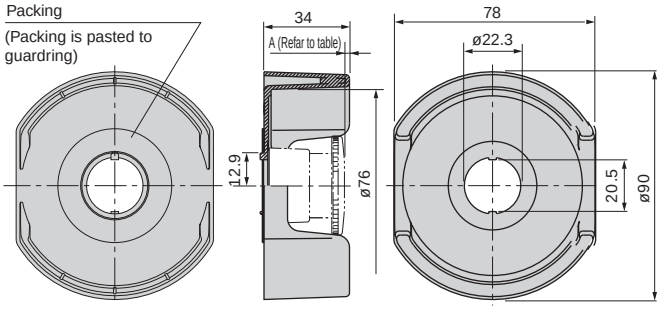
■ Emergency stop pushbutton switches

Operator	Contact	Type	Color
Push-lock, turn-reset (40mm dia, with "EMO" charactor) (KKD05-261)	1NC	**AR22V3R-01RZ286**	Red (White legend)
	1NO+1NC	**AR22V3R-11RZ286**	
	2NC	**AR22V3R-02RZ286**	
	1NO+2NC	**AR22V3R-12RZ286**	
	3NC	**AR22V3R-03RZ286**	
	1NO+3NC	**AR22V3R-13RZ286**	
	2NO+2NC	**AR22V3R-22RZ286**	
	4NC	**AR22V3R-04RZ286**	

Note : Contact arrangements indicated in the table can be supplied.

■ Dimensions, mm

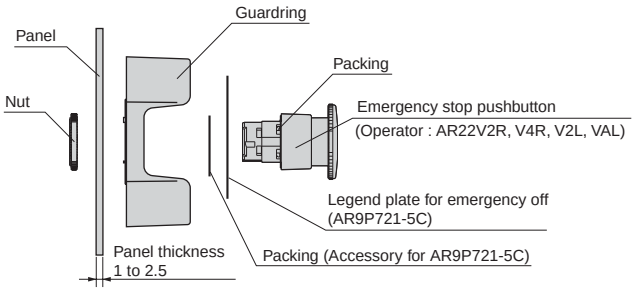
● Guardring (AR9R008)



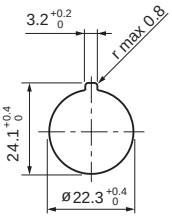
* Dimension A (the height difference between the switch and guardring) depends on the emergency stop (Illuminated) pushbutton switch that is being used. Refer to the following table.

Type	Panel thickness	A (Reference)	
AR22V2R	1~2.5	2mm	With AR9P721-5C
AR22V4R	1~2.5	2mm	With AR9P721-5C
AR22V2L	1~2.5	2mm	With AR9P721-5C
AR22VAL	1~2.5	2mm	With AR9P721-5C
AR22V3R (Z286)	1~3.6	3mm	

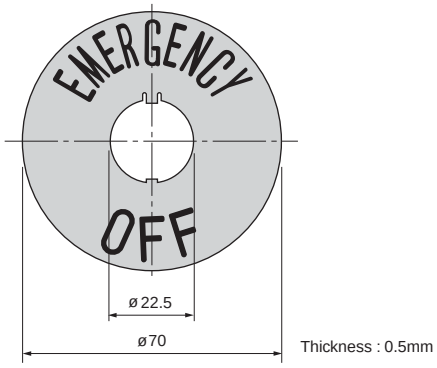
• Installation



• Panel cutout hole dimensions, mm

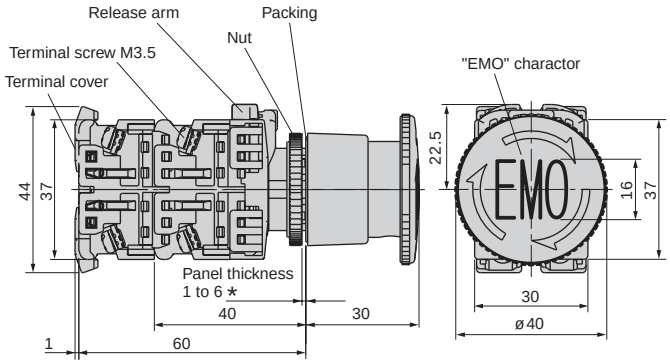


● Legend plate for emergency off (AR9P721-5C)



Note : • Engraving for marking letters is not available.
• Letter hight : 13mm

● Emegency stop pushbutton switches (AR22V3R-□□RZ286)



* Without accessories

■ Notes on use

This guardring conform to SEMI sandard. Please do not use it for the emergency stops other than Semiconductor manufacturing Equipment.

■ Applicable types

AR22V2R, V4R, V2L, VAL and V3R Z286

Products equipped with contact protection cover

■ Features
A silicon rubber cover is provided for the contact block to keep out foreign matter such as dust, etc.
Other ratings and specifications are the same as those of the standard type.

■ Type
AR22 □ Z8
AR30 □ Z8
Specify “Z8” at the end of the type number of the standard type.

■ Dimensions
The only thing different from the standard product is the addition of a 1-mm thick silicon rubber cover around the contact block.

■ Applicable types

Type	Contact arrangement	Remarks
• Pushbuttons *1 • Emergency stop pushbuttons *2 • Selectors *3	1NO+1NC, 2NO*5, 2NC	For use with a 1-step contact
	1NO+3NC, 2NO+2NC, 3NO+1NC, 4NO*5, 4NC	For use with a 2-step contact
• Illuminated pushbuttons *4 (without transformer)	1NO*6, 1NC	For use with a 1-step contact
• Emergency stop illuminated pushbuttons*2 (without transformer) • Illuminated selectors (without transformer)	1NO+2NC, 2NO+1NC, 3NO*6, 3NC	For use with a 2-step contact

Notes: *1 Except for AR30B0R, B1R, B2R, B3R, N0R, and GPR.
*2 Except for unibody (VG types)
*3 Except for AR30HR
*4 Except for AR30Q7L
*5 Except for emergency stop pushbutton switch
*6 Except for emergency stop illuminated pushbutton switch

Resisting water-soluble cutting oils and heat

■ Features
Safer operation in environments exposed to water-miscible cutting fluids, machining oils, lubricating oils, cleaning oils and high humidity (up to 95%) is made possible by using materials that protect against rust and corrosion of components.
Other ratings and specifications are the same as those of the standard type.

■ Type
AR22 □ Z9, DR22 □ Z9
AR30 □ Z9, DR30 □ Z9
Specify “Z9” at the end of the type number of the standard type.

■ Dimensions
Same as those of the standard type

■ Applicable types
• AR22, DR22 series
AR 22 (Except for joy stick selectors, FAR, FBR, EAR, EBR types and VG types)
DR22 (Except for pilot lights with resistor unit and buzzers)

• AR30, DR30 series
AR30 (Except for Q7L, FAR, FBR, EAR, EBR, HR types and joy stick selectors)
DR30 (Except for D1L, F4M, F4N, M4M types, pilot lights with resistor/resistor unit and buzzers)

Meeting IP2X finger protection standards

■ Features
Conforms to EN standard EN60204-1 (protecting against electric shock). The terminal has IEC60529 degree of protection; IP2X finger protection secured (a mock human finger used in testing did not come into contact with charged parts). The contact block and lamp terminal can be easily mounted or removed with the terminal cover mounted.

■ Type
AR22 □ ZB, DR22 □ ZB
AR30 □ ZB, DR30 □ ZB
Specify “ZB” at the end of the type number of the standard type.

■ Accessories
• Contact block (plus terminal cover)
NO contact: AR9B290-D
NC contact: AR9B291-D
•Transformer unit (plus terminal cover)
AR9T511-□ D

■ Ratings and specifications
• Protection degree: IP2X
• Terminal screw: M3.5
Wiring can be done with a solid wire or fork shaped crimp terminal.

Note: Ring-type crimp terminals cannot be used.

• Other ratings and specifications are the same as those of the standard type.

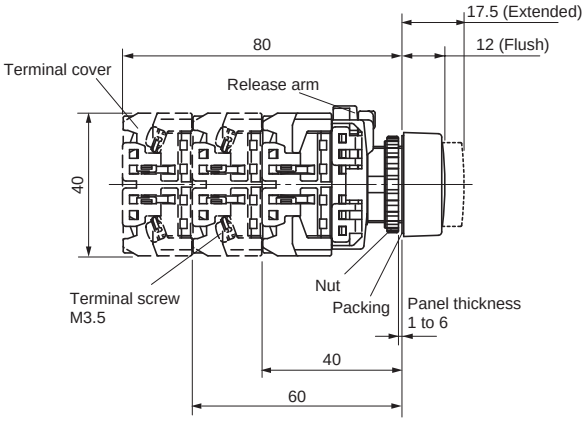
■ Applicable types
• AR22, DR22 series
AR22 (except for joy stick selectors)
DR22: Without transformer, with transformer (except for short-body types, buzzers and numerical indicators)

• AR30, DR30 series
AR30 (except for HR and joy stick selectors)
DR30: Without transformer, with transformer (except for D1L, F4M, F4N, M4M types and buzzers)

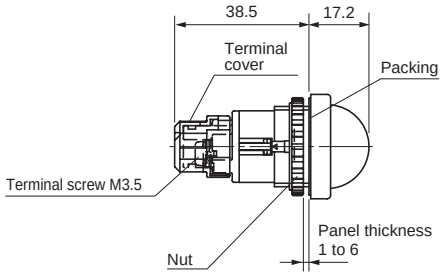
Note: The terminal of the standard type VG has IP2X protection.

■ Dimensions, mm

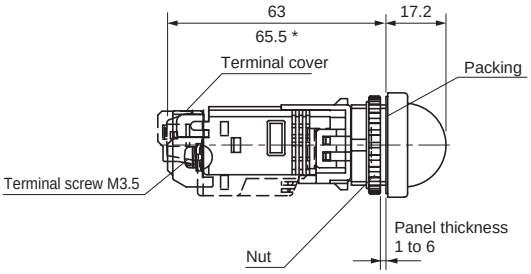
AR22/Pushbutton switches



DR22/Without transformer



DR22/With transformer



Note: * Except for the types 110V AC, 127V AC and 220V AC.

04

Metal nut (chrome plated) types

■ Features
The nut is a metallic ring (chrome plated).
Other ratings and specifications are the same as those of the standard model.

■ Type
AR30 □ ZM
DR30 □ ZM
Specify “ZM” at the end of the type number of the standard type.

■ Dimensions, mm
Same as those of the standard types.

■ Applicable types
• AR30, DR30 series
AR30 (except for G4L, G9L, GSR*1, GPR*1, BOR*1,and HR*1 types)
DR30 with round bezel (except for IP54 buzzer type B8)*2

Notes: *1 Standard type is a metallic ring (chrome plated).
*2 The nut of types DR30B0, B5 and B6 buzzers are resin (chrome plated).

KKD08-048
AR30E0R □ ZM

KK02-148A
AR30PR □ ZM

KK02-149A
DR30D0L □ ZM

Resisting sulfuration gas

■ Features
These products can be used in environments having a concentration of hydrogen sulfide gas of 0.5 ppm or less.
The metallic parts have been subjected to an anti-corrosion treatment (see note).
The contacts of the AR series are gold plated.

Note: The body is made of resin and cannot be used with gases that affect resins (plastics).

■ Type
AR22 □ Z4, DR22 □ Z4
AR30 □ Z4, DR30 □ Z4
Specify “Z4” at the end of the type number of the standard type.

■ Notes on use
• This product is resistant to light corrosive gas exposure.
• Other measures, such as covering the entire switch with a box, and the degree of protection of the panel should be taken into consideration.

■ Ratings and specifications
Hydrogen sulfide gas concentration of 0.5 ppm max.
Ambient storage temperature: 8 to 37°C
Humidity: 62 to 81%
Other ratings and specifications are the same as those of the standard type.

■ Dimensions, mm
Same as those of the standard types.

■ Applicable types
• AR22, DR22 series
AR22 (except for Joy stick selectors and VG type)
DR22 (except for pilot lights with resistor unit and buzzers)

• AR30, DR30 series
AR30 (except for HR and Joy stick selectors)
DR30 (except for F4M, F4N, M4M types, pilot lights with resistor/resistor unit and buzzers)

■ Mass, gram

● Illuminated pushbuttons

Type	Without transformer			With transformer *	
	1NO (1NC)	2NO (2NC) (1NO+1NC)	2NO+2NC	1NO (1NC)	2NO (2NC) (1NO+1NC)
AR22F0L	39	48	67	85	94
F5L	39	48	–	85	94
F0M, F0P	40	49	68	86	95
F5M, F5P	40	49	–	86	95
E0L	41	50	69	87	96
E5L	41	50	–	87	96
E0M, E0P, M4L, G1L, G2L, G4L	42	51	70	88	97
E5M, E5P, M9L, G6L, G7L, G9L	42	51	–	88	97
M4P	43	52	71	89	98
M0L	44	53	72	90	99
M5L	44	53	–	90	99
V5L	48	57	–	94	103

Note: * 230V and over : +17grams

● Pushbuttons

Type	1NO (1NC)	2NO (2NC) (1NO+1NC)	2NO+2NC
AR22F0R, FAR, F5R, FBR	27	36	55
E0R, EAR, F0S, F0Y, G0R E5R, EBR, F5S, F5Y, G5R	28	37	56
E0S, E0Y, M4R, G2R E5S, E5Y, M9R, G7R	29	38	57
M0R, M5R	31	40	59
S1R, S2R, S3R, S6R	–	43	62
M3R, M8R	44	53	72
V5R	49	58	77

● Emergency stop pushbuttons

Type	1NC	2NC (1NO+1NC)	2NO+2NC
AR22VSR	34	43	62
V0R, V4R	36	45	64
Q2R	36	45	–
V2R	38	47	66
V7R	59	68	87
VGE	61	65	–

● Emergency stop illuminated pushbuttons

Type	Without transformer		With transformer *	
	1NC	2NC (1NO+1NC)	1NC	2NC (1NO+1NC)
AR22VSL, VDL	48	57	94	103
V0L	49	58	95	104
VAL	50	59	96	105
V2L	51	60	97	106
VGF	66	70	–	–

Note: * 230V and over : +17grams

AR22 and DR22
Mass

■ Mass, gram

● Pilot lights

Type	Without transformer		With transformer		With resistor unit
	Standard	Short-body	Standard *	Short-body	
DR22D0L, K0L	18	23	70	68	32
E3L, E3P, F3M, F4M	19	24	71	69	33
F5M	20	25	72	70	34
E3M	21	26	73	71	35
E3N	23	28	75	73	37

Note: * 230V and over : +17grams

● Selector switches

Type	1NO (1NC)	2NO (2NC) (1NO+1NC)	2NO+2NC
AR22PR	30	39	58
PCR	–	39	58
WR	31	40	59
WCR	–	40	59
RR, PY, WY	32	41	60
RCR, PCY, WCY	–	41	60
RY	33	42	61
RCY	–	42	61
JR, JAR	56	65	83
JCR	–	65	83
JY	57	66	84
JCY	–	66	84

● Illuminated selector switches

Type	Without transformer			With transformer *	
	1NO (1NC)	2NO (2NC) (1NO+1NC)	2NO+2NC	1NO (1NC)	2NO (2NC) (1NO+1NC)
AR22PL	42	51	70	88	97
PP	43	52	71	89	98

Note: * 230V and over : +17grams

● Joy stick selector switches

• Screw terminal types

Type	1NO x2	(1NO+1NC) x2	1NO x4	(1NO+1NC) x4
AR22A2N, A7N	89	99	116	136
A0N, A5N	99	109	126	146
A1N, A6N	112	122	139	159

• Solder/tab terminal types

Type	(1NO+1NC) x2	(2NO+2NC) x2	(1NO+1NC) x4	(2NO+2NC) x4
AR22A2H, A7H	72	75	82	88
A0H, A5H	82	85	92	98
A1H, A6H	95	98	105	111

● Buzzers

Type	Without transformer	With transformer	With resistor unit
DR22B5	50	105	52
B8	53	108	55
B3	66	121	–

■ Mass, gram

● Illuminated pushbuttons

Type	Without transformer			With transformer *	
	1NO (1NC)	2NO (2NC) (1NO+1NC)	2NO+2NC	1NO (1NC)	2NO (2NC) (1NO+1NC)
AR30E0L	49	58	77	95	104
E5L	49	58	–	95	104
G4L	50	59	78	96	105
G9L	50	59	–	96	105
V5L	56	65	–	102	111
G2L	66	75	94	112	121
G7L	66	75	–	112	121
G3L	72	81	100	118	127
G8L	72	81	–	118	127
Q7L	–	159	–	–	205

Note: * 230V and over : +17grams

● Pushbuttons

Type	1NO (1NC)	2NO (2NC) (1NO+1NC)	2NO+2NC
AR30F0R, FAR, F5R, FBR	36	45	64
E0R, EAR, G0R, E5R, EBR, G5R	37	46	65
M4R	38	47	66
M0R, M5R	40	49	68
V5R	42	51	70
S1R, S2R, S3R, S6R	–	53	72
FVR	54	63	82
G1R, G6R	59	68	87
N0R	96	105	124
GPR	116	125	144
GSR, B0R	123	132	151
M3R, M8R	126	135	154
B1R	241	250	269
B3R	279	288	307
B2R	291	300	319

● Emergency stop pushbuttons

Type	1NC	2NC (1NO+1NC)	2NO+2NC
AR30V0R	43	52	71
Q2R	45	54	–
V2R	46	55	74
V1R	60	69	88

● Emergency stop illuminated pushbuttons

Type	Without transformer		With transformer *	
	1NC	2NC (1NO+1NC)	1NC	2NC (1NO+1NC)
AR30V0L	57	66	103	112
V2L	59	68	105	114

Note: * 230V and over : +17grams

■ Mass, gram

● Pilot lights

• Without transformer type, With transformer type, With resistor unit type

Type		Without transformer Standard	With transformer Standard *1	Short-body	With resistor unit
DR30	D0L, K0L	28	80	78	42
	E3L	29	81	79	43
	F4M *2	32 (30)	84 (82)	–	46
	F4N *2	34 (30)	86 (82)	–	48
	M4M *2	37 (32)	88 (84)	–	50
	D1L	94	164	–	111

Notes: *1 230V and over : +17grams
*2 ( ): Incandescent lamp

• With resistor type

Type		50V DC	110V DC 220V DC
DR30	D0L, K0L (LED)	103	103
	D0L, K0L (incandescent)	107	179

● Selector switches

Type		1NO (1NC)	2NO (2NC) (1NO+1NC)	2NO+2NC
AR30	PR, WR	41	50	69
	PCR, WCR	–	50	69
	JR, JAR	67	76	94
	JCR	–	76	94
	HR	125	135	153(166)

Note: ( ) : AR30HR-122

● Illuminated selector switches

Type		Without transformer			With transformer *	
		1NO (1NC)	2NO (2NC) (1NO+1NC)	2NO+2NC	1NO (1NC)	2NO (2NC) (1NO+1NC)
AR30	PL	52	61	80	98	107

Note: * 230V and over : +17grams

● Joy stick selector switches

• Screw terminal type

Type		1NO x2	(1NO+1NC) x2	1NO x4	(1NO+1NC) x4
AR30	A2N, A7N	100	110	127	147
	A0N, A5N	110	120	137	157
	A1N, A6N	124	134	151	171

• Solder/tab terminal type

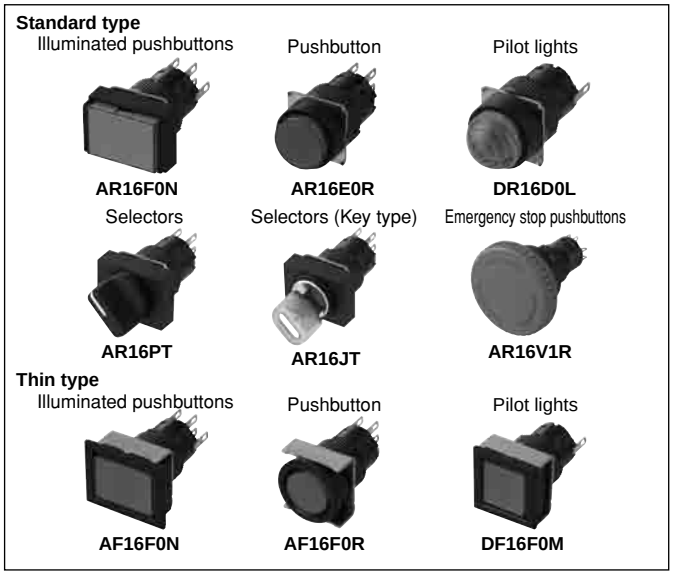
Type		(1NO+1NC) x2	(2NO+2NC) x2	(1NO+1NC) x4	(2NO+2NC) x4
AR30	A2H, A7H	83	86	93	99
	A0H, A5H	93	96	103	109
	A1H, A6H	107	110	117	123

● Buzzers

Type		Without transformer	With transformer	With resistor unit
DR30	B5, B6	47	102	49 (Except B6)
	B8	48	103	50
	B0	86	–	–

- An integrated structure with built-in contacts that can reduce control panel depth.
- A wide variety of sockets are available to simplify wiring.

- Thin type and Standard types available for your control panel design. Select an optimum one to match your control panel design.

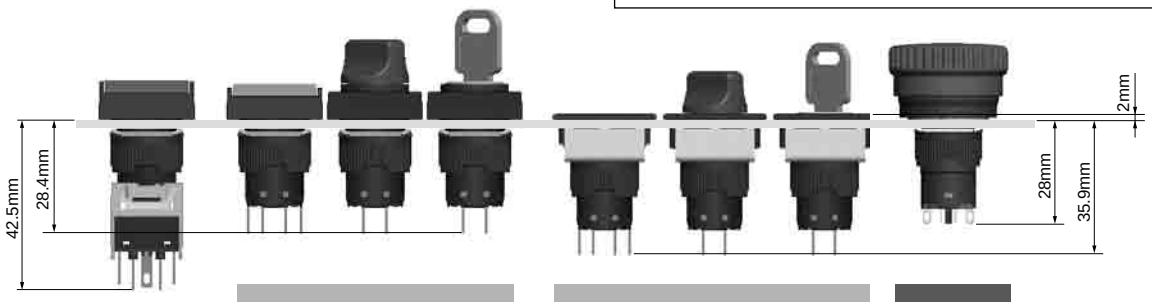


■ Features

Supporting smaller and thinner operator's panels

A structure that integrates operator and contacts to reduce panel-mounting depth. Terminals extending to the rear of the switch ensure easy wiring work.

- Standard type : 28.4mm deep
- Thin type : 35.9mm deep
- Emergency stop : 28mm deep

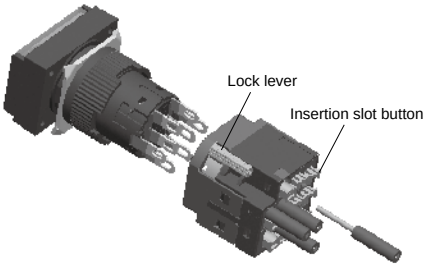


AH164, 5 series (Contact separated type) | AR16, DR16 series (Standard type) | AF16, DF16 series (Thin type) | AR16V series (Emergency stop pushbutton switches)

A wide variety of sockets reduce wiring work

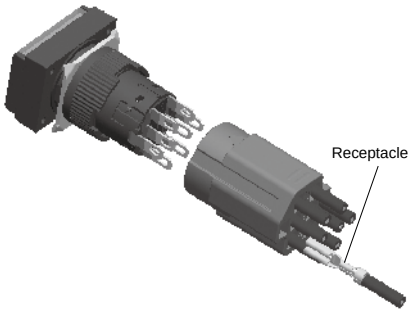
Switches combine with a variety of sockets to simplify wiring.

- Fast-connection socket



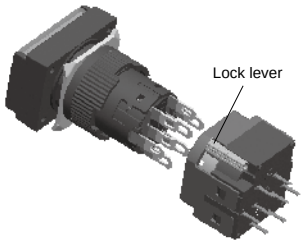
- Applicable as a fast-connection terminal switch by combining the socket with a switch.
- Easily wired by simply removing the wire sheath and inserting the wires while pressing the insertion slot button (no soldering required).
- Incorporates a branch terminal for easy branching.

- Connector socket



- Applicable as a connector by combining the socket with receptacles.
- The socket holds the receptacles, making it easy to connect the receptacle to the switch with a single operation.

- Socket for PC board



- Applicable as a switch for PC board by combining the socket with a switch.
- Pattern wiring reduces the number of wiring man-hour and helps prevent faulty wiring.

Safety

- FUJI's original Trigger Action mechanism is used in the emergency stop pushbuttons. They are suitable for emergency stop and safety. This mechanism prevents the contacts from moving untill the button in pushed and locked. (See page 04/180)

Degree of protection

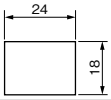
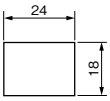
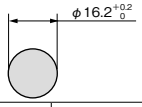
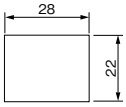
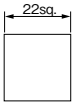
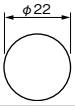
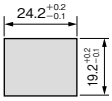
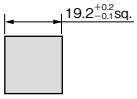
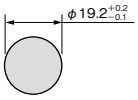
The operator has IP65 protection for smooth operation without advere effects from oil, water, or dusts.

Approvals

For further information related to approved type, see page 04/130 to 04/135

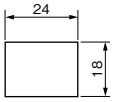
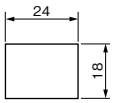
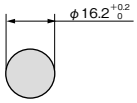
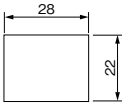
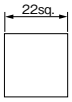
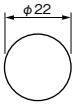
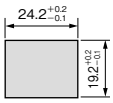
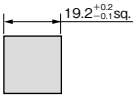
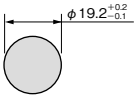
Note : commanded switches shipped as aeticiles to China must conform to the Product Quality Law. Check with your Fuji Electric representative.

■ Illuminated pushbutton switches

Operator		Flush rectangular		Flush rectangular with guard		Flush square		Extended round		Flush round	
Operator action		Momentary	Alternate	Momentary	Alternate	Momentary	Alternate	Momentary	Alternate	Momentary	Alternate
Standard type	Type	**AR16F0N**	**AR16F5N**	**AR16G0N**	**AR16G5N**	**AR16F0M**	**AR16F5M**	**AR16E0L**	**AR16E5L**	–	–
	Appearance									–	
	See page	04/143		04/143		04/143		04/143			
	Bezel (mm)									–	
	Panel cutting (mm)										
Thin type	Type	**AF16F0N**	**AF16F5N**	–	–	**AF16F0M**	**AF16F5M**	–		**AF16F0L**	**AF16F5L**
	Appearance			–				–			
	See page	04/155				04/155				04/155	
	Bezel (mm)			–				–			
	Panel cutting (mm)			–				–			
Legend plate (mm)		19.6×13.6		19.6×13.6		13.6sq.		ϕ13.6		ϕ13.6	
Bezel color		Black									
Button color (transparent)		Green, Red, White [*1], Yellow, Orange, Blue									
LED lamp	Color	Green, Red, Orange, Yellow, Amber, Blue									
	Lamp voltage	6V AC/DC, 12V AC/DC, 24V AC/DC									
Contact arrangement		SPDT, 2PDT									
Contact rating		120V AC 1A (AC-13), 24V DC 0.7A (DC-13, $T_{0.95}$ = 21ms) 240V AC 0.7A (AC-13), 125V DC 0.15A (DC-13, $T_{0.95}$ = 21ms)									
Mechanical durability		Momentary action: 1 million operations Alternate action: 250,000 operations									
Electrical durability		100,000 operations (220V AC 0.7A)									
Degree of protection (Operator)		IP65									
Type of terminal		Tab (#110) / solder dual-use terminal									
Accessories	Protective cover [*2]	○ [*3]		–		○ [*3]		○		–	
	Dust-proof cover	○ [*4]		–		○ [*4]		○		–	
	Terminal cover	○		○		○		○		○	
	Socket: Quick connection	○		○		○		○		○	
	Socket: Connector use	○		○		○		○		○	
	Socket: PC board use	○		○		○		○		○	
	Panel plug	○		○		○		○		○	

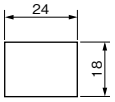
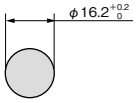
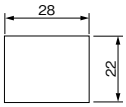
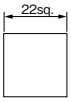
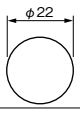
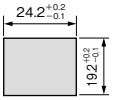
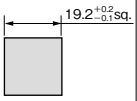
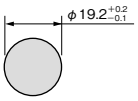
Notes: [*1] A combination of the translucent button and the white legend plate comes to white.
[*2] The protective cover and button of the thin type are made of an integral structure.
[*3] The protective cover of the thin type is available for momentary action only.
[*4] Available for standard type only.

■ Pushbutton switches

Operator		Flush rectangular		Flush rectangular with guard		Flush square		Extended round		Flush round	
Operator action		Momentary	Alternate	Momentary	Alternate	Momentary	Alternate	Momentary	Alternate	Momentary	Alternate
Standard type	Type	**AR16F0T**	**AR16F5T**	**AR16G0T**	**AR16G5T**	**AR16F0S**	**AR16F5S**	**AR16E0R**	**AR16E5R**	–	–
	Appearance									–	
	See page	04/145		04/145		04/145		04/145			
	Bezel (mm)									–	
	Panel cutting (mm)										
Thin type	Type	**AF16F0T**	**AF16F5T**	–	–	**AF16F0S**	**AF16F5S**	–		**AF16F0R**	**AF16F5R**
	Appearance			–				–			
	See page	04/157				04/157				04/157	
	Bezel (mm)			–				–			
	Panel cutting (mm)			–				–			
Legend plate (mm)		19.6×13.6		19.6×13.6		13.6sq		ϕ13.6		ϕ13.6	
Button color (transparent)		Black									
Button color		Green, Red, Black *1, White *2, Yellow, Orange, Blue									
Contact arrangement		SPDT, 2PDT									
Contact rating		120V AC 1A (AC-13), 24V DC 0.7A (DC-13, $T_{0.95}$ = 21ms) 240V AC 0.7A (AC-13), 125V DC 0.15A (DC-13, $T_{0.95}$ = 21ms)									
Mechanical durability		Momentary action: 1 million operations Alternate action: 250,000 operations									
Electrical durability		100,000 operations (220V AC 0.7A)									
Degree of protection (Operator)		IP65									
Type of terminal		Tab (#110) / solder dual-use terminal									
Accessories	Protective cover *3	○ *4		–		○ *4		○		–	
	Dust-proof cover	○ *5		–		○ *5		○		–	
	Terminal cover	○		○		○		○		○	
	Socket: Quick connection	○		○		○		○		○	
	Socket: Connector use	○		○		○		○		○	
	Socket: PC board use	○		○		○		○		○	
	Panel plug	○		○		○		○		○	

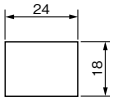
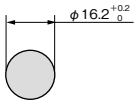
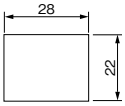
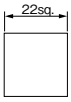
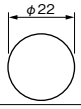
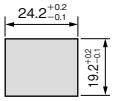
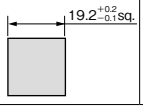
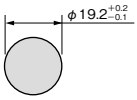
Notes: *1 A combination of the translucent button and the black legend plate comes to black button.
*2 A combination of the translucent button and the white legend plate comes to white button.
*3 The protective cover and button of the thin type are made of an integral structure.
*4 The protective cover of the thin type is available for momentary action only.
*5 Available for standard type only.

■ Pilot lights

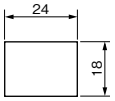
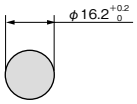
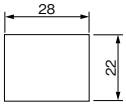
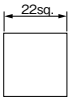
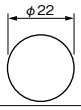
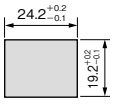
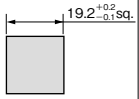
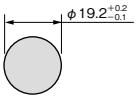
Lens shape			Flush rectangular	Flush square	Extended round	Flush round	Dome
Standard type	Type		**DR16F0N**	**DR16F0M**	**DR16E0L**	–	**DR16D0L**
	Appearance					–	
	See page		04/147	04/147	04/147		04/147
	Bezel (mm)					–	
	Panel cutting (mm)						
Thin type	Type		**DF16F0N**	**DF16F0M**	–	**DF16F0L**	–
	Appearance				–		–
	See page		04/159	04/159		04/159	
	Bezel (mm)				–		–
	Panel cutting (mm)				–		–
Legend plate (mm)			19.6×13.6	13.6sq	ϕ13.6	ϕ13.6	–
Bezel color			Black				
Button color (transparent)			Green, Red, White [*1], Yellow, Orange, Blue				
LED lamp	Color		Green, Red, Orange, Yellow, Amber, Blue				
	Lamp voltage		6V AC/DC, 12V AC/DC, 24V AC/DC				
Degree of protection (Lens)			IP65				
Type of terminal			Tab (#110) / solder dual-use terminal				
Accessories	Terminal cover		○	○	○	○	○
	Socket	Quick connection	○	○	○	○	○
		Connector use	○	○	○	○	○
		PC board use	○	○	○	○	○
	Panel plug		○	○	○	○	○

Note: [*1] A combination of the translucent lens and the white legend plate comes to white lens (except for dome type).

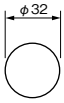
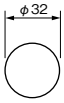
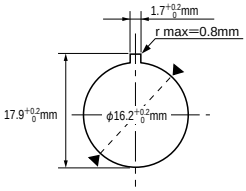
■ Selector switches (Knob type)

Operator			Knob with rectangular bezel	Knob with square bezel	Knob with round bezel
No. of position			2-position, 3-position	2-position, 3-position	2-position, 3-position
Operator action			Maintained, Spring/manual return, Spring return	Maintained, Spring/manual return, Spring return	Maintained, Spring/manual return, Spring return
Standard type	Type		**AR16PT**	**AR16PS**	**AR16PR**
	Appearance				
	See page		04/149	04/149	04/149
	Bezel (mm)				
	Panel cutting (mm)				
Thin type	Type		**AF16PT**	**AF16PS**	**AF16PR**
	Appearance				
	See page		04/161	04/161	04/161
	Bezel (mm)				
	Panel cutting (mm)				
Bezel color			Black		
Color of knob			Black		
Contact arrangement			SPDT, 2PDT		
Contact rating			120V AC 1A (AC-13), 24V DC 0.7A (DC-13, $T_{0.95}$ = 21ms) 240V AC 0.7A (AC-13), 125V DC 0.15A (DC-13, $T_{0.95}$ = 21ms)		
Mechanical durability			250,000 operations		
Electrical durability			100,000 operations (220V AC 0.7A)		
Degree of protection (Operator)			IP65		
Type of terminal			Tab (#110) / solder dual-use terminal		
Accessories	Terminal cover		○	○	○
	Socket	Quick connection	○	○	○
		Connector use	○	○	○
		PC board use	○	○	○
	Panel plug		○	○	○

■ Selector switches (Key type)

Operator			Key with rectangular bezel	Key with square bezel	Key with round bezel
No. of position			2-position, 3-position	2-position, 3-position	2-position, 3-position
Operator action			Maintained, Spring/manual return, Spring return	Maintained, Spring/manual return, Spring return	Maintained, Spring/manual return, Spring return
Standard type	Type		**AR16JT**	**AR16JS**	**AR16JR**
	Appearance				
	See page		04/152	04/152	04/152
	Bezel (mm)				
	Panel cutting (mm)				
Thin type	Type		**AF16JT**	**AF16JS**	**AF16JR**
	Appearance				
	See page		04/164	04/164	04/164
	Bezel (mm)				
	Panel cutting (mm)				
Bezel color			Black		
Key removable position			Left (A), Left/Right (B), Left/Center/Right (C), Right (D), Center (E), Center/Right (F), Left/Center (G)		
No. of key types			6 (A, B, C, D, E, F)		
Contact arrangement			SPDT, 2PDT		
Contact rating			120V AC 1A (AC-13), 24V DC 0.7A (DC-13, $T_{0.95}$ = 21ms) 240V AC 0.7A (AC-13), 125V DC 0.15A (DC-13, $T_{0.95}$ = 21ms)		
Mechanical durability			250,000 operations		
Electrical durability			100,000 operations (220V AC 0.7A)		
Degree of protection (Operator)			IP65		
Type of terminal			Tab (#110) / solder dual-use terminal		
Accessories	Terminal cover		○	○	○
	Socket	Quick connection	○	○	○
		Connector use	○	○	○
		PC board use	○	○	○
	Panel plug		○	○	○

■ Emergency stop pushbutton switches

Operator		Illuminated push-lock (32mm dia)	Illuminated push-lock (40mm dia)	Push-lock (32mm dia)	Push-lock (40mm dia)
Operator action		Turn reset or pull-reset		Turn reset or pull-reset	
Type		**AR16V0L**	**AR16V1L**	**AR16V0R**	**AR16V1R**
Appearance					
See page		04/182	04/182	04/182	04/182
Button size (mm)					
Panel cutting (mm)					
Button color		Red			
LED lamp	Color	Red		—	
	Lamp voltage	6V AC/DC, 12V AC/DC, 24V AC/DC		—	
Contact arrangement		1NC, 1NO+1NC, 2NC, 1NO+2NC, 3NC, 1NO+3NC, 4NC			
Contact ratings		120V AC 0.3A (AC-15), 24V DC 0.7A (DC-13), 240V AC 0.3A (AC-15), 125V DC 0.15A (DC-13)			
Mechanical durability		100,000 operations			
Electrical durability		100,000 operations (AC-15, AC-13, AC-12, DC-13, DC-12)			
Degree of protection (Operator)		IP65			
Type of terminal		Solder use terminal			
Accessories	Terminal cover	○	○	○	○
	Name plate (Emergency stop)	○	○	○	○

■ Contact ratings

• UL/CSA

• AC (COSø = 0.35)

Contact rating code	120V		240V	
	Making current	Breaking current	Making current	Breaking current
D300	3.6A	0.6A	1.8A	0.3A

• TÜV (EN60947-5-1), CCC (GB14048.5), JIS C 8201-5-1

Type of switches	Conventional free air thermal current Ith	Rated operational current Ie				
		Rated operational voltage Ue	AC		DC	
			AC-13 (Inductive load)	AC-12 (Resistive load)	DC-13 (Inductive load)	DC-12 (Resistive load)
Illuminated pushbutton switch Pushbutton switch Selector switch	5A	24V	–	–	0.7A *1	1A
		120V	1A	1.5A	–	–
		125V	–	–	0.15A *1	0.2A
		240V	0.7A	1A	–	–

Note: *1 $T_{0.95}$=21ms

■ Specifications (indoor use)

Item		• Illuminated pushbutton switch, pushbutton switch	• Selector switch	• Pilot lights
Rated insulation voltage Ui		250V AC/DC		
Durability	Mechanical	Momentary action: 1 million operations Alternate action: 250,000 operations	Maintained: 250,000 operations Spring/manual return: 250,000 operations Spring return: 250,000 operations	–
	Electrical	100,000 operations (at 220V AC 0.7A)		–
Operating frequency		1200 operations/hour (On-load factor: 40%)		–
Withstand voltage	Between live section and grounding	2000V AC, 1 minute		
	Between opposite polarity live sections	2000V AC, 1 minute		–
Insulation resistance		100MΩ or more (500V DC megger)		
Rated impulse withstand voltage Uimp		2.5kV		
Conditional short-circuit current		1000A		
Short-circuit protective device		gG 2A (IEC60269 Fuse)		
Pollution degree		3		
Vibration		Resonance: frequency 10 to 55Hz, double amplitude 1.0mm Constant: frequency 16.7Hz, double amplitude 3mm		
Shock		Malfunction durability; 100m/s^2 Mechanical durability; 500m/s^2		
Operational ambient temperature		–10 to +55°C (no icing or no condensation)		
Storage temperature		–40 to +70°C		
Relative humidity (inside control panel)		45 to 85%RH (–5 to + 40°C) (no icing or no condensation)		
Degree of protection of operating (displaying) section		IP65 (dust-proof, water jet proof): IEC 60529		
Degree of protection of terminal section		IP2X (Fast-connection socket: AR6S690, Connector socket: AR6S691-C or Terminal cover: AR2Y261, At the connection)		

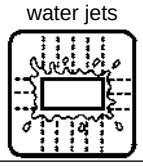
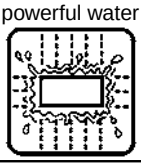
■ Specifications (Socket)

Item	Fast-connection socket	Connector socket	Socket for PC board
Rated insulation voltage Ui	250V AC/DC		60V AC/DC
Conventional free air thermal current Ith	3A	5A	3A
Rated impulse withstand voltage Uimp	2.5kV		0.5kV
Withstand voltage (Between live section and grounding)	2000V AC, 1 minute		1000V AC, 1 minute
Insulation resistance	100MΩ or more (500V DC megger)		
Operational ambient temperature	-10 to +55°C (no icing or no condensation)		
Storage temperature	-40 to +70°C		
Relative humidity	45 to 85%RH (-5 to +40°C) (no icing or no condensation)		
Pollution degree	3		

■ Degree of protection

• The table below shows the degree of protection stipulated by IEC (International Electrotechnical Commission) standard (IEC 60529).

IP– 6 5

Class	Degree of protection against human contact or penetration by a foreign object		Degree of protection against ingress of water	
5		• Normal operation secured even if the dust that can pass through screen of 75μm mesh invades.	Protection against water jets 	• Protected against water jet from all directions. • Water projected by nozzle (6.3mm-inner dia.) from all directions at 29.4kPa for 3min at a distance of 3m.
6		• The dust which can pass through screen of 75μm mesh shall not invade.	Protection against powerful water 	• Protected against powerful water jet from all directions. • Water projected by nozzle (12.5mm-inner dia.) from all directions at 98kPa for 3min at a distance of 3m.

■ Contact reliability

FUJI has confirmed that the product can be used in 1mA circuit conditions at 5V AC or DC. The operable range, however, may vary depending on the operational ambient conditions and type of load.

■ Lamp ratings and current consumption

• Illuminated pushbutton switch, Pilot lights

Applied method	Lamp operational voltage	High-brightness LED lamp		
		Type	Lamp rated voltage	Current consumption
without transformer	6V AC/DC	**DR6L695-A□**	6V AC/DC	Green, Blue: 11mA AC, 7.5mA DC Red, Amber: 9mA AC, 7.5mA DC Orange: 10mA AC, 8.5mA DC Yellow: 30mA AC, 26mA DC
	12V AC/DC	**DR6L695-B□**	12V AC/DC	Green, Red, Amber, Blue: 7.5mA AC, 7.5mA DC Orange: 9mA AC, 8.5mA DC Yellow: 11mA AC, 8.5mA DC
	24V AC/DC	**DR6L695-E□**	24V AC/DC	Green, Red, Amber, Blue: 7.5mA AC, 7.5mA DC Orange, Yellow: 9mA AC, 8.5mA DC

Note: A box □ indicates the luminous color. For details, see the “Combination of Illuminated pushbutton / pilot light color and LED lamp luminous color”.

■ Combination of Illuminated pushbutton / pilot light color and LED lamp luminous color

Illuminated pushbutton / pilot light color (lens color)		Luminous color of high-brightness LED lamp	
	Type		Type
Green	G	Green	**DR6L695-■G**
Red	R	Red	**DR6L695-■R**
White	W	Orange	**DR6L695-■W**
Yellow	Y	Yellow	**DR6L695-■Y**
Orange	A	Amber	**DR6L695-■A**
Blue	S	Blue	**DR6L695-■S**

Note: *1 A box ■ indicates the lamp operational voltage. For details, see the “Lamp ratings and current consumption”.

■ LED durability

Type of lamp	Durability (reference)	Judgment criterion
LED lamp	Approx. 30000h	When the brightness is less than 50% of initial value.

Note: The durability of LED lamp is a mean value in all colors.

■ Standard approved

UL508	cUL File No.E44592
CSA C22.2 No.14	
TÜV: EN60947-5-1	Pushbutton, Illuminated pushbutton: R50116757 Selector: R50116759 Pilot lights: R50116762
CCC: GB14048.5	Switches (except pilot ligths): 2003010305071068 Pilot lights: 2003010305071044

■ Standard models approved by international standards

The standard models of AR16 and DR16, AF16 and DF16 series of the ϕ16 Command Switches meet UL / CSA requirements, China Compulsory Certification (CCC) standards, and TÜV EN standards, thus ensuring easier direct or indirect export to North America and European countries with no safety standard concerns.

• Illuminated pushbutton switches

AR16 F0N − C2 E3 G

Product category

Category	Code
Standard type	**AR16**
Thin type	**AF16**

Operator shape and action

Operator shape	Code			
	Standard type		Thin type	
	Momentary	Alternate	Momentary	Alternate
Flush rectangular	**F0N**	**F5N**	**F0N**	**F5N**
Flush rectangular with guard	**G0N**	**G5N**	**–**	**–**
Flush square	**F0M**	**F5M**	**F0M**	**F5M**
Extended round	**E0L**	**E5L**	**–**	**–**
Flush round	**–**	**–**	**F0L**	**F5L**

Contact arrangement and terminal

Contact arrangement	Code	Type of terminal
SPDT	**C1**	Tab (#110) and solder dual-use terminal
2PDT	**C2**	

Color of button

Color	LED color	Code
Green	Green	**G**
Red	Red	**R**
White *1	Orange	**W**
Yellow	Yellow	**Y**
Orange	Amber	**A**
Blue	Blue	**S**

Note: ・The button is transparent in color.
*1: A combination of the transparent lens and the white legend plate comes to white.

Lamp operational voltage and light source

Applied method	Voltage	Code
		LED
Without transformer	6V AC/DC	**A3**
	12V AC/DC	**B3**
	24V AC/DC	**E3**

• Pushbutton switches

AR16 F0T − C2 R

Product category

Category	Code
Standard type	**AR16**
Thin type	**AF16**

Operator shape and action

Operator shape	Code			
	Standard type		Thin type	
	Momentary	Alternate	Momentary	Alternate
Flush rectangular	**F0T**	**F5T**	**F0T**	**F5T**
Flush rectangular with guard	**G0T**	**G5T**	**–**	**–**
Flush square	**F0S**	**F5S**	**F0S**	**F5S**
Extended round	**E0R**	**E5R**	**–**	**–**
Flush round	**–**	**–**	**F0R**	**F5R**

Contact arrangement and terminal

Contact arrangement	Code	Type of terminal
SPDT	**C1**	Tab (#110) and solder dual-use terminal
2PDT	**C2**	

Color of button

Color	Code
Green	**G**
Red	**R**
Black *1	**B**
White *2	**W**
Yellow	**Y**
Orange	**A**
Blue	**S**

Notes: ・The button is transparent in color.
*1: A combination of the transparent button and the black legend plate comes to black.
*2: A combination of the transparent button and the white legend plate comes to white.

Note: The manufacturing range varies depending on the model. For details, see “Types and dimensions” of this catalog.

AR16 and DR16, AF16 and DF16
Type number nomenclature

• **Pilot lights**

DR16 D0L – E3 W

Product category

Category	Code
Standard type	**DR16**
Thin type	**DF16**

Lens shape

Lens shape	Code	
	Standard type	Thin type
Flush rectangular	**F0N**	**F0N**
Flush square	**F0M**	**F0M**
Extended round	**E0L**	**–**
Flush round	**–**	**F0L**
Dome	**D0L**	**–**

Color of lens

Color	LED color	Code
Green	Green	**G**
Red	Red	**R**
White *1	Orange	**W**
Yellow	Yellow	**Y**
Orange	Amber	**A**
Blue	Blue	**S**

Note: ・The lens is transparent in color.
*1 : A combination of the transparent lens and the white legend plate comes to white (except for dome type).

Lamp operational voltage and light source

Applied method	Voltage	Code
		LED
Without transformer	6V AC/DC	**A3**
	12V AC/DC	**B3**
	24V AC/DC	**E3**

Note: The terminal used is a tab (#110) and solder dual-use terminal.

Note: The manufacturing range varies depending on the model. For details, see “Types and dimensions” of this catalog.

• Selector switches (Knob type)

AR16 PT − 2 C1 B

Product category

Category	Code
Standard type	**AR16**
Thin type	**AF16**

Operator shape

Operator shape	Code
Knob with rectangular bezel	**PT**
Knob with square bezel	**PS**
Knob with round bezel	**PR**

Color of knob

Color	Code
Black	**B**

Contact arrangement and terminal

Contact arrangement	Code	Type of terminal
SPDT *1	**C1**	Tab (#110) and solder dual-use terminal
2PDT	**C2**	

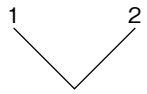
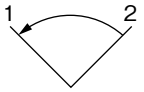
Note: *1 2-position model only available

No. of positions and operator action

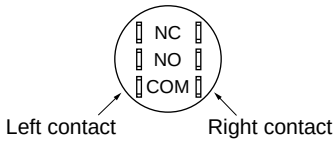
No. of positions	Operator action	Code
2-position (90°)	Maintained	**2**
	Spring return (Right to left)	**0**
3-position (45°)	Maintained	**3**
	Spring/manual return (Left to center)	**6**
	Spring/manual return (Right to center)	**7**
	Spring return (Left or right to center)	**1**

• Key position and contact operation

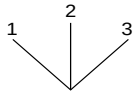
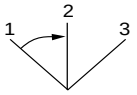
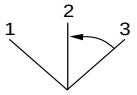
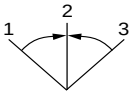
2-position

Operator action (View form the front)		Contact arrangement	Contact unit			Operator position *2	
2	0					1	2
 Maintained/90°	 Spring return/90°	SPDT	Left	COM	NC	●	
					NO		●
		2PDT	Left	COM	NC	●	
					NO		●
			Right	COM	NC	●	
					NO		●

Terminal arrangement
View from the terminal side (the back)



3-position

Operator action (View form the front)				Contact arrangement	Contact unit			Operator position *2		
3	6	7	1					1	2	3
 Maintained/each 45°	 Spring/manual return/each 45°	 Spring/manual return/each 45°	 Spring return/ each 45°	2PDT	Left	COM	NC	▬	▬	
							NO			●
					Right	COM	NC		▬	▬
							NO	●		

Note: *2 ●, ▬: means the contact closed (ON).

AR16 and DR16, AF16 and DF16
Type number nomenclature

• Selector switches (Key type)

AR16 JT−3 E C2 A

Product category

Category	Code
Standard type	**AR16**
Thin type	**AF16**

Operator shape

Operator shape	Code
Key with rectangular bezel	**JT**
Key with square bezel	**JS**
Key with round bezel	**JR**

No. of positions and operator action

No. of positions	Operator action	Code
2-position (90°)	Maintained	**2**
	Spring return (Right to left)	**0**
3-position (45°)	Maintained	**3**
	Spring/manual return (Left to center)	**6**
	Spring/manual return (Right to center)	**7**
	Spring return (Left or right to center)	**1**

Key removable position

Key removable position	Applicable operator action 2	0	3	6	7	1	Code
Left	○	○	○	–	○	–	**A**
Left and right	○	–	○	–	–	–	**B**
Left, center and right	–	–	○	–	–	–	**C**
Right	○	–	○	○	–	–	**D**
Center	–	–	○	○	○	○	**E**
Center and right	–	–	○	○	–	–	**F**
Left and center	–	–	○	–	○	–	**G**

Types of key

Type [*1]	A	B	C	D	E	F
Code	**A**	**B**	**C**	**D**	**E**	**F**

Note: [*1] "A" is standard.

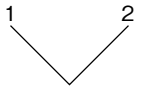
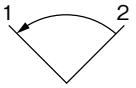
Contact arrangement and terminal

Contact arrangement	Code	Type of terminal
SPDT [*2]	**C1**	Tab (#110) and solder dual-use terminal
2PDT	**C2**	

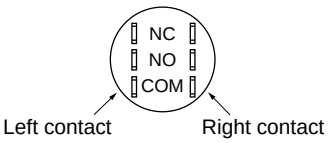
Note: [*2] 2-position model only

• Key position and contact operation

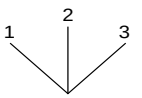
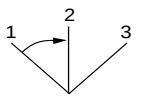
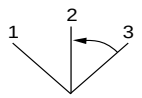
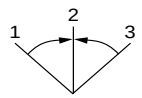
2-position

Operator action (View form the front) 2	0	Contact arrangement	Contact unit			Operator position [*3] 1	2
 Maintained/90°	 Spring return/90°	SPDT	Left	COM	NC	●	
					NO		●
		2PDT	Left	COM	NC	●	
					NO		●
			Right	COM	NC	●	
					NO		●

Terminal arrangement
View from the terminal side (the back)



3-position

Operator action (View form the front) 3	6	7	1	Contact arrangement	Contact unit			Operator position [*3] 1	2	3
 Maintained/each 45°	 Spring/manual return/each 45°	 Spring/manual return/each 45°	 Spring return/each 45°	2PDT	Left	COM	NC	▬	▬	
							NO			●
					Right	COM	NC		▬	▬
							NO	●		

Note: [*3] ●, ▬: means the contact closed (ON).

1. Standard type, AR16 and DR16

■ Illuminated pushbutton switches (LED illuminated)

• Type number system

AR16 F0N – C2 E3 G

- AR16: Product category: Standard type
- F0N: Operator shape and action
- C2: Contact arrangement and terminal
- E3: Lamp operational voltage and light source
- G: Color of button

• Type

Operator	Appearance (Standard type)	Lamp operational voltage	Conntact arrangement	Momentary action Type	Alternate action Type
Flush rectangular	**AR16F0N, F5N**	6V AC/DC	SPDT	**AR16F0N-C1A3□**	**AR16F5N-C1A3□**
			2PDT	**AR16F0N-C2A3□**	**AR16F5N-C2A3□**
		12V AC/DC	SPDT	**AR16F0N-C1B3□**	**AR16F5N-C1B3□**
			2PDT	**AR16F0N-C2B3□**	**AR16F5N-C2B3□**
		24V AC/DC	SPDT	**AR16F0N-C1E3□**	**AR16F5N-C1E3□**
			2PDT	**AR16F0N-C2E3□**	**AR16F5N-C2E3□**
Flush rectangular with guard	**AR16G0N, G5N**	6V AC/DC	SPDT	**AR16G0N-C1A3□**	**AR16G5N-C1A3□**
			2PDT	**AR16G0N-C2A3□**	**AR16G5N-C2A3□**
		12V AC/DC	SPDT	**AR16G0N-C1B3□**	**AR16G5N-C1B3□**
			2PDT	**AR16G0N-C2B3□**	**AR16G5N-C2B3□**
		24V AC/DC	SPDT	**AR16G0N-C1E3□**	**AR16G5N-C1E3□**
			2PDT	**AR16G0N-C2E3□**	**AR16G5N-C2E3□**
Flush square	**AR16F0M, F5M**	6V AC/DC	SPDT	**AR16F0M-C1A3□**	**AR16F5M-C1A3□**
			2PDT	**AR16F0M-C2A3□**	**AR16F5M-C2A3□**
		12V AC/DC	SPDT	**AR16F0M-C1B3□**	**AR16F5M-C1B3□**
			2PDT	**AR16F0M-C2B3□**	**AR16F5M-C2B3□**
		24V AC/DC	SPDT	**AR16F0M-C1E3□**	**AR16F5M-C1E3□**
			2PDT	**AR16F0M-C2E3□**	**AR16F5M-C2E3□**
Extended round	**AF16E0L, E5L**	6V AC/DC	SPDT	**AR16E0L-C1A3□**	**AR16E5L-C1A3□**
			2PDT	**AR16E0L-C2A3□**	**AR16E5L-C2A3□**
		12V AC/DC	SPDT	**AR16E0L-C1B3□**	**AR16E5L-C1B3□**
			2PDT	**AR16E0L-C2B3□**	**AR16E5L-C2B3□**
		24V AC/DC	SPDT	**AR16E0L-C1E3□**	**AR16E5L-C1E3□**
			2PDT	**AR16E0L-C2E3□**	**AR16E5L-C2E3□**

Note: • See page 04/144 for the outline dimensions.

• Button color

Replace the □ mark by the color code

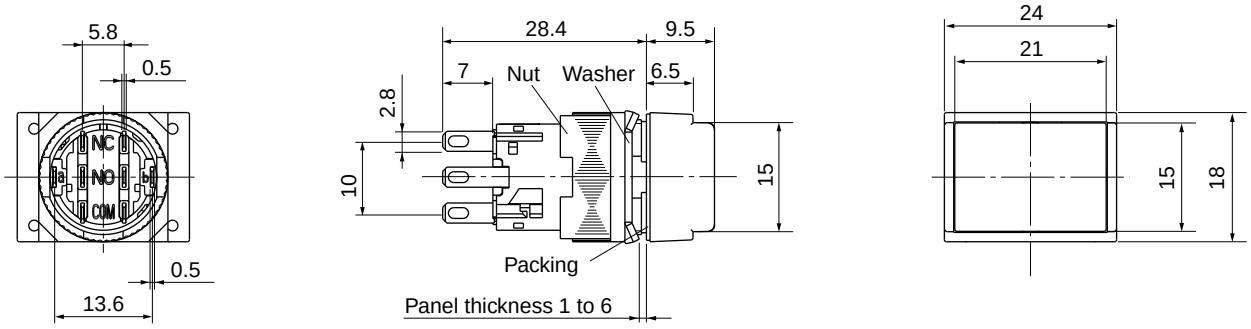
Color	Green	Red	White	Yellow	Orange	Blue
Code	G	R	W *1	Y	A	S

Note: *1 A combination of the transparent button and the white legend plate comes to white.

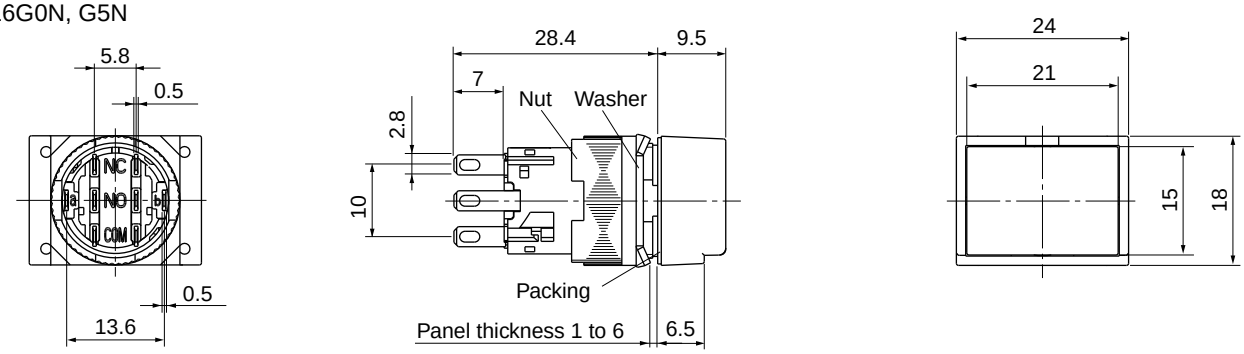
AR16 and DR16
Type numbers and dimensions

• **Dimensions, mm**

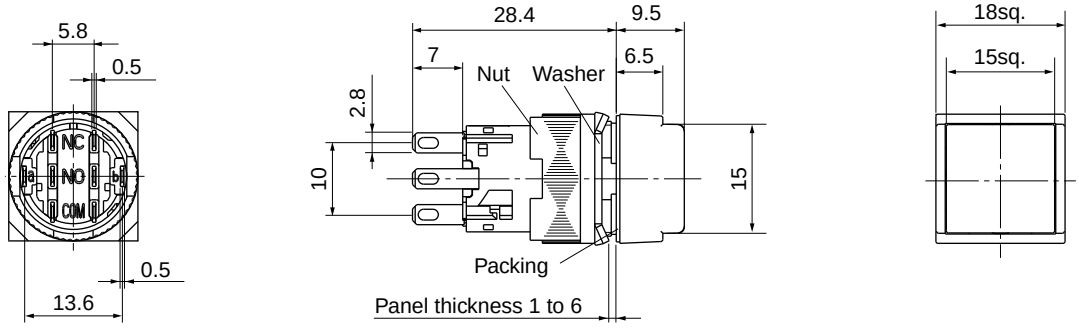
Flush rectangular
AR16F0N, F5N



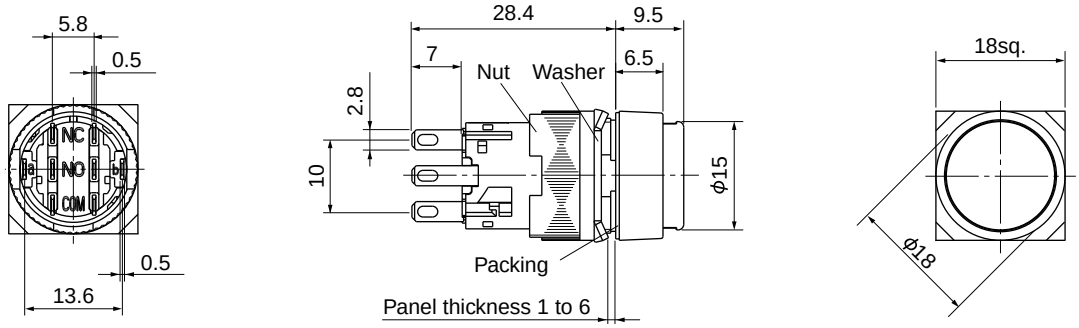
Flush rectangular with guard
AR16G0N, G5N



Flush square
AR16F0M, F5M



Extended round
AR16E0L, E5L



■ Pushbutton switches

• Type number system

AR16 F0T – C2 G

- AR16: Product category: Standard type
- F0T: Operator shape and action
- C2: Contact arrangement and terminal
- G: Color of button

• Type

Operator	Appearance (Standard type)	Conntact arrangement	Momentary action Type	Alternate action Type
Flush rectangular	**AR16F0T, F5T**	SPDT	**AR16F0T-C1□**	**AR16F5T-C1□**
		2PDT	**AR16F0T-C2□**	**AR16F5T-C2□**
Flush rectangular with guard	**AR16G0T, G5T**	SPDT	**AR16G0T-C1□**	**AR16G5T-C1□**
		2PDT	**AR16G0T-C2□**	**AR16G5T-C2□**
Flush square	**AR16F0S, F5S**	SPDT	**AR16F0S-C1□**	**AR16F5S-C1□**
		2PDT	**AR16F0S-C2□**	**AR16F5S-C2□**
Extended round	**AR16E0R, E5R**	SPDT	**AR16E0R-C1□**	**AR16E5R-C1□**
		2PDT	**AR16E0R-C2□**	**AR16E5R-C2□**

Note: • See page 04/146 for the outline dimensions.

• Button color

Replace the □ mark by the color code

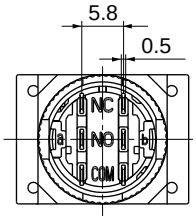
Color	Green	Red	Black	White	Yellow	Orange	Blue
Code	G	R	B *1	W *2	Y	A	S

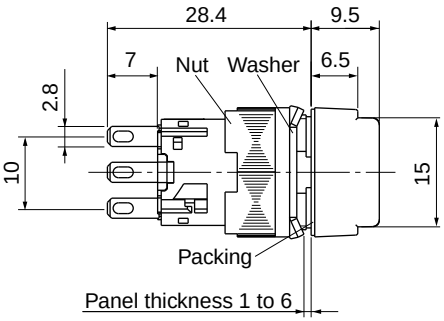
Notes: *1 A combination of the transparent button and the black legend plate comes to black.
*2 A combination of the transparent button and the white legend plate comes to white.

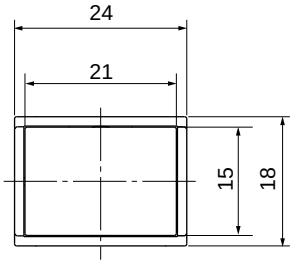
AR16 and DR16
Type numbers and dimensions

• **Dimensions, mm**

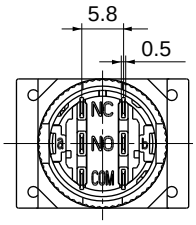
Flush rectangular
AR16F0T, F5T

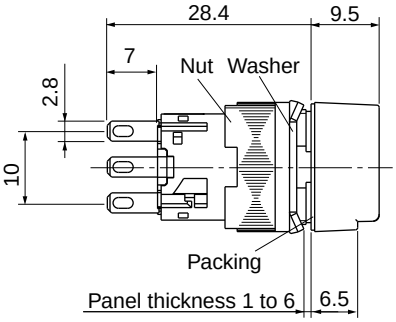


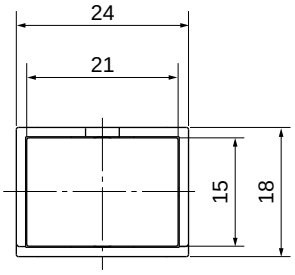




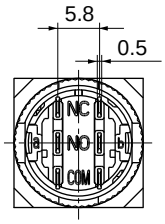
Flush rectangular with guard
AR16G0T, G5T

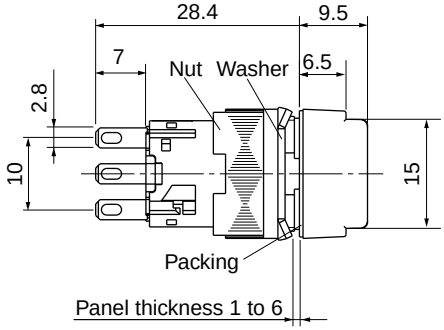


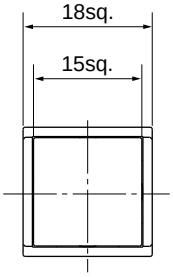




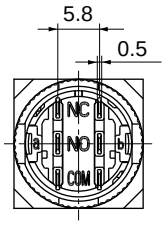
Flush square
AR16F0S, F5S

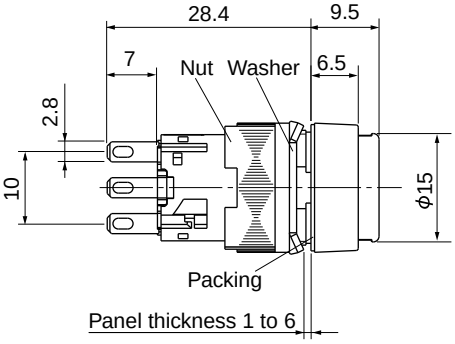


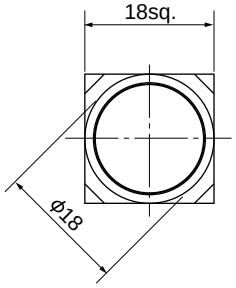




Extended round
AR16E0R, E5R







■ Pilot lights (LED illuminated)

• Type number system

DR16 D0L – E3 W

Product category: Standard type

Lens shape

Color of lens

Lamp operational voltage and light source

• Type

Lens	Appearance (Standard type)	LED lamp operational voltage	Type
Flush rectangular	**DR16F0N**	6V AC/DC	**DR16F0N-A3□**
		12V AC/DC	**DR16F0N-B3□**
		24V AC/DC	**DR16F0N-E3□**
Flush square	**DR16F0M**	6V AC/DC	**DR16F0M-A3□**
		12V AC/DC	**DR16F0M-B3□**
		24V AC/DC	**DR16F0M-E3□**
Extended round	**DR16E0L**	6V AC/DC	**DR16E0L-A3□**
		12V AC/DC	**DR16E0L-B3□**
		24V AC/DC	**DR16E0L-E3□**
Dome	**DR16D0L**	6V AC/DC	**DR16D0L-A3□**
		12V AC/DC	**DR16D0L-B3□**
		24V AC/DC	**DR16D0L-E3□**

Note: • See page 04/148 for the outline dimensions.

• Lens color

Replace the □ mark by the color code

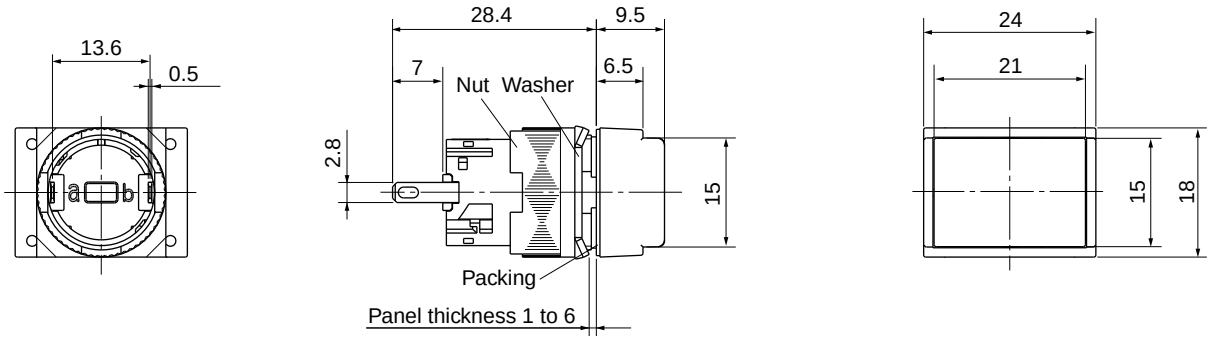
Color	Green	Red	White	Yellow	Orange	Blue
Code	G	R	W *[1]	Y	A	S

Note: *[1] A combination of the transparent lens and the white legend plate comes to white (except for dome type).

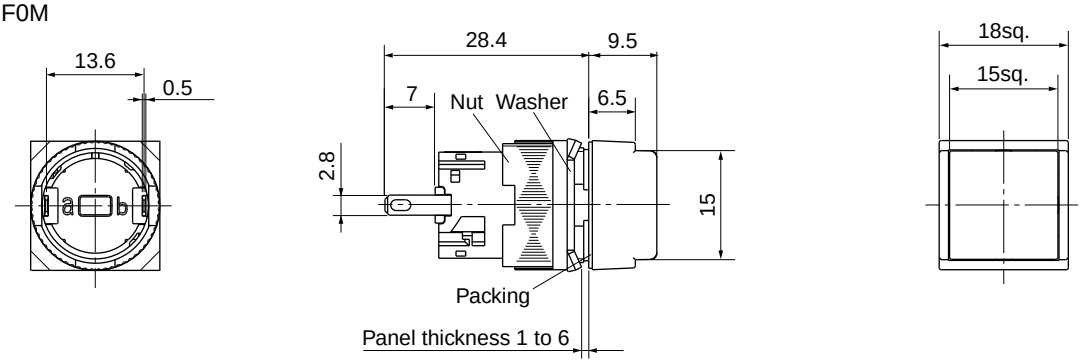
AR16 and DR16
Type numbers and dimensions

• **Dimensions, mm**

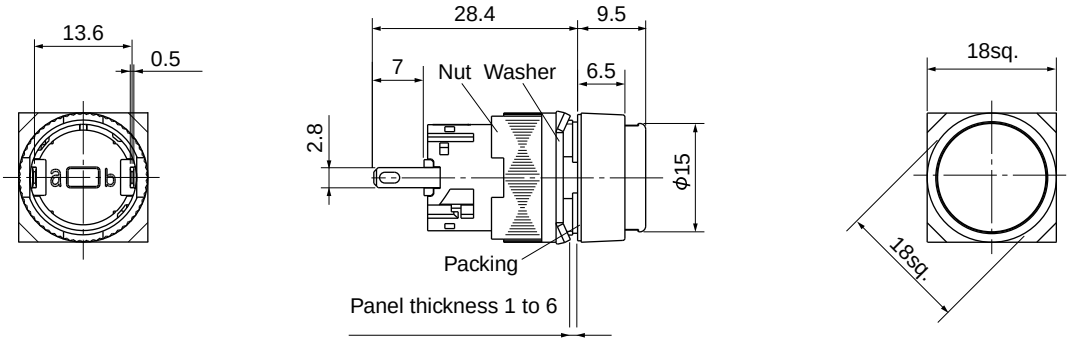
Flush rectangular
DR16F0N



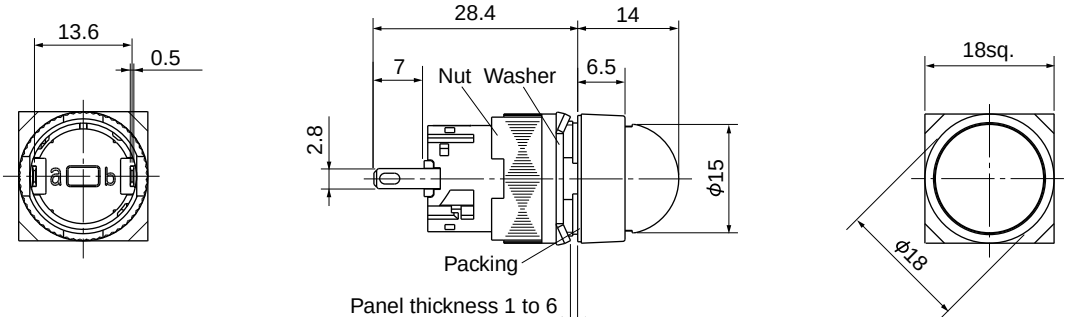
Flush square
DR16F0M



Extended round
DR16E0L



Dome
DR16D0L



■ Selector switches (Knob type)

• Type number system

AR16 PT – 2 C2 B

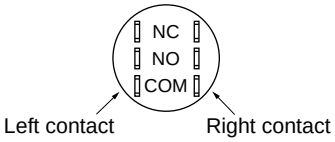
- Product category: Standard type
- Operator shape
- No. of positions and operator action
- Contact arrangement and terminal
- Color of knob: Black

• Type

2-position

Operator and appearance (Standard type)	No. of positions	Contact arrangement	Type: Maintained/90° (1 – 2)	Type: Spring return/90° (1 – 2)	Contact operation: Contact unit *1		Operator position *2: 1	Operator position *2: 2
Knob with rectangular bezel/**AR16PT**	2-position	SPDT	**AR16PT-2C1B**	**AR16PT-0C1B**	Left	COM – NC	●	
			AR16PS-2C1B	**AR16PS-0C1B**		COM – NC	●	
			AR16PR-2C1B	**AR16PR-0C1B**		COM – NO		●
Knob with square bezel/**AR16PS**		2PDT	**AR16PT-2C2B**	**AR16PT-0C2B**	Left	COM – NC	●	
			AR16PS-2C2B	**AR16PS-0C2B**	Left	COM – NO		●
Knob with round bezel/**AR16PR**			**AR16PR-2C2B**	**AR16PR-0C2B**	Right	COM – NC	●	
					Right	COM – NO		●

Note: *1 Terminal arrangement of contact (View from the terminal side (the back)).

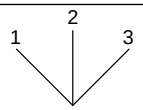
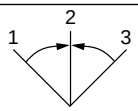
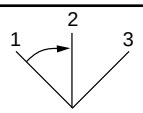
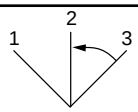


*2 ●: Means the contact closed (ON).

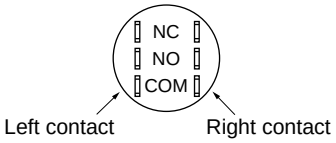
• See page 04/151 for the outline dimensions.

AR16 and DR16
Type numbers and dimensions

3-position

Operator and appearance (Standard type)	No. of positions	Contact arrangement	Type		Contact operation		
			 Maintained/each 45°	 Spring return/each 45°	Contact unit *1		Operator position *2 (1 2 3)
Knob with rectangular bezel/**AR16PT**	3-position	2PDT	**AR16PT-3C2B**	**AR16PT-1C2B**	Left	COM NC / NO	
			AR16PS-3C2B	**AR16PS-1C2B**			
Knob with square bezel/**AR16PS**			**AR16PR-3C2B**	**AR16PR-1C2B**	Right	COM NC / NO	
			 Spring/manual return/each 45°	 Spring/manual return/each 45°	Contact unit *1		Operator position *2 (1 2 3)
Knob with round bezel/**AR16PR**			**AR16PT-6C2B**	**AR16PT-7C2B**	Left	COM NC / NO	
			AR16PS-6C2B	**AR16PS-7C2B**			
			AR16PR-6C2B	**AR16PR-7C2B**	Right	COM NC / NO	

Notes: *1 Terminal arrangement of contact (View from the terminal side (the back)).

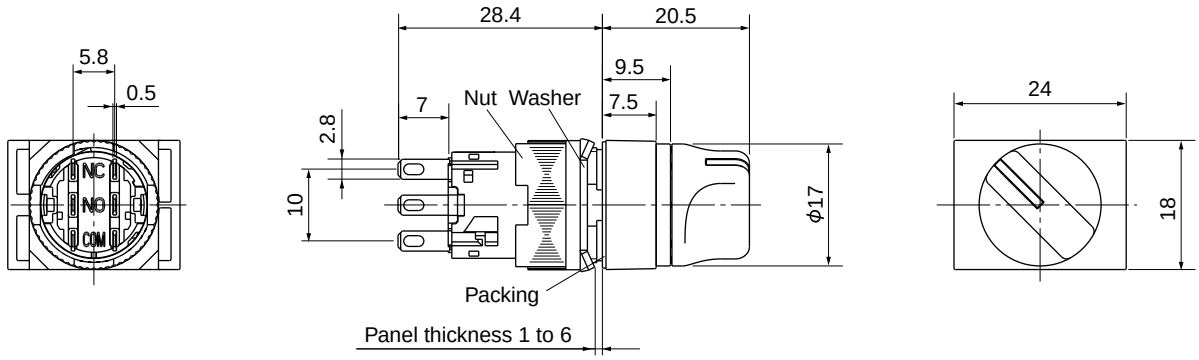


*2 ●, ▬: means the contact closed (ON).

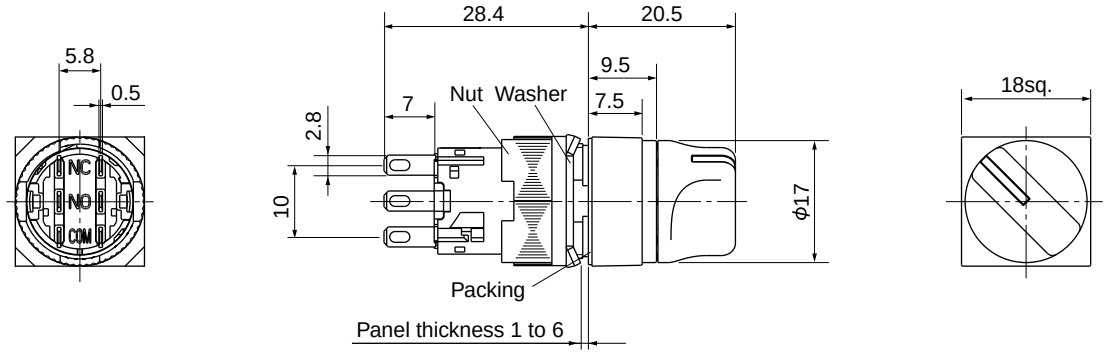
• See page 04/151 for the outline dimensions.

• **Dimensions, mm**

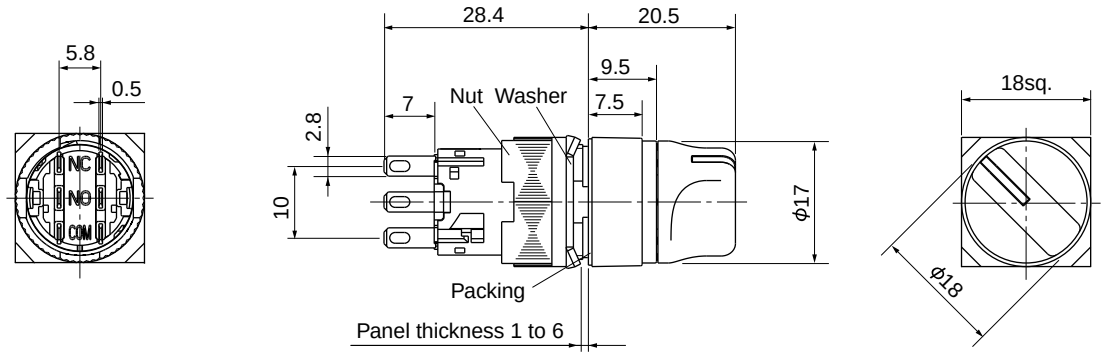
Knob with rectangular bezel
AR16PT



Knob with square bezel
AF16PS



Knob with round bezel
AF16PR



■ Selector switches (Key type)

• Type number system

AR16 JT – 2 B C2 A

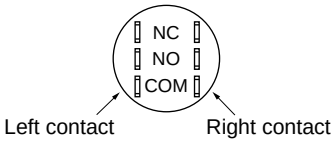
- Product category: Standard type
- Operator shape
- No. of positions and operator action
- Key removable position
- Contact arrangement and terminal
- Type of key

• Type

2-position

Operator and appearance (Standard type)	No. of positions	Contact arrangement	Type: Maintained/90° (1–2)	Type: Spring return/90° (1–2)	Contact operation: Contact unit *1		Operator position *2: 1	Operator position *2: 2
Key with rectangular bezel/**AR16JT**	2-position	SPDT	**AR16JT-2■C1A**	**AR16JT-0AC1A**	Left	COM–NC	●	
			AR16JS-2■C1A	**AR16JS-0AC1A**		COM–NO		●
			AR16JR-2■C1A	**AR16JR-0AC1A**				
Key with square bezel/ **AR16JS**		2PDT	**AR16JT-2■C2A**	**AR16JT-0AC2A**	Left	COM–NC	●	
			AR16JS-2■C2A	**AR16JS-0AC2A**		COM–NO		●
Key with round bezel/ **AR16JR**			**AR16JR-2■C2A**	**AR16JR-0AC2A**	Right	COM–NC	●	
						COM–NO		●

Notes: *1 Terminal arrangement of contact (View from the terminal side (the back)).



*2 ●: Means the contact closed (ON).
• See page 04/154 for the outline dimensions.

• Key removable position

Specify the key removal position in the square ■ mark.

Key removable position	Applied operator action 2	Applied operator action 0	Code
Left ⦸	○	○	**A**
Left•Right ⊗	○	–	**B**
Left ⊘	○	–	**D**

○ : Available –: Not available

• Type of key

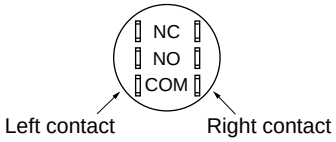
Type *1	A	B	C	D	E	F
Code	**A**	**B**	**C**	**D**	**E**	**F**

*1 "A" is standard.

3-position

Operator and appearance (Standard type)	No. of positions	Contact arrangement	Type: Maintained/each 45° (1 2 3)	Type: Spring return/each 45° (1 2 3)	Contact operation: Contact unit *1		Operator position *2 (1 2 3)
Key with rectangular bezel/**AR16JT**	3-position	2PDT	**AR16JT-3■C2A**	**AR16JT-1EC2A**	Left	COM – NC	▬
			AR16JS-3■C2A	**AR16JS-1EC2A**		COM – NO	●
Key with square bezel/**AR16JS**			**AR16JR-3■C2A**	**AR16JR-1EC2A**	Right	COM – NC	▬
						COM – NO	●
			Spring/manual return/each 45° (1 2 3)	Spring/manual return/each 45° (1 2 3)	Contact unit *1		Operator position *2 (1 2 3)
Key with round bezel/**AR16JR**			**AR16JT-6■C2A**	**AR16JT-7■C2A**	Left	COM – NC	▬
			AR16JS-6■C2A	**AR16JS-7■C2A**		COM – NO	●
			AR16JR-6■C2A	**AR16JR-7■C2A**	Right	COM – NC	▬
						COM – NO	●

Notes: *1 Terminal arrangement of contact (View form the terminal side (the back)).



*2 ●, ▬: Means the contact closed (ON).
• See page 04/154 for the outline dimensions.

• Key removal position

Specify the key removal position in the square ■ mark.

Key removable position	Applied operator action 3	6	7	1	Code
Left	○	–	○	–	**A**
Left•Right	○	–	–	–	**B**
Left•Center•Right	○	–	–	–	**C**
Right	○	○	–	–	**D**
Center	○	○	○	○	**E**
Center•Right	○	○	–	–	**F**
Left•Center	○	–	○	–	**G**

○ : Available –: Not available

• Type of key

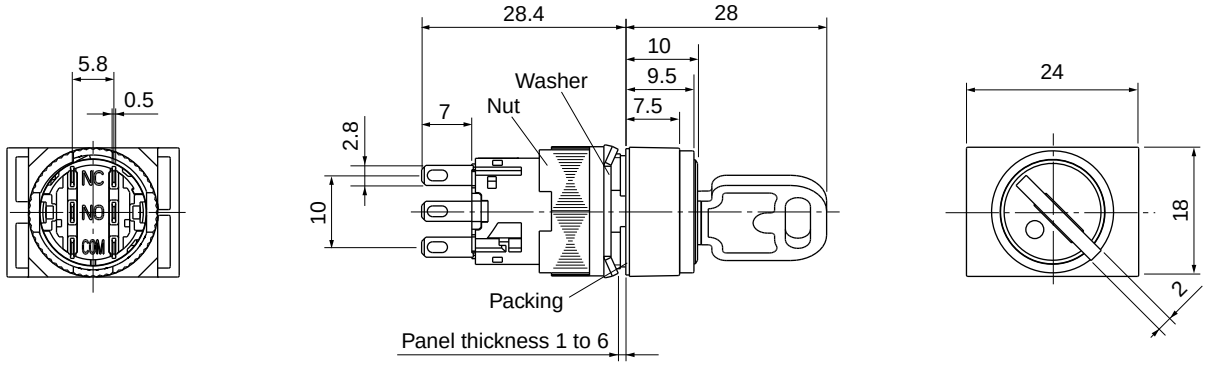
Type *1	A	B	C	D	E	F
Code	**A**	**B**	**C**	**D**	**E**	**F**

*1 "A" is standard.

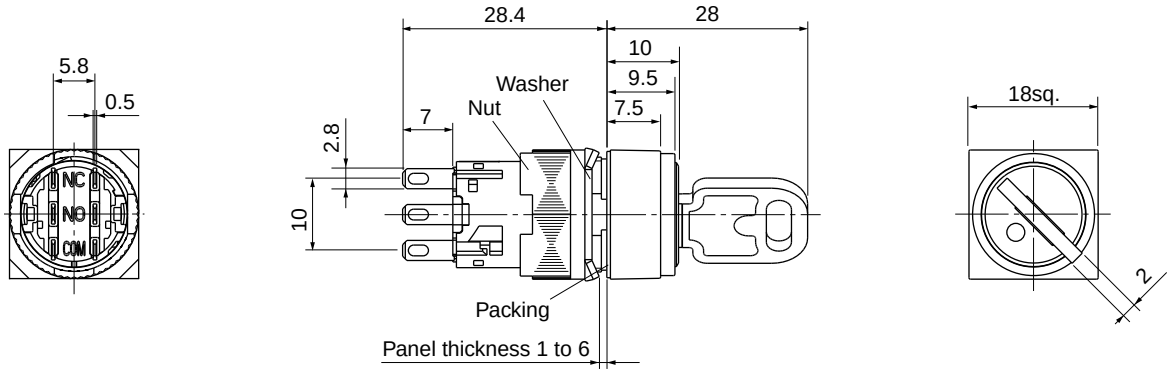
AF16 and DF16
Type numbers and dimensions

• **Dimensions, mm**

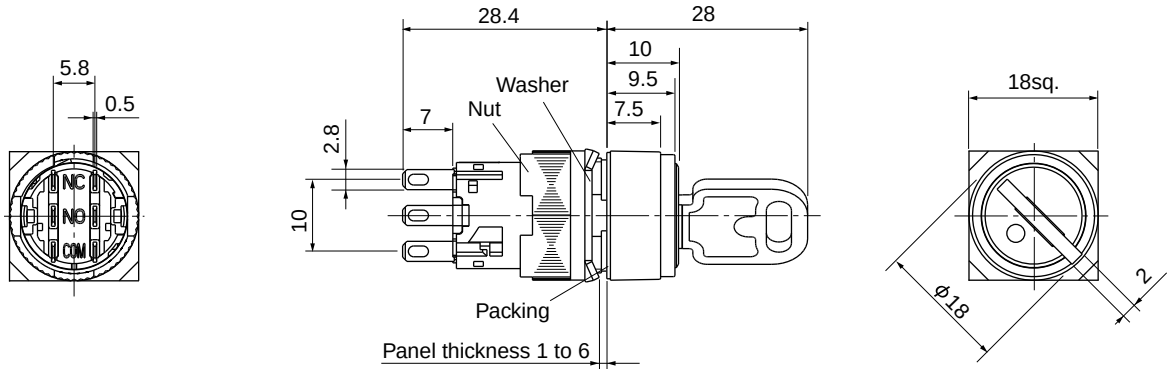
Key with rectangular bezel
AR16JT



Key with square bezel
AR16JS



Key with round bezel
AR16JR



■ Illuminated pushbutton switches (LED lamp)

• Type number system

AF16 F0N – C2 E3 G

- Prodect category: Thin type — AF16
- Operator shape and action — F0N
- Contact arrangement and terminal — C2
- Lamp operational voltage and light source — E3
- Color of button — G

• Type

Operator	Appearance (Thin type)	LED lamp operational voltage	Conntact arrangement	Momentary action Type	Alternate action Type
Flush rectangular	**AF16F0N, F5N**	6V AC/DC	SPDT	**AF16F0N-C1A3□**	**AF16F5N-C1A3□**
			2PDT	**AF16F0N-C2A3□**	**AF16F5N-C2A3□**
		12V AC/DC	SPDT	**AF16F0N-C1B3□**	**AF16F5N-C1B3□**
			2PDT	**AF16F0N-C2B3□**	**AF16F5N-C2B3□**
		24V AC/DC	SPDT	**AF16F0N-C1E3□**	**AF16F5N-C1E3□**
			2PDT	**AF16F0N-C2E3□**	**AF16F5N-C2E3□**
Flush square	**AF16F0M, F5M**	6V AC/DC	SPDT	**AF16F0M-C1A3□**	**AF16F5M-C1A3□**
			2PDT	**AF16F0M-C2A3□**	**AF16F5M-C2A3□**
		12V AC/DC	SPDT	**AF16F0M-C1B3□**	**AF16F5M-C1B3□**
			2PDT	**AF16F0M-C2B3□**	**AF16F5M-C2B3□**
		24V AC/DC	SPDT	**AF16F0M-C1E3□**	**AF16F5M-C1E3□**
			2PDT	**AF16F0M-C2E3□**	**AF16F5M-C2E3□**
Flush round	**AF16F0L, F5L**	6V AC/DC	SPDT	**AF16F0L-C1A3□**	**AF16F5L-C1A3□**
			2PDT	**AF16F0L-C2A3□**	**AF16F5L-C2A3□**
		12V AC/DC	SPDT	**AF16F0L-C1B3□**	**AF16F5L-C1B3□**
			2PDT	**AF16F0L-C2B3□**	**AF16F5L-C2B3□**
		24V AC/DC	SPDT	**AF16F0L-C1E3□**	**AF16F5L-C1E3□**
			2PDT	**AF16F0L-C2E3□**	**AF16F5L-C2E3□**

Note: • The panel cutting dimensions differ depending on the operator shape of thin type model. See page 04/167.
• For the dimensions, see page 04/156.

•Button color

Replace the □ mark by the color code.

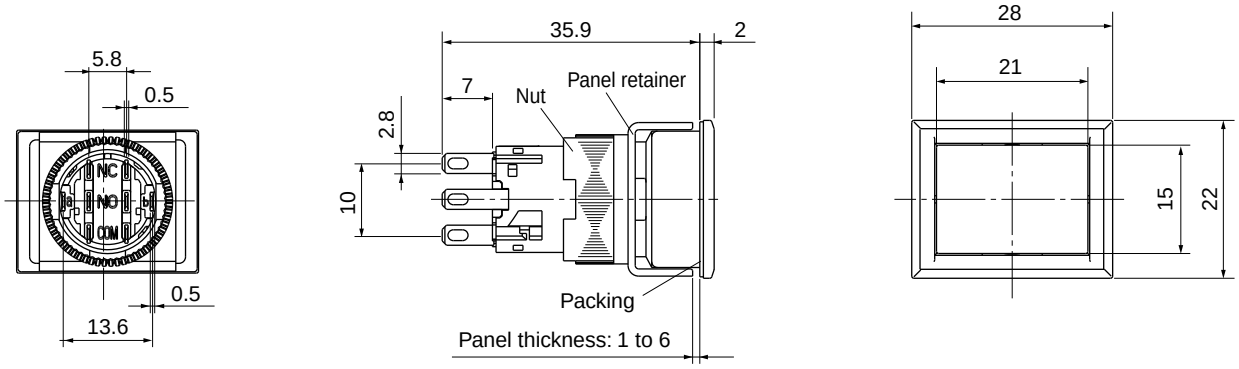
Color	Green	Red	White	Yellow	Orange	Blue
Code	G	R	W *1	Y	A	S

Note: *1 A combination of the translucent button and the white legend plate comes to white lens.

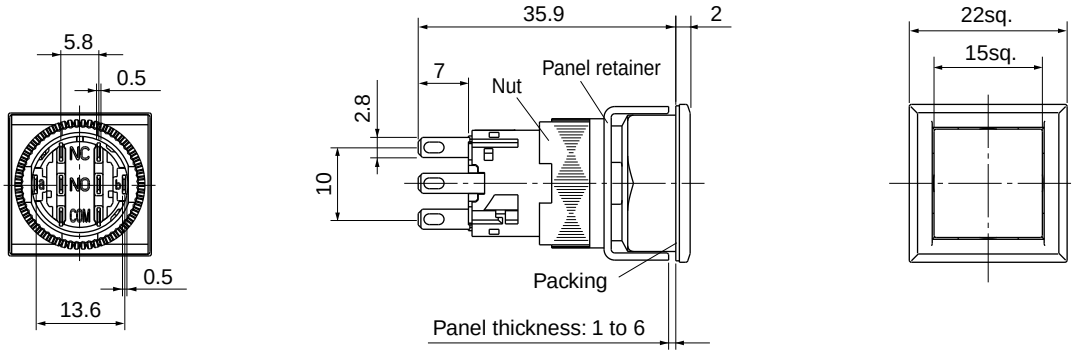
AF16 and DF16
Type numbers and dimensions

• **Dimensions, mm**

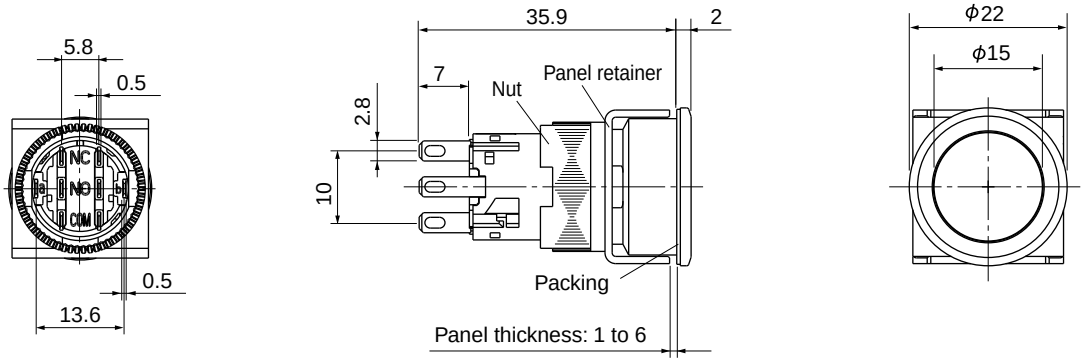
Flush rectangular
AF16F0N, F5N



Flush square
AF16F0M, F5M



Flush round
AF16F0L, F5L



■ Pushbutton switches

• Type number system

AF16 F0T – C2 G

- AF16: Prodect category: Thin type
- F0T: Operator shape and action
- C2: Contact arrangement and terminal
- G: Color of button

• Type

Operator	Appearance (Thin type)	Contact arrangement	Momentary action Type	Alternate action Type
Flush rectangular	**AF16F0T, F5T**	SPDT	**AF16F0T-C1□**	**AF16F5T-C1□**
		2PDT	**AF16F0T-C2□**	**AF16F5T-C2□**
Flush square	**AF16F0S, F5S**	SPDT	**AF16F0S-C1□**	**AF16F5S-C1□**
		2PDT	**AF16F0S-C2□**	**AF16F5S-C2□**
Flush round	**AF16F0R, F5R**	SPDT	**AF16F0R-C1□**	**AF16F5R-C1□**
		2PDT	**AF16F0R-C2□**	**AF16F5R-C2□**

Note: • The panel cutting dimensions differ depending on the operator shape of thin type model. See page 04/167.
• For the dimensions, see page 04/158.

• Button color

Replace the □ mark by the color code.

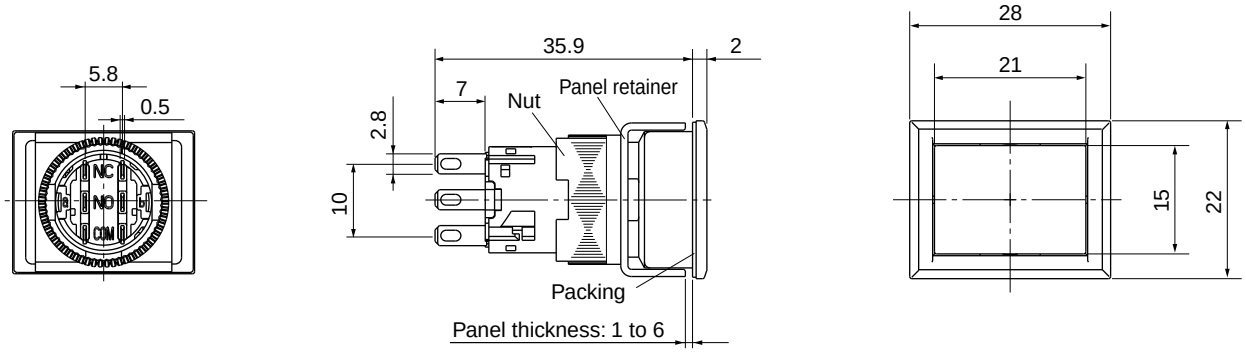
Color	Green	Black	Red	White	Yellow	Orange	Blue
Code	G	B *1	R	W *2	Y	A	S

Notes: *1 A combination of the translucent button and the black legend plate comes to black.
*2 A combination of the translucent button and the white legend plate comes to white.

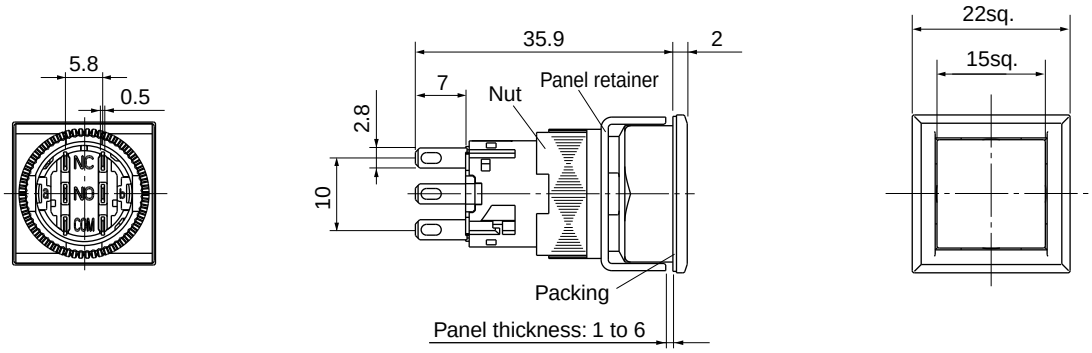
AF16 and DF16
Type numbers and dimensions

• **Dimensions, mm**

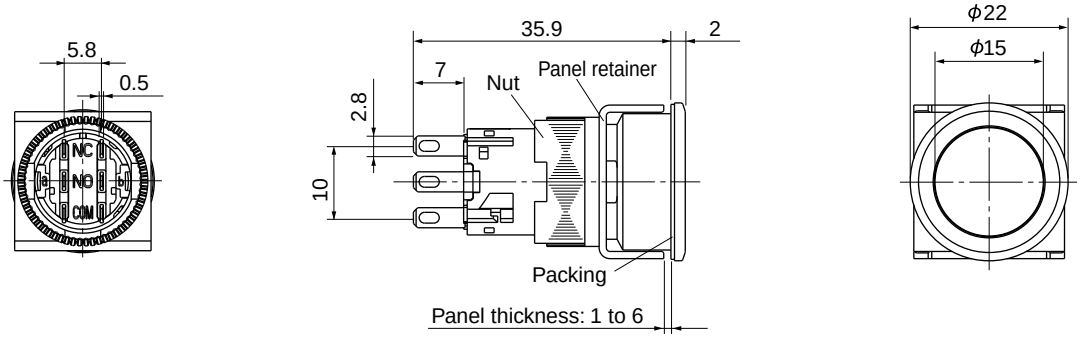
Flush rectangular
AF16F0T, F5T



Flush square
AF16F0S, F5S



Flush round
AF16F0R, F5R



■ Pilot lights (LED lamp)

• Type number system

DF16 F0N – E3 W

- DF16: Product category: Thin type
- F0N: Lens shape
- E3: Lamp operational voltage and light source
- W: Color of lens

• Type

Lens	Appearance (Thin type)	LED lamp operational voltage	Type
Flush rectangular	**DF16F0N**	6V AC/DC	**DF16F0N-A3□**
		12V AC/DC	**DF16F0N-B3□**
		24V AC/DC	**DF16F0N-E3□**
Flush square	**DF16F0M**	6V AC/DC	**DF16F0M-A3□**
		12V AC/DC	**DF16F0M-B3□**
		24V AC/DC	**DF16F0M-E3□**
Flush round	**DF16F0L**	6V AC/DC	**DF16F0L-A3□**
		12V AC/DC	**DF16F0L-B3□**
		24V AC/DC	**DF16F0L-E3□**

Note: • The panel cutting dimensions differ depending on the lens shape of thin type model. See page 04/167.
• For the dimensions, see page 04/160.

• Lens color

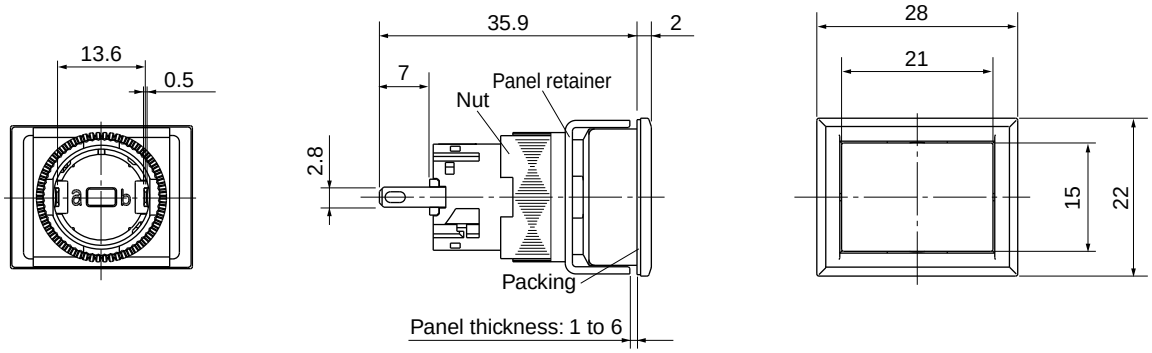
Replace the □ mark by the color code

Color	Green	Red	White	Yellow	Orange	Blue
Code	G	R	W *1	Y	A	S

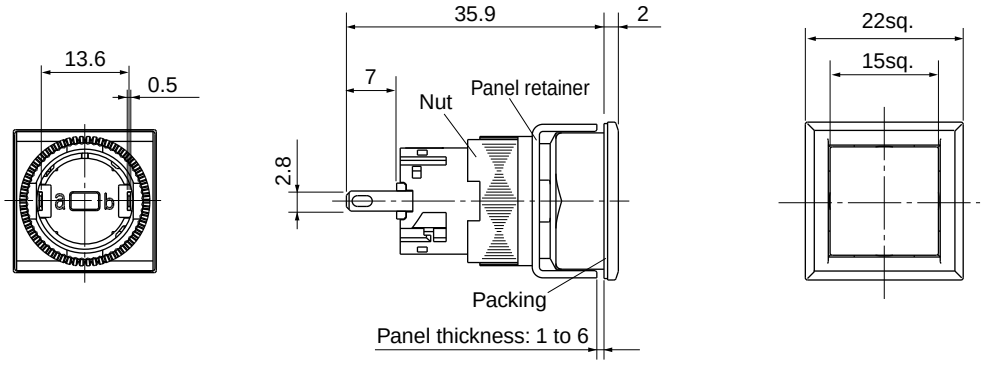
Note: *1 A combination of the transparent lens and the white legend plate comes to white.

• **Dimensions, mm**

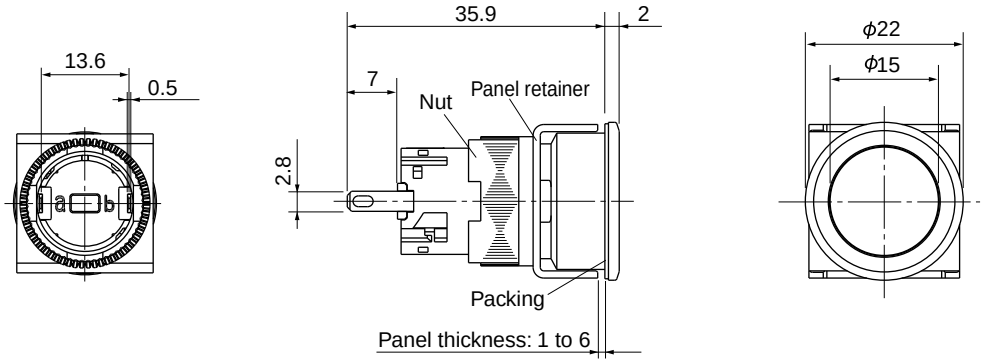
Flush rectangular
DF16F0N



Flush square
DF16F0M



Flush round
DF16F0L



■ Selector switches (Knob type)

• Type number system

AF16 PT – 2 C2 B

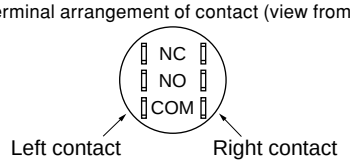
- Product category: Thin type
- Operator shape
- No. of positions and operator action
- Contact arrangement and terminal
- Color of knob: Black

• Type

2-position

Operator (Thin type)	Conntact arrangement	Type: Maintained/90° (1 – 2)	Type: Spring return/90° (1 – 2)	Contact operation: Contact unit *1		Operator position *2: 1	Operator position *2: 2
Knob with rectangular bezel/**AF16PT**	SPDT	**AF16PT-2C1B**	**AF16PT-0C1B**	Left	COM – NC	●	
		AF16PS-2C1B	**AF16PS-0C1B**	Left	COM – NO		●
		AF16PR-2C1B	**AF16PR-0C1B**				
Knob with square bezel/**AF16PS**	2PDT	**AF16PT-2C2B**	**AF16PT-0C2B**	Left	COM – NC	●	
		AF16PS-2C2B	**AF16PS-0C2B**	Left	COM – NO		●
Knob with round bezel/**AF16PR**		**AF16PR-2C2B**	**AF16PR-0C2B**	Right	COM – NC	●	
				Right	COM – NO		●

Notes: *1 Terminal arrangement of contact (view from terminal side).



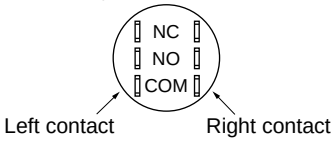
*2 ●: Contact closed.
• The panel cutting dimensions differ depending on the operator shape of thin type model. See page 04/167.
• For the dimensions, see page 04/163.

AF16 and DF16
Type numbers and dimensions

3-position

Operator (Thin type)	Contact arrangement	Type: Maintained/each 45°	Type: Spring return/each 45°	Contact operation: Contact unit *1		Operator position *2: 1	2	3
Knob with flush square/**AF16PT**	2PDT	**AF16PT-3C2B**	**AF16PT-1C2B**	Left	COM–NC	▬		
		AF16PS-3C2B	**AF16PS-1C2B**		COM–NO			●
Knob with square bezel/**AF16PS**		**AF16PR-3C2B**	**AF16PR-1C2B**	Right	COM–NC		▬	
					COM–NO	●		
		Spring/manual return/each 45°	Spring/manual return/each 45°	Contact unit *1		Operator position *2: 1	2	3
Knob with round bezel/**AF16PR**		**AF16PT-6C2B**	**AF16PT-7C2B**	Left	COM–NC	▬		
		AF16PS-6C2B	**AF16PS-7C2B**		COM–NO			●
		AF16PR-6C2B	**AF16PR-7C2B**	Right	COM–NC		▬	
					COM–NO	●		

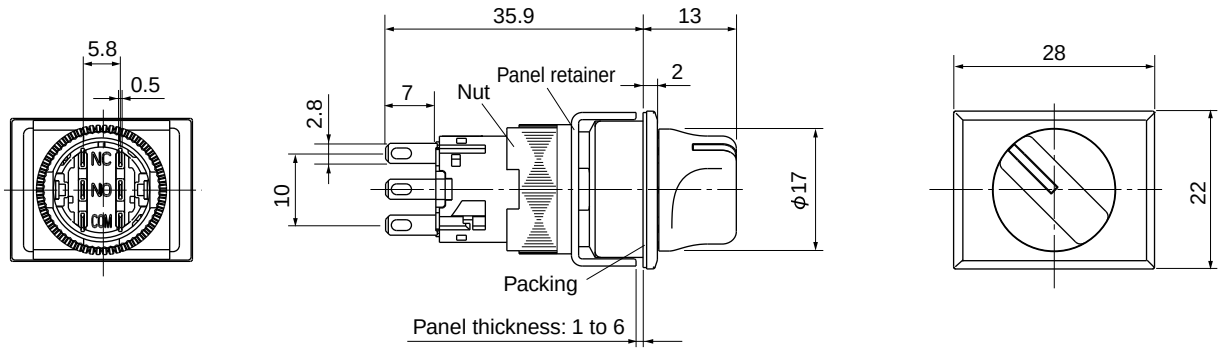
Notes: *1 Terminal arrangement of contact (view from terminal side).



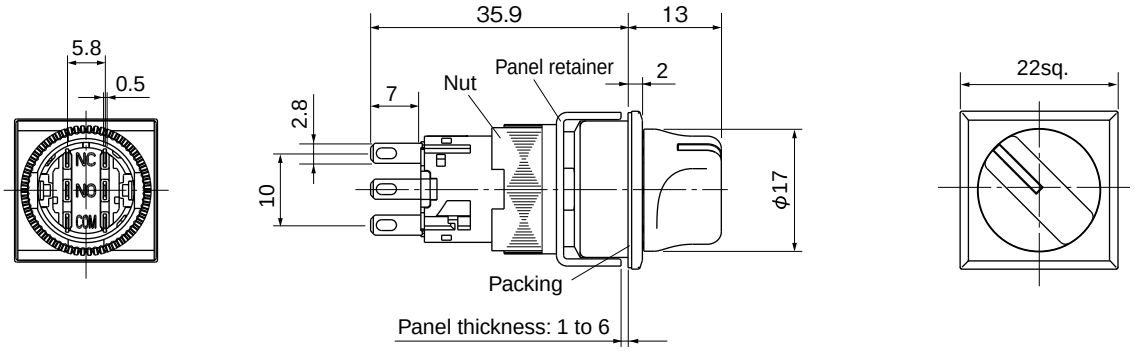
*2 ●, ▬: Contact closed.
• The panel cutting dimensions differ depending on the operator shape of thin type model. See page 04/167.
• For the dimensions, see page 04/163.

• **Dimensions, mm**

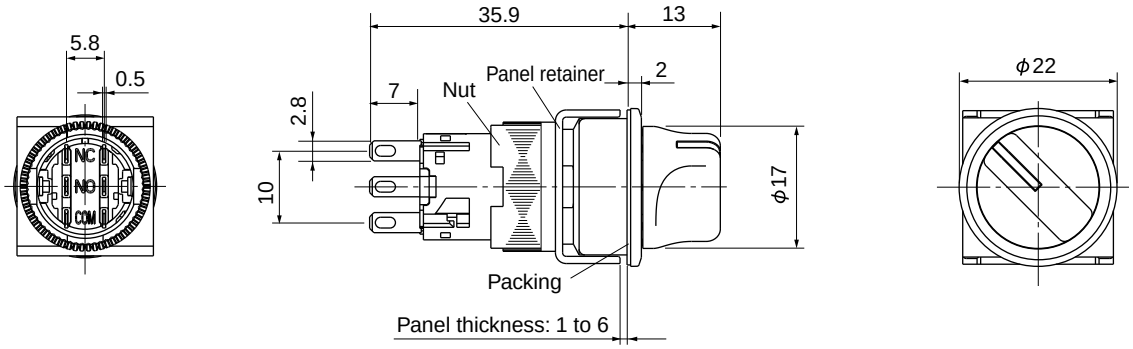
Knob with rectangular bezel
AF16PT



Knob with square bezel
AF16PS



Knob
AF16PR



■ Selector switches (Key type)

• Type number system

AF16 JT – 2 B C2 A

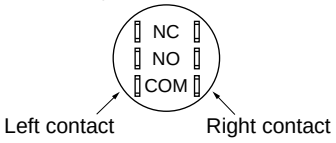
- Product category: Standard type
- Operator shape
- No. of positions and operator action
- Key removable position
- Contact arrangement and terminal
- Type of key

• Type

2-position

Operator (Thin type)	Contact arrangement	Type: Maintained/90° (1–2)	Type: Spring return/90° (1–2)	Contact operation: Contact unit *1		Operator position *2: 1	Operator position *2: 2
Key with rectangular bezel/**AF16JT**	SPDT	**AF16JT-2■C1A**	**AF16JT-0AC1A**	Left	COM–NC	●	
		AF16JS-2■C1A	**AF16JS-0AC1A**		COM–NO		●
		AF16JR-2■C1A	**AF16JR-0AC1A**				
Key with square bezel/ **AF16JS**	2PDT	**AF16JT-2■C2A**	**AF16JT-0AC2A**	Left	COM–NC	●	
		AF16JS-2■C2A	**AF16JS-0AC2A**		COM–NO		●
Key with round bezel/ **AF16JR**		**AF16JR-2■C2A**	**AF16JR-0AC2A**	Right	COM–NC	●	
					COM–NO		●

Notes: *1 Terminal arrangement of contact (view from terminal side).



*2 ●: Contact closed.
• The panel cutting dimensions differ depending on the operator shape of thin type model. See page 04/167.
• For the dimensions, see page 04/166.

• Key removable position

Replace the ■ mark by the removable positiom code.

Removable position	Applied operatior position 2	Applied operatior position 0	Code
Left ⊘	○	○	**A**
Left•Right ⊗	○	–	**B**
Left ⊘	○	–	**C**

○ : Available –: Not available

• Type of key

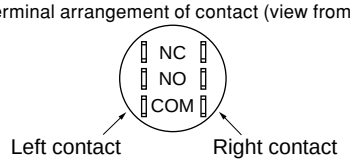
Type *1	A	B	C	D	E	F
Code	**A**	**B**	**C**	**D**	**E**	**F**

*1 "A" is standard.

3-position

Operator (Thin type)	Contact arrangement	Type: Maintained/each 45°	Type: Spring return/each 45°	Contact operation: Contact unit *1		Operator position *2: 1	2	3
Key with Flush square/ **AF16JT**	2PDT	**AF16JT-3■C2A**	**AF16JT-1EC2A**	Left	COM NC	▬		
		AF16JS-3■C2A	**AF16JS-1EC2A**		COM NO			●
Key with square bezel/ **AF16JS**		**AF16JR-3■C2A**	**AF16JR-1EC2A**	Right	COM NC		▬	
					COM NO	●		
		Spring/manual return/each 45°	Spring/manual return/each 45°	Contact unit *1		Operator position *2: 1	2	3
Key with round bezel/ **AF16JR**		**AF16JT-6■C2A**	**AF16JT-7■C2A**	Left	COM NC	▬		
		AF16JS-6■C2A	**AF16JS-7■C2A**		COM NO			●
		AF16JR-6■C2A	**AF16JR-7■C2A**	Right	COM NC		▬	
					COM NO	●		

Notes: *1 Terminal arrangement of contact (view from terminal side).



*2 ●, ▬: Contact closed.
• The panel cutting dimensions differ depending on the operator shape of thin type model. See page 04/167.
• For the dimensions, see page 04/166.

• Key removable position

Replace the ■ mark by the removable positiom code.

Removable position	Applied operatior position 3	6	7	1	Code
Left	○	–	○	–	**A**
Left•Right	○	–	–	–	**B**
Left•Center•Right	○	–	–	–	**C**
Right	○	○	–	–	**D**
Center	○	○	○	○	**E**
Center•Right	○	○	–	–	**F**
Left•Center	○	–	○	–	**G**

○ : Available –: Not available

• Type of key

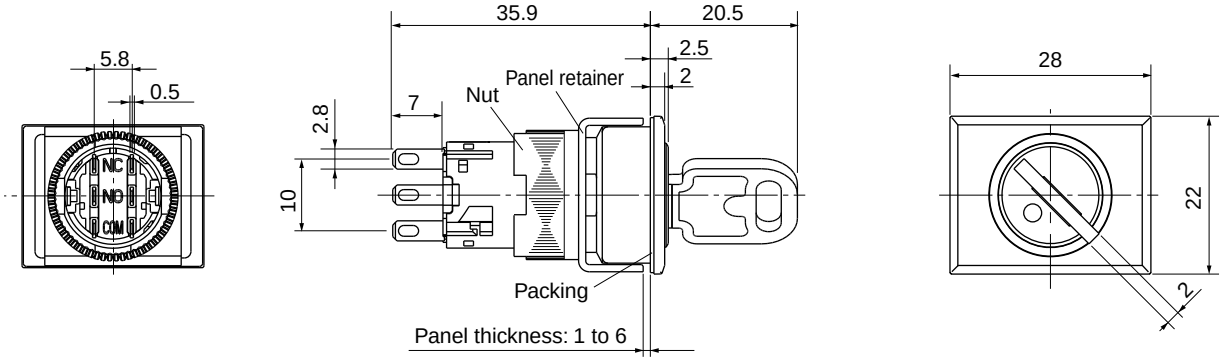
Type *1	A	B	C	D	E	F
Code	**A**	**B**	**C**	**D**	**E**	**F**

*1 "A" is standard.

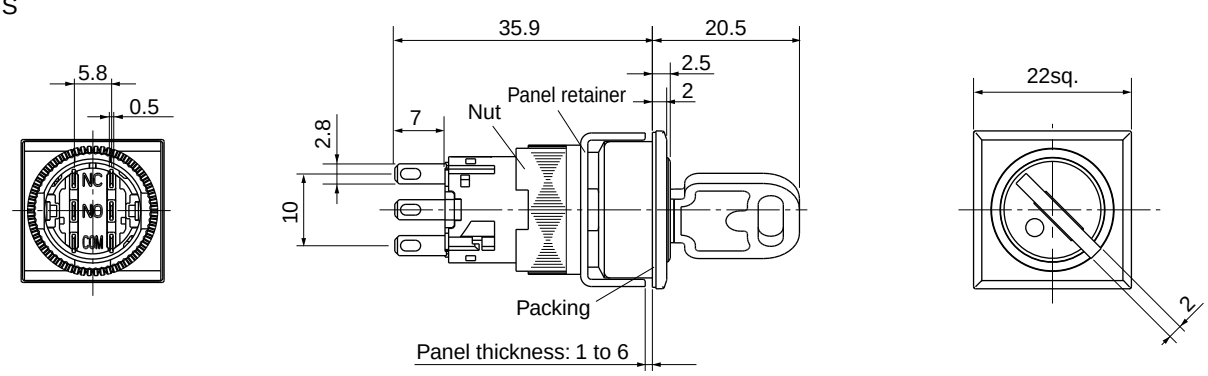
AF16 and DF16
Type numbers and dimensions

• **Dimensions, mm**

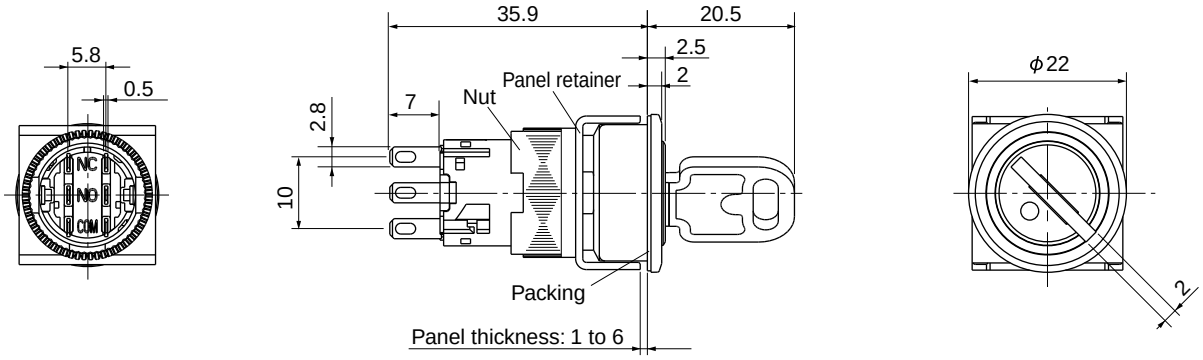
Key with recrangular bezel
AF16JT



Key with square bezel
AF16JS



Key with round bezel
AF16JR



Safety Precautions

Read the Operating Instructions carefully before mounting, wiring, operating, servicing, or inspecting the command switch. Make sure that the Operating Instructions is delivered to the final user of the command switch.

- The safety precautions are classified into two levels, Warning and Caution, with meanings described as follows:

⚠ Warning : If operation is incorrect, a dangerous situation may occur, resulting in death or serious injuries.

⚠ Caution : If operation is incorrect, a dangerous situation may occur, resulting in minor to medium injuries or physical damage to equipment.

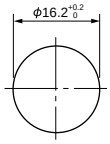
An item described under CAUTION may result in a serious accident, depending on the situation.

⚠ Warning
• Do not touch or approach any live part while power is supplied. An electric shock or burning may result. • Be sure to turn off the power before mounting, dismounting, wiring, or inspecting the product. An electric shock, burning from short-circuiting or equipment malfunction may result.

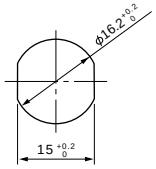
⚠ Caution
• Wire the product according to the wiring instructions in the Operating Instructions. Make sure that the size of the wires is suitable for the voltage and applied current. The wrong wiring may result in fire, accidents or malfunctions. • Treat the product as industrial waste when it is to be discarded.

■ Panel cutout, mm

- **Standard type** (common)

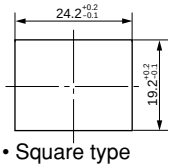


When requiring rotation prevention or positional stabilization

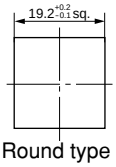


Note: When changing the operating angle position of the selector switch, the panel cutout also requires an angle change.

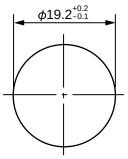
- **Thin type** (The panel cutout dimension varies depending on the operator or lens shape.)
- Rectangular type



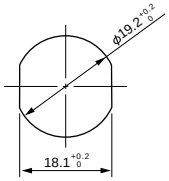
- Square type



- Round type



When requiring rotation prevention or positional stabilization

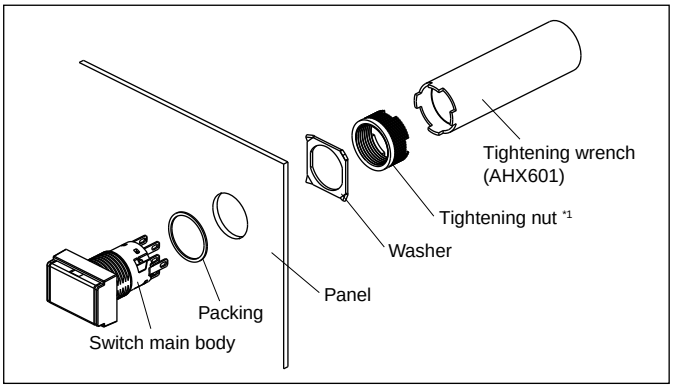


Note: When changing the operating angle position of the selector switch, the panel cutout also requires an angle change.

■ Installation on panel

- As shown in the figure below, insert the switch main unit into the mounting hole from the front of the panel, attach the washer and tightening nut from the back of the panel, and securely tighten the nut with the wrench (AHX601).

Note: The proper tightening torque is 0.6 to 1.0 N•m.

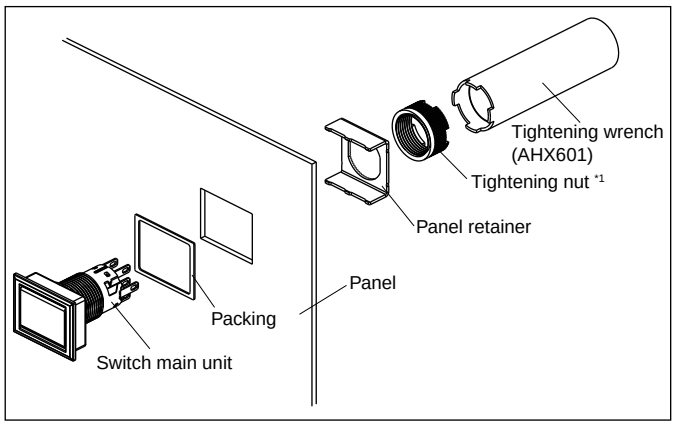


Note: *1 Do not use pliers or other improper tools to tighten the nut, or tighten it excessively, Otherwise, the nut may be damaged or the switch may malfunction.

- **Thin type**

As shown in the figure below, insert the switch main unit into the mounting hole from the front of the panel, attach the panel retainer from the back of the panel, and securely tighten the nut with the wrench (AHX601).

Note: The proper tightening torque is 0.6 to 1.0 N•m.



Note: *1 Do not use pliers or other improper tools to tighten the nut, or tighten it excessively, Otherwise, the nut may be damaged or the switch may malfunction.

■ Applicable panel thickness

Tables 1 and 2 show applicable panel thickness.

Table 1 Standard type (AR16/DR16 series)

Mounting condition		Applicable panel thickness, mm
Without accessories		1 to 6
With accessories	Protective cover	1 to 4
	Dust-tight cover	1 to 4
	Various sockets	1 to 3.2
	Terminal cover	1 to 3.2
	Protective cover + various sockets	1 to 1.6
	Protective cover + Terminal cover	1 to 1.6
	Dust-tight cover + various sockets	Cannot be used.
	Dust-tight cover + Terminal cover	Cannot be used.

Table 2 Thin type (AF16/DF16 series)

Mounting condition		Applicable panel thickness, mm
Without accessories		1 to 6
With accessories	Protective cover	1 to 4
	Various sockets	1 to 3.2
	Terminal cover	1 to 3.2
	Protective cover + various sockets	1 to 3.2
	Protective cover + Terminal cover	1 to 3.2

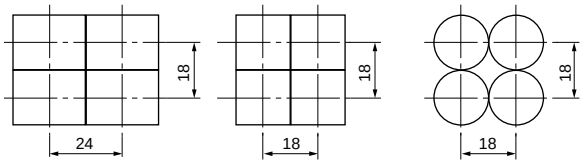
■ High-density mounting

Minimum mounting space (pitch) without accessories, mm

• **Standard type** (AR16/DR16 series)

Illuminated pushbuttons, pushbuttons, selectors, and pilot lights

①Rectangular ②Square ③Round, dome

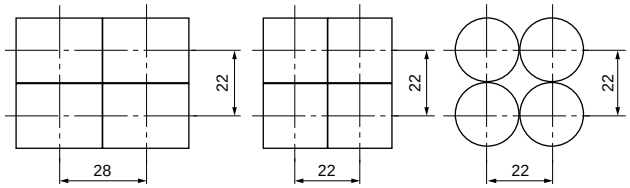


Note: Determine the mounting pitch by taking the operatbility and wiring work into consideration.

• **Thin type** (AF16/DF16 series)

Illuminated pushbuttons, pushbuttons, selectors, and pilot lights

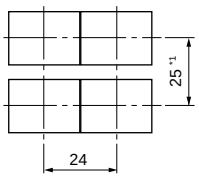
①Rectangular ②Square ③Round, dome



Note: Determine the mounting pitch by taking the operatbility and wiring work into consideration.

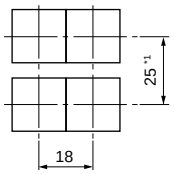
Minimum mounting space (pitch) with accessories, mm

• Protective cover AHX669 and AHX826 (Standard type)



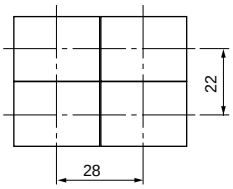
*1 43: with the cover fully opened

• Protective cover AHX671 (Standard type)

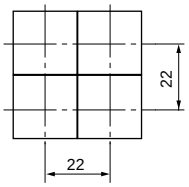


*1 43: with the cover fully opened

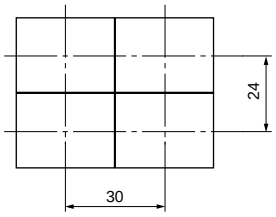
• Protective cover AF6D826 (Thin type)



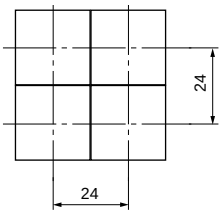
• Protective cover AF6D827 (Thin type)



• Dust-tight cover AHX668 (Standard type)



• Dust-tight cover AHX822 (Standard type)



• Minimum mounting spaces (pitch) with sockets, such as Fast-Connection socket (AR6S690), connector socket (AR6S691) and PC board-use socket (AR6S692) are the same as those without accessories.

Note: Determine the mounting pitch by taking the operability and wiring workability into consideration.

Safety Precautions

Read the Operating Instructions carefully before mounting, wiring, operating, servicing, or inspecting the command switch. Make sure that the Operating Instructions is delivered to the final user of the command switch.

• The safety precautions are classified into two levels, Warning and Caution, with meanings described as follows:

⚠ Warning : If operation is incorrect, a dangerous situation may occur, resulting in death or serious injuries.

⚠ Caution : If operation is incorrect, a dangerous situation may occur, resulting in minor to medium injuries or physical damage to equipment.

An item described under CAUTION may result in a serious accident, depending on the situation.

⚠ Warning
• Do not touch or approach any live part while power is supplied. An electric shock or burning may result. • Be sure to turn off the power before mounting, dismounting, wiring, or inspecting the product. An electric shock, burning from short-circuiting, or equipment malfunction may result.

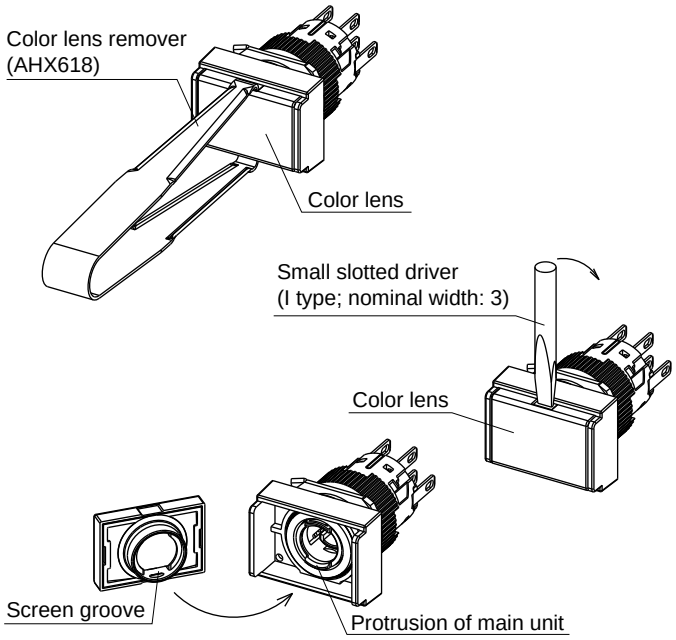
⚠ Caution
• Wire the product according to the wiring instructions in the Operating Instructions. Make sure that the size of the wires is suitable for the voltage and applied current. The wrong wiring may result in fire, accidents, or malfunctions. • Treat the product as industrial waste when it is to be discarded.

■ Method of replacing color lens, legend plate, and screen

Replacing color lens (screen)

• Standard type (AR16/DR16 series)

To remove the color lens, fit the color lens remover (AHX618) to the grooves in the color lens and pull out the lens, or pry the lens lightly with a small slotted screwdriver.

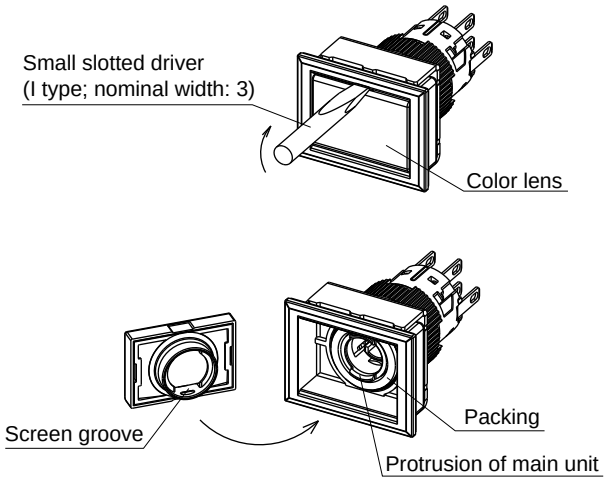


• Thin type (AF16/DF16 Series)

To remove the color lens, pry the lens lightly with a small slotted screwdriver.

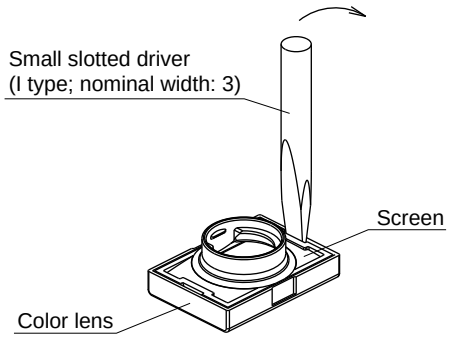
If one side of the color lens is separated from the screen, further insert the screwdriver and remove the color lens together with the screen. Do not pry the packing when doing this.

To fit the color lens, align the protrusion of switch main body with the groove of the screen, and press-fit them.



• Removing screen

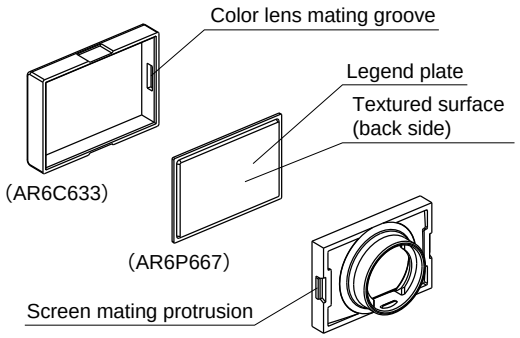
Insert the tip of a small slotted screwdriver into the groove and press down the screwdriver in the direction of the arrow.



Fitting color lens to screen

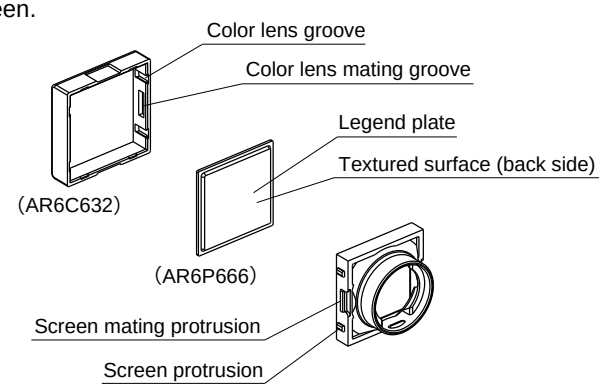
• Rectangular type

Set the textured surface side of the legend plate with the screen side, then press-fit the color lens. When press-fitting, make sure that your fingers do not touch the reflective surface inside the screen.



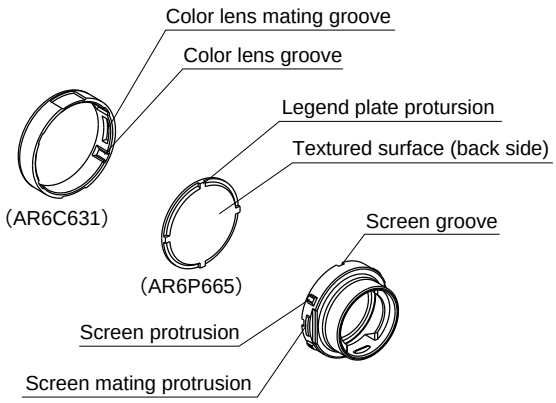
• Square type

Set the textured surface side of the legend plate with the screen side, align the screen protrusion with the color lens groove, and press-fit together. When press-fitting, make sure that your fingers do not touch the reflective surface inside the screen.



• Round type

Align the protrusion of the legend plate with the groove of the screen, also align the screen protrusion and color lens groove, and press-fit together. When press-fitting, make sure that your fingers do not touch the reflective surface inside the screen.



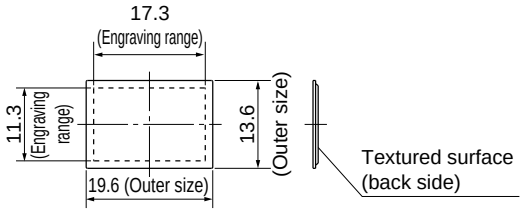
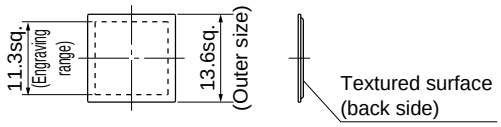
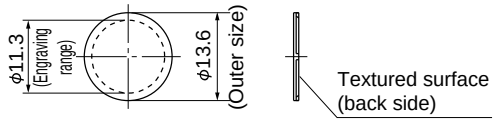
• For alternate action type of illuminated pushbutton switches and pushbutton switches, do not remove the color lenses (screens) in locked (depressed) state. The internal mechanisms may be damaged.

■ Engraving legend plate

Engrave the surface of the legend plate.

- Material: Acrylic resin
- Engraving depth: 0.5 mm max.
- Paint: Use a paint that has alcohol as its main ingredient, such as melamine paint, phthalic acid paint, or acrylic paint.

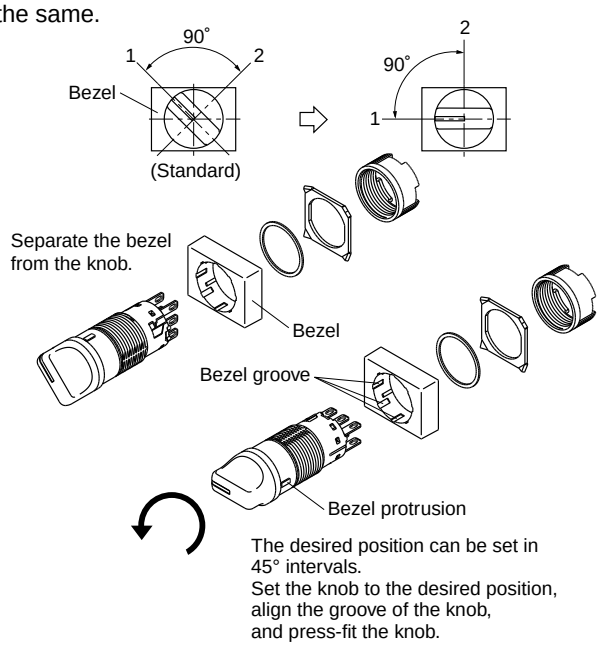
• Legend plate size

Shape	Size, mm
Rectangular	
Square	
Round	

Notes: *1 A legend sheet may be used, provided that the external dimensions do not exceed the corresponding outer size specified in the above table and that the thickness is 0.1 mm or below. (No legend sheets are provided with the product. Please prepare on customer side.)
*2 Do not engrave any part other than the legend plate.

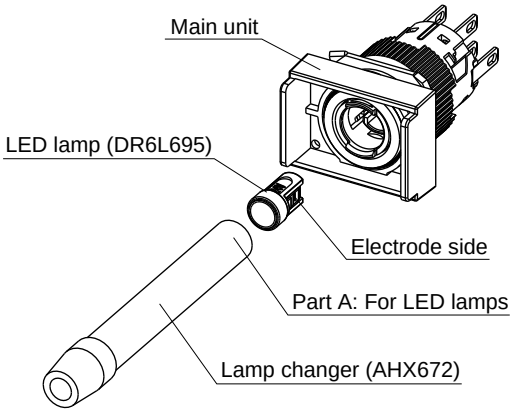
■ Changing the operating angle position of selector switch

The bezel is separated from the knob (key), which makes it easy to change the operating angle position in 45° increments (the AR16 series rectangular or square type only).
The following figures show a knob type example. The key type is the same.



■ Method of replacing lamp

- To remove the LED lamp, insert the lamp changer (AHX672) in the LED lamp and pull out the LED lamp.
  To mount the LED lamp, align the lamp terminal side of the main unit with the electrode side of the LED lamp, lightly hold the lamp by hand or with the head of the lamp changer (AHX672), and insert the lamp.
  The LED lamp has no polarity, so it can be powered by either AC or DC.

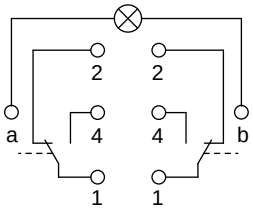
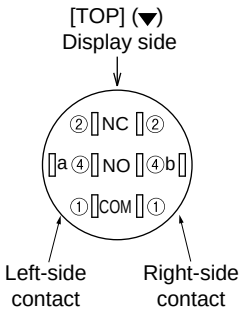
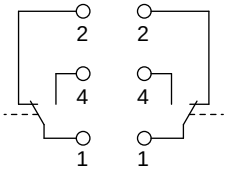
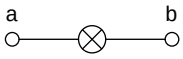
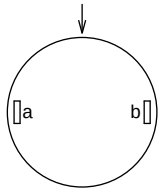


- Handling of LEDs
  LED whose luminous color is green or blue is sensitive to static electricity. Be careful when handling the LED. Take thorough measures against static electricity and surges when handling the product. The following anti-electrostatic measure is recommended.
  Use a wristband or anti-electrostatic glove when replacing LED lamps.

■ Wiring

- Wiring to tab terminal
  Use 110 (2.8mm) series receptacles for tab terminals.
- Pay attention to the following points when soldering.
  Type of solder: Use resin-core solder.
  Use a soldering iron with a maximum power consumption of 60W (350(C) within five seconds. Make sure that the terminal is free of tension during soldering. Also, do not deform the terminal.
- The melting point of lead-free solder is slightly high, which may make soldering difficult. Use a soldering iron that has a large soldering tip or high heat generation.
- Connectable wires
  Two solid wires with a maximum diameter of 0.8 mm (solder)
  One stranded wire with a maximum area of 0.75 mm^2 (solder)
  Flat-type connection terminal
  (2.8□-1.25-5) 0.5 to 1.25mm^2
  (2.8□-0.5-5) 0.2 to 0.5mm^2
- Use of contact blocks
  When using NO and NC contacts in the same contact block, avoid connection that involves opposite polarity or wiring from different types of power supply.
- For wiring to adjacent terminals, use the terminal cover (AR6Y261) to prevent short-circuit, or an insulation tube to assure isolation. For solder terminals, caution is required if thick wires, in particular, are connected or a large quantity of solder is used.

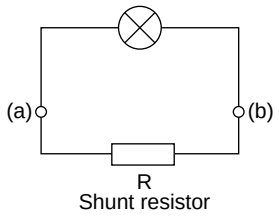
• Terminal arrangement

Model	Circuit diagram (example)	Terminal arrangement (view from the terminal (back) side)
Illuminated pushbuttons (2PDT)		
Pushbuttons and selector switches (2PDT)		
Pilot lights		

Note: Only the left-side contact is applicable to the SPDT mechanism.

■ LED Lamps

- LED lamp malfunctioning (incorrect lighting)
  The LED lamp incorporates a circuit to prevent malfunctioning. Compared with conventional models, this LED lamp is less likely to malfunction, but it incorporates no absolute countermeasures.
  A minute current (approximately 0.25 mA) turns on the LED lamp. A leakage current from the surge absorption circuit or noncontact circuit, or stray capacitance between cables, may also turn on the LED lamp.
  In this case, a countermeasure (e.g., attaching a resistor in parallel with the LED lamp) is required.
- Countermeasure against malfunctioning
  Malfunctioning can be prevented by connecting a shunt resistor (R) in parallel. The resistance in that case varies with the model and operating conditions.



In the case of 24V DC
R: 10kΩ (0.5W)

In the case of 24V AC
R: 2kΩ (2W)

- The permissible fluctuation range for the operating voltage of the 6V model is ±5% and that for the 12V or 24V model is ±10%. If the operating voltage is always 5% or 10% higher, select a resistor that will make the operating current the same as or lower than the rated current, and connect the resistor in series to the LED lamp.

- Calculation of external resistance
  Example: Connecting a 24V red LED to a 48V circuit

$$\text{External resistance } [\Omega] = \frac{\text{Circuit voltage [V] - Rated voltage [V]}}{\text{Rated current [A]}}$$

$$= \frac{48-24}{7.5\times10^{-3}} = 3200\ [\Omega]$$

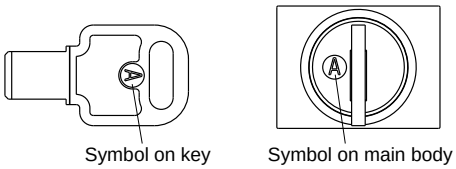
→ Therefore, use an external resistor of 3.3kΩ 1W.
(Select a resistor with sufficient wattage.)

- Surges
  High-brightness LED products use elements that are sensitive to static electricity. Keep in mind that an unusual voltage, such as a surge voltage, may cause the product to malfunction.

■ Selector Switches

- **Knob type**
  The knob can be operated by turning it lightly. Be careful to operate the knob with a torque not exceeding 1N•m.

- **Key type**
- Types of keys
  Five types (B, C, D, E, and F) are available in addition to the standard type (type A).
  Make sure that the symbol on the key coincides with the symbol on the switch.



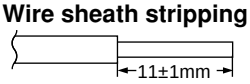
- Fully insert the key into the switch and turn the key. Do not pull on the key while turning it.
- Operate the key with a torque not exceeding 0.1N•m.
- Do not forcibly insert or extract the key.
- Do not attempt to operate the switch with the key insufficiently inserted or insert the wrong key. Otherwise, a malfunction may result.

■ Fast-connection socket

- **Connectable wires**
  - Standed wire : 0.3 to 0.75 mm^2 (AWG22 to AWG18)
  - Single wire : 0.5 to 1 mm dia.
  - Recommended ferrule : Phoenix Contact, part number AI0, 34-8TQ
    Wire size : 0.34 mm^2 (22 AWG)
    Crimping tool : CRIMPFOX UD6-6
    Note : Use a crimping tool with a hexagonal or round cross section.

  Sheath external diameter: 2.8 mm dia. Max.

- **Wire sheath stripping length**



Note : If ferrules are used, securely insert the wire sheath inside a resin shell. Cut the end of the wire the same length as the ferrule or cut it at a position approximately 0.5 mm longer.

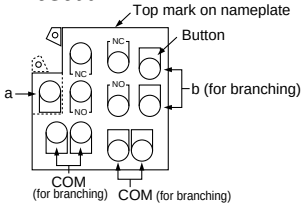
Check the length using the strip gauge on the surface of the socket displayed on the model nameplate. If standed wire is used, twist the wire so that there are no loose strands after stripping.

- **Connection method**

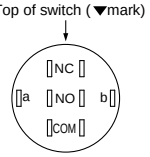
(1) Insert the wire while pressing the button on the insertion slot with a small flat-head screwdriver (tip width of 2 mm max.). Release the button when the wire is all the way seated in the switch.
(2) When disconnecting the wire, pull out the wire while pressing the button on the insertion slot with a small flat-head screwdriver. Cut the bare part of the wire if it was previously used, and then newly remove the sheath to reuse the wire.
(3) Insert a single wire for each insertion slot.
(4) Do not pull on the wires with excessive force (15 N or more) when you perform wiring. Make sure that not extemal force is exerted on the wires after wiring has been completed. The next time that a wire is inserted, the parts that support the wire may change shape and result in conduction failure.

- **Terminal arrangement (Rear-side View)**

(1) Socket Terminal Arrangement for AR6S690-L2

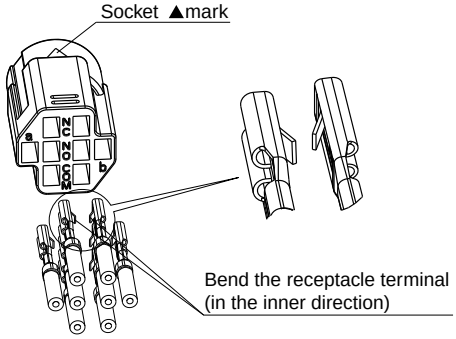


(2) Switch Terminal Arrangement for Illuminated 2PDT Contacts

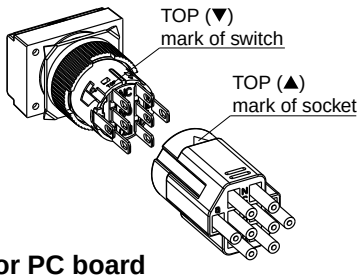


■ Connector sockets

- Connectable wires
  Stranded wire: 0.5 to 0.75 mm^2 (20AWG to 18AWG)
- Arrange for a receptacle terminal separately.
  Nichifu Co., Ltd.: CMC62895F
- Check the insertion position and insert the receptacle terminal into the socket after connecting the wires to the receptacle terminal. (The wires once connected cannot be disconnected.) Lightly pull the wires and check that the receptacle terminal is securely connected to the socket.

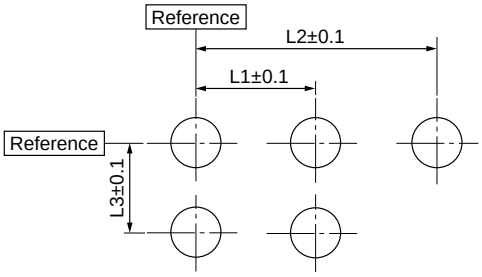


- Align the ▲ mark of the socket and the TOP (▼) mark of the switch, and put the socket and switch together.



■ Socket for PC board

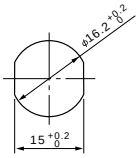
- Minimum mounting space (pitch), mm



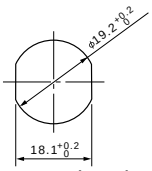
Obtain the mounting pitch based on a reference line to minimize the cumulative error.
Make sure that the centering difference between the switch and the PCB socket does not exceed 0.25 mm.

- Apply the following panel cutout dimensions (in mm) to stabilize the operator position of the switch when combined with the socket.

AR16/DR16 (common)

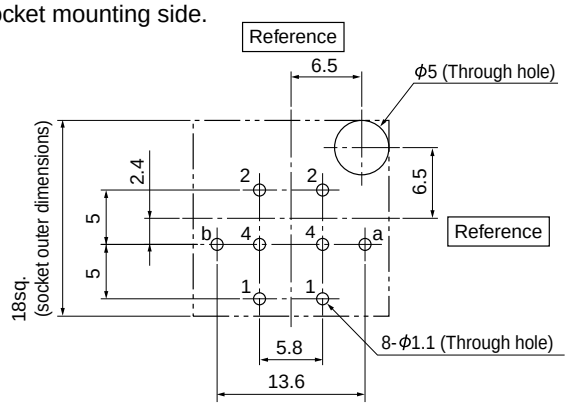


AF16/DF16 (round type)

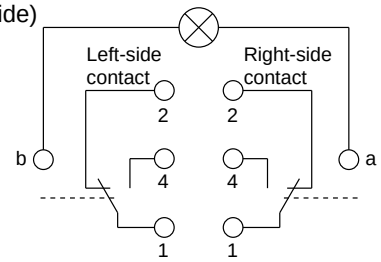


- Mount the switch to the panel. Make sure that the switch is free of any bends.

- PC board processing dimensions (in mm) as viewed from the socket mounting side.

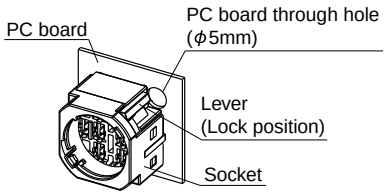


- The reference is the center of the socket (switch).
- Switch terminal arrangement (as viewed from the socket mounting side)

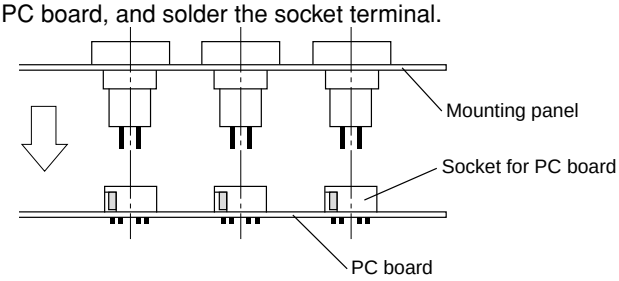


Note: The right-side contact is connected in the case of an SPDT contact.

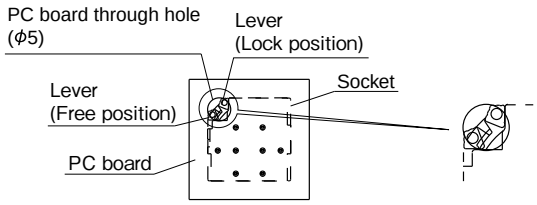
- Insert the socket so that the lever will be located in the 5mm-diameter through hole of the PC board. Set the lever to the lock position as viewed from the socket mounting side.



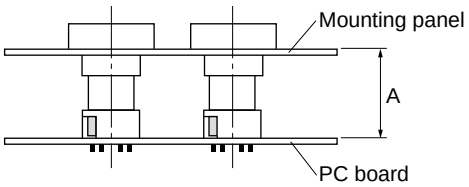
- Combine the switch-mounted panel with the socket on the PC board, and solder the socket terminal.



- Combine the PCB socket and the panel while making sure that the socket terminal does not fall off, and turn over the socket to do the soldering. Do not leave any space between the PC board and socket.
- After combining them, check that the lever as viewed from the soldering side is in the lock position, and solder the terminal.



- Pay attention to the following points when soldering.
  - Type of solder: Use resin-core solder.
  - Finish soldering at 350°C within 5 seconds.
  - Do not wash the socket.
  - Solder the socket so that no flux adheres to it.
- The melting point of lead-free solder is slightly higher than lead solder, which may make soldering difficult. Use a soldering iron with a large tip or that provides a high heat generation.
- Using a spacer between the panel and the PC board
  Make sure that the distance shown in the figure below is maintained between the panel and the PC board. The spacer dimensions vary with the thickness of the mounting panel.



Series	A (mm)
AR16/DR16	30.2±0.2
AF16/DF16	37.7±0.2

- Mounting and removing PC board sockets
  - Removing
    Push down the socket levers all the way viewed from the soldering side in the direction of the free position and remove the PC board sockets. After removal, the socket levers will return to the lock position automatically.
  - Mounting
    Check that the socket lever as viewed from the soldering side is in the lock position, lightly insert the terminal and socket so their position is aligned with the switch on the panel, press the socket-mounting portion of the PC board, and securely insert the entire socket until the socket lever snaps. (Check that the lever as viewed from the soldering side is in the lock position.)
- Use the switch within the following rated voltage range when the PCB socket is used.
  - Rated insulation voltage: 60V
  - Rated operational voltage: 24V
  - Conventional free air thermal current: 3A
- Use a 1.6-mm-thick double-sided through-hole printed circuit board made of copper-plated laminated epoxy resin on a woven glass fabric base.
- In case of standard type (AR16 and DR16 series), beware that the adopted models are not allowed to attach the protective cover to some models and that the adopted models cannot be mounted to some models afterward.

■ Others

- Operation
  Do not hit or flip the button, or the button may be damaged.
  Be sure to operate the button by hand.
  Do not pull the button if the switch is an alternate action type.

- High-density mounting of illuminated type
  When continuously lighting pilot lights or pressing illuminated pushbuttons, keep in mind that the ambient temperature may exceed the rated value due to the heat radiated by the lamp. Be sure to ventilate the lamp /switch if the mounting panel is not made of metal or if the mounting panel is an enclosed type.

- Usage locations
  - Be sure to use and store the product within the rated ambient temperature and humidity ranges.
  - Although the product resists ordinary cutting oils and coolant oils, do not use the unit in places where special oils may be sprayed onto the product.
  - If dusts or filings accumulate in the gap between the button and the frame, the switch may fail to operate normally. Take appropriate measures, such as using a dust-proof protective cover, if the switch is to be used in places that are subject to dusts or filings.
  - The AR16/DR16 series and AF16/DF16 series are for indoor use. Make sure that the product is not exposed to direct sunlight.
  - Do not use the product in the places that are subject to the adverse effects of ozone or corrosive gases.

Description	Type	Dimensions, mm

Protective cover (for Standard type)

KKD07-246

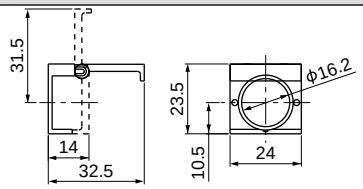
KKD07-247

KKD07-248

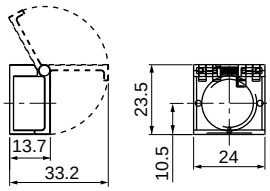
Type	Used with
AHX669	AR16F0N, F5N, F0T, F5T
AXH826 *	
AHX671	AR16F0M, F5M, F0S, F5S AR16E0L, E5L, E0R, E5R

* This cover returns to the home position with spring action to prevent accidental operation (Packing is provided).
Note: The cover cannot be used with the flush rectangular with guard type models.

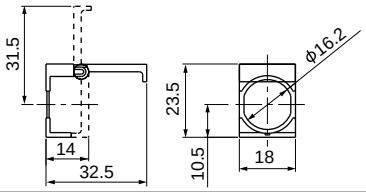
AHX669



AHX826



AHX671



Protective cover (for Thin type)

KKD07-249

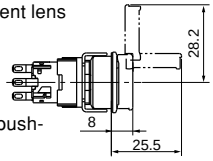
KKD07-250

Type	Used with
AF6D826-□	AF16F0N, F0T
AF6D827-□	AF16F0M, F0S

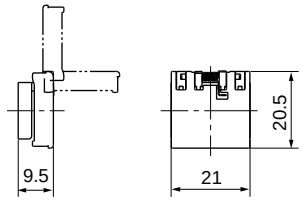
This cover prevents accidental operation.
Note: • The protective cover and the button are made of an integral structure.
• Enter the color code in the square box .

Color	Green	Red	Transparent *	Yellow	Orange	Blue
Code	**G**	**R**	**C**	**Y**	**A**	**S**
Color code of main unit	G	R	W, B	Y	A	S

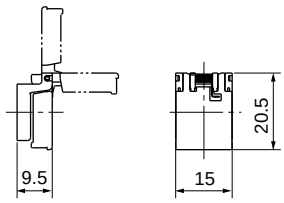
* When the color code of the main unit is W, a combination of the transparent lens and the white legend plate comes to white. When it is B, a combination of the transparent lens and the black legend plate comes to black.
• This cover returns to the home position with spring action.
• Not applicable to alternate models.
• Dimensions when connected with a push-button switch (unit: mm)



AF6D826



AF6D827



Dust-proof cover (for Standard type)

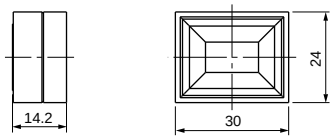
KKD07-251

KKD07-252

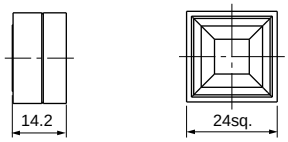
Type	Used with
AHX668	AR16F0N, F5N, F0T, F5T
AHX822	AR16F0M, F5M, F0S, F5S AR16E0L, E5L, E0R, E5R

This cover seals the operator section to prevent powder or dust from invading inside the switch (Packing is provided).

AHX668



AHX822



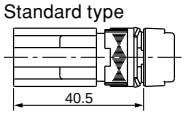
Terminal cover

KKD07-253

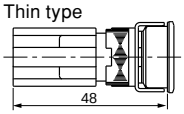
Type	Used with
AR6Y261	Illuminated pushbutton switch, pushbutton switch, selector switch, pilot light

Protective cover for insulation between terminals and live parts.
Note: • Dimensions when connected with a switch (pilot light) (unit: mm)

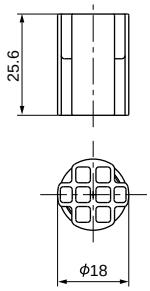
Standard type



Thin type



• Wiring work should be made first, and attach the cover to the switch (pilot light).
• Use cables of sheath outer diameter of ϕ2.8mm or less.



Description	Type	Dimensions, mm

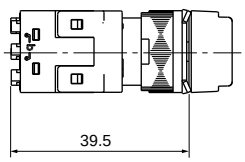
Fast-connection socket

KKD08-093

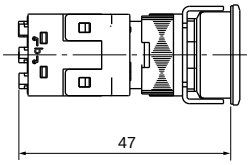
Type	Used with
AR6S690-L1	Illuminated pushbutton switch : SPDT
AR6S690-L2	Illuminated pushbutton switch : 2PDT
AR6S690-LX	Pilot light
AR6S690-R1	Pushbutton switch, selector switch : SPDT
AR6S690-R2	Pushbutton switch, selector switch : 2PDT

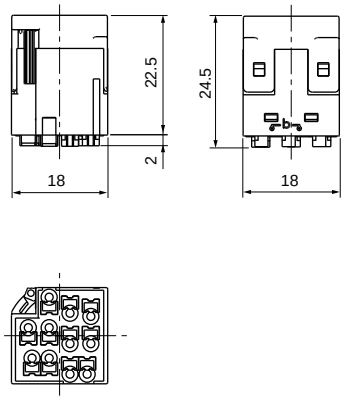
By combining with a switch, they can be used as a Fast-connection type switch.
Note: Dimensions when connected with a switch (pilot light) (unit:mm)

Standard type



Thin type





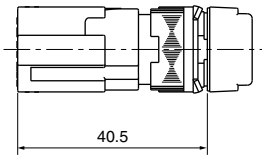
Connector socket

KKD07-255

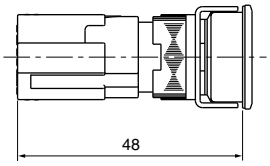
Type	Used with
AR6S691-C	Illuminated pushbutton switch, pushbutton switch, selector switch, pilot light

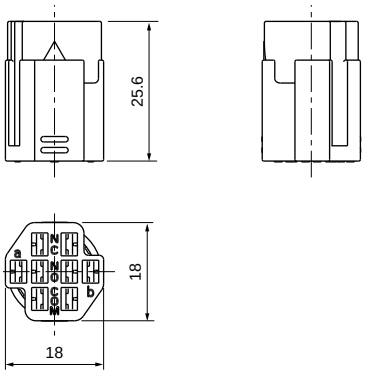
By combining with receptacle terminals, this can be used as a connector.
Note: • The receptacle terminal is not supplied.
Please prepare the receptacle terminal Model No. CMC62895-F made by NICHIFU Co.,Ltd. on your side.
• Dimensions when connected with a switch (pilot light) (unit: mm)

Standard type



Thin type





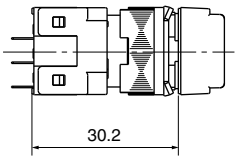
Socket for PC board

KKD08-096

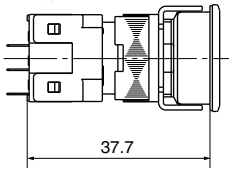
Type	Used with
AR6S692	Illuminated pushbutton switch, pushbutton switch, selector switch, pilot light

By combining with a switch, they can be used as a switch for PC board, connection type switch.
Note: • Dimensions when connected with a switch (pilot light) (unit: mm)

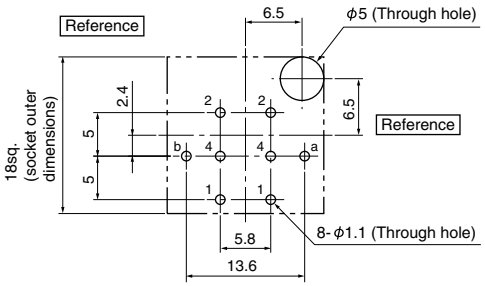
Standard type

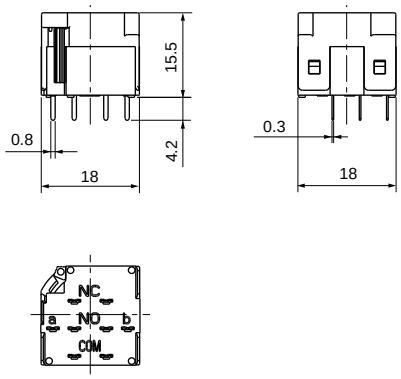


Thin type



• PC board processing drawing (View from component side) (unit: mm)





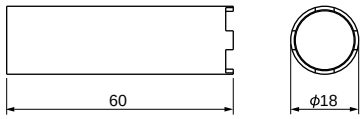
Description	Type	Dimensions, mm

Wrench

KKD07-257

Type	Used with
AHX601	AR16 and DR16 series AF16 and DF16 series

When installing a Command Switch on a panel, this tool enables secure and firm tightening.

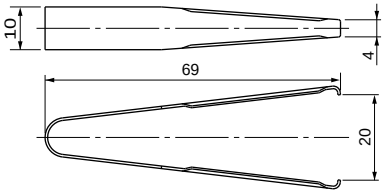


Remover (for Standard type)

KKD07-258

Type	Used with
AHX618	Illuminated pushbutton switch, pushbutton switch, pilot light

This tool is used for removing color lens, buttons or screens.



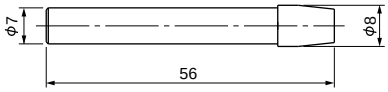
Lamp remover

Part A

KKD07-259

Type	Used with
AHX672	Illuminated pushbutton switch, pilot light

This tool is used for installing or removing lamps.
Use the part A to remove LED lamps.



Panel plug (for Standard type)

KKD07-260

KKD07-261

KKD07-262

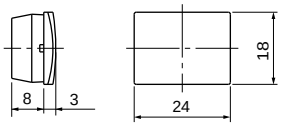
KKD07-267

Type	Used with
AXH645-□	Rectangular type Degree of protection: IP40
AXH644-□	Square type Degree of protection: IP40
AXH622-□	Round type Degree of protection: IP40
AXH850-B *1	Rectangular type Degree of protection: IP65

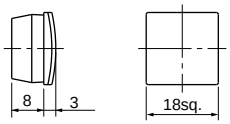
*1 Packing and nut are provided. The color is black only.
Note: • Enter the color code in the square box □.

Type	Black	Gray
Code	**B**	**GY**

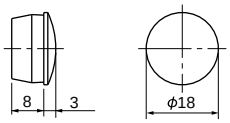
AHX645



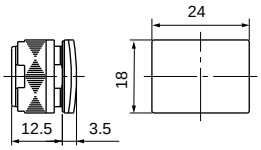
AHX644



AHX622



AHX850-B



Panel plug (for Thin type)

KKD07-264

KKD07-266

KKD07-265

KKD07-263

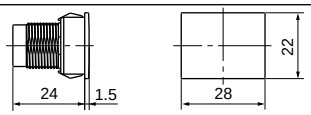
KKD07-268

KKD07-269

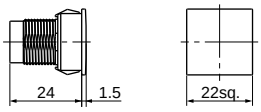
Type	Used with
AF6Y645-B	Rectangular type Degree of protection: IP40
AF6Y644-B	Square type Degree of protection: IP40
AF6Y622-B	Round type Degree of protection: IP40
AF6Y850-B *1	Rectangular type Degree of protection: IP65
AF6Y851-B *1	Square type Degree of protection: IP65
AF6Y852-B *1	Round type Degree of protection: IP65

*1 Packing, panel retainer, and nut are provided.
Note: • The color is black only.

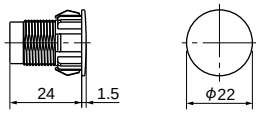
AF6Y645-B



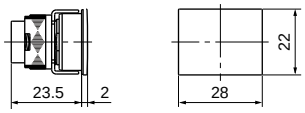
AF6Y644-B



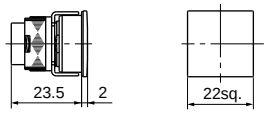
AF6Y622-B



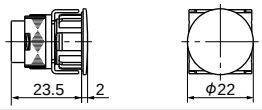
AF6Y850-B



AF6Y851-B



AF6Y852-B



Description	Type	Dimensions, mm

Color lens and button

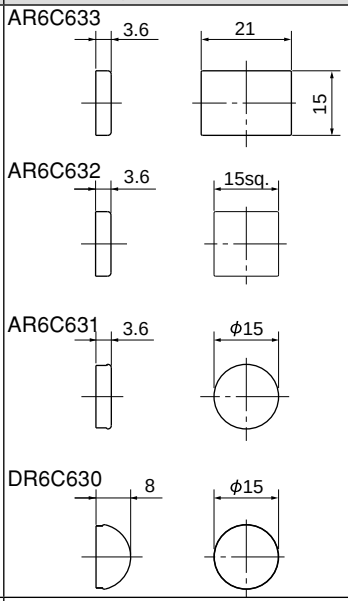
KKD07-270

Type	Used with
AR6C633-□	AR16F0N, F5N, F0T, F5T, G0N, G5N, G0T, G5T DR16F0N AF16F0N, F5N, F0T, F5T, Type DF16F0N
AR6C632-□	AR16F0M, F5M, F0S, F5S, Type DR16F0M AF16F0M, F5M, F0S, F5S, Type DF16F0M
AR6C631-□	AR16E0L, E5L, E0R, E5R, Type DR16E0L AF16F0L, F5L, F0R, F5R, Type DF16F0L
DR6C630-□	DR16D0L

Note: Enter the color code in the square box □.

Color	Green	Red	Transparent*	Yellow	Orange	Blue
Code	**G**	**R**	**C**	**Y**	**A**	**S**
Color code of main unit	G	R	W, B	Y	A	S

* When the color code of the main unit is W, a combination of the transparent lens and the white legend plate comes to white (except for dome type).
When it is B, a combination of the transparent lens and the black legend plate comes to black (except for pilot light).
When the dome type (DR16D0L)'s color code of the main unit is W, the lens code is W.



Legend plate

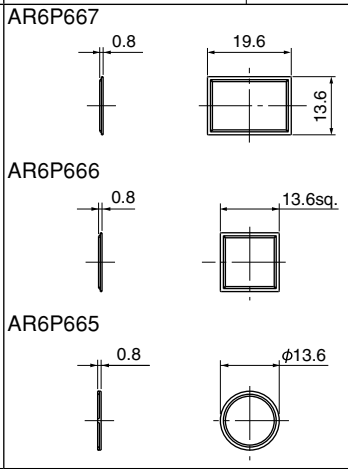
KKD07-272

Type	Used with
AR6P667-□	AR16F0N, F5N, F0T, F5T, G0N, G5N, G0T, G5T DR16F0N AF16F0N, F5N, F0T, F5T, Type DF16F0N
AR6P666-□	AR16F0M, F5M, F0S, F5S, Type DR16F0M AF16F0M, F5M, F0S, F5S, Type DF16F0M
AR6P665-□	AR16E0L, E5L, E0R, E5R, Type DR16E0L AF16F0L, F5L, F0R, F5R, Type DF16F0L

Note: Enter the color code in the square box □.

Type	White	Black
Code	**W**	**B**
Color code of main unit	G, R, W, Y, A, S	B

• When the color code of the main unit is W, a combination of the transparent lens and the white legend plate comes to white.
When it is B, a combination of the transparent lens and the black legend plate comes to black (except for pilot light).



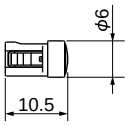
LED lamp

KKD07-273

Type	Lamp operational voltage, current consumption
DR6L695-A□	6V AC/DC, Green, Red, Amber, blue: 7.5mA AC, 7.5mA DC Orange: AC8.5mA, DC8.5mA, Yellow: 17mA AC, 17mA DC
DR6L695-B□	12V AC/DC, Green, Red, Amber, blue: 7.5mA AC, 7.5mA DC Orange, Yellow: 8.5mA AC, 8.5mA DC
DR6L695-E□	24V AC/DC, Green, Red, Amber, blue: 7.5mA AC, 7.5mA DC Orange, Yellow: 8.5mA AC, 8.5mA DC

Note: Enter the color code in the square box □.

Color	Green	Red	Orange	Yellow	Amber	Blue
Code	**G**	**R**	**W**	**Y**	**A**	**S**
Color code of main unit	G	R	W	Y	A	S



Key

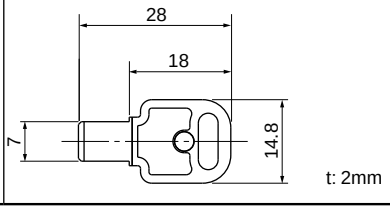
KKD07-274

Type	Used with
AR6C662-□	AR16JT, JS, JR AF16JT, JS, JR

Note: • Enter the color code in the square box □.

Code (Key type)	**A**	**B**	**C**	**D**	**E**	**F**

• Two pieces per set on delivery.
• Both sides of the key is same.



• Standard type <AR16, DR16 series>

1. Illuminated push button switches (g)

Type	Without transformer	
	SPDT	2PDT
AR16F0N	9.3	9.9
AR16F5N	9.3	9.9
AR16G0N	9.4	10
AR16G5N	9.4	10
AR16F0M	8.7	9.3
AR16F5M	8.7	9.3
AR16E0L	8.1	8.7
AR16E5L	8.1	8.7

2. Pushbutton switches (g)

Type	SPDT	2PDT
AR16F0T	8.5	9.1
AR16F5T	8.5	9.1
AR16G0T	8.7	9.3
AR16G5T	8.7	9.3
AR16F0S	8	8.6
AR16F5S	8	8.6
AR16E0R	7.4	8
AR16E5R	7.4	8

3. Pilot lights (g)

Type	Without transformer
DR16F0N	8.7
DR16F0M	8.1
DR16E0L	7.5
DR16D0L	7.5

4. Selector switches (knob type) (g)

Type	SPDT	2PDT
AR16PT	9.6	10.2
AR16PS	8.6	9.2
AR16PR	8.3	8.9

5. Selector switches (key type) (g)

Type	SPDT	2PDT
AR16JT	23.2	23.8
AR16JS	22.3	22.9
AR16JR	21.9	22.5

Note: The value when two keys are attached.

• Thin type <AF16, DF16 series>

1. Illuminated push button switches (g)

Type	Without transformer	
	SPDT	2PDT
AF16F0N	13.5	14.1
AF16F5N	13.5	14.1
AF16F0M	12.8	13.4
AF16F5M	12.8	13.4
AF16F0L	12	12.6
AF16F5L	12	12.6

2. Pushbutton switches (g)

Type	SPDT	2PDT
AF16F0T	12.7	13.3
AF16F5T	12.7	13.3
AF16F0S	12	12.6
AF16F5S	12	12.6
AF16F0R	11.3	11.9
AF16F5R	11.3	11.9

3. Pilot lights (g)

Type	Without transformer
DF16F0N	12.8
DF16F0M	12.1
DF16F0L	11.4

4. Selector switches (knob type) (g)

Type	SPDT	2PDT
AF16PT	14.2	14.8
AF16PS	13.7	14.3
AF16PR	13.1	13.7

5. Selector switches (key type) (g)

Type	SPDT	2PDT
AF16JT	27.8	28.4
AF16JS	27.3	27.9
AF16JR	26.8	27.4

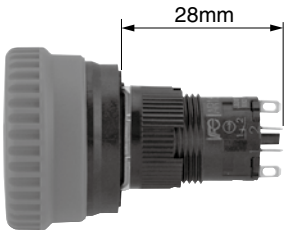
Note: The value when two keys are attached.

Integrated Contacts Structure Emergency stop pushbutton switches AR16V

■ Features

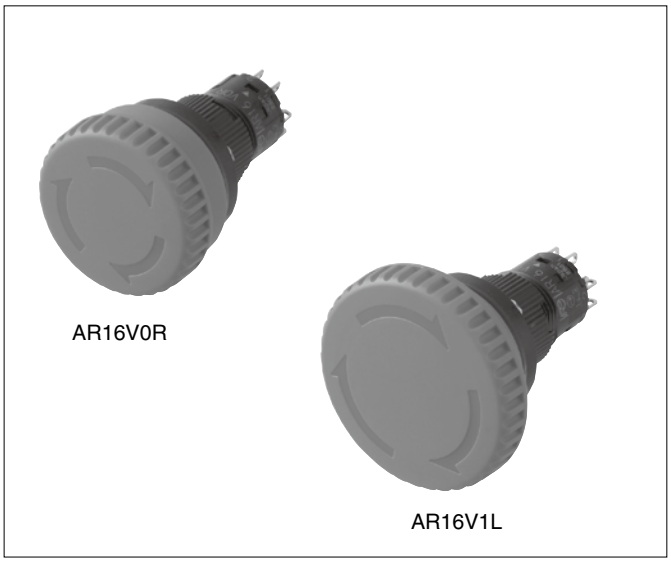
- Up to four sets of contacts in a one-piece structure with a panel depth dimension of 28 mm (non-illuminated type).

Non illuminated type



Illuminated type

- Both pull or turn reset methods are supported.
- Two button diameters are available: 32 mm (AR16V0) and 40 mm (AR16V1).
- Safety trigger-action mechanism that prevents the contacts from operating until the switch is locked, even if people or objects accidentally come into contact with the switch.
- Direct opening mechanism for NC contacts to ensure that the contacts can be opened even in the unlikely event that they become fused.
- IP65 protection for operating section.



- RoHS compliance (EU Directive 2002/95/EC) is a standard feature.
- Compliance with UL/CSA standards, China Compulsory Certification (CCC) standards, and TÜV (EN standards).
- CE marking.

■ Specifications (indoor use)

Item		AR16V
Rated insulation voltage Ui		250V AC/DC
Durability	Mechanical	100,000 operations
	Electrical	100,000 operations (AC-15, AC-13, AC-12, DC-13, DC-12)
Operating frequency		1200 operations / hour (On-load factor : 40%)
Withstand voltage	Between live section and grounding	2000V AC, 1 minute
	Between opposite polarity live sections	2000V AC, 1 minute
Insulation resistance		100MΩ or more (500V DC megger)
Rated impulse withstand voltage Uimp		2.5kV
Conditional short-circuit current		1000A
Short-circuit protective device		gG 6A (IEC60269 Fuse)
Pollution degree		3
Vibration		Operating extremes : frequency 10 to 500 Hz, double amplitude 0.7mm acceleration 50m/s^2 Damage limits : frequency 10 to 500 Hz, double amplitude 0.7mm acceleration 50m/s^2
Shock		Malfunction durability : 100m/s^2 Mchanical durability : 500m/s^2
Operational ambient temperature		-10 to +55°C (no icing or no condensation)
Storage temperature		-40 to +70°C
Relative humidity (inside control panel)		45 to 85%RH (-5 to 40°C) (no icing or no condensation)
Degree of protection of operating (displaying) section		IP65 (dust-ploof, water jet proof): IEC 60529
Degree of protection of control section		IP2X (Terminal cover : AR6Y262, At the connection)
Terminal style		Solder terminal
Connectable wire		0.75mm^2 maximun (18AWG maximun)

■ Contact ratings

• TÜV (EN60947-5-1), JIS C 8201-5-1 (1999)

Conventional free air thermal current I th	Rated operational current					
	Rated operational voltage Ue	AC			DC	
		AC-12 (Resistive load)	AC-13 (Inductive load)	AC-15 (Inductive load)	DC-12 (Resistive load)	DC-13 (Inductive load)
5A	24V	—	—	—	1.0A	0.7A
	120V	1.5A	1.0A	0.3A	—	—
	125V	—	—	—	0.2A	0.15A
	240V	1.0A	0.7A	0.3A	—	—

• UL/CSA

• AC (COSø=0.35)

Contact rating code	120V		240V	
	Making current	Braeking current	Making current	Braeking current
C300	15A	1.5A	7.5A	0.75A

• DC ($T_{0.95}$=6P)

Contact rating code	Making current・Braeking current	
	125V	250V
R300	0.22A	0.11A

■ Contact reliability

• FUJI has confirmed that the product can be used in 1mA circuit conditions at 5V AC or DC. The operable range, however, may vary deperding on the operational ambient conditions and type of load.

■ Operating characteristic

Operation	Push-lock, turn-reset or pull-reset
Ave. required operating force	25N
Operating travel	Approx. 5.4mm
Operation angle	Approx. 45°
Required return force (pull-reset)	20N
Required return force (tarn-reset)	0.3N・m

■ Mass

(g)

Type	1NC	2NC(1NO+1NC)	4NC(2NO+2NC)
AR16V0R	19.0	19.4	20.0
AR16V1R	21.1	21.5	22.1
AR16V0L	19.7	20.1	20.7
AR16V1L	21.8	22.2	22.8

■ Standards approved

UL508	cUL File No. E44592
CSA C22.2 No.14	
TÜV : EN60947-5-1, EN60947-5-5	R50136611

■ Lamp rating and current consumption

Applied method	Type of lamp	Luminous color	Lamp rated voltage	Current consumption
Without transformer	LED lamp	Red	6V AC/DC	9mA AC, 7.5mA DC
			12V AC/DC	7.5mA AC, 7.5mA DC
			24V AC/DC	7.5mA AC, 7.5mA DC

■ Type

• Emergency stop pushbutton switches

Operator	Contact	Type
Unibody push-lock, pull or turn-reset (32mm dia.)	1NC	AR16V0R-01R
	1NO+1NC	AR16V0R-11R
	2NC	AR16V0R-02R
	1NO+2NC	AR16V0R-12R
	3NC	AR16V0R-03R
	1NO+3NC	AR16V0R-13R
(KKD08-090)	4NC	AR16V0R-04R
Unibody push-lock, pull or turn-reset (40mm dia.)	1NC	AR16V1R-01R
	1NO+1NC	AR16V1R-11R
	2NC	AR16V1R-02R
	1NO+2NC	AR16V1R-12R
	3NC	AR16V1R-03R
	1NO+3NC	AR16V1R-13R
(KKD08-092)	4NC	AR16V1R-04R

• Emergency stop illuminated pushbutton switches

Operator	Contact	LED Lamp Type
Unibody push-lock, pull or turn-reset (32mm dia.)	1NC	AR16V0L-01■R
	1NO+1NC	AR16V0L-11■R
	2NC	AR16V0L-02■R
	1NO+2NC	AR16V0L-12■R
	3NC	AR16V0L-03■R
	1NO+3NC	AR16V0L-13■R
(KKD08-087)	4NC	AR16V0L-04■R
Unibody push-lock, pull or turn-reset (40mm dia.)	1NC	AR16V1L-01■R
	1NO+1NC	AR16V1L-11■R
	2NC	AR16V1L-02■R
	1NO+2NC	AR16V1L-12■R
	3NC	AR16V1L-03■R
	1NO+3NC	AR16V1L-13■R
(KKD08-091)	4NC	AR16V1L-04■R

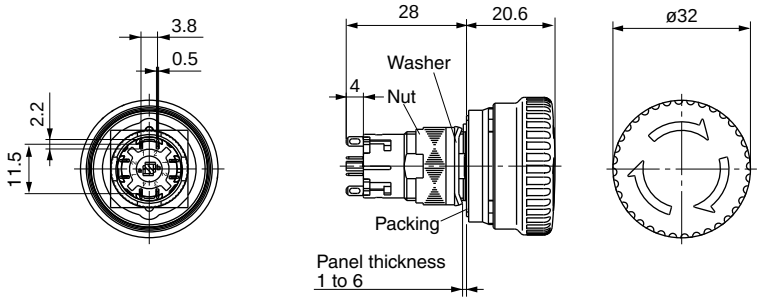
• Voltage Replace the ■mark by the lamp voltage code

Lamp voltage	Code
6V AC/DC	A3
12V AC/DC	B3
24V AC/DC	E3

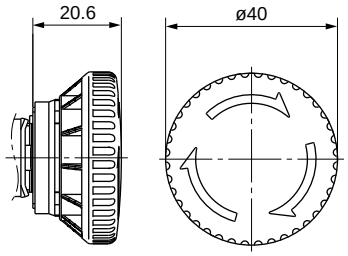
■ **Dimensions, mm**

• Emergency stop pushbutton switches

• AR16V0R

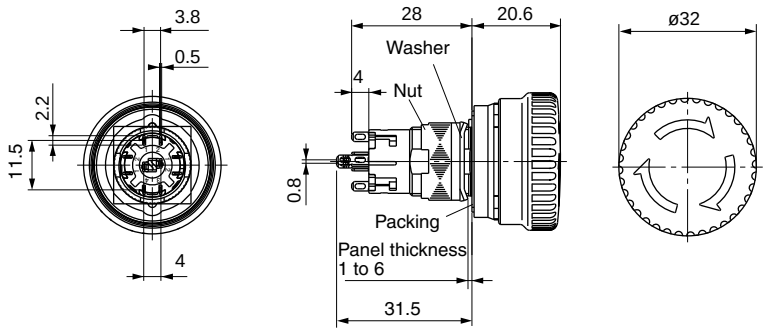


• AR16V1R

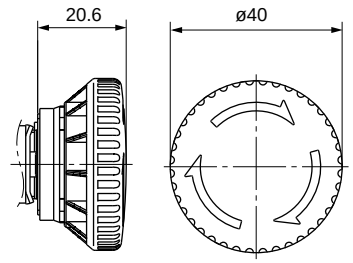


• Emergency stop illuminated pushbutton switches

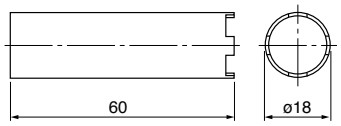
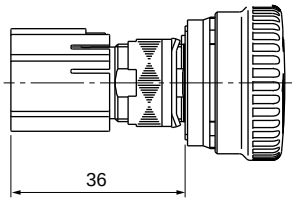
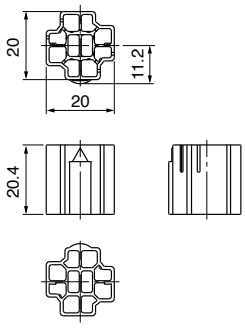
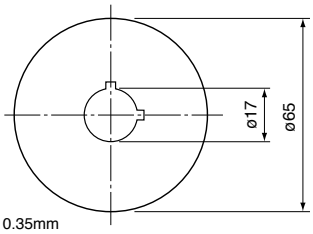
• AR16V0L



• AR16V1L



■ **Accessories**

Description	Type	Dimensions, mm
Wrench (KKD07-257)	**AHX601 (AH9A601)** When installing a command switch on a panel, this tool is useful for tightening the switch firmly and efficiently.	
Terminal cover	**AR6Y262** Protective cover for insulation between terminals and live parts. Note : Dimensions when connected with a switch (unit : mm)  • Wiring work should be made first , and attach the cover to the switch.	
Legend plate for AR16V emergency stop	**AR6P719-*1,2** Legend / code (*1, 2) / Letter hight Black / 00 / — EMERGENCY STOP / 5A / 7mm • Plate color : Yellow • Letter color : Black	 Thickness : 0.35mm

■ Notes on use

Safety Precautions

Read the Operating Instructions carefully before mounting, wiring, operating, servicing, or inspecting the command switch. Make sure that the Operating Instructions is delivered to the final user of the command switch.

• The safety precautions are classified into two levels, "**WARNING** and **CAUTION**", with meanings described follows.

⚠WARNING: Indicates a potentially hazardous situation, which, if not avoided, could resuit in death or serious injury.

⚠CAUTION: Indicates a potentially hazardous situation, which, if not avoided, may result in minor or moderate injury and/or damage to the equipment.

An item described under "**CAUTION**" may resuit in a serious accident, depending on the situation.

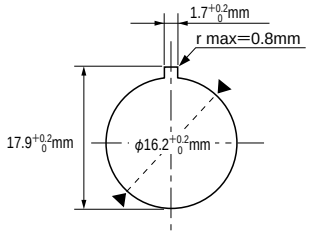
⚠WARNING

• Do not touch or approach any live part while power is supplied. An electric shock or burning may result.
• Be sure to turn off the power before mounting, dismounting, wiring, or inspecting, the product.
An electric shock, burning from short-circuiting, or equipment malfunction may result.

⚠CAUTION

• Wire the product according to the wiring instructions in the Operating Instructions. Make sure that the size of the wires is suitable for the voltage and applied current.
The wrong wiring may result in fire, accidents, or malfunctions.
• Treat the product as industrial waste when it is to be discarded.

■ Panel cutout (mm)

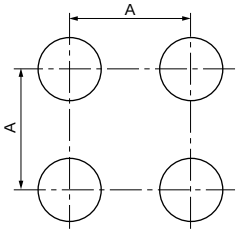


■ Applicable panel thickness

The applicable panel thickness is 1 to 6 mm. When the terminal cover (AR6Y262) is used, however, the applicable panel thickness will be 1 to 3.2 mm.

■ High-density mounting

The following minimum mounting pitch applies to high-density mounting.

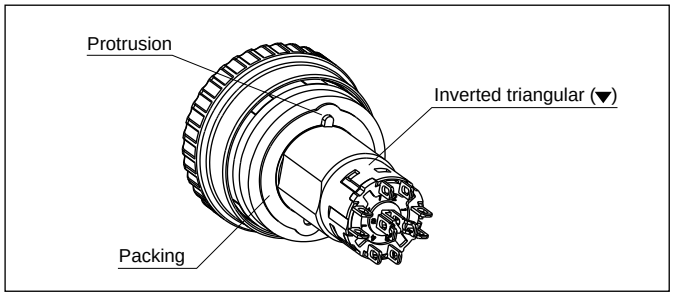


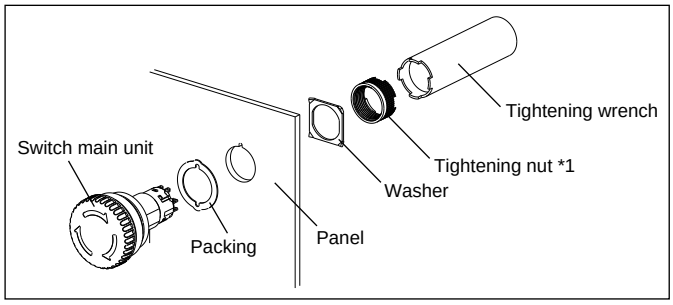
Type	Dimension A
AR16V0□	41mm min.
AR16V1	45mm min.
With AR6P719	65mm min.

Note : Detemine the mounting pitch by taking the operability and wiring workability into consideration.

• Installation on panel

As shown in the figure below, insert the switch main unit into the panel cutout from the front of the panel with the top of the switch main unit (marked with an inverted triangular) facing upward. Then, use a tightening wrench (AHX601) and secure the unit with a washer and tightening nut from the rear of the panel.
Note : The proper tightening torque is 0.6 to 1.0 N・m.



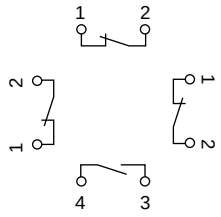
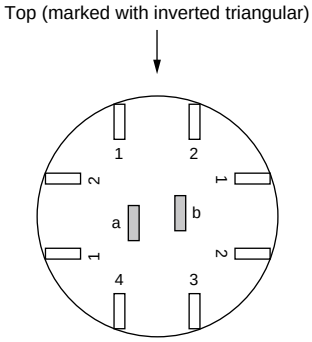
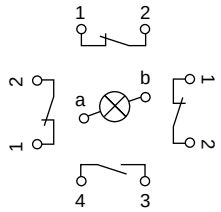


*1 : Do not use pliers or other improper tools tighten the nut, and do not tighten it excessively, or the nut may be damaged or switch may malfunction.

■ Wiring

●The wiring to this switch must be soldered. Keep the following items in mind when soldering.
• Type of solder : Use resin-core solder.
• Use a soldering iron with a maximum power consumption of 60W (350°C) within five seconds. Make sure that the terminals is free of tension during soldering. Also, do not deform the terminal.
●Lead-free solder has a high melting point, but the specific melting point depends on the type of lead-free solder. This may cause difficulty in soldering. Be careful not to overheat the solder if a soldering iron with a large soldering tip or a large heating capacity is used. Keep in mind that overheating the solder may resuit in product malfunctioning.
●Connectable wires
One Solid wires with a maximum diameter of 1.0mm
One standed wire with a maximum area of 0.75 mm^2
●For wiring to adjacent terminals, use the terminal cover (AR6Y262) to prevent short-circuit, or an insulation tube to assure isolation. Care is necessary when two wires are connected together or a large quantily of solder is applied. In addition, keep in mind that overheating the tube may result in product malfunctioning if a heat-shrinking tube is used.

• Terminal arrangement

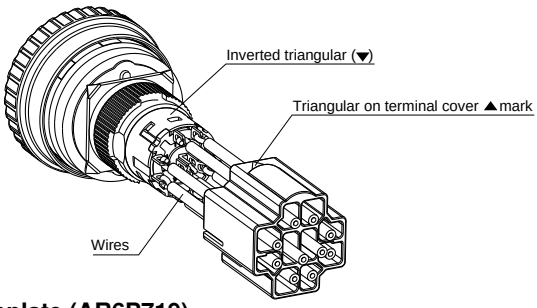
Model	Circuit diagram (example)	Terminal arrangement (view from the terminal (back) side)
Emergency stop pushbutton switches		
Emergency stop illuminated pushbutton switches		Terminals 1-2 : b (NC) contact terminals Terminals 3-4 : a (NO) contact terminals Terminals a-b : Lamp terminals

Note : If NO contacts are uesd in the contact configuration, they will be on the top of the unit (marked with the inverted triangular) and on the opposite side, regardless of the number of contacts.

■ Terminal caver (AR6Y262)

• Combination

The terminal cover must be attached in the correct direction. Make sure that the triangular on the terminal cover is aligned with the inverted triangular on the top of the unit. Also, when wiring the switch, check the alignment of these triangles and insert the wires correctly through the corresponding holes in the terminal cover.



■ Nameplate (AR6P719)

• Precautions

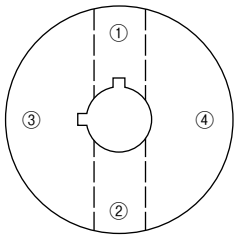
The nameplate must be attached. Attach the nameplate to an appropriate part, such as the panel, after removing the paper from the back of the nameplate.

Before attaching the nameplate, claen the surface to which the nameplate will be attached with alcohol.

The nameplate may come off if the surface is dirty or oily.

• Attachment Procedure (Example)

Remove portions ① and ② from the center of the nameplate, aligh the nameplate with the panel cutout, and lightly press on the front surface of the nameplate to attach it to the panel. Then remove portions ③ and ④ , and press on the entire front surface of the nameplate to complate attaching it to the panel.



■ Others

Operation

- Do not hit or flip the button, or the button may be damaged. Be sure to operate the button by hand.
- To unlock the switch, turn the button approximately 45° clockwise (in the direction of the arrow) or pull out the button. Do not operate or handle the button with excessive force.
- Do not lock the emergency stop pushbutton switch during normal use. Push and lock the switch only in an emergency.

Storage and Usage Locations

- Be sure to use and store the product within the rated ambient temperature and humidity ranges.
- Although the product resists ordinary cutting oils and coolant oils, do not use the unit in places where special oils may be sprayed onto the product.
- If dusts or filings accumulate in the gap between the button and the frame, the switch may fail to operate normally.
- This switch are for indoor use. Make sure that the product is not exposed to direct sunlight.
- Do not use the product in the places thet are subject to the adverse effects of ozone or corrosive gases.

AH164, AH165 and AH165-2
General information

■ Features

Design basis

The 16mm dia. series of compact size pushbuttons are 'finger-size', and consequently take up little panel space. AH165-2 series operators are about twice as large as the AH164 and AH165 series operators for easier operation. With many types of operator available, the most suitable switch can be identified by color, shape and legend, and have a smooth, quality "snap-action". In spite of their small size they have a highly reliable mechanism, and are eminently suited for solid state and other electronic circuits. AH164, AH165 and AH165-2 series contact block holders can easily be removed manually. Moreover, the contact block can be easily attached or detached without using any special tools, thus facilitating addition or replacement of contact.

Selector switches

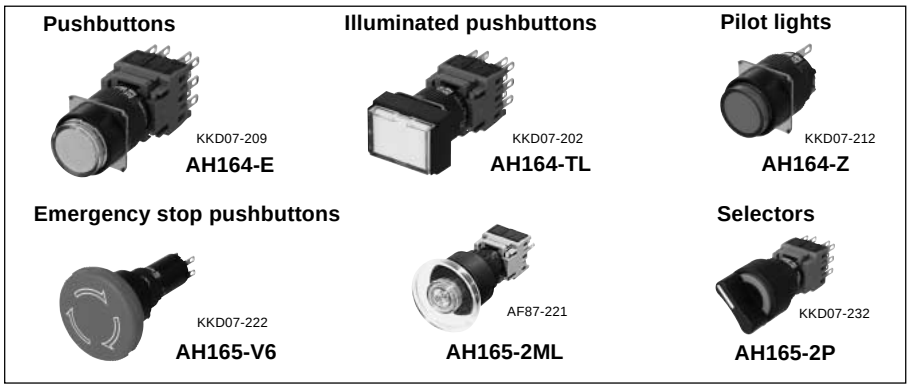
Selector switches can also be supplied in either knob-handle operated or key operated types.

Strong construction

The operator and contact blocks are molded from an excellent thermal resistance resin and can withstand the heat at the time of soldering.
Since these pushbuttons are manufactured to industrial standards they can withstand vibration or shock thus eliminating lamp failure due to such causes as loose bases.
With regard to the degree of protection, standard types which met the requirements of IP40 of IEC 60529, and oil tight types which meet the requirements of IP65 of the said, are available. This permits the application to various fields, from machine tools to OA (Office Automation) facilities.

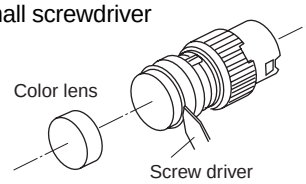
Quality feel tough

Both the operator and contact block are precisely engineered. There is no fear of the switch malfunction even after long use and it continues to operate smoothly for its service life of about 1,000,000 operations.



Easy color change

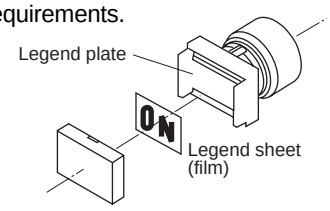
Color lenses fit over the inner button. The lens can easily be removed using a small screwdriver



Note: The luminous color of LEDs and neon illumination types varies with the body color of the product.

Visible inscription

Button legends are printed on legend sheet, which is stuck to the legend plate on the inner button.
The lettering is back lit by the switch lamp and the inscription is highly visible through the color lens.
Contact FUJI for your lettering requirements.

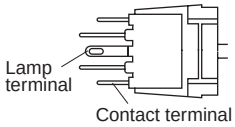


Excellent switch reliability

The switch uses a snap-action mechanism. The pushbuttons are available with either momentary or alternative actions. The snap-action switch has a double break movement which operates independently of the speed of switching. The contacts are made from gold-flashed silver. High contact reliability of 1mA at 5V AC/DC is assured. Contact blocks are available in 1NO+1NC to 3NO+3NC arrangement.

Large terminals

Solder/tab terminal is provided as standard. Wire-wrap terminal is available on reguest.



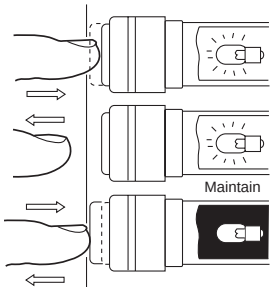
Safety

FUJI's original Trigger Action mechanism is used in the emergency stop pushbuttons. They are suitable for emergency stop and safety. This mechanism prevents the contacts from moving until the button is pushed and locked.

- Provided with a trigger action mechanism conforming to EN418.
- Provided with direct opening action (approved by TÜV) conforming to EN60947-5-1 and EN60947-5-5.

Alternate action

In the case of alternate action when the button is depressed the contacts are maintained and remain so even if the finger is removed. The button will not return to its free position. In order to remove the lock, the button must be given a second pressure before the button will return to its free position. This makes it most suitable as the switch for a power source.



Pushbutton with finger guards

Finger guards are provided for square or rectangular type pushbuttons (SF, TF, SL and TL types) in order to prevent operational error of adjacent buttons.

Approvals

For further information related to approved type, *see page 04/187 to 04/190 .*

AH164 (standard) / AH165 (oil-tight)

■ Illuminated pushbutton switches

Operator	Type	Operator	Type	Operator	Type
Extended round head *See page 04/195*	**AH164-L, L5** **AH165-L, L5** KKD07-205	Flush square head *See page 04/195*	**AH164-SL, SL5** **AH165-SL, SL5** KKD07-204	Flush rectangular head *See page 04/195*	**AH164-TL, TL5** **AH165-TL, TL5** KKD07-202
Flush rectangular head with guard *See page 04/196*	**AH164-TGL, TGL5** **AH165-TGL, TGL5** KKD07-203	Flush square head with guard *See page 04/196*	**AH164-SGL, SGL5** **AH165-SGL, SGL5** KKD05-075b		

Note: Spot LED and red/green LED types: Not approved standard

■ Pushbutton switches

Operator	Type	Operator	Type	Operator	Type
Extended round head *See page 04/199*	**AH164-E, E5** **AH165-E, E5** KKD07-209	Mushroom head *See page 04/199*	**AH164-M, M5** **AH165-M, M5** KKD07-210	Flush square head *See page 04/199*	**AH164-SF, SF5** **AH165-SF, SF5** KKD07-208
Flush rectangular head *See page 04/199*	**AH164-TF, TF5** **AH165-TF, TF5** KKD07-206	Flush rectangular head with guard *See page 04/199*	**AH164-TGF, TGF5** **AH165-TGF, TGF5** KKD05-176	Flush square head with guard *See page 04/199*	**AH164-SGF, SGF5** **AH165-SGF, SGF5** KKD05-075b
Convex square head *See page 04/199*	**AH164-SM, SM5** **AH165-SM, SM5** KKD05-081b	Convex rectangular head *See page 04/199*	**AH164-TM, TM5** **AH165-TM, TM5** KKD05-082b	Push-lock, turn-reset (32mm dia.) ⊖ (Direct opening action) *See page 04/200*	**AH165-VR** AF91-584
Push-lock, turn-reset (40mm dia.) ⊖ (Direct opening action) *See page 04/200*	**AH165-V1R** AF91-583				

■ Emergency stop pushbutton switches ⊖ (Direct opening action), conform to EN418

Operator	Type	Operator	Type
Push-lock, turn-reset (32mm dia.) *See page 04/200*	**AH165-V5R** KKD07-221	Push-lock, turn-reset (40mm dia.) *See page 04/200*	**AH165-V6R** KKD07-222

Note: (CCC): *See page 04/292*

AH164, AH165 and AH165-2
Quick reference guide

■ Selector switches

Operator	Type	Operator	Type	Operator	Type
Knob with rectangular bezel *See page 04/201*	**AH164-P** **AH165-P** KKD07-213	Knob with square bezel *See page 04/201*	**AH164-SP** **AH165-SP** KKD07-215	Key with rectangular bezel *See page 04/201*	**AH164-J** **AH165-J** KKD09-001L
Key with square bezel *See page 04/201, 04/204*	**AH164-SJ** **AH165-SJ** KKD09-001R	Key with rectangular bezel ⊖ (Direct opening action) *See page 04/202*	**AH165-JM** KKD09-006	Key ⊖ (Direct opening action) *See page 04/202*	**AH165-RJM** KKD09-007

■ Pilot lights

Lens	Type	Lens	Type	Lens	Type
Extended round *See page 04/206*	**AH164-Z** **AH165-Z** KKD07-212	Flush square *See page 04/206*	**AH164-ZS** **AH165-ZS** KKD05-094b	Flush rectangular *See page 04/206*	**AH164-ZT** **AH165-ZT** KKD07-211
Dome *See page 04/206*	**AH165-ZM** AF87-45				

■ Buzzers

Sound	Type	Sound	Type	Sound	Type
Standard *See page 04/208*	**AH164-TX** AF87-317	Loud sound *See page 04/208*	**AH164-TX1** AF87-44	Loud sound with volume control *See page 04/208*	**AH164-TX2B** KKD07-223
Standard sound with volume control (IP54) *See page 04/208*	**AH165-X** KKD05-096b				

Note: (CCC): *See page 04/292*

AH165-2 (oil-tight)

■ Illuminated pushbutton switches

Operator	Type	Operator	Type	Operator	Type
Flush round head *See page 04/213*	**AH165-2FL, 2FL5** AF87-211	Extended round head *See page 04/213*	**AH165-2EL, 2EL5** AF87-210	Mushroom head *See page 04/213*	**AH165-2ML** AF87-221
Mushroom head with square bezel *See page 04/213*	**AH165-2YML** AF87-220	Flush square head *See page 04/214*	**AH165-2SFL, 2SFL5** AF87-201	Extended square head *See page 04/214*	**AH165-2SEL, 2SEL5** AF87-200
Concave square head *See page 04/214*	**AH165-2SCL, 2SCL5** AF87-199	Push-lock, turn-reset *See page 04/215*	**AH165-2VL** AF87-219	Push-lock, turn-reset with square bezel *See page 04/215*	**AH165-2YVL** AF87-218

Note: (CCC): *See page 04/292*

■ Pushbutton switches

Operator	Type	Operator	Type	Operator	Type
Flush round head *See page 04/216*	**AH165-2F, 2F5** AF87-211	Extended round head *See page 04/216*	**AH165-2E, 2E5** AF87-210	Mushroom head *See page 04/216*	**AH165-2M** AF87-215
Mushroom head with square bezel *See page 04/216*	**AH165-2YM** AF87-214	Flush square head *See page 04/216*	**AH165-2SF, 2SF5** AF87-201	Concave square head *See page 04/216*	**AH165-2SCE, 2SCE5** AF87-199
Extended square head *See page 04/216*	**AH165-2SE, 2SE5** AF87-200	With selector ring *See page 04/217*	**AH165-2S2** AF87-207	With selector ring with square bezell *See page 04/217*	**AH165-2YS2** AF87-206
Push-lock, turn-reset *See page 04/217*	**AH165-2V** AF87-217	Push-lock, turn-reset with square bezel *See page 04/217*	**AH165-2YV** AF87-216		

AH164, AH165 and AH165-2
Quick reference guide

■ Selector switches

Operator	Type	Operator	Type	Operator	Type
Knob *See page 04/218*	**AH165-2P** KKD07-232	Knob with square bezel *See page 04/218*	**AH165-2YP** KKD07-234	Key *See page 04/218*	**AH165-2J** KKD09-003L
Key with square bezel *See page 04/218*	**AH165-2YJ** KKD09-003R	Lever *See page 04/219*	**AH165-2H** AF87-209	Lever with square bezel *See page 04/219*	**AH165-2SH** AF87-203

■ Illuminated selector switches

Operator	Type
Knob *See page 04/221*	**AH165-2PL** KKD07-240

■ Pilot lights

Lens	Type	Lens	Type	Lens	Type
Flush round *See page 04/222*	**AH165-2Z** AF87-213	Extended round *See page 04/222*	**AH165-2ZE** AF87-212	Flush square *See page 04/222*	**AH165-2SZ** AF87-205
Extended square *See page 04/222*	**AH165-2SZE** AF87-204				

Note: (CCC): *See page 04/292*

■ Type number nomenclature

Pushbuttons, illuminated pushbuttons and pilot lights

AH165	-	L	R	11	E	3	–	W
①		②	③	④	⑤	⑥		⑦

① Product category
AH164: Standard (IP40)
AH165: Oil-tight (IP65)

② Operator or lens
• Operator for illuminated pushbutton
SL: Flush square head
SL5: Flush square head (Alternate)
TL: Flush rectangular head
TL5: Flush rectangular head (Alternate)
L: Extended round head
L5: Extended round head (Alternate)
TGL: Flush rectangular head with guard
TGL5: Flush rectangular head with guard (Alternate)
SGL: Flush square head with guard
SGL5: Flush square head with guard (Alternate)

• Operator for pushbuttons
SF: Flush square head
SF5: Flush square head (Alternate)
TF: Flush rectangular head
TF5: Flush rectangular head (Alternate)
E: Extended round head
E5: Extended round head (Alternate)
TGF: Flush rectangular head with guard
TGF5: Flush rectangular head with guard (Alternate)
SGF: Flush square head with guard
SGF5: Flush square head with guard (Alternate)
M: Mushroom head
M5: Mushroom head (Alternate)
SM: Convex square head
SM5: Convex square head (Alternate)
TM: Convex rectangular head
TM5: Convex rectangular head (Alternate)
V: Push-lock, turn-reset (32mm dia.)*1 *2
V1: Push-lock, turn-reset (40mm dia.)*1 *2

• Operator for emergency stop pushbuttons
V5: Push-lock, turn-reset (32mm dia.)*2
V6: Push-lock, turn-reset (40mm dia.)*2

• Lens for pilot lights
Z: Extended round
ZS: Flush square
ZT: Flush rectangular
ZM: Dome

Note: *1 Product with no trigger action mechanism
*2 AH165 type only, direct opening action

③ Color of button or lens

Code	color	Button	LED	Incandescent	Neon
G	Green	○	○	○	○
R	Red	○	○	○	○ (Orange)
B	Black*	○	–	–	–
Y	Yellow	○	○	○	○ (Orange)
W	White	○	○ (Orange)	○	○ (Orange)
S	Blue	○	○	○	○ (Green)
O	Orange	○	○ (Amber)	○	○
RG	Red/Green	–	○	–	–

Notes: • ( ): indicates luminous color
• AH165-V, V1, V5, V6: Red only
* Not available for illuminated types

④ Contact arrangement
01: 1NC*1
02: 2NC*1
11: 1NO+1NC
22: 2NO+2NC
33: 3NO+3NC*2

Notes: *1 Available for AH165-V, V1, V5, V6
*2 Not available for with transformer types

⑤ Lamp voltage

Code	LED	Incandescent*2	Neon*2
AA	5V DC*2	–	–
A	6V DC*2	5V AC/DC	–
B	12V DC	12V AC/DC	–
E	24V DC	24V AC/DC	–
H	100-110V AC*1 *2	100-110V AC*1	110V AC
K	–	–	120V AC
M	200-220V AC*1 *2	200-220V AC*1	220V AC
P	–	–	240V AC

Notes: *1 With transformer (LED: 24V, Incandescent: 28V)
*2 Not available AH165-ZM
• ZM type: LED lamp only (12, 24V DC)

⑥ Type of lamp
Blank: Incandescent
1: Neon
2: Spot LED, LED (ZM types)
3: Flat LED

⑦ Terminal
Blank: Solder/tab
W: Wire-wrap
S: Soder (AH165-V, V1, V5, V6 types only)

Note: ZM types: wire-wrap terminal only (Code is blank)

AH164 and AH165
Type number nomenclature

■ Type number nomenclature

Selector switches

AH165 - J 2 B 11 A – W
① ② ③ ④ ⑤ ⑥ ⑦

① **Product category**
AH164: Standard (IP40)
AH165: Oil-tight (IP65)

② **Operator**
• 2-position, 3-position (operating angle 90˚)
SP: Knob with square bezel
P: Knob with rectangular bezel
SJ: Key with square bezel
J: Key with rectangular bezel
JM: Key with rectangular bezel (Direct opening action) *
RJM: Key (Direct opening action) *
Note: * AH165 types (2-position) only

• 3-position (operating angle 45˚)
SPK: Knob with square bezel
PK: Knob with rectangular bezel
SJK: Key with square bezel
JK: Key with rectangular bezel

③ **Operation**
2: 2-position, maintained
0: 2-position, spring return*
3: 3-position, maintained
6: 3-position, spring/manual return (Left to center)
7: 3-position, spring/manual return (Right to center)
1: 3-position, spring return
Note: * Except for JM and RJM types

④ **Color of knob or key removable position**
• Color of knob
B: Black

• Key removable position

Code	2-position		3-position (operating angle 90˚)				3-position (operating angle 45˚)			
	2	0	1	3	6	7	1	3	6	7
A	↖	↖	–	←	–	←	–	↖	–	↖
B	⊗	–	–	↔	–	–	–	⊗	–	–
C	–	–	–	✥	–	–	–	✥	–	–
D	↗	–	–	→		–	–	↗		–
E	–	–	↑				↑			
F	–	–	–	–	–	–	–	↗		–
G	–	–	–	–	–	–	–	↖	–	↖

⑤ **Contact arrangement**
11: 1NO+1NC
22: 2NO+2NC
33: 3NO+3NC*
Note: * Except for JM and RJM types.

⑥ **Key type No.**
A (standard), B, C, D, E, F

⑦ **Terminal**
Blank: Solder/tab
W: Wire-warp
Note: JM, RJM types: Solder/tab terminal only

Buzzers

AH164 - T X B E
① ② ③ ④

① **Product category**
AH164: Standard (IP00)
AH165: Splash-proof (IP54)

② **Sound**
TX: Standard (AH164)
TX1: Loud sound (AH164)
TX2: Loud sound with volume control (AH164)
X: Standard sound with volume control (AH165)

③ **Color of head**
B: Black

④ **Operating voltage**
AAC: 6V AC*2
ADC: 6V DC*2
A: 6V AC/DC*1
E: 12 to 24V AC/DC
F: 35 to 48V AC/DC
Notes: *1 Except for TX and TX1 types
*2 Except for TX2 and X types

■ Standards approved

UL508	File No. E44592
CSA C22.2 No.14	File No. LR20479 (except for AH165-ZM) File No. LR84365 (for AH165-ZM)
TÜV: EN60947-5-1	Pushbutton (except for AH165-V, V1), Illuminated pushbutton: R9250087 Pushbutton (for AH165-V, V1): J9551059 Selector (except for AH165-JM, RJM): R9250088 Selector (for AH165-JM, RJM): J9551059 Pilot lights: R9250089 Buzzer: J9950092 (for AH164-TX2, AH165-X)
TÜV: EN60947-5-1 EN60947-5-5	Emergency stop pushbutton: R9950093

■ Specifications (Indoor use)

• Pushbutton switches, illuminated pushbutton switches selector switches, pilot lights

Item	AH164	AH165
Rated insulation voltage	250V AC/DC	
Ambient temperature (no condensation or no icing)	–20 to +70°C *1	–10 to +70°C *2
Humidity	45 to 85%RH (at –5 to +40°C), no condensation or no icing	
Durability (operations) Mechanical	Pushbutton switch Momentary action: 1 million Alternate action: 250,000 Push-lock, turn-reset: 100,000 Selector switch: 250,000 *3	
Electrical	100,000 (220V AC 0.7A)	
Dielectric strength	2000V AC, 1 minute (Between lamp and contact terminals: 1500V AC, 1 minute)	
Conditional short-circuit current	1000A	
Short-circuit protective device	Fuse 1A *4	
Pollution degree	3	
Vibration	Resonance: 10 to 55Hz, double amplitude 0.1mm *5 Constant: 16.7Hz, double amplitude 3mm	
Shock	Malfunction durability: 100m/s² *6 Mechanical durability: 500m/s²	
Operating frequency	1200 operation/hour (on-load factor: 40%)	
Insulation resistance	100MΩ or more (500V DC megger)	
Degree of protection	IP40	IP65

Notes: *1 For illuminated pushbutton switch and pilot light: –20 to +55°C
*2 For illuminated pushbutton switch and pilot light: –10 to +55°C
*3 Key insertion/removal durability for selector switch key types: 10,000
*4 AH165-V, V1, JM, RJM, V5, V6 types: Fuse 5A
*5 Emergency stop type: 10 to 500Hz, double amplitude 0.7mm (acceleration 50m/s²), according to the test condition of EN60947-5-5 (1998)
*6 Emergency stop type:150m/s²

• Buzzers

Item	AH164-TX	AH164-TX1
Rated insulation voltage	60V AC/DC	
Operating voltage	6V AC, 6V DC,12 to 24V AC/DC 35 to 48V AC/DC	
Sound level	80dB (0.1m) 60dB(1m)	90dB (0.1m) 70dB(1m)
Durability	1000h	
Frequency	2 ±0.5kHz	2.4 to 3.3kHz
Intermittent cycle	Approx. 170 cycle/minute	
Current consumption	7mA(24, 48V DC) 15mA(6V DC) 20mA (6, 24V AC) 30mA (48V AC)	15mA (24, 48V DC) 25mA (6V DC) 30mA (24V AC) 40mA (48V AC) 50mA (6V AC)
Dielectric strength	1000V AC, 1 minute	
Insulation resistance	100MΩ or more (500V DC megger)	
Ambient temperature	–20 to +60°C (no condensation or no icing)	
Humidity	45 to 85%RH (at –5 to +40˚C)	
Operator protection	IP00	

Item	AH164-TX2	AH165-X
Rated insulation voltage	60V AC/DC	
Operating voltage	6V AC/DC, 12 to 24V AC/DC 35 to 48V AC/DC	
Sound level	70dB to 90dB (0.1m) 50dB to 70dB (1m)	60dB to 80dB (0.1m) 40dB to 60dB (1m)
Durability	1000h	
Frequency	2 ±0.5kHz	2.4 to 3.3kHz
Intermittent cycle	Approx. 170 cycle/minute	
Current consumption	30mA (6V DC) 20mA (24, 48V DC) 40mA (6, 24, 48V AC)	
Dielectric strength	1000V AC, 1 minute	
Insulation resistance	100MΩ or more (500V DC megger)	
Ambient temperature	–20 to +60°C (no condensation or no icing)	
Humidity	45 to 85%RH (at –5 to +40˚C)	
Degree of protection	IP00	IP54

AH164 and AH165
Ratings and specifications

■ Contact ratings

• UL/CSA standards

Rated thermal current	Rated operational voltage	Maximum current	
		AC (Res. load)	DC (Res. load)
5A	24V	–	1.0A
	125V	–	0.2A
	250V	5.0A	–

• EN standards (TÜV approved)

Rated thermal current	Rated operational voltage	Rated operational current				
		AC 15 (Ind. load)	AC 13 (Ind. load)	AC 12 (Res. load)	DC 13 (Ind. load)	DC 12 (Res. load)
5A	24V	–	–	–	0.7A	1.0A
	100 to 120V	0.3A	1.0A	1.5A	–	–
	100 to 125V	–	–	–	0.15A	0.2A
	200 to 240V	0.3A	0.7A	1.0A	–	–

■ Lamp ratings

Rated operational voltage	Consumption		
	LED DC	Incandescent AC/DC	Neon AC
5V	7mA (Yellow: 28mA)	0.45W (6V)	–
6V	7mA (Yellow: 28mA)	–	–
12V	7mA	0.55W (14V)	–
24V	7mA	0.55W (28V)	–
110V	–	–	0.19VA
120V	–	–	0.21VA
220V	–	–	0.38VA
240V	–	–	0.42VA

Notes: • With transformer (LED): 2.6VA/110, 220V
• With transformer (Incandescent): 2VA/110, 220V
• For the incandescent lamps, the values in parentheses indicate the rated voltage of the lamps.

■ Contact reliability

FUJI has confirmed that the unit can be used in 1mA circuit conditions at 5V AC or DC. The operable range may vary depending on the ambient conditions and type of load.

■ Illuminated pushbutton switches/without transformer

Operator	Lamp	Voltage	Contact	Momentary action		Alternate action	
				AH164 type	AH165 (Oil-tight) type	AH164 type	AH165 (Oil-tight) type
Extended round head	Flat LED	24V DC	1NO+1NC	**AH164-L□11E3**	**AH165-L□11E3**	**AH164-L5□11E3**	**AH165-L5□11E3**
			2NO+2NC	**AH164-L□22E3**	**AH165-L□22E3**	**AH164-L5□22E3**	**AH165-L5□22E3**
			3NO+3NC	**AH164-L□33E3**	**AH165-L□33E3**	**AH164-L5□33E3**	**AH165-L5□33E3**
	Spot LED	24V DC	1NO+1NC	**AH164-L□11E2**	**AH165-L□11E2**	**AH164-L5□11E2**	**AH165-L5□11E2**
			2NO+2NC	**AH164-L□22E2**	**AH165-L□22E2**	**AH164-L5□22E2**	**AH165-L5□22E2**
			3NO+3NC	**AH164-L□33E2**	**AH165-L□33E2**	**AH164-L5□33E2**	**AH165-L5□33E2**
	Incandes-cent	24V AC/DC	1NO+1NC	**AH164-L□11E**	**AH165-L□11E**	**AH164-L5□11E**	**AH165-L5□11E**
			2NO+2NC	**AH164-L□22E**	**AH165-L□22E**	**AH164-L5□22E**	**AH165-L5□22E**
			3NO+3NC	**AH164-L□33E**	**AH165-L□33E**	**AH164-L5□33E**	**AH165-L5□33E**
	Neon	110V AC	1NO+1NC	**AH164-L□11H1**	**AH165-L□11H1**	**AH164-L5□11H1**	**AH165-L5□11H1**
			2NO+2NC	**AH164-L□22H1**	**AH165-L□22H1**	**AH164-L5□22H1**	**AH165-L5□22H1**
			3NO+3NC	**AH164-L□33H1**	**AH165-L□33H1**	**AH164-L5□33H1**	**AH165-L5□33H1**
		220V AC	1NO+1NC	**AH164-L□11M1**	**AH165-L□11M1**	**AH164-L5□11M1**	**AH165-L5□11M1**
			2NO+2NC	**AH164-L□22M1**	**AH165-L□22M1**	**AH164-L5□22M1**	**AH165-L5□22M1**
			3NO+3NC	**AH164-L□33M1**	**AH165-L□33M1**	**AH164-L5□33M1**	**AH165-L5□33M1**
Flush square head	Flat LED	24V DC	1NO+1NC	**AH164-SL□11E3**	**AH165-SL□11E3**	**AH164-SL5□11E3**	**AH165-SL5□11E3**
			2NO+2NC	**AH164-SL□22E3**	**AH165-SL□22E3**	**AH164-SL5□22E3**	**AH165-SL5□22E3**
			3NO+3NC	**AH164-SL□33E3**	**AH165-SL□33E3**	**AH164-SL5□33E3**	**AH165-SL5□33E3**
	Spot LED	24V DC	1NO+1NC	**AH164-SL□11E2**	**AH165-SL□11E2**	**AH164-SL5□11E2**	**AH165-SL5□11E2**
			2NO+2NC	**AH164-SL□22E2**	**AH165-SL□22E2**	**AH164-SL5□22E2**	**AH165-SL5□22E2**
			3NO+3NC	**AH164-SL□33E2**	**AH165-SL□33E2**	**AH164-SL5□33E2**	**AH165-SL5□33E2**
	Incandes-cent	24V AC/DC	1NO+1NC	**AH164-SL□11E**	**AH165-SL□11E**	**AH164-SL5□11E**	**AH165-SL5□11E**
			2NO+2NC	**AH164-SL□22E**	**AH165-SL□22E**	**AH164-SL5□22E**	**AH165-SL5□22E**
			3NO+3NC	**AH164-SL□33E**	**AH165-SL□33E**	**AH164-SL5□33E**	**AH165-SL5□33E**
	Neon	110V AC	1NO+1NC	**AH164-SL□11H1**	**AH165-SL□11H1**	**AH164-SL5□11H1**	**AH165-SL5□11H1**
			2NO+2NC	**AH164-SL□22H1**	**AH165-SL□22H1**	**AH164-SL5□22H1**	**AH165-SL5□22H1**
			3NO+3NC	**AH164-SL□33H1**	**AH165-SL□33H1**	**AH164-SL5□33H1**	**AH165-SL5□33H1**
		220V AC	1NO+1NC	**AH164-SL□11M1**	**AH165-SL□11M1**	**AH164-SL5□11M1**	**AH165-SL5□11M1**
			2NO+2NC	**AH164-SL□22M1**	**AH165-SL□22M1**	**AH164-SL5□22M1**	**AH165-SL5□22M1**
			3NO+3NC	**AH164-SL□33M1**	**AH165-SL□33M1**	**AH164-SL5□33M1**	**AH165-SL5□33M1**
Flush rectangular head	Flat LED	24V DC	1NO+1NC	**AH164-TL□11E3**	**AH165-TL□11E3**	**AH164-TL5□11E3**	**AH165-TL5□11E3**
			2NO+2NC	**AH164-TL□22E3**	**AH165-TL□22E3**	**AH164-TL5□22E3**	**AH165-TL5□22E3**
			3NO+3NC	**AH164-TL□33E3**	**AH165-TL□33E3**	**AH164-TL5□33E3**	**AH165-TL5□33E3**
	Spot LED	24V DC	1NO+1NC	**AH164-TL□11E2**	**AH165-TL□11E2**	**AH164-TL5□11E2**	**AH165-TL5□11E2**
			2NO+2NC	**AH164-TL□22E2**	**AH165-TL□22E2**	**AH164-TL5□22E2**	**AH165-TL5□22E2**
			3NO+3NC	**AH164-TL□33E2**	**AH165-TL□33E2**	**AH164-TL5□33E2**	**AH165-TL5□33E2**
	Incandes-cent	24V AC/DC	1NO+1NC	**AH164-TL□11E**	**AH165-TL□11E**	**AH164-TL5□11E**	**AH165-TL5□11E**
			2NO+2NC	**AH164-TL□22E**	**AH165-TL□22E**	**AH164-TL5□22E**	**AH165-TL5□22E**
			3NO+3NC	**AH164-TL□33E**	**AH165-TL□33E**	**AH164-TL5□33E**	**AH165-TL5□33E**
	Neon	110V AC	1NO+1NC	**AH164-TL□11H1**	**AH165-TL□11H1**	**AH164-TL5□11H1**	**AH165-TL5□11H1**
			2NO+2NC	**AH164-TL□22H1**	**AH165-TL□22H1**	**AH164-TL5□22H1**	**AH165-TL5□22H1**
			3NO+3NC	**AH164-TL□33H1**	**AH165-TL□33H1**	**AH164-TL5□33H1**	**AH165-TL5□33H1**
		220V AC	1NO+1NC	**AH164-TL□11M1**	**AH165-TL□11M1**	**AH164-TL5□11M1**	**AH165-TL5□11M1**
			2NO+2NC	**AH164-TL□22M1**	**AH165-TL□22M1**	**AH164-TL5□22M1**	**AH165-TL5□22M1**
			3NO+3NC	**AH164-TL□33M1**	**AH165-TL□33M1**	**AH164-TL5□33M1**	**AH165-TL5□33M1**

KKD07-205

KKD07-204

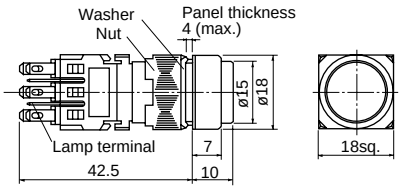
KKD07-202

Note: Replace the □ mark by the button color code, *see page 04/196.*

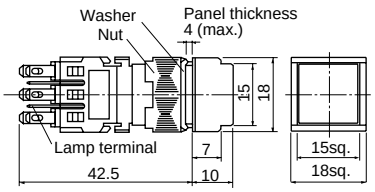
Operator	Lamp	Voltage	Contact	Momentary action		Alternate action	
				AH164 type	AH165 (oil-tight) type	AH164 type	AH165 (oil-tight) type
Flush rectangular head with guard	Flat LED	24V DC	1NO+1NC 2NO+2NC 3NO+3NC	**AH164-TGL□11E3** **AH164-TGL□22E3** **AH164-TGL□33E3**	**AH165-TGL□11E3** **AH165-TGL□22E3** **AH165-TGL□33E3**	**AH164-TGL5□11E3** **AH164-TGL5□22E3** **AH164-TGL5□33E3**	**AH165-TGL5□11E3** **AH165-TGL5□22E3** **AH165-TGL5□33E3**
 KKD07-203	Incandes-cent	24V AC/DC	1NO+1NC 2NO+2NC 3NO+3NC	**AH164-TGL□11E** **AH164-TGL□22E** **AH164-TGL□33E**	**AH165-TGL□11E** **AH165-TGL□22E** **AH165-TGL□33E**	**AH164-TGL5□11E** **AH164-TGL5□22E** **AH164-TGL5□33E**	**AH165-TGL5□11E** **AH165-TGL5□22E** **AH165-TGL5□33E**
	Neon	110V AC	1NO+1NC 2NO+2NC 3NO+3NC	**AH164-TGL□11H1** **AH164-TGL□22H1** **AH164-TGL□33H1**	**AH165-TGL□11H1** **AH165-TGL□22H1** **AH165-TGL□33H1**	**AH164-TGL5□11H1** **AH164-TGL5□22H1** **AH164-TGL5□33H1**	**AH165-TGL5□11H1** **AH165-TGL5□22H1** **AH165-TGL5□33H1**
		220V AC	1NO+1NC 2NO+2NC 3NO+3NC	**AH164-TGL□11M1** **AH164-TGL□22M1** **AH164-TGL□33M1**	**AH165-TGL□11M1** **AH165-TGL□22M1** **AH165-TGL□33M1**	**AH164-TGL5□11M1** **AH164-TGL5□22M1** **AH164-TGL5□33M1**	**AH165-TGL5□11M1** **AH165-TGL5□22M1** **AH165-TGL5□33M1**
Flush square head with guard	Flat LED	24V DC	1NO+1NC 2NO+2NC 3NO+3NC	**AH164-SGL□11E3** **AH164-SGL□22E3** **AH164-SGL□33E3**	**AH165-SGL□11E3** **AH165-SGL□22E3** **AH165-SGL□33E3**	**AH164-SGL5□11E3** **AH164-SGL5□22E3** **AH164-SGL5□33E3**	**AH165-SGL5□11E3** **AH165-SGL5□22E3** **AH165-SGL5□33E3**
 KKD05-075b	Incandes-cent	24V AC/DC	1NO+1NC 2NO+2NC 3NO+3NC	**AH164-SGL□11E** **AH164-SGL□22E** **AH164-SGL□33E**	**AH165-SGL□11E** **AH165-SGL□22E** **AH165-SGL□33E**	**AH164-SGL5□11E** **AH164-SGL5□22E** **AH164-SGL5□33E**	**AH165-SGL5□11E** **AH165-SGL5□22E** **AH165-SGL5□33E**
	Neon	110V AC	1NO+1NC 2NO+2NC 3NO+3NC	**AH164-SGL□11H1** **AH164-SGL□22H1** **AH164-SGL□33H1**	**AH165-SGL□11H1** **AH165-SGL□22H1** **AH165-SGL□33H1**	**AH164-SGL5□11H1** **AH164-SGL5□22H1** **AH164-SGL5□33H1**	**AH165-SGL5□11H1** **AH165-SGL5□22H1** **AH165-SGL5□33H1**
		220V AC	1NO+1NC 2NO+2NC 3NO+3NC	**AH164-SGL□11M1** **AH164-SGL□22M1** **AH164-SGL□33M1**	**AH165-SGL□11M1** **AH165-SGL□22M1** **AH165-SGL□33M1**	**AH164-SGL5□11M1** **AH164-SGL5□22M1** **AH164-SGL5□33M1**	**AH165-SGL5□11M1** **AH165-SGL5□22M1** **AH165-SGL5□33M1**

■ Dimensions, mm

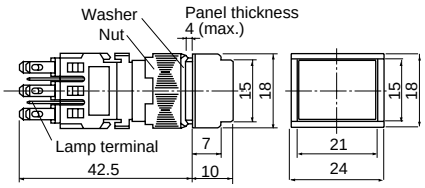
L, L5



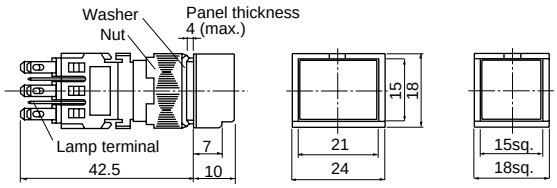
SL, SL5



TL, TL5



TGL, TGL5 SGL, SGL5



• Button color

Color	Green	Red	White	Yellow	Blue	Orange
Code	G	R	W	Y	S	O

- The color lens is made of a tinted transparent material.
- A white illuminated pushbutton is fitted with a transparent color lens.(Except the neon lamp)
- With wire-wrap pin terminals have a depth of 47mm.

• Lamp voltage

Voltages other than above are available

Code	LED	Incandescent	Neon
AA	5V DC	–	–
A	6V DC	5V AC/DC	–
B	12V DC	12V AC/DC	–
K	–	–	120V AC
P	–	–	240V AC

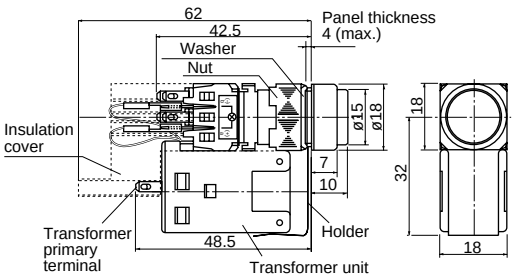
■ Illuminated pushbutton switches/with transformer

Operator	Lamp	Voltage	Contact	Momentary action		Alternate action	
				AH164 type	AH165 (oil-tight) type	AH164 type	AH165 (oil-tight) type
Extended round head AF90-945	Flat LED	■ Voltage code H: 100-110V AC M: 200-220V AC	1NO+1NC	**AH164-L□11■3**	**AH165-L□11■3**	**AH164-L5□11■3**	**AH165-L5□11■3**
			2NO+2NC	**AH164-L□22■3**	**AH165-L□22■3**	**AH164-L5□22■3**	**AH165-L5□22■3**
	Incandes-cent		1NO+1NC	**AH164-L□11■**	**AH165-L□11■**	**AH164-L5□11■**	**AH165-L5□11■**
			2NO+2NC	**AH164-L□22■**	**AH165-L□22■**	**AH164-L5□22■**	**AH165-L5□22■**
Flush square head AF90-946	Flat LED	■ Voltage code H: 100-110V AC M: 200-220V AC	1NO+1NC	**AH164-SL□11■3**	**AH165-SL□11■3**	**AH164-SL5□11■3**	**AH165-SL5□11■3**
			2NO+2NC	**AH164-SL□22■3**	**AH165-SL□22■3**	**AH164-SL5□22■3**	**AH165-SL5□22■3**
	Incandes-cent		1NO+1NC	**AH164-SL□11■**	**AH165-SL□11■**	**AH164-SL5□11■**	**AH165-SL5□11■**
			2NO+2NC	**AH164-SL□22■**	**AH165-SL□22■**	**AH164-SL5□22■**	**AH165-SL5□22■**
Flush rectangular head AF90-947	Flat LED	■ Voltage code H: 100-110V AC M: 200-220V AC	1NO+1NC	**AH164-TL□11■3**	**AH165-TL□11■3**	**AH164-TL5□11■3**	**AH165-TL5□11■3**
			2NO+2NC	**AH164-TL□22■3**	**AH165-TL□22■3**	**AH164-TL5□22■3**	**AH165-TL5□22■3**
	Incandes-cent		1NO+1NC	**AH164-TL□11■**	**AH165-TL□11■**	**AH164-TL5□11■**	**AH165-TL5□11■**
			2NO+2NC	**AH164-TL□22■**	**AH165-TL□22■**	**AH164-TL5□22■**	**AH165-TL5□22■**
Flush rectangular head with guard AF90-941	Flat LED	■ Voltage code H: 100-110V AC M: 200-220V AC	1NO+1NC	**AH164-TGL□11■3**	**AH165-TGL□11■3**	**AH164-TGL5□11■3**	**AH165-TGL5□11■3**
			2NO+2NC	**AH164-TGL□22■3**	**AH165-TGL□22■3**	**AH164-TGL5□22■3**	**AH165-TGL5□22■3**
	Incandes-cent		1NO+1NC	**AH164-TGL□11■**	**AH165-TGL□11■**	**AH164-TGL5□11■**	**AH165-TGL5□11■**
			2NO+2NC	**AH164-TGL□22■**	**AH165-TGL□22■**	**AH164-TGL5□22■**	**AH165-TGL5□22■**
Flush square head with guard AF90-948	Flat LED	■ Voltage code H: 100-110V AC M: 200-220V AC	1NO+1NC	**AH164-SGL□11■3**	**AH165-SGL□11■3**	**AH164-SGL5□11■3**	**AH165-SGL5□11■3**
			2NO+2NC	**AH164-SGL□22■3**	**AH165-SGL□22■3**	**AH164-SGL5□22■3**	**AH165-SGL5□22■3**
	Incandes-cent		1NO+1NC	**AH164-SGL□11■**	**AH165-SGL□11■**	**AH164-SGL5□11■**	**AH165-SGL5□11■**
			2NO+2NC	**AH164-SGL□22■**	**AH165-SGL□22■**	**AH164-SGL5□22■**	**AH165-SGL5□22■**

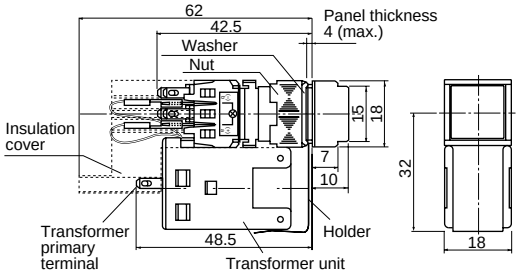
Note: Replace the □ mark by the button color code, *see page 04/198.*

■ Dimensions, mm

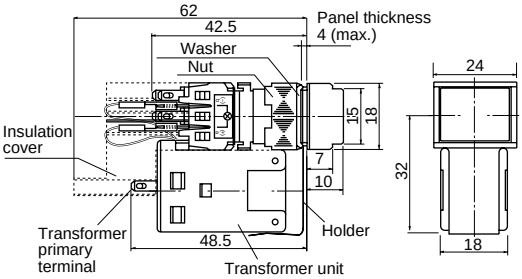
L, L5



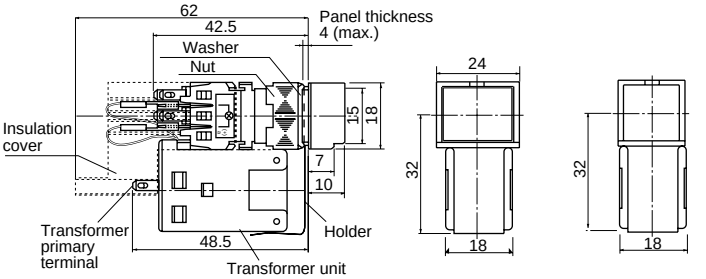
SL, SL5



TL, TL5



TGL, TGL5 SGL, SGL5

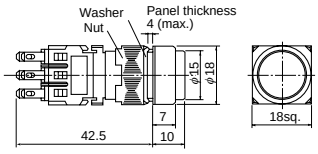
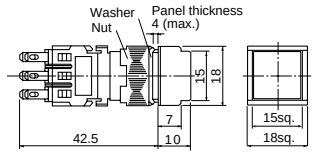
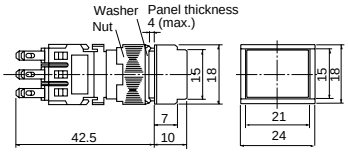
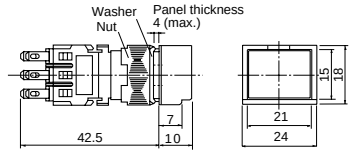
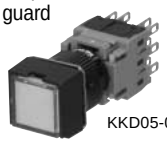
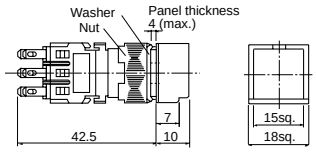
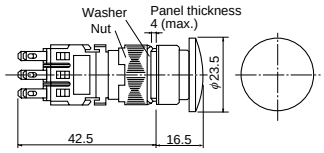
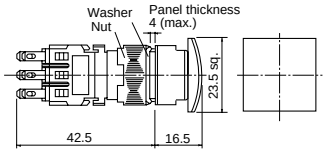
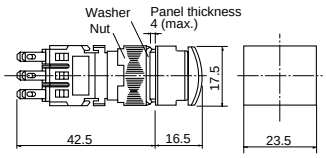


• Button color

Color	Green	Red	White	Yellow	Blue	Orange
Code	G	R	W	Y	S	O

• The color lens is made of a tinted transparent material.

■ Pushbutton switches

Operator	Contact	Momentary action		Alternate action		Dimensions, mm
		AH164 type	AH165 (oil-tight) type	AH164 type	AH165 (oil-tight) type	
Extended round head KKD07-209	1NO+1NC	**AH164-E□11**	**AH165-E□11**	**AH164-E5□11**	**AH165-E5□11**	
	2NO+2NC	**AH164-E□22**	**AH165-E□22**	**AH164-E5□22**	**AH165-E5□22**	
	3NO+3NC	**AH164-E□33**	**AH165-E□33**	**AH164-E5□33**	**AH165-E5□33**	
Flush square head KKD07-208	1NO+1NC	**AH164-SF□11**	**AH165-SF□11**	**AH164-SF5□11**	**AH165-SF5□11**	
	2NO+2NC	**AH164-SF□22**	**AH165-SF□22**	**AH164-SF5□22**	**AH165-SF5□22**	
	3NO+3NC	**AH164-SF□33**	**AH165-SF□33**	**AH164-SF5□33**	**AH165-SF5□33**	
Flush rectangular head KKD07-206	1NO+1NC	**AH164-TF□11**	**AH165-TF□11**	**AH164-TF5□11**	**AH165-TF5□11**	
	2NO+2NC	**AH164-TF□22**	**AH165-TF□22**	**AH164-TF5□22**	**AH165-TF5□22**	
	3NO+3NC	**AH164-TF□33**	**AH165-TF□33**	**AH164-TF5□33**	**AH165-TF5□33**	
Flush rectangular head with guard KKD05-176	1NO+1NC	**AH164-TGF□11**	**AH165-TGF□11**	**AH164-TGF5□11**	**AH165-TGF5□11**	
	2NO+2NC	**AH164-TGF□22**	**AH165-TGF□22**	**AH164-TGF5□22**	**AH165-TGF5□22**	
	3NO+3NC	**AH164-TGF□33**	**AH165-TGF□33**	**AH164-TGF5□33**	**AH165-TGF5□33**	
Flush square head with guard  KKD05-075b	1NO+1NC	**AH164-SGF□11**	**AH165-SGF□11**	**AH164-SGF5□11**	**AH165-SGF5□11**	
	2NO+2NC	**AH164-SGF□22**	**AH165-SGF□22**	**AH164-SGF5□22**	**AH165-SGF5□22**	
	3NO+3NC	**AH164-SGF□33**	**AH165-SGF□33**	**AH164-SGF5□33**	**AH165-SGF5□33**	
Mushroom head KKD07-210	1NO+1NC	**AH164-M□11**	**AH165-M□11**	**AH164-M5□11**	**AH165-M5□11**	
	2NO+2NC	**AH164-M□22**	**AH165-M□22**	**AH164-M5□22**	**AH165-M5□22**	
	3NO+3NC	**AH164-M□33**	**AH165-M□33**	**AH164-M5□33**	**AH165-M5□33**	
Convex square head KKD05-081b	1NO+1NC	**AH164-SM□11**	**AH165-SM□11**	**AH164-SM5□11**	**AH165-SM5□11**	
	2NO+2NC	**AH164-SM□22**	**AH165-SM□22**	**AH164-SM5□22**	**AH165-SM5□22**	
	3NO+3NC	**AH164-SM□33**	**AH165-SM□33**	**AH164-SM5□33**	**AH165-SM5□33**	
Convex rectangular head KKD05-082b	1NO+1NC	**AH164-TM□11**	**AH165-TM□11**	**AH164-TM5□11**	**AH165-TM5□11**	
	2NO+2NC	**AH164-TM□22**	**AH165-TM□22**	**AH164-TM5□22**	**AH165-TM5□22**	
	3NO+3NC	**AH164-TM□33**	**AH165-TM□33**	**AH164-TM5□33**	**AH165-TM5□33**	

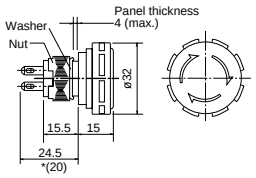
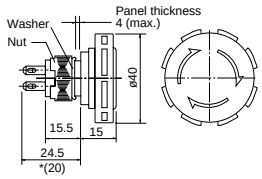
• Button color
Replace the □ mark by the following color code

Color	Green	Red	Black	White	Blue	Yellow	Orange
Code	G	R	B	W	S	Y	O

- The color lens is made of a tinted transparent material. (Except the M, SM, TM types)
- A white pushbutton is fitted with a transparent color lens.(Except the M, SM, TM types) A black pushbutton consists of a transparent color lens and an attached black legend plate. (Except M, SM, TM types)
- With wire-wrap pin terminals have a depth of 47mm.

■ Pushbutton switches

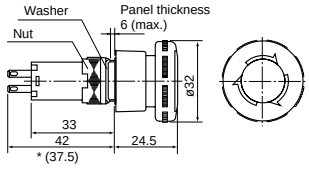
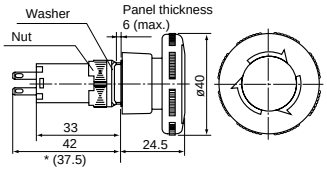
⊖ (Direct opening action)

Operator	Button color	Contact	Terminal	AH165 (oil-tight) type	Dimensions, mm
Push-lock, turn-reset (32mm dia.) AF91-584	Red	1NC	Solder/Tab Solder	**AH165-VR01 (AH165-VR01-S)**	
		2NC		**AH165-VR02 (AH165-VR02-S)**	
Push-lock, turn-reset (40mm dia.) AF91-583		1NC		**AH165-V1R01 (AH165-V1R01-S)**	
		2NC		**AH165-V1R02 (AH165-V1R02-S)**	

Notes: * ( ) For switch with solder terminal.
- Contact arrangements indicated in the table can be supplied.
- Product with no trigger action mechanism.

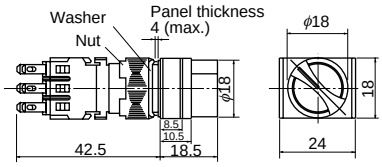
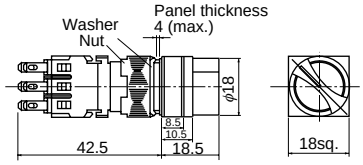
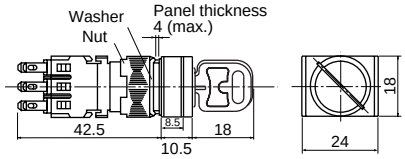
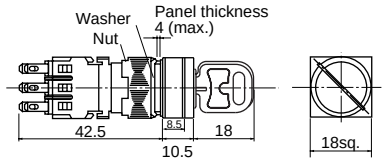
■ Emergency stop pushbutton switches

⊖ (Direct opening action), conform to EN418

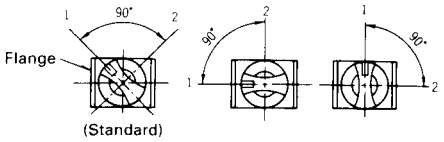
Operator	Button color	Contact	Terminal	AH165 (oil-tight) type	Dimensions, mm
Push-lock, turn-reset (32mm dia.) KKD07-221	Red	1NC	Solder/Tab Solder	**AH165-V5R01 (AH165-V5R01-S)**	
		2NC		**AH165-V5R02 (AH165-V5R02-S)**	
Push-lock, turn-reset (40mm dia.) KKD07-222		1NC		**AH165-V6R01 (AH165-V6R01-S)**	
		2NC		**AH165-V6R02 (AH165-V6R02-S)**	

Notes: * ( ) For switch with solder terminal.
- Contact arrangements indicated in the table can be supplied.

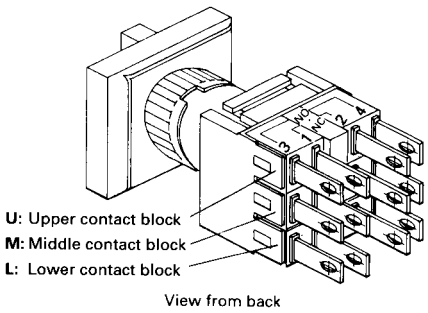
■ Selector switches/2-position (90-degree)

Operator	Operation	Key removable position	Contact	AH164 type	AH165 (oil-tight) type	Dimensions, mm
Knob with rectangular bezel KKD07-213	Maintained	—	1NO+1NC	**AH164-P2B11**	**AH165-P2B11**	
			2NO+2NC	**AH164-P2B22**	**AH165-P2B22**	
			3NO+3NC	**AH164-P2B33**	**AH165-P2B33**	
	Spring return	—	1NO+1NC	**AH164-P0B11**	**AH165-P0B11**	
			2NO+2NC	**AH164-P0B22**	**AH165-P0B22**	
			3NO+3NC	**AH164-P0B33**	**AH165-P0B33**	
Knob with square bezel KKD07-215	Maintained	—	1NO+1NC	**AH164-SP2B11**	**AH165-SP2B11**	
			2NO+2NC	**AH164-SP2B22**	**AH165-SP2B22**	
			3NO+3NC	**AH164-SP2B33**	**AH165-SP2B33**	
	Spring return	—	1NO+1NC	**AH164-SP0B11**	**AH165-SP0B11**	
			2NO+2NC	**AH164-SP0B22**	**AH165-SP0B22**	
			3NO+3NC	**AH164-SP0B33**	**AH165-SP0B33**	
Key with rectangular bezel KKD09-001L	Maintained	A	1NO+1NC	**AH164-J2A11A**	**AH165-J2A11A**	
			2NO+2NC	**AH164-J2A22A**	**AH165-J2A22A**	
			3NO+3NC	**AH164-J2A33A**	**AH165-J2A33A**	
		B	1NO+1NC	**AH164-J2B11A**	**AH165-J2B11A**	
			2NO+2NC	**AH164-J2B22A**	**AH165-J2B22A**	
			3NO+3NC	**AH164-J2B33A**	**AH165-J2B33A**	
		D	1NO+1NC	**AH164-J2D11A**	**AH165-J2D11A**	
			2NO+2NC	**AH164-J2D22A**	**AH165-J2D22A**	
			3NO+3NC	**AH164-J2D33A**	**AH165-J2D33A**	
	Spring return	A	1NO+1NC	**AH164-J0A11A**	**AH165-J0A11A**	
			2NO+2NC	**AH164-J0A22A**	**AH165-J0A22A**	
			3NO+3NC	**AH164-J0A33A**	**AH165-J0A33A**	
Key with square bezel KKD09-001R	Maintained	A	1NO+1NC	**AH164-SJ2A11A**	**AH165-SJ2A11A**	
			2NO+2NC	**AH164-SJ2A22A**	**AH165-SJ2A22A**	
			3NO+3NC	**AH164-SJ2A33A**	**AH165-SJ2A33A**	
		B	1NO+1NC	**AH164-SJ2B11A**	**AH165-SJ2B11A**	
			2NO+2NC	**AH164-SJ2B22A**	**AH165-SJ2B22A**	
			3NO+3NC	**AH164-SJ2B33A**	**AH165-SJ2B33A**	
		D	1NO+1NC	**AH164-SJ2D11A**	**AH165-SJ2D11A**	
			2NO+2NC	**AH164-SJ2D22A**	**AH165-SJ2D22A**	
			3NO+3NC	**AH164-SJ2D33A**	**AH165-SJ2D33A**	
	Spring return	A	1NO+1NC	**AH164-SJ0A11A**	**AH165-SJ0A11A**	
			2NO+2NC	**AH164-SJ0A22A**	**AH165-SJ0A22A**	
			3NO+3NC	**AH164-SJ0A33A**	**AH165-SJ0A33A**	

- The operating angle range can be changed as shown below by setting the attached flange shifted by 45° in combination with the contact block.
  In this case, the minimum mounting pitch is 26mm because the contact block is shifted by 45° from the flange.



- **Contact block position**



- **Contact arrangement and operator position:**

2-position selector switch

Contact arrangement		1NO+1NC	2NO+2NC	3NO+3NC
Operator position	Left	M	U / M / L	U / M / L
	Right	M	U / M / L	U / M / L

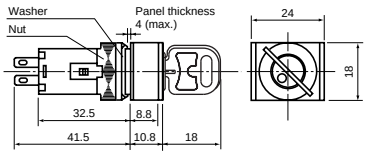
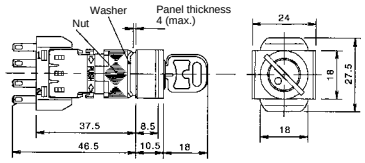
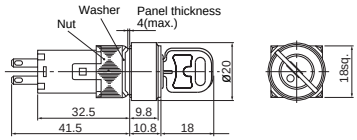
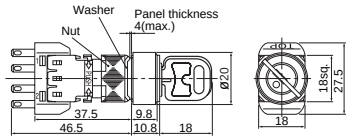
3-position selector switch

Contact arrangement		2NO+2NC	3NO+3NC
Operator position	Left	U L	U M L
	Center		
	Right		

- There are 6 available key types; A, B, C, D, E and F.
  Standard key code is A.
- With wire-wrap pin terminals have a depth of 47mm.

■ Selector switches/2-position (90-degree)

⊖ (Direct opening action)

Operator	Operation	Key removable position	Contact	AH165 (oil-tight) type	Dimensions, mm
Key with rectangular bezel KKD09-005L	Maintained	A ↖	1NO+1NC	**AH165-JM2A11A**	
		B ⊗		**AH165-JM2B11A**	
		D ↗		**AH165-JM2D11A**	
KKD09-005R		A ↖	2NO+2NC	**AH165-JM2A22A**	
		B ⊗		**AH165-JM2B22A**	
		D ↗		**AH165-JM2D22A**	
Key with round bezel KKD09-005L	Maintained	A ↖	1NO+1NC	**AH165-RJM2A11A**	
		B ⊗		**AH165-RJM2B11A**	
		D ↗		**AH165-RJM2D11A**	
KKD09-007R		A ↖	2NO+2NC	**AH165-RJM2A22A**	
		B ⊗		**AH165-RJM2B22A**	
		D ↗		**AH165-RJM2D22A**	

- There are 6 available key types; A, B, C, D, E and F.
  Standard key code is A.

• Contact arrangement and operator positions:

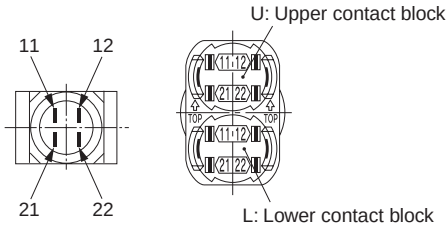
2-position selector switch

Contact arrangement		1NO+1NC	
Operator position	Left ⊘	11 12	21 22
	Right ⊘	11 12	21 22

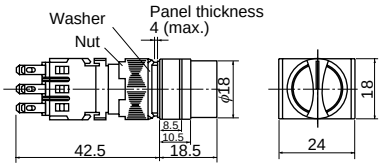
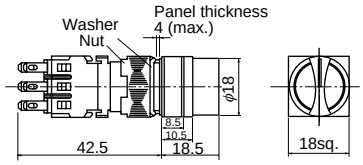
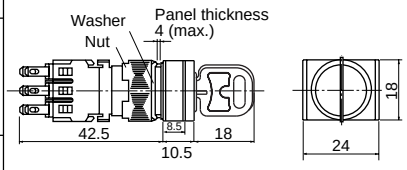
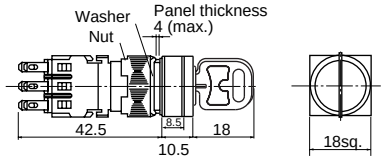
Contact arrangement		2NO+2NC	
Operator position	Left ⊘	U 11 12 / 21 22	L 11 12 / 21 22
	Right ⊘	11 12 / 21 22	11 12 / 21 22

• Terminal number

1NO+1NC 2NO+2NC

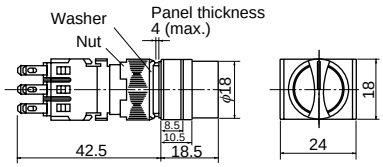
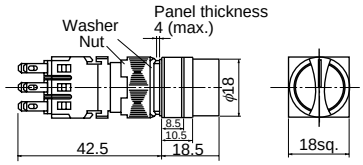
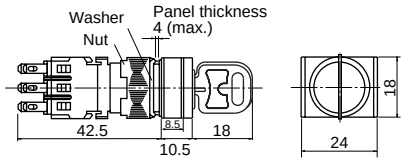
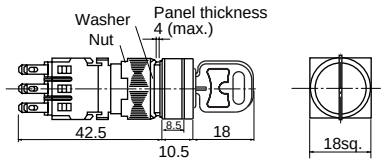


■ Selector switches/3-position (90-degree)

Operator	Operation	Key removable position	Contact	AH164 type	AH165 (oil-tight) type	Dimensions, mm
Knob with rectangular bezel KKD07-214	Maintained	—	2NO+2NC	**AH164-P3B22**	**AH165-P3B22**	
			3NO+3NC	**AH164-P3B33**	**AH165-P3B33**	
	Spring/ manual return	—	2NO+2NC	**AH164-P6B22**	**AH165-P6B22**	
			3NO+3NC	**AH164-P6B33**	**AH165-P6B33**	
	Spring/ manual return	—	2NO+2NC	**AH164-P7B22**	**AH165-P7B22**	
			3NO+3NC	**AH164-P7B33**	**AH165-P7B33**	
	Spring return	—	2NO+2NC	**AH164-P1B22**	**AH165-P1B22**	
			3NO+3NC	**AH164-P1B33**	**AH165-P1B33**	
Knob with square bezel KKD07-216	Maintained	—	2NO+2NC	**AH164-SP3B22**	**AH165-SP3B22**	
			3NO+3NC	**AH164-SP3B33**	**AH165-SP3B33**	
	Spring/ manual return	—	2NO+2NC	**AH164-SP6B22**	**AH165-SP6B22**	
			3NO+3NC	**AH164-SP6B33**	**AH165-SP6B33**	
	Spring/ manual return	—	2NO+2NC	**AH164-SP7B22**	**AH165-SP7B22**	
			3NO+3NC	**AH164-SP7B33**	**AH165-SP7B33**	
	Spring return	—	2NO+2NC	**AH164-SP1B22**	**AH165-SP1B22**	
			3NO+3NC	**AH164-SP1B33**	**AH165-SP1B33**	
Key with rectangular bezel KKD09-002L	Maintained*	A	2NO+2NC	**AH164-J3A22A**	**AH165-J3A22A**	
			3NO+3NC	**AH164-J3A33A**	**AH165-J3A33A**	
		E	2NO+2NC	**AH164-J3E22A**	**AH165-J3E22A**	
			3NO+3NC	**AH164-J3E33A**	**AH165-J3E33A**	
		D	2NO+2NC	**AH164-J3D22A**	**AH165-J3D22A**	
			3NO+3NC	**AH164-J3D33A**	**AH165-J3D33A**	
		C	2NO+2NC	**AH164-J3C22A**	**AH165-J3C22A**	
			3NO+3NC	**AH164-J3C33A**	**AH165-J3C33A**	
	Spring/ manual return	E	2NO+2NC	**AH164-J6E22A**	**AH165-J6E22A**	
			3NO+3NC	**AH164-J6E33A**	**AH165-J6E33A**	
		D	2NO+2NC	**AH164-J6D22A**	**AH165-J6D22A**	
			3NO+3NC	**AH164-J6D33A**	**AH165-J6D33A**	
	Spring/ manual return	A	2NO+2NC	**AH164-J7A22A**	**AH165-J7A22A**	
			3NO+3NC	**AH164-J7A33A**	**AH165-J7A33A**	
		E	2NO+2NC	**AH164-J7E22A**	**AH165-J7E22A**	
			3NO+3NC	**AH164-J7E33A**	**AH165-J7E33A**	
	Spring return	E	2NO+2NC	**AH164-J1E22A**	**AH165-J1E22A**	
			3NO+3NC	**AH164-J1E33A**	**AH165-J1E33A**	
Key with square bezel KKD09-002R	Maintained*	A	2NO+2NC	**AH164-SJ3A22A**	**AH165-SJ3A22A**	
			3NO+3NC	**AH164-SJ3A33A**	**AH165-SJ3A33A**	
		E	2NO+2NC	**AH164-SJ3E22A**	**AH165-SJ3E22A**	
			3NO+3NC	**AH164-SJ3E33A**	**AH165-SJ3E33A**	
		D	2NO+2NC	**AH164-SJ3D22A**	**AH165-SJ3D22A**	
			3NO+3NC	**AH164-SJ3D33A**	**AH165-SJ3D33A**	
		C	2NO+2NC	**AH164-SJ3C22A**	**AH165-SJ3C22A**	
			3NO+3NC	**AH164-SJ3C33A**	**AH165-SJ3C33A**	
	Spring/ manual return	E	2NO+2NC	**AH164-SJ6E22A**	**AH165-SJ6E22A**	
			3NO+3NC	**AH164-SJ6E33A**	**AH165-SJ6E33A**	
		D	2NO+2NC	**AH164-SJ6D22A**	**AH165-SJ6D22A**	
			3NO+3NC	**AH164-SJ6D33A**	**AH165-SJ6D33A**	
	Spring/ manual return	A	2NO+2NC	**AH164-SJ7A22A**	**AH165-SJ7A22A**	
			3NO+3NC	**AH164-SJ7A33A**	**AH165-SJ7A33A**	
		E	2NO+2NC	**AH164-SJ7E22A**	**AH165-SJ7E22A**	
			3NO+3NC	**AH164-SJ7E33A**	**AH165-SJ7E33A**	
	Spring return	E	2NO+2NC	**AH164-SJ1E22A**	**AH165-SJ1E22A**	
			3NO+3NC	**AH164-SJ1E33A**	**AH165-SJ1E33A**	

- There are 6 available key types; A, B, C, D, E and F. Standard key code is A.
- Contact arrangement and operator position: *See page 04/201.*
- Spring return, spring/manual return (spring return): Operation angle 70-degree
- * Available key removable position: Code B
- With wire-wrap pin terminals have a depth of 47mm.

■ Selector switches/3-position (45-degree)

Operator	Operation	Key removable position	Contact	AH164 type	AH165 (oil-tight) type	Dimensions, mm
Knob with rectangular bezel KKD07-214	Maintained	—	2NO+2NC	**AH164-PK3B22**	**AH165-PK3B22**	
			3NO+3NC	**AH164-PK3B33**	**AH165-PK3B33**	
	Spring/ manual return	—	2NO+2NC	**AH164-PK6B22**	**AH165-PK6B22**	
			3NO+3NC	**AH164-PK6B33**	**AH165-PK6B33**	
	Spring/ manual return	—	2NO+2NC	**AH164-PK7B22**	**AH165-PK7B22**	
			3NO+3NC	**AH164-PK7B33**	**AH165-PK7B33**	
	Spring return	—	2NO+2NC	**AH164-PK1B22**	**AH165-PK1B22**	
			3NO+3NC	**AH164-PK1B33**	**AH165-PK1B33**	
Knob with square bezel KKD07-216	Maintained	—	2NO+2NC	**AH164-SPK3B22**	**AH165-SPK3B22**	
			3NO+3NC	**AH164-SPK3B33**	**AH165-SPK3B33**	
	Spring/ manual return	—	2NO+2NC	**AH164-SPK6B22**	**AH165-SPK6B22**	
			3NO+3NC	**AH164-SPK6B33**	**AH165-SPK6B33**	
	Spring/ manual return	—	2NO+2NC	**AH164-SPK7B22**	**AH165-SPK7B22**	
			3NO+3NC	**AH164-SPK7B33**	**AH165-SPK7B33**	
	Spring return	—	2NO+2NC	**AH164-SPK1B22**	**AH165-SPK1B22**	
			3NO+3NC	**AH164-SPK1B33**	**AH165-SPK1B33**	
Key with rectangular bezel KKD09-002L	Maintained	A	2NO+2NC	**AH164-JK3A22A**	**AH165-JK3A22A**	
			3NO+3NC	**AH164-JK3A33A**	**AH165-JK3A33A**	
		E	2NO+2NC	**AH164-JK3E22A**	**AH165-JK3E22A**	
			3NO+3NC	**AH164-JK3E33A**	**AH165-JK3E33A**	
		D	2NO+2NC	**AH164-JK3D22A**	**AH165-JK3D22A**	
			3NO+3NC	**AH164-JK3D33A**	**AH165-JK3D33A**	
		C	2NO+2NC	**AH164-JK3C22A**	**AH165-JK3C22A**	
			3NO+3NC	**AH164-JK3C33A**	**AH165-JK3C33A**	
	Spring/ manual return	E	2NO+2NC	**AH164-JK6E22A**	**AH165-JK6E22A**	
			3NO+3NC	**AH164-JK6E33A**	**AH165-JK6E33A**	
		D	2NO+2NC	**AH164-JK6D22A**	**AH165-JK6D22A**	
			3NO+3NC	**AH164-JK6D33A**	**AH165-JK6D33A**	
	Spring/ manual return	A	2NO+2NC	**AH164-JK7A22A**	**AH165-JK7A22A**	
			3NO+3NC	**AH164-JK7A33A**	**AH165-JK7A33A**	
		E	2NO+2NC	**AH164-JK7E22A**	**AH165-JK7E22A**	
			3NO+3NC	**AH164-JK7E33A**	**AH165-JK7E33A**	
	Spring return	E	2NO+2NC	**AH164-JK1E22A**	**AH165-JK1E22A**	
			3NO+3NC	**AH164-JK1E33A**	**AH165-JK1E33A**	
Key with square bezel KKD09-002R	Maintained	A	2NO+2NC	**AH164-SJK3A22A**	**AH165-SJK3A22A**	
			3NO+3NC	**AH164-SJK3A33A**	**AH165-SJK3A33A**	
		E	2NO+2NC	**AH164-SJK3E22A**	**AH165-SJK3E22A**	
			3NO+3NC	**AH164-SJK3E33A**	**AH165-SJK3E33A**	
		D	2NO+2NC	**AH164-SJK3D22A**	**AH165-SJK3D22A**	
			3NO+3NC	**AH164-SJK3D33A**	**AH165-SJK3D33A**	
		C	2NO+2NC	**AH164-SJK3C22A**	**AH165-SJK3C22A**	
			3NO+3NC	**AH164-SJK3C33A**	**AH165-SJK3C33A**	
	Spring/ manual return	E	2NO+2NC	**AH164-SJK6E22A**	**AH165-SJK6E22A**	
			3NO+3NC	**AH164-SJK6E33A**	**AH165-SJK6E33A**	
		D	2NO+2NC	**AH164-SJK6D22A**	**AH165-SJK6D22A**	
			3NO+3NC	**AH164-SJK6D33A**	**AH165-SJK6D33A**	
	Spring/ manual return	A	2NO+2NC	**AH164-SJK7A22A**	**AH165-SJK7A22A**	
			3NO+3NC	**AH164-SJK7A33A**	**AH165-SJK7A33A**	
		E	2NO+2NC	**AH164-SJK7E22A**	**AH165-SJK7E22A**	
			3NO+3NC	**AH164-SJK7E33A**	**AH165-SJK7E33A**	
	Spring return	E	2NO+2NC	**AH164-SJK1E22A**	**AH165-SJK1E22A**	
			3NO+3NC	**AH164-SJK1E33A**	**AH165-SJK1E33A**	

- There are 6 available key types; A, B, C, D, E and F.
  Standard key code is A.
- Contact arrangement and operator position: *See page 04/205.*

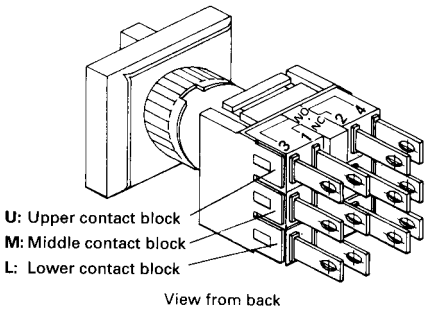
- Key removable positions (JK, SJK)

Remvable position							
Code	A	B	C	D	E	F	G

Operation code	Key removable position
3	A, B, C, D, E, F, G
6	D, E, F
7	A, E, G
1	E

- Key code No.
  There are 6 available key types; A, B, C, D, E and F.
  Standard key code is A.

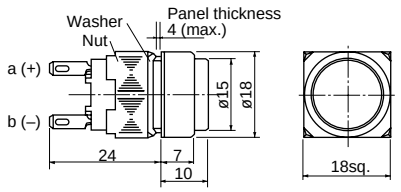
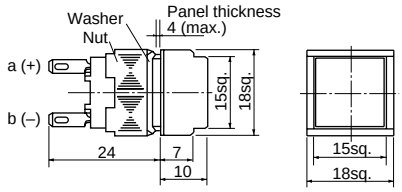
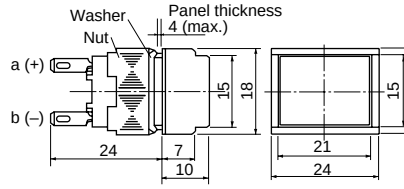
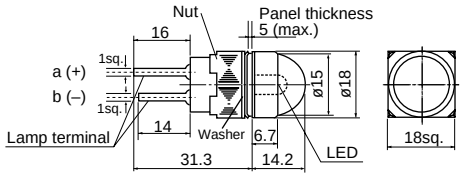
- **Contact block position**



- **Contact arrangement and operator position:**
3-position selector switch

Contact arrangement		2NO+2NC	3NO+3NC
Operator position	Left	U L	U M L
	Center		
	Right		

■ Pilot lights/without transformer

Lens	Lamp	Voltage	AH164 type	AH165 (oil-tight) type	Dimensions, mm
Extended round SK-1139	Flat LED	24V DC	**AH164-Z□E3**	**AH165-Z□E3**	
	Spot LED	24V DC	**AH164-Z□E2**	**AH165-Z□E2**	
	Incandescent	24V AC/DC	**AH164-Z□E**	**AH165-Z□E**	
	Neon	110V AC	**AH164-Z□H1**	**AH165-Z□H1**	
		220V AC	**AH164-Z□M1**	**AH165-Z□M1**	
Flush square SK-1138	Flat LED	24V DC	**AH164-ZS□E3**	**AH165-ZS□E3**	
	Spot LED	24V DC	**AH164-ZS□E2**	**AH165-ZS□E2**	
	Incandescent	24V AC/DC	**AH164-ZS□E**	**AH165-ZS□E**	
	Neon	110V AC	**AH164-ZS□H1**	**AH165-ZS□H1**	
		220V AC	**AH164-ZS□M1**	**AH165-ZS□M1**	
Flush rectangular SK-1137	Flat LED	24V DC	**AH164-ZT□E3**	**AH165-ZT□E3**	
	Spot LED	24V DC	**AH164-ZT□E2**	**AH165-ZT□E2**	
	Incandescent	24V AC/DC	**AH164-ZT□E**	**AH165-ZT□E**	
	Neon	110V AC	**AH164-ZT□H1**	**AH165-ZT□H1**	
		220V AC	**AH164-ZT□M1**	**AH165-ZT□M1**	
Dome AF87-45	LED	12V DC	–	**AH165-ZM□B2**	
		24V DC	–	**AH165-ZM□E2**	

• Lens color

Replace the □ mark by the following lens color code

Color	Green	Red	White	Yellow	Blue	Orange
Code	G	R	W	Y	S	O

- The color lens is made of a tinted transparent material.
- A white pilot lights is fitted with a transparent color lens. (Except the neon lamp and dome).
- With wire-wrap pin terminals have a depth of 29mm. (Except for ZM type)

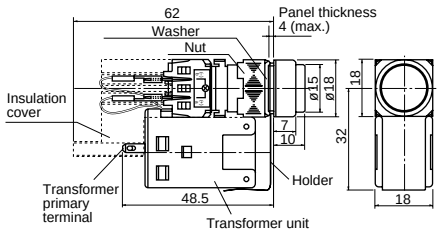
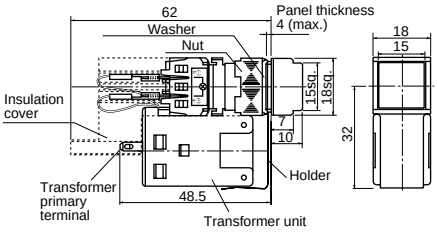
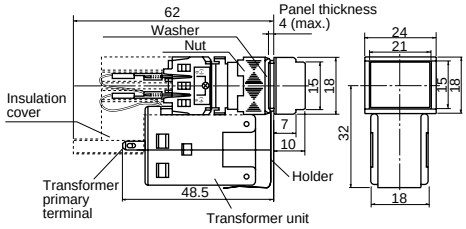
• Lamp voltage

Voltages other than above are available

Code	LED	Incandescent	Neon
AA	5V DC	–	–
A	6V DC	5V AC/DC	–
B	12V DC	12V AC/DC	–
K	–	–	120V AC
P	–	–	240V AC

Note: Except for ZM types and red/green LED types

■ Pilot lights/with transformer

Lens	Lamp	Voltage	AH164 type	AH165 (oil-tight) type	Dimensions, mm
Extended square AF90-944	Flat LED	■ Voltage H: 100-110V AC	**AH164-Z□■3**	**AH165-Z□■3**	
	Incandescent	M: 200-220V AC	**AH164-Z□■**	**AH165-Z□■**	
Flush square AF90-943	Flat LED	■ Voltage H: 100-110V AC	**AH164-ZS□■3**	**AH165-ZS□■3**	
	Incandescent	M: 200-220V AC	**AH164-ZS□■**	**AH165-ZS□■**	
Flush rectangular AF90-942	Flat LED	■ Voltage H: 100-110V AC	**AH164-ZT□■3**	**AH165-ZT□■3**	
	Incandescent	M: 200-220V AC	**AH164-ZT□■**	**AH165-ZT□■**	

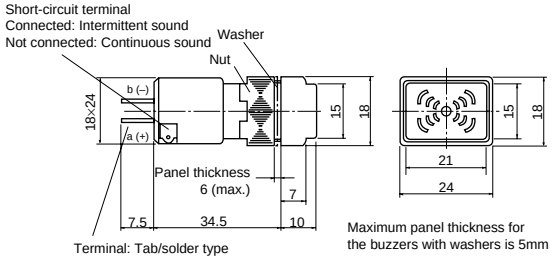
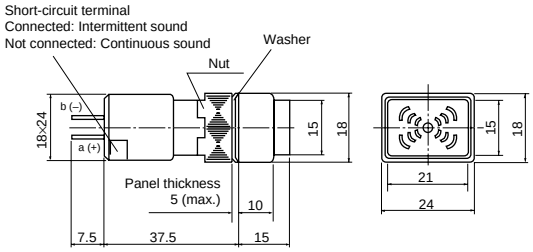
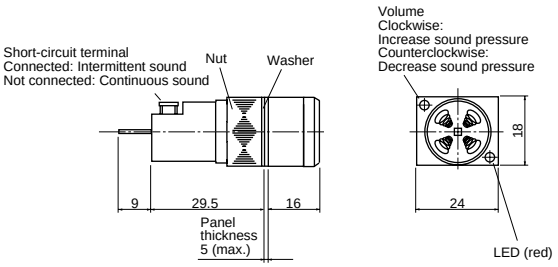
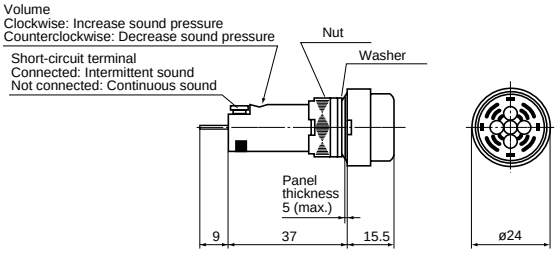
• Lens color

Replace the □ mark by the following lens color code

Color	Green	Red	White	Yellow	Blue	Orange
Code	G	R	W	Y	S	O

- The color lens is made of a tinted transparent material.
- A white pilot lights is fitted with a transparent color lens.

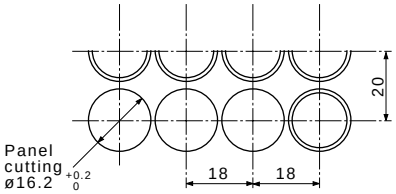
■ Buzzers

Sound	Operating voltage	Type	Dimensions, mm
Standard AF87-317	6V AC	**AH164-TXBAAC**	
	6V DC	**AH164-TXBADC**	
	12 to 24V AC/DC	**AH164-TXBE**	
	35 to 48V AC/DC	**AH164-TXBF**	
Loud sound AF87-44	6V AC	**AH164-TX1BAAC**	
	6V DC	**AH164-TX1BADC**	
	12 to 24V AC/DC	**AH164-TX1BE**	
	35 to 48V AC/DC	**AH164-TX1BF**	
Loud sound with volume control KKD07-223	6V AC/DC	**AH164-TX2BA**	
	12 to 24V AC/DC	**AH164-TX2BE**	
	35 to 48V AC/DC	**AH164-TX2BF**	
Standard sound with volume control (IP54) KKD05-096b	6V AC/DC	**AH165-XBA**	
	12 to 24V AC/DC	**AH165-XBE**	
	35 to 48V AC/DC	**AH165-XBF**	

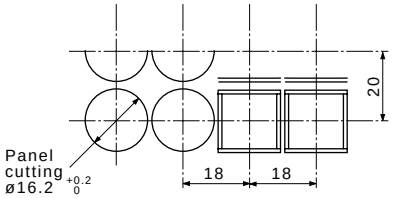
■ Mounting space, mm

• Pushbuttons and pilot lights

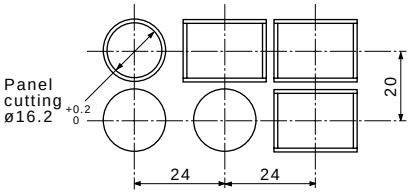
Extended round head or lens



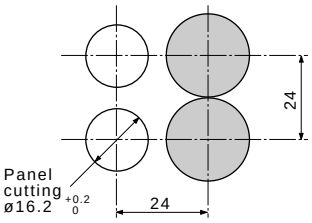
Flush square head or lens



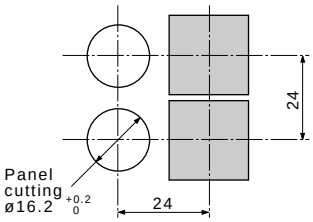
Flush rectangular head or lens



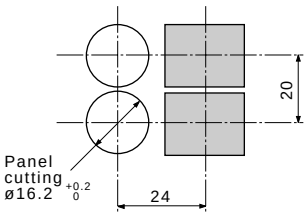
Mushroom head



Convex square head

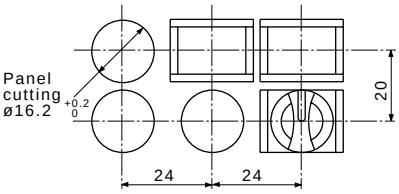


Convex rectangular head

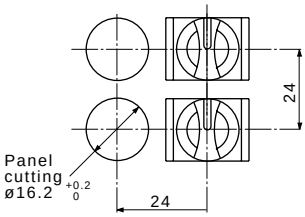


• Selector switches

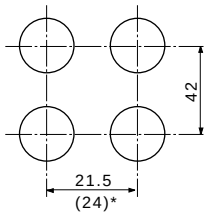
•When mounting the selector switches near the pilot light



• When mounting the selector switches near each other

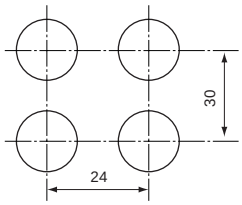


• With transformer

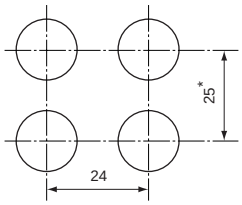


Note: *( ) For switch with flush rectangular head

• When mounting the JM or RJM selector switches near each other (2NO+2NC only)

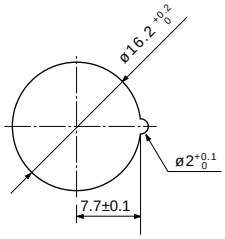


• When mounting the JM or RJM selector switches near the other selector switch, pushbutton switch and pilot lights

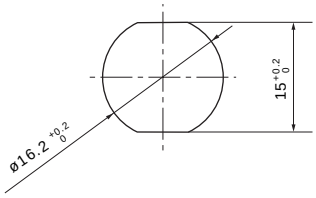


Note: * Mushroom, convex square, convex rectangular: 27

• AH165-V, V1, V5, V6

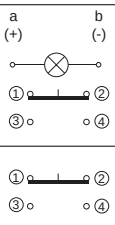


• AH165-JM, RJM



■ Terminal number

• AH164, 165

Type	Wiring	Terminal position
Illuminated pushbuttons		Type number display side
Pushbuttons Selector switches (except for JM, RJM types)		
Pilot lights (without transformer)		Type number display side

AH165-2
Type number nomenclature

■ Type number nomenclature

Pushbuttons, illuminated pushbuttons and pilot lights

AH165-2 FL R 11 E 3 – W
① ② ③ ④ ⑤ ⑥ ⑦

① Product category
AH165-2: Oil-tight (Large operator)

② Operator or lens
• Operator for illuminated pushbutton
FL: Flush round head
FL5: Flush round head (Alternate)
SFL: Flush square head
SFL5: Flush square head (Alternate)
EL: Extended round head
EL5: Extended round head (Alternate)
SEL: Extended square head
SEL5: Extended square head (Alternate)
SCL: Concave square head
SCL5: Concave square head (Alternate)
ML: Mushroom head
YML: Mushroom head with square bezel
VL: Push-lock, turn-reset
YVL: Push-lock, turn-reset with square bezel

• Operator for pushbuttons
F: Flush round head
F5: Flush round head (Alternate)
SF: Flush square head
SF5: Flush square head (Alternate)
E: Extended round head
E5: Extended round head (Alternate)
SE: Extended square head
SE5: Extended square head (Alternate)
SCE: Concave square head
SCE5: Concave square head (Alternate)
M: Mushroom head
YM: Mushroom head with square bezel
V: Push-lock, turn-reset
YV: Push-lock, turn-reset with square bezel
S2: With selector ring
YS2: With selector ring with square bezel

• Lens for pilot lights
Z: Flush round
SZ: Flush square
ZE: Extended round
SEZ: Extended square

③ Color of button or lens

Code	Color	Button	LED	Incandescent	Neon
G	Green	○	○	○	○
R	Red	○	○	○	○ (Orange)
B	Black*	○	–	–	–
Y	Yellow	○	○	○	○ (Orange)
W	White	○	○ (Orange)	○	○ (Orange)
S	Blue	○	○	○	○ (Green)
O	Orange	○	○ (Amber)	○	○

Notes: • ( ): indicates luminous color
* Not available for illuminated types

④ Contact arrangement (except pilot lights)
11: 1NO+1NC
22: 2NO+2NC
33: 3NO+3NC

⑤ Lamp voltage

Code	LED	Incandescent	Neon
AA	5V DC	–	–
A	6V DC	5V AC/DC	–
B	12V DC	12V AC/DC	–
E	24V DC	24V AC/DC	–
H	–	–	110V AC
K	–	–	120V AC
M	–	–	220V AC
P	–	–	240V AC

⑥ Type of lamp
Blank: Incandescent
1: Neon
3: Flat LED

⑦ Terminal
Blank: Solder/tab
W: Wire-wrap

■ Type number nomenclature

Selector switches

AH165-2 J 2 B 11 A – W
① ② ③ ④ ⑤ ⑥ ⑦

① **Product category**
AH165-2: Oil-tight (Large operator)

② **Operator**
• Knob and key type
2-position (operating angle 90˚)
P: Knob
YP: Knob with square bezel
J: Key
YJ: Key with square bezel

3-position (operating angle 45˚)
P: Knob
YP: Knob with square bezel
J: Key
YJ: Key with square bezel

• Lever type
2-position (operating angle 45˚)
H: Lever
SH: Lever with square bezel
Note: The operation angle is 45˚ on the upper and lower side.

③ **Operation**
2: 2-position, maintained
0: 2-position, spring return*
3: 3-position, maintained
6: 3-position, spring/manual return (Left to center)
7: 3-position, spring/manual return (Right to center)
1: 3-position, spring return
Note: * Except for H and SH types

④ **Color of knob, lever or key removable position**
• Color of knob or lever
B: Black

• Key removable position

Code	2-position		3-position			
	2	0	1	3	6	7
A	⊘	⊘	–	⊘	–	⊘
B	⊗	–	–	⊗	–	–
C	–	–	–	⊛	–	–
D	⊘	–	–	⊘		–
E	–	–	⊘			
F	–	–	–	⊘		–
G	–	–	–	⊘	–	⊘

⑤ **Contact arrangement**
11: 1NO+1NC*
22: 2NO+2NC
33: 3NO+3NC
Note: * Except for 3-position

⑥ **Key type No.**
A (standard), B, C, D, E, F

⑦ **Terminal**
Blank: Solder/tab
W: Wire-wrap

Illuminated selector switches

AH165-2 PL 2 G 11 E 3
① ② ③ ④ ⑤ ⑥ ⑦

① **Product category**
AH165-2: Oil-tight (Large operator)

② **Operator**
• 2-position (operating angle 90˚)
PL: Knob

• 3-position (operating angle 45˚)
PL: Knob

③ **Operation**
2: 2-position, maintained
3: 3-position, maintained

④ **Color of knob**

Code	Color	LED	Incandescent	Neon
G	Green	○	○	○
R	Red	○	○	○ (Orange)
Y	Yellow	○	○	○ (Orange)
W	White	○ (Orange)	○	○ (Orange)
S	Blue	○	○	○ (Green)
O	Orange	○ (Amber)	○	○

Notes: • ( ): indicates luminous color
• The part other than the arrow of the knob is black.

⑤ **Contact arrangement**
11: 1NO+1NC*
22: 2NO+2NC
Note: * Except for 3-position

⑥ **Lamp voltage**

Code	LED	Incandescent	Neon
AA	5V DC	–	–
A	6V DC	5V AC/DC	–
B	12V DC	12V AC/DC	–
E	24V DC	24V AC/DC	–
H	–	–	110V AC
K	–	–	120V AC
M	–	–	220V AC
P	–	–	240V AC

⑦ **Type of lamp**
Blank: Incandescent
1: Neon
3: Flat LED
Note: Terminal with solder/tab only

AH165-2
Ratings and specifications

■ Standards approved

UL508	File No. E44592
CSA C22.2 No.14	File No. LR20479 (except for AH165-2Z, 2ZE, 2SZ, 2SZE) File No. LR84365 (for AH165-2Z, 2ZE, 2SZ, 2SZE)
TÜV: EN60947-5-1	Pushbutton, illuminated pushbutton: R9250087 Selector (except for AH165-2H, SH), illuminated selector: R9250088 Selector (for AH165-2H, SH): R9250087 Pilot lights: R9250089

■ Specifications (Indoor use)

Item		AH165-2
Rated insulation voltage		250V AC/DC
Ambient temperature (no condensation or no icing)		–10 to +70°C *1
Humidity		45 to 85%RH (at –5 to +40°C), no condensation or no icing
Durability (operations)	Mechanical	Pushbutton and illuminated pushubutton switch Momentary action: 1 million Alternate action: 250,000 Push-lock, turn-reset: 100,000 With selector ring: 250,000 Selector and illuminated selector switch: 250,000*2
	Electrical	100,000 (220V AC 0.7A)
Dielectric strength		2000V AC, 1 minute (Between lamp and contact terminals: 1500V AC, 1 minute)
Conditional short-circuit current		1000A
Short-circuit protective device		Fuse 1A
Pollution degree		3
Vibration		Resonance: 10 to 55Hz, double amplitude 0.1mm Constant: 16.7Hz, double amplitude 3mm
Shock		Malfunction durability: 100m/s^2 Mechanical durability: 500m/s^2
Operating frequency		1200 operation/hour (on-load factor: 40%)
Insulation resistance		100MΩ or more (500V DC megger)
Operator protection		IP65

Notes: *1 For illuminated pushbutton, illuminated selector switch and pilot light: –10 to +55°C
*2 Key insertion/removal durability for selector switch key types: 10,000

■ Contact ratings
See page 04/194

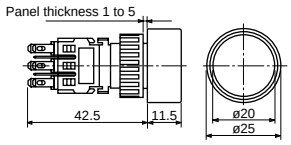
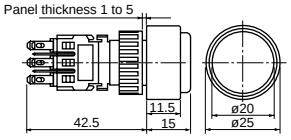
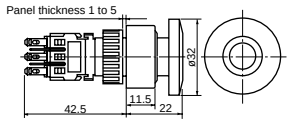
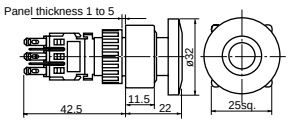
■ Lamp ratings

Rated operational voltage	Consumption		
	LED DC	Incandescent AC/DC	Neon AC
5V	7mA (Yellow: 28mA)	0.45W (6V)	–
6V	7mA (Yellow: 28mA)	–	–
12V	7mA	0.55W (14V)	–
24V	7mA	0.55W (28V)	–
110V	–	–	0.19VA
120V	–	–	0.21VA
220V	–	–	0.38VA
240V	–	–	0.42VA

Notes: For the incandescent lamps, the values in parentheses indicate the rated voltage of the lamps.

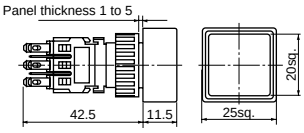
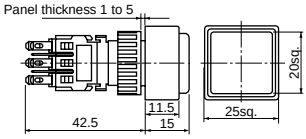
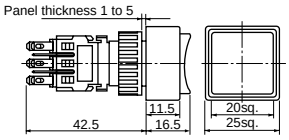
■ Contact reliability
FUJI has confirmed that the unit can be used in 1mA circuit conditions at 5V AC or DC. The operable range may vary depending on the ambient conditions and type of load.

■ Illuminated pushbutton switches

Operator	Lamp	Voltage	Contact	Momentary action Type	Alternate action Type	Dimensions, mm
Flush round head	Flat LED	24V DC	1NO+1NC	**AH165-2FL□11E3**	**AH165-2FL5□11E3**	
			2NO+2NC	**AH165-2FL□22E3**	**AH165-2FL5□22E3**	
			3NO+3NC	**AH165-2FL□33E3**	**AH165-2FL5□33E3**	
	Incandescent	24V AC/DC	1NO+1NC	**AH165-2FL□11E**	**AH165-2FL5□11E**	
			2NO+2NC	**AH165-2FL□22E**	**AH165-2FL5□22E**	
			3NO+3NC	**AH165-2FL□33E**	**AH165-2FL5□33E**	
AF87-211	Neon	110V AC	1NO+1NC	**AH165-2FL□11H1**	**AH165-2FL5□11H1**	
			2NO+2NC	**AH165-2FL□22H1**	**AH165-2FL5□22H1**	
			3NO+3NC	**AH165-2FL□33H1**	**AH165-2FL5□33H1**	
		220V AC	1NO+1NC	**AH165-2FL□11M1**	**AH165-2FL5□11M1**	
			2NO+2NC	**AH165-2FL□22M1**	**AH165-2FL5□22M1**	
			3NO+3NC	**AH165-2FL□33M1**	**AH165-2FL5□33M1**	
Extended round head	Flat LED	24V DC	1NO+1NC	**AH165-2EL□11E3**	**AH165-2EL5□11E3**	
			2NO+2NC	**AH165-2EL□22E3**	**AH165-2EL5□22E3**	
			3NO+3NC	**AH165-2EL□33E3**	**AH165-2EL5□33E3**	
	Incandescent	24V AC/DC	1NO+1NC	**AH165-2EL□11E**	**AH165-2EL5□11E**	
			2NO+2NC	**AH165-2EL□22E**	**AH165-2EL5□22E**	
			3NO+3NC	**AH165-2EL□33E**	**AH165-2EL5□33E**	
AF87-210	Neon	110V AC	1NO+1NC	**AH165-2EL□11H1**	**AH165-2EL5□11H1**	
			2NO+2NC	**AH165-2EL□22H1**	**AH165-2EL5□22H1**	
			3NO+3NC	**AH165-2EL□33H1**	**AH165-2EL5□33H1**	
		220V AC	1NO+1NC	**AH165-2EL□11M1**	**AH165-2EL5□11M1**	
			2NO+2NC	**AH165-2EL□22M1**	**AH165-2EL5□22M1**	
			3NO+3NC	**AH165-2EL□33M1**	**AH165-2EL5□33M1**	
Mushroom head	Flat LED	24V DC	1NO+1NC	**AH165-2ML□11E3**	–	
			2NO+2NC	**AH165-2ML□22E3**	–	
			3NO+3NC	**AH165-2ML□33E3**	–	
	Incandescent	24V AC/DC	1NO+1NC	**AH165-2ML□11E**	–	
			2NO+2NC	**AH165-2ML□22E**	–	
			3NO+3NC	**AH165-2ML□33E**	–	
AF87-221	Neon	110V AC	1NO+1NC	**AH165-2ML□11H1**	–	
			2NO+2NC	**AH165-2ML□22H1**	–	
			3NO+3NC	**AH165-2ML□33H1**	–	
		220V AC	1NO+1NC	**AH165-2ML□11M1**	–	
			2NO+2NC	**AH165-2ML□22M1**	–	
			3NO+3NC	**AH165-2ML□33M1**	–	
Mushroom head with square bezel	Flat LED	24V DC	1NO+1NC	**AH165-2YML□11E3**	–	
			2NO+2NC	**AH165-2YML□22E3**	–	
			3NO+3NC	**AH165-2YML□33E3**	–	
	Incandescent	24V AC/DC	1NO+1NC	**AH165-2YML□11E**	–	
			2NO+2NC	**AH165-2YML□22E**	–	
			3NO+3NC	**AH165-2YML□33E**	–	
AF87-220	Neon	110V AC	1NO+1NC	**AH165-2YML□11H1**	–	
			2NO+2NC	**AH165-2YML□22H1**	–	
			3NO+3NC	**AH165-2YML□33H1**	–	
		220V AC	1NO+1NC	**AH165-2YML□11M1**	–	
			2NO+2NC	**AH165-2YML□22M1**	–	
			3NO+3NC	**AH165-2YML□33M1**	–	

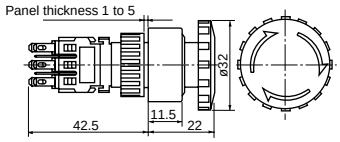
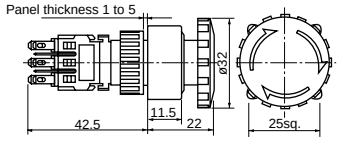
Note: Replace the □ mark by the following color code, *see page 04/215.*

■ Illuminated pushbutton switches

Operator	Lamp	Voltage	Contact	Momentary action Type	Alternate action Type	Dimensions, mm
Flush square head AF87-201	Flat LED	24V DC	1NO+1NC	**AH165-2SFL□11E3**	**AH165-2SFL5□11E3**	
			2NO+2NC	**AH165-2SFL□22E3**	**AH165-2SFL5□22E3**	
			3NO+3NC	**AH165-2SFL□33E3**	**AH165-2SFL5□33E3**	
	Incandescent	24V AC/DC	1NO+1NC	**AH165-2SFL□11E**	**AH165-2SFL5□11E**	
			2NO+2NC	**AH165-2SFL□22E**	**AH165-2SFL5□22E**	
			3NO+3NC	**AH165-2SFL□33E**	**AH165-2SFL5□33E**	
	Neon	110V AC	1NO+1NC	**AH165-2SFL□11H1**	**AH165-2SFL5□11H1**	
			2NO+2NC	**AH165-2SFL□22H1**	**AH165-2SFL5□22H1**	
			3NO+3NC	**AH165-2SFL□33H1**	**AH165-2SFL5□33H1**	
		220V AC	1NO+1NC	**AH165-2SFL□11M1**	**AH165-2SFL5□11M1**	
			2NO+2NC	**AH165-2SFL□22M1**	**AH165-2SFL5□22M1**	
			3NO+3NC	**AH165-2SFL□33M1**	**AH165-2SFL5□33M1**	
Extended square head AF87-200	Flat LED	24V DC	1NO+1NC	**AH165-2SEL□11E3**	**AH165-2SEL5□11E3**	
			2NO+2NC	**AH165-2SEL□22E3**	**AH165-2SEL5□22E3**	
			3NO+3NC	**AH165-2SEL□33E3**	**AH165-2SEL5□33E3**	
	Incandescent	24V AC/DC	1NO+1NC	**AH165-2SEL□11E**	**AH165-2SEL5□11E**	
			2NO+2NC	**AH165-2SEL□22E**	**AH165-2SEL5□22E**	
			3NO+3NC	**AH165-2SEL□33E**	**AH165-2SEL5□33E**	
	Neon	110V AC	1NO+1NC	**AH165-2SEL□11H1**	**AH165-2SEL5□11H1**	
			2NO+2NC	**AH165-2SEL□22H1**	**AH165-2SEL5□22H1**	
			3NO+3NC	**AH165-2SEL□33H1**	**AH165-2SEL5□33H1**	
		220V AC	1NO+1NC	**AH165-2SEL□11M1**	**AH165-2SEL5□11M1**	
			2NO+2NC	**AH165-2SEL□22M1**	**AH165-2SEL5□22M1**	
			3NO+3NC	**AH165-2SEL□33M1**	**AH165-2SEL5□33M1**	
Concave square head AF87-199	Flat LED	24V DC	1NO+1NC	**AH165-2SCL□11E3**	**AH165-2SCL5□11E3**	
			2NO+2NC	**AH165-2SCL□22E3**	**AH165-2SCL5□22E3**	
			3NO+3NC	**AH165-2SCL□33E3**	**AH165-2SCL5□33E3**	
	Incandescent	24V AC/DC	1NO+1NC	**AH165-2SCL□11E**	**AH165-2SCL5□11E**	
			2NO+2NC	**AH165-2SCL□22E**	**AH165-2SCL5□22E**	
			3NO+3NC	**AH165-2SCL□33E**	**AH165-2SCL5□33E**	
	Neon	110V AC	1NO+1NC	**AH165-2SCL□11H1**	**AH165-2SCL5□11H1**	
			2NO+2NC	**AH165-2SCL□22H1**	**AH165-2SCL5□22H1**	
			3NO+3NC	**AH165-2SCL□33H1**	**AH165-2SCL5□33H1**	
		220V AC	1NO+1NC	**AH165-2SCL□11M1**	**AH165-2SCL5□11M1**	
			2NO+2NC	**AH165-2SCL□22M1**	**AH165-2SCL5□22M1**	
			3NO+3NC	**AH165-2SCL□33M1**	**AH165-2SCL5□33M1**	

Note: Replace the □ mark by the following color code, *see page 04/215.*

■ Illuminated pushbutton switches

Operator	Lamp	Voltage	Contact	Type	Dimensions, mm
Push-lock, turn-reset AF87-219	Flat LED	24V DC	1NO+1NC	**AH165-2VL□11E3**	
			2NO+2NC	**AH165-2VL□22E3**	
			3NO+3NC	**AH165-2VL□33E3**	
	Incandescent	24V AC/DC	1NO+1NC	**AH165-2VL□11E**	
			2NO+2NC	**AH165-2VL□22E**	
			3NO+3NC	**AH165-2VL□33E**	
	Neon	110V AC	1NO+1NC	**AH165-2VL□11H1**	
			2NO+2NC	**AH165-2VL□22H1**	
			3NO+3NC	**AH165-2VL□33H1**	
		220V AC	1NO+1NC	**AH165-2VL□11M1**	
			2NO+2NC	**AH165-2VL□22M1**	
			3NO+3NC	**AH165-2VL□33M1**	
Push-lock, turn-reset with square bezel AF87-218	Flat LED	24V DC	1NO+1NC	**AH165-2YVL□11E3**	
			2NO+2NC	**AH165-2YVL□22E3**	
			3NO+3NC	**AH165-2YVL□33E3**	
	Incandescent	24V AC/DC	1NO+1NC	**AH165-2YVL□11E**	
			2NO+2NC	**AH165-2YVL□22E**	
			3NO+3NC	**AH165-2YVL□33E**	
	Neon	110V AC	1NO+1NC	**AH165-2YVL□11H1**	
			2NO+2NC	**AH165-2YVL□22H1**	
			3NO+3NC	**AH165-2YVL□33H1**	
		220V AC	1NO+1NC	**AH165-2YVL□11M1**	
			2NO+2NC	**AH165-2YVL□22M1**	
			3NO+3NC	**AH165-2YVL□33M1**	

• Button color
Replace the □ mark by the following button color code

Color	Green	Red	White	Yellow	Blue	Orange
Code	G	R	W	Y	S	O

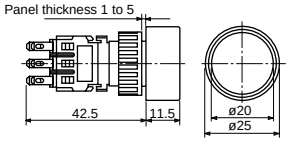
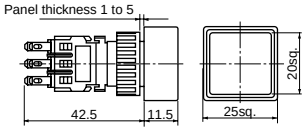
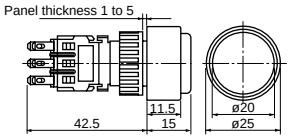
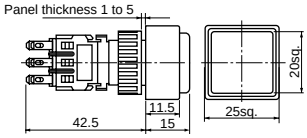
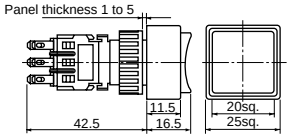
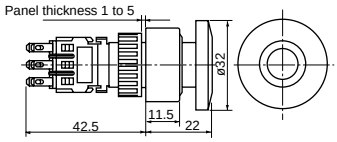
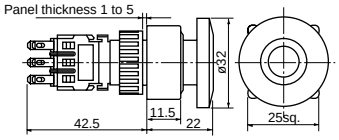
• With wire-wrap pin terminals have a depth of 47mm.

• A white illuminated pushbutton is fitted with a transparent color lens.
• The color lens is made of a tinted transparent material.

• Lamp voltage
Voltages other than above are available

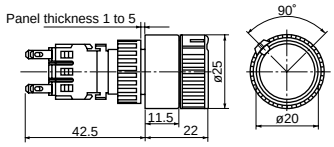
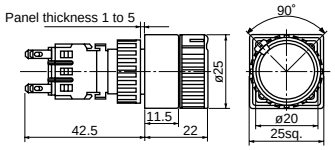
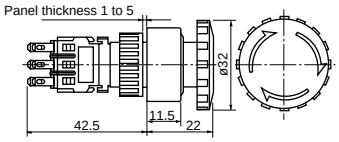
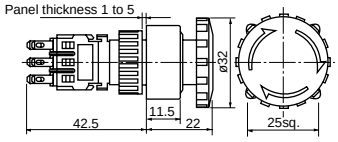
Code	LED	Incandescent	Neon
AA	5V DC	–	–
A	6V DC	5V AC/DC	–
B	12V DC	12V AC/DC	–
K	–	–	120V AC
P	–	–	240V AC

■ Pushbutton switches

Operator	Contact	Momentary action Type	Alternate action Type	Dimensions, mm
Flush round head AF87-211	1NO+1NC 2NO+2NC 3NO+3NC	**AH165-2F□11** **AH165-2F□22** **AH165-2F□33**	**AH165-2F5□11** **AH165-2F5□22** **AH165-2F5□33**	
Flush square head AF87-201	1NO+1NC 2NO+2NC 3NO+3NC	**AH165-2SF□11** **AH165-2SF□22** **AH165-2SF□33**	**AH165-2SF5□11** **AH165-2SF5□22** **AH165-2SF5□33**	
Extended round head AF87-210	1NO+1NC 2NO+2NC 3NO+3NC	**AH165-2E□11** **AH165-2E□22** **AH165-2E□33**	**AH165-2E5□11** **AH165-2E5□22** **AH165-2E5□33**	
Extended square head AF87-200	1NO+1NC 2NO+2NC 3NO+3NC	**AH165-2SE□11** **AH165-2SE□22** **AH165-2SE□33**	**AH165-2SE5□11** **AH165-2SE5□22** **AH165-2SE5□33**	
Concave square head AF87-199	1NO+1NC 2NO+2NC 3NO+3NC	**AH165-2SCE□11** **AH165-2SCE□22** **AH165-2SCE□33**	**AH165-2SCE5□11** **AH165-2SCE5□22** **AH165-2SCE5□33**	
Mushroom head AF87-215	1NO+1NC 2NO+2NC 3NO+3NC	**AH165-2M□11** **AH165-2M□22** **AH165-2M□33**	– – –	
Mushroom head with square bezel AF87-214	1NO+1NC 2NO+2NC 3NO+3NC	**AH165-2YM□11** **AH165-2YM□22** **AH165-2YM□33**	– – –	

Note: Replace the □ mark by the following color code, *see page 04/217.*

■ Pushbutton switches

Operator	Contact	Type	Dimensions, mm
With selector ring AF87-207	2NO+2NC	**AH165-2S2□22**	
With selector ring with square bezel AF87-206	2NO+2NC	**AH165-2YS2□22**	
Push-lock, turn-reset AF87-210	1NO+1NC 2NO+2NC 3NO+3NC	**AH165-2V□11** **AH165-2V□22** **AH165-2V□33**	
Push-lock, turn-reset with square bezel AF87-200	1NO+1NC 2NO+2NC 3NO+3NC	**AH165-2YV□11** **AH165-2YV□22** **AH165-2YV□33**	

• Button color

Replace the □ mark by the following button color code

Color	Green	Red	Black	White	Blue	Yellow	Orange
Code	G	R	B	W	S	Y	O

• Contact arrangement and operator position

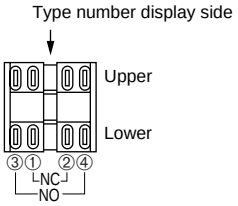
AH165-2S, 2YS

Ring / Button	Left	Right
Free	U L 1○ ○2 1○ ○2 3○ ○4 3○ ○4	U L 1○ ○2 1○ ○2 3○ ○4 3○ ○4
Depressed	1○ ○2 1○ ○2 3○ ○4 3○ ○4	1○ ○2 1○ ○2 3○ ○4 3○ ○4

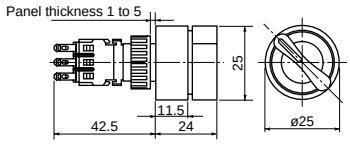
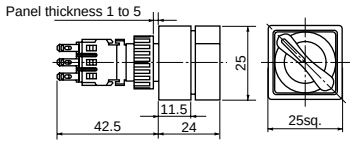
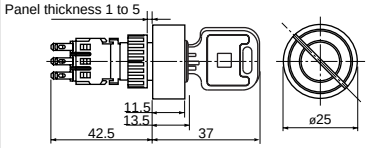
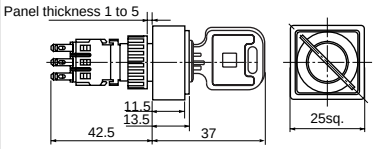
U: Upper contact block
L: Lower contact block

- The color lens is made of a tinted transparent material. (Except for M, YM, V, YV, types)
- A white pushbutton is fitted with a transparent color lens. A black pushbutton consists of a transparent color lens and an attached black legend plate. (Except for M, YM, V, YV, types)
- With wire-wrap pin terminals have a depth of 47mm.

• Terminal number and contact block position



■ Selector switches/2-position (90-degree)

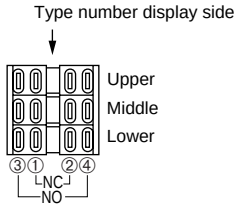
Operator	Operation	Key removable position	Contact	Type	Dimensions, mm
Knob KKD07-232	Maintained	–	1NO+1NC	**AH165-2P2B11**	
			2NO+2NC	**AH165-2P2B22**	
			3NO+3NC	**AH165-2P2B33**	
	Spring return	–	1NO+1NC	**AH165-2P0B11**	
			2NO+2NC	**AH165-2P0B22**	
			3NO+3NC	**AH165-2P0B33**	
Knob KKD07-234	Maintained	–	1NO+1NC	**AH165-2YP2B11**	
			2NO+2NC	**AH165-2YP2B22**	
			3NO+3NC	**AH165-2YP2B33**	
	Spring return	–	1NO+1NC	**AH165-2YP0B11**	
			2NO+2NC	**AH165-2YP0B22**	
			3NO+3NC	**AH165-2YP0B33**	
Key KKD09-003L	Maintained	A	1NO+1NC	**AH165-2J2A11A**	
			2NO+2NC	**AH165-2J2A22A**	
			3NO+3NC	**AH165-2J2A33A**	
		B	1NO+1NC	**AH165-2J2B11A**	
			2NO+2NC	**AH165-2J2B22A**	
			3NO+3NC	**AH165-2J2B33A**	
		D	1NO+1NC	**AH165-2J2D11A**	
			2NO+2NC	**AH165-2J2D22A**	
			3NO+3NC	**AH165-2J2D33A**	
	Spring return	A	1NO+1NC	**AH165-2J0A11A**	
			2NO+2NC	**AH165-2J0A22A**	
			3NO+3NC	**AH165-2J0A33A**	
Key with square bezel KKD09-003R	Maintained	A	1NO+1NC	**AH165-2YJ2A11A**	
			2NO+2NC	**AH165-2YJ2A22A**	
			3NO+3NC	**AH165-2YJ2A33A**	
		B	1NO+1NC	**AH165-2YJ2B11A**	
			2NO+2NC	**AH165-2YJ2B22A**	
			3NO+3NC	**AH165-2YJ2B33A**	
		D	1NO+1NC	**AH165-2YJ2D11A**	
			2NO+2NC	**AH165-2YJ2D22A**	
			3NO+3NC	**AH165-2YJ2D33A**	
	Spring return	A	1NO+1NC	**AH165-2YJ0A11A**	
			2NO+2NC	**AH165-2YJ0A22A**	
			3NO+3NC	**AH165-2YJ0A33A**	

• The key can be removed only at the following positions:

A: B: D:

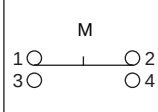
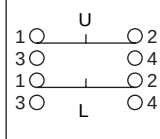
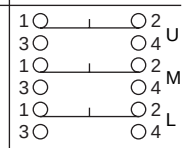
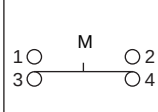
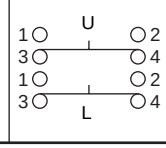
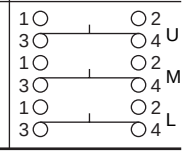
• For spring-return selector switches, the key can be removed at position A.
• There are 6 available key types; A, B, C, D, E and F. Standard key code is A.
• With wire-wrap pin terminals have a depth of 47mm.

• Terminal number and contact block position



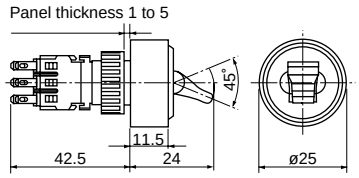
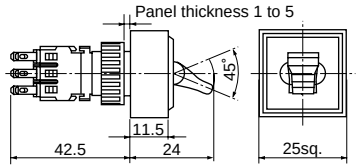
Contact arrangement (terminal No.: common)
1NO+1NC: Middle
2NO+2NC: Upper, lower
3NO+3NC: Upper, middle, lower

• Contact arrangement and operator positions:
2-position

Contact arrangement		1NO+1NC	2NO+2NC	3NO+3NC
Operator position	Left			
	Right			

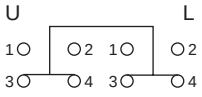
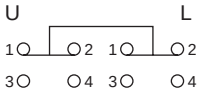
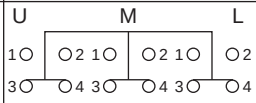
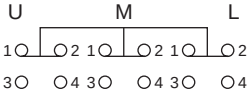
U: Upper contact block
M: Middle contact block
L: Lower contact block

■ Selector switches/2-position

Operator	Lever color	Operation	Contact	Type	Dimensions, mm
Lever AF87-209	Black	Maintained	1NO+1NC 2NO+2NC 3NO+3NC	**AH165-2H2B11** **AH165-2H2B22** **AH165-2H2B33**	
Lever with square bezel AF87-203	Black	Maintained	1NO+1NC 2NO+2NC 3NO+3NC	**AH165-2SH2B11** **AH165-2SH2B22** **AH165-2SH2B33**	

• Contact arrangement and operator position

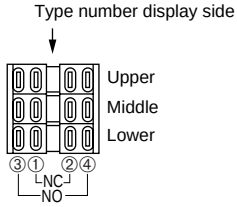
AH165-2H, 2SH

Contact block \ Lever	Up	Down
1NO+1NC		
2NO+2NC		
3NO+3NC		

U: Upper contact block
M: Middle contact block
L: Lower contact block

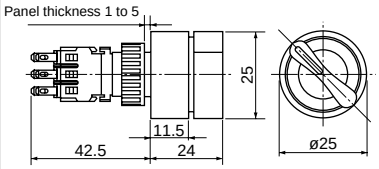
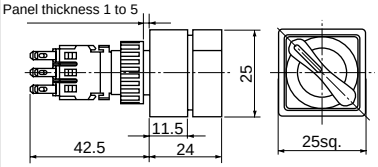
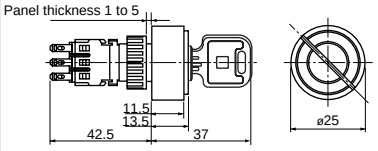
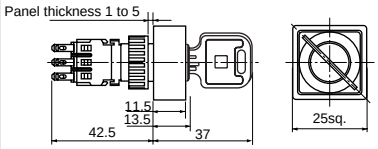
• With wire-wrap pin terminals have a depth of 47mm.

• Terminal number and contact block position



Contact arrangement (terminal No.: common)
1NO+1NC: Middle
2NO+2NC: Upper, lower
3NO+3NC: Upper, middle, lower

■ Selector switches/3-position (45-degree)

Operator	Operation	Key removable position	Contact	Type	Dimensions, mm
Knob KKD07-233	Mainteined	–	2NO+2NC 3NO+3NC	**AH165-2P3B22** **AH165-2P3B33**	
	Spring/ manual return	–	2NO+2NC 3NO+3NC	**AH165-2P6B22** **AH165-2P6B33**	
	Spring/ manual return	–	2NO+2NC 3NO+3NC	**AH165-2P7B22** **AH165-2P7B33**	
	Spring return	–	2NO+2NC 3NO+3NC	**AH165-2P1B22** **AH165-2P1B33**	
Knob with square bezel KKD07-235	Mainteined	–	2NO+2NC 3NO+3NC	**AH165-2YP3B22** **AH165-2YP3B33**	
	Spring/ manual return	–	2NO+2NC 3NO+3NC	**AH165-2YP6B22** **AH165-2YP6B33**	
	Spring/ manual return	–	2NO+2NC 3NO+3NC	**AH165-2YP7B22** **AH165-2YP7B33**	
	Spring return	–	2NO+2NC 3NO+3NC	**AH165-2YP1B22** **AH165-2YP1B33**	
Key KKD09-003R	Mainteined	A	2NO+2NC 3NO+3NC	**AH165-2J3A22A** **AH165-2J3A33A**	
		E	2NO+2NC 3NO+3NC	**AH165-2J3E22A** **AH165-2J3E33A**	
		D	2NO+2NC 3NO+3NC	**AH165-2J3D22A** **AH165-2J3D33A**	
		C	2NO+2NC 3NO+3NC	**AH165-2J3C22A** **AH165-2J3C33A**	
	Spring/ manual return	E	2NO+2NC 3NO+3NC	**AH165-2J6E22A** **AH165-2J6E33A**	
		D	2NO+2NC 3NO+3NC	**AH165-2J6D22A** **AH165-2J6D33A**	
	Spring/ manual return	A	2NO+2NC 3NO+3NC	**AH165-2J7A22A** **AH165-2J7A33A**	
		E	2NO+2NC 3NO+3NC	**AH165-2J7E22A** **AH165-2J7E33A**	
	Spring return	E	2NO+2NC 3NO+3NC	**AH165-2J1E22A** **AH165-2J1E33A**	
Key with square bezel KKD09-003L	Mainteined	A	2NO+2NC 3NO+3NC	**AH165-2YJ3A22A** **AH165-2YJ3A33A**	
		E	2NO+2NC 3NO+3NC	**AH165-2YJ3E22A** **AH165-2YJ3E33A**	
		D	2NO+2NC 3NO+3NC	**AH165-2YJ3D22A** **AH165-2YJ3D33A**	
		C	2NO+2NC 3NO+3NC	**AH165-2YJ3C22A** **AH165-2YJ3C33A**	
	Spring/ manual return	E	2NO+2NC 3NO+3NC	**AH165-2YJ6E22A** **AH165-2YJ6E33A**	
		D	2NO+2NC 3NO+3NC	**AH165-2YJ6D22A** **AH165-2YJ6D33A**	
	Spring/ manual return	A	2NO+2NC 3NO+3NC	**AH165-2YJ7A22A** **AH165-2YJ7A33A**	
		E	2NO+2NC 3NO+3NC	**AH165-2YJ7E22A** **AH165-2YJ7E33A**	
	Spring return	E	2NO+2NC 3NO+3NC	**AH165-2YJ1E22A** **AH165-2YJ1E33A**	

• The Key can be removed at the following positions:

A: B: C: D: E: F: G:

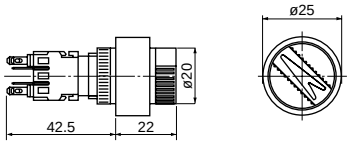
For spring-return selector switches, the key can be removed only at position E. For manual/spring-return selector switches, the key can be removed at positions D, E and F for type J6, and position A, E and G for type J7.
• There are 6 available key types; A, B, C, D, E and F.
Standard key code is A.
• With wire-wrap pin terminals have a depth of 47mm.

• Contact arrangement and operator positions:

Contact arrangement		2NO+2NC	3NO+3NC
Operator position	Left	1 U 2 1 L 2 3 4 3 4	1 U 2 1 M 2 1 L 2 3 4 3 4 3 4
	Center	1 2 1 2 3 4 3 4	1 2 1 2 1 2 3 4 3 4 3 4
	Right	1 2 1 2 3 4 3 4	1 2 1 2 1 2 3 4 3 4 3 4

U: Upper contact block M: Middle contact block L: Lower contact block
• Contact block positions: *See page 04/219*

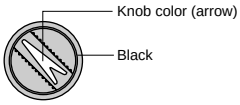
■ Illuminated selector switches

Operator	Operation	Lamp voltage	No. of positions	Contact	Type	Dimensions, mm
Knob KKD07-240	Maintained	Flat LED 24V DC	2	1NO+1NC	**AH165-2PL2□11E3**	
				2NO+2NC	**AH165-2PL2□22E3**	
			3	2NO+2NC	**AH165-2PL3□22E3**	
		Incandescent 24V AC/DC	2	1NO+1NC	**AH165-2PL2□11E**	
				2NO+2NC	**AH165-2PL2□22E**	
			3	2NO+2NC	**AH165-2PL3□22E**	
		Neon 110V AC	2	1NO+1NC	**AH165-2PL2□11H1**	
				2NO+2NC	**AH165-2PL2□22H1**	
			3	2NO+2NC	**AH165-2PL3□22H1**	
		Neon 220V AC	2	1NO+2NC	**AH165-2PL2□11M1**	
				2NO+2NC	**AH165-2PL2□22M1**	
			3	2NO+2NC	**AH165-2PL3□22M1**	

• Knob color (arrow)

Replace the □ mark by the following color code

Color	Green	Red	White	Blue	Yellow	Orange
Code	G	R	W	S	Y	O

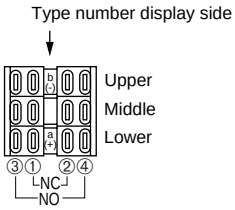


• Lamp voltage

Voltages other than above are available

Code	LED	Incandescent	Neon
AA	5V DC	–	–
A	6V DC	5V AC/DC	–
B	12V DC	12V AC/DC	–
K	–	–	120V AC
P	–	–	240V AC

• Terminal number and contact block position



Contact arrangement (terminal No.: common)
1NO+1NC: Middle
2NO+2NC: Upper, lower

• Contact arrangement and operator positions:

2-position

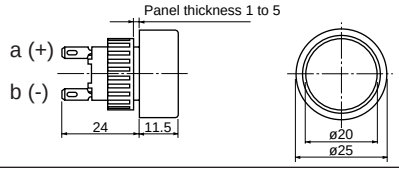
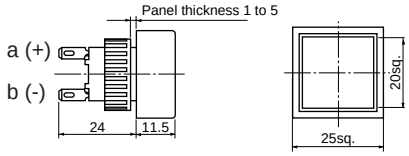
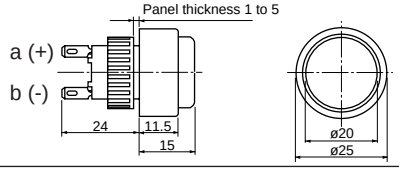
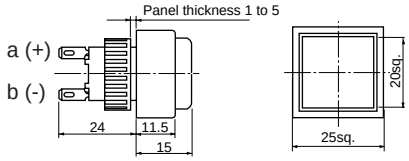
Contact arrangement		1NO+1NC	2NO+2NC
Operator position	Left	M 1 2 3 4	U 1 2 3 4 L 1 2 3 4
	Right	M 1 2 3 4	U 1 2 3 4 L 1 2 3 4

3-position

Contact arrangement		2NO+2NC
Operator position	Left	U 1 2 3 4 L 1 2 3 4
	Center	U 1 2 3 4 L 1 2 3 4
	Right	U 1 2 3 4 L 1 2 3 4

U: Upper contact block
M: Middle contact block
L: Lower contact block

■ Pilot lights

Lens	Lamp	Voltage	Type	Dimensions, mm
Flush round AF87-213	Flat LED	24V DC	**AH165-2Z□E3**	
	Incandescent	24V AC/DC	**AH165-2Z□E**	
	Neon	110V AC	**AH165-2Z□H1**	
		220V AC	**AH165-2Z□M1**	
Flush square AF87-205	Flat LED	24V DC	**AH165-2SZ□E3**	
	Incandescent	24V AC/DC	**AH165-2SZ□E**	
	Neon	110V AC	**AH165-2SZ□H1**	
		220V AC	**AH165-2SZ□M1**	
Extended round AF87-212	Flat LED	24V DC	**AH165-2ZE□E3**	
	Incandescent	24V AC/DC	**AH165-2ZE□E**	
	Neon	110V AC	**AH165-2ZE□H1**	
		220V AC	**AH165-2ZE□M1**	
Extended square AF87-204	Flat LED	24V DC	**AH165-2SZE□E3**	
	Incandescent	24V AC/DC	**AH165-2SZE□E**	
	Neon	110V AC	**AH165-2SZE□H1**	
		220V AC	**AH165-2SZE□M1**	

• Lens color

Replace the □ mark by the following lens color code

Color	Green	Red	White	Yellow	Blue	Orange
Code	G	R	W	Y	S	O

• Lamp voltage

Voltage other than above is available

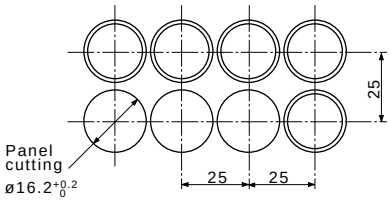
Code	LED	Incandescent	Neon
AA	5V DC	–	–
A	6V DC	5V AC/DC	–
B	12V DC	12V AC/DC	–
K	–	–	120V AC
P	–	–	240V AC

• The color lens is made of a tinted transparent material.
• A white lens is fitted with a transparent color lens.
• With wire-wrap pin terminals have a depth of 29mm.

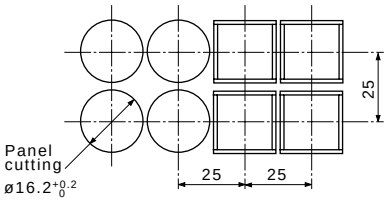
■ Mounting space, mm

• Illuminated pushbuttons, pushbuttons, selector switches, illuminated selector switches and pilot lights

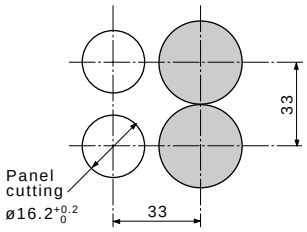
Round head



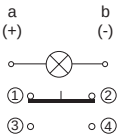
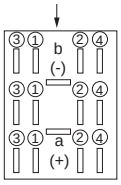
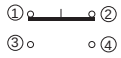
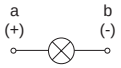
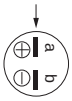
Square head



Mushroom head
Push-lock, turn-reset



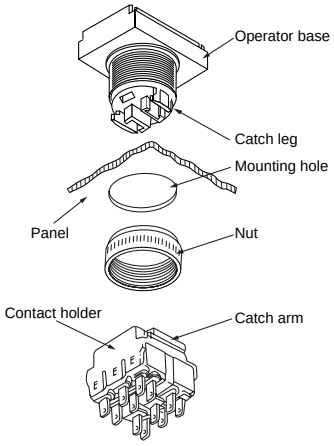
■ Terminal number

Type	Wiring	Terminal position
Illuminated pushbuttons, Illuminated selector switches		Type number display side 
Pushbuttons Selector swiches		
Pilot lights (without transformer)		Type number display side 

Notes on use

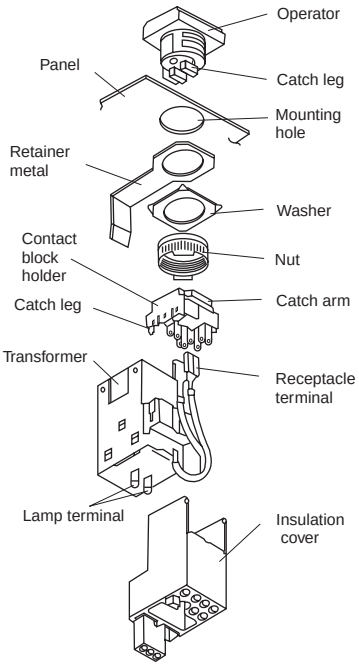
■ Installation on panel

- For installation, use dedicated wrench AHX601. The appropriate tightening torque is 0.6 to 1N·cm.
- The installation sequence is as follows:
  Pass the operator base through the hole in the panel and secure it by tightening the bezel. Properly position the catch arms of the contact holder and the catch legs of the operator base and push the contact holder onto the operator base. To remove the contact holder, pull it while pressing the catch arms inward.



■ Mounting steps of switch with transformer

①Pass the switch operator through the panel hole and secure with a nut by way of the retainer metal from the front of the panel.
②Align the position of the catch arm of the contact block holder with that of the catch leg of the switch operator. Engage these two catches by pushing them together.
③Insert and secure the transformer unit while assembling the contact block holder with the retainer metal.
④Connect the receptacle terminal with lead wires extending from the transformer to the lamp terminal of the contact block holder. (Be care on the polarity of the LED. Red: +, Black: –)
⑤Push in and secure the standard accessory insulation cover by aligning its position with each terminal. To replace the transformer, remove the transformer by widening the catch leg of the contact block holder. Pay attention not to excessively widen the catch leg. Mounting steps are the same as the above steps ③, ④, and ⑤.



■ Installing the protection cover / dust-tight cover, guard-ring

Be careful that the panel thickness does not exceed the following:
Panel thickness
Protection cover: 2.6mm max.
Dust-tight cover: 2.0mm max.
Guard ring: 2.5mm max.

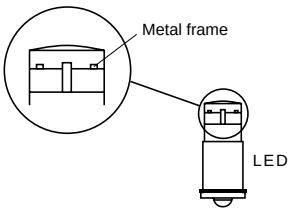
■ Operating voltage and rated voltage of incandescent lamps

Rated voltage	Operating voltage
6V	4 to 5V
14V	10 to 12V
28V (Standard)	20 to 24V

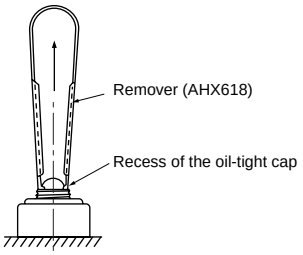
Incandescent lamps should be operated at the operating voltages if a lamp service life of 5,000 to 10,000 hours are needed. The ambient temperature must not exceed 30°C if the lamp is used at the rated voltage continuously.

■ Method of replacing lamp

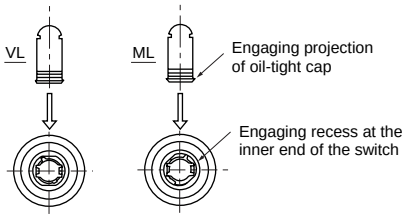
- Incandescent lamps/LED lamps/neon lamps
  Remove the color lens and inner button with a remover AHX618.
  Then draw out the lamp with a lamp changer AHX672.
  When installing lamps, do it manually and in the reverse order of removing.
- Products with blue and green LEDs
  The LED devices on products with high-brightness (blue and green) LEDs are very sensitive to static electricity. When replacing LED lamps do not allow static electricity to come into direct contact with the metal frame on the upper side of the LED lamp. The LED device may be damaged if this part is subjected to static electricity. When installing or removing an LED lamp, it is recommended that you use the lamp changer (AHX672).



- To replace the lamp of a AH165-2 illuminated pushbutton switch (ML,VL), remove the button and draw out the oil-tight cap.



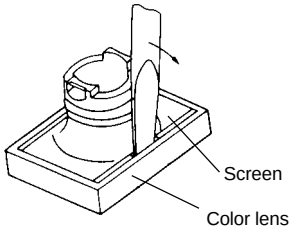
- Then, replace the lamp using a lamp changer (AHX672) and push the oil-tight cap into its original position with its engaging projection properly adjusted (see the figure below).

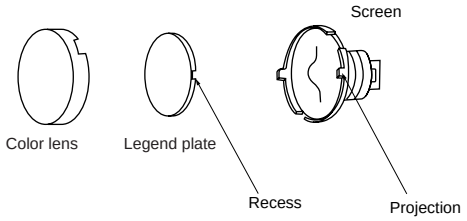


Note: Lamp of AH165-ZM type can not be replaced.

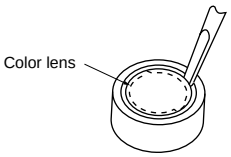
■ Method of replacing color lens

• To remove the color lens , insert a small screwdriver into the color lens and twist in direction of the arrow.





• For an AH165-2, use a small standard screwdriver or a similar tool with a flat end. If one side of the color lens is removed from the screen, insert the screwdriver or a similar tool deeper and remove the color lens together with the screen.



■ Replacing pushbuttons

In the case of alternative action type pushbutton switches and illuminated pushbutton switches, be sure not to replace the pushbuttons in their locked state. This could result in internal damage to the mechanism.

■ Description sheet

The Fuji description sheet is 25µm thick. If preparing custom description sheets, make sure that the thickness is 0.1mm or less.

■ Contact block

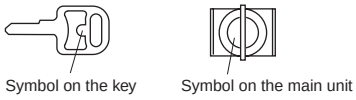
To replace a contact block, use removing tool AGX012. If excessive force is applied when attempting to open the support legs for the contact block holder, deformation or damage may occur.

■ Handling precautions

• Do not apply torque in excess of 1.0 N•m to operate the selectors switch (Type “P”). Required operating force of switches is less than 0.1 N•m.
• Do not tap on a pushbutton to turn it ON or OFF, such handling may damage it. Be sure to operate the pushbutton by hand.

■ Key type selector switch

• Five key types (Type B to Type F) are available besides Type A, which is the standard key type.
Be sure to use a key with a symbol which is matched with the symbol on the main unit.



• Fully insert the key into the main unit before turning the key.
• The key turning force should not exceed 0.1 N•m.
• Do not pull out or insert the key forcibly.

■ Wiring connections

• Use a soldering iron with a wattage of not more than 30W and a tip length of more than 20mm.
Use a rosin-core solder
With a 30W iron complete soldering within 5 seconds, or 10 seconds with a 20W iron. Do not apply external force to the terminals. Do not deform the terminals.
Because lead-free solder's melting point is slightly high, soldering work may be difficult. Use a soldering iron whose tip is rather large or whose calorie is rather high.
• Wires that can be connected
Two solid wires with a maximum diameter of 0.8mm (solder)
One stranded wire with a maximum area of 0.75mm^2 (solder)
Flat connection terminal
(2.8□-1.25-5) 0.5 to 1.25mm^2
(2.8□-0.5-5) 0.2 to 0.5mm^2
• Using contact blocks
When using NO and NC contacts in the same contact block, avoid connection that involves opposite polarity or wiring from different types of power supply.
• For wiring to adjacent terminals, use insulated tubing to prevent short-circuit and to assure isolation. For solder terminals, be careful when connecting thick wires. Do not use too much solder.
• Wiring to wire-wrap pin terminals
Select the appropriate wire sizes and tools from the table below.

Wire size	Bit	Sleeve	Number of effective wraps
0.4mm dia.	3-A	1-B	About 8
0.5mm dia.	1-A	1-B	About 6
(0.65mm dia.)	(2-A)	(2-B)	(About 6)

Use ordinary wrapping for connection.
Wires of 0.65mm dia. must not be used on adjacent terminals. However, 0.65mm dia. wire can be mixed with 0.4 and 0.5mm dia. wires.
• Wiring to tab terminals
Use receptacles, No. 110.

■ Installing lamps in close order

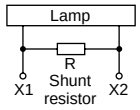
When continuously lighting pilot lights or pressing illuminated pushbuttons installed in close order, care must be taken that the ambient temperature does not exceed the rated value.

■ LEDs

• LED Lamp Malfunctioning
The LED lamp is lit by a very small level of current (approximately 0.01mA). Therefore, the it may be erroneously lit by a current leaking from the surge absorption circuit or semiconductor circuit or due to stray capacitance between cables. In that case, provide a countermeasure (e.g., connect a resistor in parallel with the LED lamp).

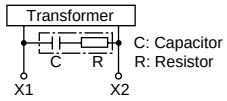
• Countermeasure for Malfunctioning
Shunt Resistor R or CR elements connected in parallel
Lamp malfunctions can be prevented by connecting a shunt resistor (R) or CR elements (a capacitor and resistor) in parallel with the LED lamp terminal. The resistance and CR values vary depending on the model and the operating conditions.

Example 1



• 24V DC
R: 10kΩ (1W)

Example 2



• 110V AC
C: 0.33μF (250V AC)
R: 120Ω (0.25W)
• 220V AC
C: 0.33μF (250V AC)
R: 120Ω (0.25W)

• Incoming surge
Be careful that since high luminance LED products use an element sensitive to static electricity, they may not be lit by an abnormal voltage like surge.

■ Using a flat LED in 48V DC circuit

When a flat LED lamps having a rated voltage of 24V DC is used with 48V DC circuit, connect an external resistor of 3,500Ω (1W).

■ Preventing the neon lamp from incorrectly turning ON

The neon lamp may incorrectly turn ON due to current leakage or voltage induction. In such a case, connect a shunt resistor in parallel with the lamp.
Example) 110V AC: 100k (0.25W)
220V AC: 50k (2W)

If an external surge of 3kV or more may occur, connect a surge absorption element in parallel with the lamp.

■ Operation

Do not use a hitting or bouncing action to operate the button, or the switch may break. Always operate the switch by hand.

■ Storage and operation site

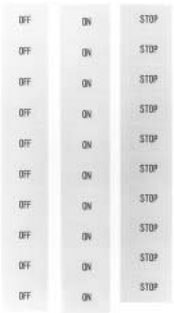
• Use the unit within the rated operating ambient temperature and humidity ranges.
• Do not use the enclosed type in places where oil or water is sprayed or where dust accumulates. In places such as these, use the oil-tight type or provide a dust cover.
• The oil-tight type is evaluated with standard cutting oil and cooling oil applied. The oil-tight type cannot be used with some special oils.

■ Buzzer

• Noise
If the application circuit is likely to generate excessively strong noise, connect a surge absorber (e.,g., FUJI'S ENC390D, provided that the switch is a 24V type) in parallel with the buzzer.
• Place of Use
The buzzer does not have a drip-proof construction. Do not use the buzzer in places where oil or water is sprayed or where dust accumulates. If the buzzer is a splash-proof type, it will resist sprays of water.
• Do not use the buzzer in places that are subject to an excessive amount of corronsive gas.
• Be careful that the buzzer is likely to sound erroneously due to leakage current or the like.

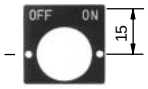
■ Accessories for AH164 and AH165

Description		Type	
Color chips (Round)		Color	Type
	L, L5, E E5, Z	Green	**AHX631-G**
		Red	**AHX631-R**
		White (For Neon)	**AHX631-W**
		Blue	**AHX631-S**
		Yellow	**AHX631-Y**
		Orange	**AHX631-O**
		Clear	**AHX631-C**
SF-682	For LED, Neon	Green	**AHX653-G**
Color chips (Square)		Color	Type
	SL, SL5, SGL, SGL5, SF, SF5, SGF, SGF5, ZS	Green	**AHX632-G**
		Red	**AHX632-R**
		White (For Neon)	**AHX632-W**
		Blue	**AHX632-S**
		Yellow	**AHX632-Y**
		Orange	**AHX632-O**
		Clear	**AHX632-C**
SF-681	For LED, Neon	Green	**AHX653-SG**
Color chips (Rectangular)		Color	Type
	TL, TL5, TGL TGL5, TF, TF5 TGF, TGF5, ZT	Green	**AHX633-G**
		Red	**AHX633-R**
		White (For Neon)	**AHX633-W**
		Blue	**AHX633-S**
		Yellow	**AHX633-Y**
		Orange	**AHX633-O**
		Clear	**AHX633-C**
SF-680	For LED, Neon	Green	**AHX653-TG**
Mushroom head button		Color	Type
	M, M5	Green	**AHX682-G**
		Red	**AHX682-R**
		White	**AHX682-W**
		Blue	**AHX682-S**
		Yellow	**AHX682-Y**
		Orange	**AHX682-O**
SI-40		Black	**AHX682-B**
Convex square head button		Color	Type
	SM, SM5	Green	**AHX683-G**
		Red	**AHX683-R**
		White	**AHX683-W**
		Blue	**AHX683-S**
		Yellow	**AHX683-Y**
		Orange	**AHX683-O**
SI-43		Black	**AHX683-B**
Convex rectangular head button		Color	Type
	TM, TM5	Green	**AHX684-G**
		Red	**AHX684-R**
		White	**AHX684-W**
		Blue	**AHX684-S**
		Yellow	**AHX684-Y**
		Orange	**AHX684-O**
SI-44		Black	**AHX684-B**

Description	Type
Legend sheet  SH-165	Round Type: **AHX615-□** Legend: ON, OFF, UP, DOWN Square Type: **AHX616-□** Legend: ON, OFF, UP, DOWN START, STOP, OPEN CLOSE, AUTO, MAN, RESET, POWER, REV, FWD, HIGH, LOW Rectangular Type: **AHX617-□** Legend: ON, OFF, UP, DOWN START, STOP, AUTO, MAN, FOWARD, REVERSE When ordering, specify desired legend in the □ at the end of ordering code, Transparent blank sheets are also available. Use black oil ink.

Legend plate (Acrylic resin)		Type	Color	Dimensions, mm
	Round	**AHX665**	White	ø12.2 x 0.9
		AHX665-C	Transparent	
		AHX665-B	Black	
	Square	**AHX666**	White	12.2sq. x 0.9
		AHX666-C	Transparent	
		AHX666-B	Black	
	Rectangular	**AHX667**	White	12.2 x 18.2 x 0.9
		AHX667-C	Transparent	
SH-164		**AHX667-B**	Black	

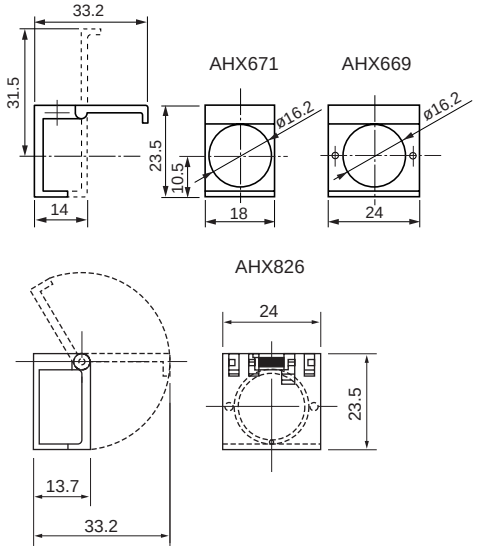
Legend plate for spot LED (Acrylic resin)		Type	Dimensions, mm
	Round	**AHX650**	ø12.2 x 0.9
	Square	**AHX651**	12.2sq. x 0.9
	Rectangular	**AHX652**	12.2 x 18.2 x 0.9
SP-113			

Legend plate for selector switch (2-position)	Type: **AHX664** Legend: ON-OFF Legend: Blank Dimensions, mm: 24sq. x 0.5
 SH-226A	

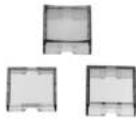
Legend plate for symbol mark		Mark	Type
	Square	◯	**AHX666-E**
	Rectangular		**AHX667-E**
	Square	I	**AHX666-H**
	Rectangular		**AHX667-H**
	Square	Ⓣ	**AHX666-T**
AF87-74	Rectangular		**AHX667-T**

04

AH164 and AH165
Accessories

Description	Type
Protection cover KKD07-246 KKD07-248 KKD07-247	For round and square head button Type: **AHX671** For rectangular head button Type: **AHX669** **AHX826** This cover protect against accidental operation. Note: Not used for illuminated pushbuttons with guard. Applicable panel thickness is 2.6mm max. Dimensions, mm 
Dust-tight cover AF91-123, SI-41	For round and square head button Type: **AHX822** Dimensions, mm: 24sq. x 14.2 For rectangular head button Type: **AHX668** Dimensions, mm: 24 x 30 x 14.2 For mushroom head button Type: **AHX649** Dimensions, mm: ø30 x 18 These covers protect against dust. Note: Applicable panel thickness is 2.0mm max.
Guard ring SI-42	Type / Color / Dimensions, mm **AHX676-B** Black ø21 x 12 **AHX676-GY** Gray This guard ring is used in combination with an extended round head pushbutton (L or E). Note: Applicable panel thickness is 2.5mm max. Please place an order for a packing (AHX685) separately when you intend to use for AH165 series.
Transformer AF90-949	Voltage / Type / Lamp 100 to 110V AC **AHX805-H** LED 200 to 220V AC **AHX805-M** 100 to 110V AC **AHX806-H** Incandescent 200 to 220V AC **AHX806-M**

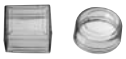
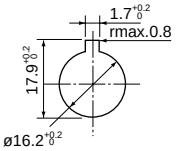
■ Accessories for AH165-2

Description	Type
Color lens (Round)	For flush head (Used with 2F, 2F5, 2FL, 2FL5, 2Z) Color — Type Green — **AHX2604-G** Red — **AHX2604-R** Yellow — **AHX2604-Y** Blue — **AHX2604-S** Orange — **AHX2604-O** Clear — **AHX2604-C** For extended head (Used with 2E, 2E5, 2EL, 2EL5, 2ZE) Color — Type Green — **AHX2605-G** Red — **AHX2605-R** Yellow — **AHX2605-Y** Blue — **AHX2605-S** Orange — **AHX2605-O** Clear — **AHX2605-C**
 AF87-631	
Color lens (Square)	For flush head (Used with 2SF, 2SF5, 2SFL, 2SFL5, 2SZ) Color — Type Green — **AHX2606-G** Red — **AHX2606-R** Yellow — **AHX2606-Y** Blue — **AHX2606-S** Orange — **AHX2606-O** Clear — **AHX2606-C** For extended head (Used with 2SE, 2SE5, 2SEL, 2SEL5, 2SZE) Color — Type Green — **AHX2607-G** Red — **AHX2607-R** Yellow — **AHX2607-Y** Blue — **AHX2607-S** Orange — **AHX2607-O** Clear — **AHX2607-C** For concave head (Used with 2SCE, 2SCE5, 2SCL, 2SCL5) Color — Type Green — **AHX2608-G** Red — **AHX2608-R** Yellow — **AHX2608-Y** Blue — **AHX2608-S** Orange — **AHX2608-O** Clear — **AHX2608-C**
 AF87-632	

Description	Type
Legend plate	For flush head Color — Type — Used with White — **AHX2609-W** — Incandescent lamp, LED lamp, Pushbutton *1 Clear — **AHX2609-C** — Neon lamp *2 Black — **AHX2609-B** — Pushbutton *3 Dimensions, mm: ø18*4 x 0.9 For extended head Color — Type — Used with White — **AHX2610-W** — Incandescent lamp, LED lamp, Pushbutton *1 Clear — **AHX2610-C** — Neon lamp *2 Black — **AHX2610-B** — Pushbutton *3 Dimensions, mm: ø18*4 x 4.4 For flush square Color — Type — Used with White — **AHX2611-W** — Incandescent lamp, LED lamp, Pushbutton *1 Clear — **AHX2611-C** — Neon lamp *2 Black — **AHX2611-B** — Pushbutton *3 Dimensions, mm: 17sq. x 0.9 For extended square, concave square Color — Type — Used with White — **AHX2612-W** — Incandescent lamp, LED lamp, Pushbutton *1 Clear — **AHX2612-C** — Neon lamp *2 Black — **AHX2612-B** — Pushbutton *3 Dimensions, mm: 17sq. x 4.4 *1 Illuminated pushbutton switches and pilot lights with incandescent lamps or LED lamps, Pushbutton switches (excluding). *2 Illuminated pushbutton switches and pilot lights with neon lamps. *3 Pushbutton switches (black) *4 Engraved range: 17mm dia.
 AF87-631 AF87-630	
Mushroom head button	For illuminated pushbuttons (Used with 2ML, 2YML) Color — Type Green — **AHX2614-G** Red — **AHX2614-R** White — **AHX2614-W** Yellow — **AHX2614-Y** Blue — **AHX2614-S** Orange — **AHX2614-O** For non-illuminated pushbuttons (Used with 2M, 2YM) Color — Type Green — **AHX2613-G** Red — **AHX2613-R** White — **AHX2613-W** Yellow — **AHX2613-Y** Blue — **AHX2613-S** Orange — **AHX2613-O** Black — **AHX2613-B**
 AF87-633	

04

AH165-2
Accessories

Description	Type
Push-lock, turn-reset button AF87-634	For illuminated pushbuttons (Used with 2VL, 2YVL) Color — Type Green — **AHX2616-G** Red — **AHX2616-R** White — **AHX2616-W** Yellow — **AHX2616-Y** For pushbuttons (Used with 2V, 2YV) Color — Type Green — **AHX2615-G** Red — **AHX2615-R** Yellow — **AHX2615-Y** Black — **AHX2615-B**
Dust-tight cover  AF87-636	For flush round (Used with 2F, 2FL, 2F5, 2FL5) Type: **AHX2603-2** For flush square (Used with 2SF, 2SFL, 2SF5, 2SFL5) Type: **AHX2603-2S** These covers protect against dust.
Key washer AF87-635	Type: **AHX2601** Mounting hole, mm 

■ Accessories for AH164, AH165 and AH165-2

Description	Type
Incandescent lamp KKD06-333	Voltage / Type 6V, 0.6W **AHX641** 14V, 0.7W **AHX642** 28V, 0.7W **AHX643**
LED lamp KKD06-206	Voltage / Type 5V DC **AHX695-5 □** 6V DC **AHX695-6 □** 12V DC **AHX695-12 □** 24V DC **AHX695-24 □** Replace the □ mark by the luminous color code Red (R), Green (G), Orange (O), Amber (A), Yellow (Y), Blue (S)
Neon lamp KKD06-306	Voltage / Type / Luminous color 110V AC **AHX655-H** Green **AHX654-H** Orange 120V AC **AHX655-K** Green **AHX654-K** Orange 220V AC **AHX655-M** Green **AHX654-M** Orange 240V AC **AHX655-P** Green **AHX654-P** Orange
Panel plug KKD07-262 Round KKD07-261 Square KKD07-260 Rectangular	Color / Type Round: Black **AHX622-B** IP40 Gray **AHX622-GY** IP40 Square: Black **AHX644-B** IP40 Gray **AHX644-GY** IP40 Rectangular: Black **AHX645-B** IP40 Gray **AHX645-GY** IP40 Black **AHX850-B** IP65
Lamp changer KKD07-259	Type: **AHX672** If the switch is fitted with a lamp, use this tool to remove the lamp. The tool is unnecessary when installing a lamp.
Remover KKD07-258	Type: **AHX618** This tool is used for replacing the color chips or screens.
Contact holder remover SP-522	Type: **AHX699** This tool is used to remove a contact holder when switches are densely installed.

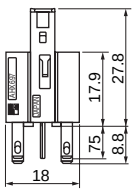
Description	Type
Wrench KKD07-257	Type: **AHX601** When installing a command switch on a panel, this tool is useful for tightening the switch firmly and efficiently.
Terminal cover AF87-637	Type: **AHX2602** This cover is used with AH164 and AH165 and AH165-2 (except pilot lights). Pass the wires through the cover, then mount the cover in position.
Contact block KKD06-305, KKD06-304	Terminal / Type Solder/Tab **AGX001** Wire-wrap **AGX001–W**
Dummy unit SK-1141	Type: **AGX002** A dummy unit is used to fill the space where no contact blocks are installed. For example, two dummy units are used if 1NO+1NC contact block is installed, and one dummy unit is used if 2NO+2NC contact blocks are installed.
Remover SM-334	Type: **AGX012** This tool is used for replacing the contact blocks or dummy units.

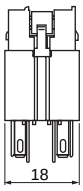
04

Description	Type		
Sockets	Terminal	Type	Used with
SM-1097	Solder/Tab	**AHX697-S**	Pushbuttons
	Wire-wrap	**AHX697-W**	
	PC board	**AHX697-P**	
	Solder/Tab	**AHX697-SL**	Illuminated pushbuttons
	Wire-wrap	**AHX697-WL**	
	PC board	**AHX697-PL**	
	Contact arrangement is 2NO+2NC only. Except for AH165-2PL types		
Sockets for LED	Terminal	Type	
SM-1098	Solder/Tab	**AHX697-SH3**	
	Wire-wrap	**AHX697-WH3**	
	• Contact arrangement is 2NO+2NC only. • These sockets are used only when LED lamps rated for 24V DC are used under 110V AC/DC. • Except for AH164, 165 and 165-2 series pilot lights or AH165-2PL type. • When side-by-side mounting and continuous lighting, note that a socket has higher temperature over the ambient temperature.		

Dimensions, mm

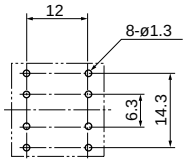
Solder/Tab



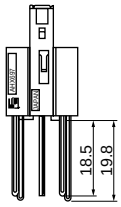


PC board mounting

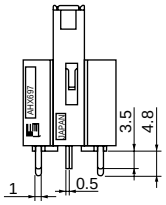
Pushbuttons



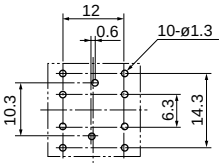
Wire-wrap

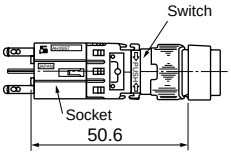


PC board



Illuminated pushbuttons





For wiring to wire-wrap pin terminals, select appropriate wire sizes and tool from the table below.

Wire size	Bit	Sleeve	Number of effective wraps
0.4mm dia.	3-A	1-B	About 8
0.5mm dia.	1-A	1-B	About 6
(0.65mm dia.)	(2-A)	(2-B)	(About 6)

Use ordinary wrapping for connection. Wires of 0.65mm dia. must not be used on adjacent terminals. However, 0.65mm dia. wire can be mixed with 0.4mm and 0.5mm dia. wires.

■ Mass, gram

AH164 series

Type	1NO + 1NC	2NO + 2NC	3NO + 3NC
AH164-L,L5 (Without transformer)	12.5	13.5	14.5
L,L5 (With transformer)	53.5	54.5	-
SL,SL5 (Without transformer)	13.1	14.1	15.1
SL,SL5 (With transformer)	54.1	55.1	-
TL,TL5 (Without transformer)	13.9	14.9	15.9
TL,TL5 (With transformer)	54.9	55.9	-
TGL,TGL5 (Without transformer)	13.9	14.9	15.9
TGL,TGL5 (With transformer)	54.9	55.9	-
SGL,SGL5 (Without transformer)	13.1	14.1	15.1
SGL,SGL5 (With transformer)	54.1	55.1	-
AH164-E,E5	10.5	11.5	12.5
M,M5	12.5	13.5	14.5
SF,SF5	11.1	12.1	13.1
TF,TF5	11.9	12.9	13.9
TGF,TGF5	11.9	12.9	13.9
SGF,SGF5	11.1	12.1	13.1
SM,SM5	13.4	14.4	15.4
TM,TM5	13.1	14.1	15.1
AH164-P2,P0	16.1	17.1	18.1
P3,P6,P7,P1	-	17.1	18.1
PK3,PK6,PK7,PK1	-	17.1	18.1
SP2,SP0	15.8	16.8	17.8
SP3,SP6,SP7,SP1	-	16.8	17.8
SPK3,SPK6,SPK7,SPK1	-	16.8	17.8
J2,J0	30.6	31.6	32.6
J3,J6,J7,J1	-	31.6	32.6
JK3,JK6,JK7,JK1	-	31.9	32.9
SJ2,SJ0	30.3	31.3	32.3
SJ3,SJ6,SJ7,SJ1	-	31.3	32.3
SJK3,SJK6,SJK7,SJK1	-	31.6	32.6

AH164-Z (Without transformer)	6.9
Z (With transformer)	50.9
ZS (Without transformer)	7.5
ZS (With transformer)	51.5
ZT (Without transformer)	8.2
ZT (With transformer)	52.2
AH164-TX	16
TX1	17.5
TX2B	13

AH165 series

Type	1NO + 1NC	2NO + 2NC	3NO + 3NC
AH165-L,L5 (Without transformer)	12.5	13.5	14.5
L,L5 (With transformer)	53.5	54.5	-
SL,SL5 (Without transformer)	13.1	14.1	15.1
SL,SL5 (With transformer)	54.1	55.1	-
TL,TL5 (Without transformer)	13.9	14.9	15.9
TL,TL5 (With transformer)	54.9	55.9	-
TGL,TGL5 (Without transformer)	13.9	14.9	15.9
TGL,TGL5 (With transformer)	54.9	55.9	-
SGL,SGL5 (Without transformer)	13.1	14.1	15.1
SGL,SGL5 (With transformer)	54.1	55.1	-
AH165-E,E5	10.5	11.5	12.5
M,M5	12.5	13.5	14.5
SF,SF5	11.1	12.1	13.1
TF,TF5	11.9	12.9	13.9
TGF,TGF5	11.9	12.9	13.9
SGF,SGF5	11.1	12.1	13.1
SM,SM5	13.4	14.4	15.4
TM,TM5	13.1	14.1	15.1
VR	13.4 *1	14 *2	-
V1R	14.4 *1	15 *2	-
AH165-V5R	18.1 *1	18.7 *2	-
V6R	18.9 *1	19.5 *2	-
AH165-P2,P0	16.7	17.7	18.7
P3,P6,P7,P1	-	17.7	18.7
PK3,PK6,PK7,PK1	-	17.7	18.7
SP2,SP0	16.1	17.1	18.1
SP3,SP6,SP7,SP1	-	17.1	18.1
SPK3,SPK6,SPK7,SPK1	-	17.1	18.1
J2,J0	31.2	32.2	33.2
J3,J6,J7,J1	-	32.2	33.2
JK3,JK6,JK7,JK1	-	32.5	33.5
SJ2,SJ0	30.6	31.6	32.6
SJ3,SJ6,SJ7,SJ1	-	31.6	32.6
SJK3,SJK6,SJK7,SJK1	-	31.9	32.9
AH165-JM2	30	33.9	-
RJM2	29.6	34	-

AH165-Z (Without transformer)	6.9
Z (With transformer)	50.9
ZS (Without transformer)	7.5
ZS (With transformer)	51.5
ZT (Without transformer)	8.2
ZT (With transformer)	52.2
ZM (Without transformer)	5.4
AH165-X	13.7

Note: *1 For 1NC
*2 For 2NC

AH164, AH165 and AH165-2
Mass

■ Mass, gram
AH165-2 series

Type	1NO + 1NC	2NO + 2NC	3NO + 3NC
AH165-2FL,FL5	15.3	16.3	17.3
2EL,EL5	15.8	16.8	17.8
2ML	18.7	19.7	20.7
2YML	20.2	21.2	22.2
2SFL,SFL5	16.6	17.6	18.6
2SEL,SEL5	17.4	18.4	19.4
2SCL,SCL5	17.6	18.6	19.6
2VL	20.7	21.7	22.7
2YVL	21.4	22.4	23.4
AH165-2F,F5	13.4	14.4	15.4
2E,E5	13.9	14.9	15.9
2M	17.8	18.8	19.8
2YM	18.2	19.2	20.2
2SF,SF5	14.6	15.6	16.6
2SE,SE5	15.4	16.4	17.4
2SCE,SCE5	15.6	16.6	17.6
2S2	-	19	-
2YS2	-	20.6	-
2V	18	19	20
2YV	19.4	20.4	21.4
AH165-2P2,P0	16.6	17.6	18.6
2P3,P6,P7,P1	-	17.6	18.6
2YP2,YP0	18.3	19.3	20.3
2YP3,YP6,YP7,YP1	-	19.3	20.3
2J2,J0	40.9	41.9	42.9
2J3,J6,J7,J1	-	41.9	42.9
2YJ2	42.6	43.6	44.6
2YJ3,YJ6,YJ7,YJ1	-	43.6	44.6
2H	14.3	15.3	16.3
2SH	16.1	17.1	18.1
AH165-2PL2	17.4	18.4	-
2PL3	-	18.4	-

AH165-2Z	9.7
2ZE	10.2
2SZ	11
2SZE	11.6

Multi display lights F series

■ Description
Provide a bright, colorful display surface.
More user-friendly with easy wiring and windows in a wide variety of sizes.

■ Features
Lightweight (LED display, 100V or 200V AC)
Only one-third the weight of FUJI conventional models.

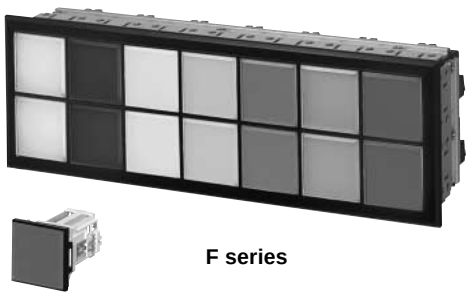
Wide window size selection
A wide selection, including half-size windows.
AP30F: 30 x 30mm, 30 x 60mm, 15 x 30mm
AP40F: 40 x 40mm, 40 x 80mm, 20 x 40mm

Easy color and voltage changes
LEDs (with voltage-dividing resistors or voltage-dividing capacitors and resistors) are easily replaced from the panel surface.

Save energy
A sharp reduction in power consumption.

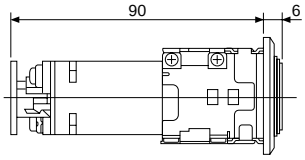
High brightness for more vivid colors
LEDs with two to eight times the brightness of those on FUJI conventional models. Newly added blue and pure white LEDs improve visibility.

Charged-section cover
A cover for the charged section is provided as a standard accessory.

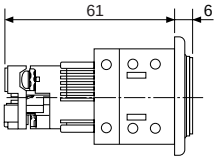

F series

Reduced depth (AP30 series, 100V or 200V AC)
Two-thirds the depth of FUJI conventional models. And, the AP30F and AF40F feature the same depth.

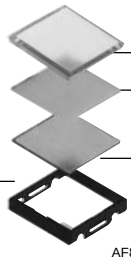
Conventional



New



■ Configuration of AP30F/AP40F



Lens: Clear lens and smoked lens
Common to incandescent and LED lamps

Legend plate
Common to incandescent and LED lamps

Color-insert

Lens case

Lens case	AP30F	AP40F
Standard	○	○
Inclined	–	○

LED unit
Combination of LED luminous colors and color-inserts

Incandescent lamp

LED luminous color	Color-insert	Illumination
Red	Red	Red
Green	Green	Green
Yellow	Yellow	Yellow
Amber	Orange	Orange
Orange	Clear	White
Red/green	Clear	Red/green
Blue	Blue	Blue
Pure-white	White	Pure-white

Frame, Black

Bracket
(Standard accessories)

Voltage units

Type	LED	Incandescent
Full-voltage type	○	
R voltage dividing	○	–
CR voltage dividing	○	–
Transformer unit	○	
Resistor unit	–	○
Flicker unit	○	–
Voltage stabilizer unit	○	–

○ : Available
– : Not available

■ Type number nomenclature

AP30F– 04 05 □ E3–S 4 –SR (20) Z1
① ② ③ ④ ⑤ ⑥ ⑦ ⑧

① Basic type
AP30F: 30 × 30, 30 × 60, 60 × 30, 15 × 30mm (Window size)
AP40F: 40 × 40, 40 × 80, 80 × 40, 20 × 40mm

② Number of windows
(=Row × Column)

	Row	Column	
AP30F	01,02,03,04,05,06,07,08,09,10 11,12,13,14,15,16,17,18,19,20	01,02,03,04,05,06,07,08,09,10 11,12,13,14,15,16,17,18,19,20	Max. 400
AP40F	01,02,03,04,05,06,07	01,02,03,04,05,06,07,08,09,10, 11,12,13,14,15	Max. 105

- Convert one rectangular window to two square windows.
- The number of windows is limited to 80 when transformer units are mounted.

③ Check terminal
C: with
Blank: without

④ Voltage unit and input voltage

AP30F series

	Incandescent	LED unit
Full-voltage type	A: 5.5V AC/DC C: 15.5V AC/DC D: 20V AC/DC E: 24V AC/DC	A3: 6V DC B3: 12V ACDC C3: 15V AC/DC E3: 24V AC/DC ES: 24V AC/DC * F3: 48V AC/DC H3: 100-110V AC/DC L3: 115-127V AC/DC M3: 200-220V AC
Transformer unit	H: 100-110V AC L:115-127V AC M: 200-220V AC Q:230-254V AC S: 350-380V AC T:400-440V AC V: 480V AC	Q3: 230-254V AC S3: 350-380V AC T3: 400-440V AC V3: 480V AC
Resistor unit	H6:110V DC L6: 125V DC (Electric bulb 48V 1W)	–
Mixed type	X: Combination of the above three	X3: Combination of the above three types plus flicker and voltage stabilizer unit

* Short body type

AP40F series

	Incandescent	LED unit
Full-voltage type	C: 15.5V AC/DC D: 20V AC/DC E: 24V AC/DC	A3: 6V DC B3: 12V AC/DC C3: 15V AC/DC E3: 24V AC/DC ES: 24V AC/DC * F3: 48V AC/DC H3: 100-110V AC/DC L3: 115-127V AC/DC M3: 200-220V AC
Transformer unit	H: 100-110V AC L: 115-127V AC M: 200-220V AC Q: 230-254V AC S: 350-380V AC T: 400-440V AC V: 480V AC	Q3: 230-254V AC S3: 350-380V AC T3: 400-440V AC V3: 480V AC
Resistor unit	H6: 110V DC L6: 127V DC (Electric bulb 48V 2W)	–
Mixed type	X: Combination of the above three	X3: Combination of the above three types plus flicker and voltage stabilizer unit

* Short body type

Notes:
The combination of LED units and voltage units is limited as follows:

Code	Voltage unit		LED unit
E3FA	Flicker unit	For 24V AC	24V (short body type)
E3FD		For 24V DC	
E3C	Voltage stabilizer unit 27-35V AC/DC		24V (short body type)

- Two-color illumination face is only available for 24V AC/DC type.
- The flicker unit is available in square design only (S-type).

⑤ Shape of illuminated face

AP30F series
S: Square (30 × 30)
T: Rectangular, horizontally long (30 × 60)
V: Rectangular, vertically long (60 × 30)
H: Half-size (15 × 30) × 2
X: Mixture of S, T, and V

AP40F series
S: Square (40 × 40)
T: Rectangular, horizontally long (40 × 80)
V: Rectangular, vertically long (80 × 40)
H: Half-size (20 × 40) × 2
X: Mixture of S, T, and V

⑥ Illumination method
Blank: Single color, entire surface illumination
4: 2-color, entire surface illumination (for 24V AC/DC LEDs only)
2: 2-way rectangular-split illumination

⑦ Illuminated color

Using clear lens	Color plate (White)	Using smoked lens
R: Red	CR: Red	SR: Red
G: Green	CG: Green	SG: Green
Y: Yellow	CY: Yellow	SY: Yellow
O: Orange	CO: Orange	SO: Orange
W: White	CS: Blue	SW: White
S: Blue	RG: Red/green	SS: Blue
P: Pure-white*		

- Specify the number of windows in ( ).
- If two or more colors are specified using LED unit, the illuminated color ⑦ here should be blank.

* Not available for incandescent lamp

⑧ UL, CSA Approved (Option)

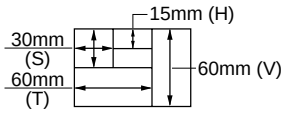
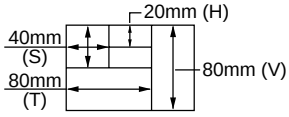
Using window layout sheet

Use the copies of the window layout sheet *(See page 04/255)* and specify for each of the window when ordering the following types.
- Types with letters on legend plate
- Types with symbol X for ④ voltage unit and input voltage
- Types with symbol X for ⑤ shape of illuminated face
- When two or more illuminated colors are specified for LED unit in ⑦.

■ Ordering information

Specify the following:
1. Type number

■ Specifications

Type		AP30F		AP40F	
Light source		Incandescent	LED	Incandescent	LED
Size of illuminated face					
Illuminated color (types of color-insert)	Red	●	●	●	●
	Green	●	●	●	●
	Yellow	●	●	●	●
	Orange	●	●	●	●
	White	●	●	●	●
	Blue	●	●	●	●
	Pure-white	–	●	–	●
Input voltage	Full voltage	5.5, 15.5, 20 24V AC/DC	6V DC 12, 15, 24, 48, 110, 127V AC/DC 220V AC	15.5, 20 24V AC/DC	6V DC 12, 15, 24, 48, 110, 127V AC/DC 220V AC
	With transformer unit	110, 127, 220, 254, 380, 440, 480V AC 50/60Hz	254, 380, 440, 480V AC 50/60Hz	110, 127, 220, 254, 380, 440, 480V AC 50/60Hz	254, 380, 440, 480V AC 50/60Hz
	With resistor unit	110V DC 125V DC	–	110V DC 125V DC	–
	With flicker unit	–	24V DC 24V AC	–	24V DC 24V AC
	With voltage stabilizer unit	–	27 to 35V AC/DC	–	27 to 35V AC/DC
	Mixture	Combination of the above input voltages for different windows.			
Terminal		M3.5 screw with washer (self-lifting)			
No. of windows		1 to 400 *1		1 to 105 *1	
		1 to 80 *2		1 to 80 *2	
Panel thickness		1 to 6mm			

●: Available –: Not available
*1 : Without transformer unit
*2 : With transformer unit

■ Performance

Rated insulation voltage	250V AC/DC: Full voltage type, with resistor unit, with voltage stabilizer unit, R/CR dividing, with flicker unit, with transformer unit (AP30F incandescent 100 to 200V) 600V AC/DC: With transformer unit (AP30F 230 to 480V)
Dielectric strength (between unit and ground)	2000V AC 1-minute: Full voltage type, with resistor unit, with voltage stabilizer unit, R/CR dividing, with flicker unit, with transformer unit (AP30F incandescent 100 to 200V) 2500V AC 1-minute: With transformer unit (AP30F 230 to 480V)
Operating ambient temperature	–20°C to 40°C
Humidity	45 to 85%RH
Insulation resistance	100MΩ or more (500V DC megger)

■ Power consumption

Light source	Operating voltage		AP30F square	AP40F square			AP30F, AP40F half size
			R, G, Y, O, W, S, P	R, Y, O, W	G, S	P	R, G, Y, O, W, S, P
LED	Full voltage	6V DC	0.26W	0.33W	0.40W	0.53W	–
		12V AC/DC	0.53W 0.56VA	0.66W 0.70VA	0.79W 0.82VA	1.06W 1.30VA	0.14W 0.16VA
		15V AC/DC	0.66W 0.69VA	0.83W 0.87VA	0.99W 1.02VA	1.32W 1.62VA	0.17W 0.18VA
		24V AC/DC	0.26W 0.34VA	0.53W 0.58VA	0.53W 0.58VA	0.53W 0.65VA	0.26W 0.29VA
		48V AC/DC	0.53W 0.67VA	0.53W 0.67VA			–
	R voltage dividing type	100-110V AC/DC	1.21W 1.54VA	1.21W 1.54VA			
		115-127V AC/DC	1.40W 1.78VA	1.40W 1.78VA			
	CR voltage dividing type	200-220V AC	3.3VA	3.3VA			
	With transformer unit	230-254V AC 350-380V AC 400-440V AC 480V AC	2.4VA	2.4VA			
	With flicker unit	24V AC	1.0VA	1.0VA			
		24V DC	0.48W	0.48W			
Incandescent	Full voltage	5.5V AC/DC	1.0W	–			
		15.5V AC/DC 20V AC/DC 24V AC/DC	1.0W	2.0W			
	With transformer unit	100-110V AC 115-127V AC 200-220V AC 230-254V AC 350-380V AC 400-440V AC 480V AC	3.0VA	3.0VA			
	With resistor unit	110V DC	2.0W	3.0W			

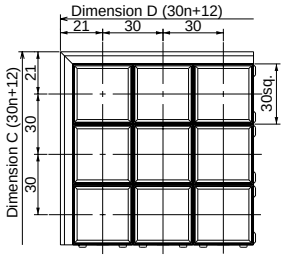
Notes: • Maximum power consumption per one square window, except for half-size window.
• Maximum power consumption for rectangular type is twice value indicated in the table.

AP30F

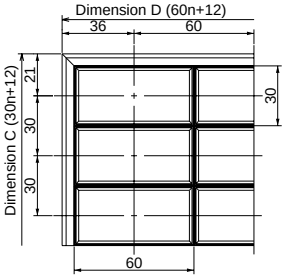
■ Dimensions, mm

Front view

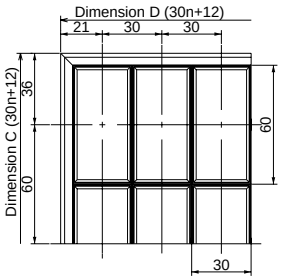
● S-type



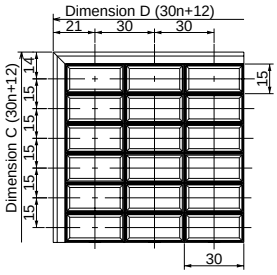
● T-type



● V-type

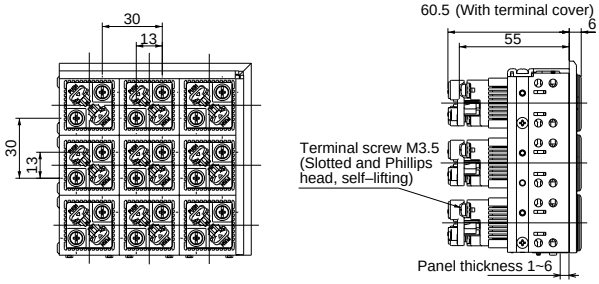


● H-type

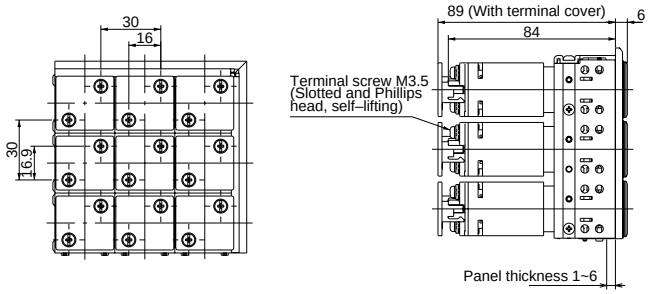


Back view

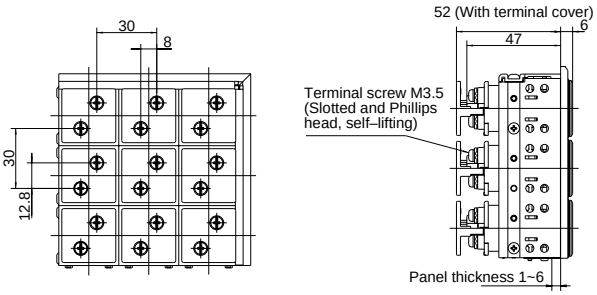
● Full-voltage type (LED)



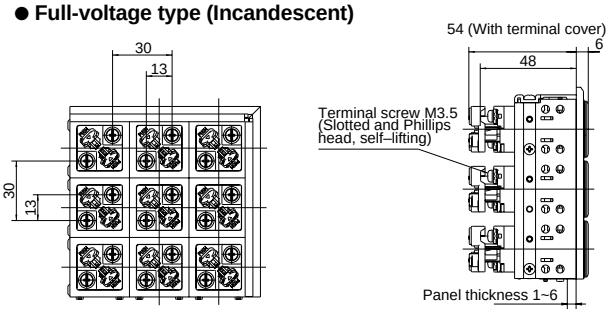
● With transformer unit (230V to 480V LED and incandescent)
With resistor unit, with flicker unit, with voltage stabilizer unit



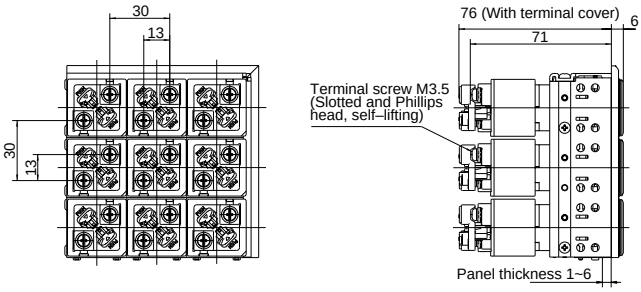
● Full-voltage type (LED, short body type)



● Full-voltage type (Incandescent)

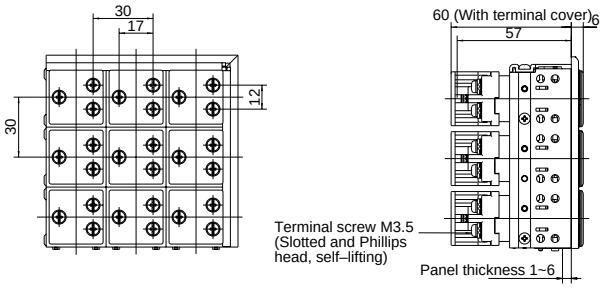


● With transformer (Incandescent, 100V to 220V)



Half size (Illuminated face)
With check terminal

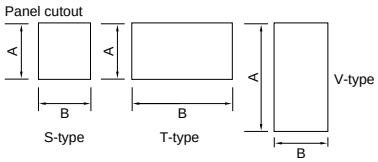
● Full-voltage type



AP30F

■ Panel cutout and overall dimensions

Tolerance: +1.0 mm, –0



● S, H-type

Number of windows		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Panel cutout	A	35	65	95	125	155	185	215	245	275	305	336	366	396	426	456	486	516	546	576	606
	B	35	65	95	125	155	185	215	245	275	305	335	365	395	425	455	485	515	545	575	605
Overall	C	42	72	102	132	162	192	222	252	282	312	342	372	402	432	462	492	522	552	582	612
	D	42	72	102	132	162	192	222	252	282	312	342	372	402	432	462	492	522	552	582	612

● T-type

Number of windows		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Panel cutout	A	35	65	95	125	155	366	426	486	546	606	336	366	396	426	456	486	516	546	576	606
	B *	65	125	185	145	305	365	425	485	545	605	–	–	–	–	–	–	–	–	–	–
Overall	C	42	72	102	132	162	192	222	252	282	312	342	372	402	432	462	492	522	552	582	612
	D *	72	132	192	252	312	372	432	492	552	612	–	–	–	–	–	–	–	–	–	–

● V-type

Number of windows		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Panel cutout	A *	65	125	185	245	305	366	426	486	546	606	–	–	–	–	–	–	–	–	–	–
	B	35	65	95	125	155	185	215	245	275	305	335	365	395	425	455	485	515	545	575	605
Overall	C *	72	132	192	252	312	372	432	492	552	612	–	–	–	–	–	–	–	–	–	
	D	42	72	102	132	166	192	222	252	282	312	342	372	402	432	462	492	522	552	582	612

Note: * Indicates dimensions for rectangular windows.

■ Total numbers of windows

T type / V type / S.V type / S.T type			Number of windows (Column)																			
			1	2	3	4	5	6	7	8	9	10	–	–	–	–	–	–	–	–	–	–
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Number of windows (Row)	1	1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
	2	2	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
	3	3	3	6	9	12	15	18	21	24	27	30	33	36	39	42	45	48	51	54	57	60
	4	4	4	8	12	16	20	24	28	32	36	40	44	48	52	56	60	64	68	72	76	80
	5	5	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100
	6	6	6	12	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102	108	114	120
	7	7	7	14	21	28	35	42	49	56	63	70	77	84	91	98	105	112	119	126	133	140
	8	8	8	16	24	32	40	48	56	64	72	80	88	96	104	112	120	128	136	144	152	160
	9	9	9	18	27	36	45	54	63	72	81	90	99	108	117	126	135	144	153	162	171	180
	10	10	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	200
	11	–	11	22	33	44	55	66	77	88	99	110	121	132	143	154	165	176	187	198	209	220
	12	–	12	24	36	48	60	72	84	96	108	120	132	144	156	168	180	192	204	216	228	240
	13	–	13	26	39	52	65	78	91	104	117	130	143	156	169	182	195	208	221	234	247	260
	14	–	14	28	42	56	70	84	98	112	126	140	154	168	182	196	210	224	238	252	266	280
	15	–	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270	285	300
	16	–	16	32	48	64	80	96	112	128	144	160	176	192	208	224	240	256	272	288	304	320
	17	–	17	34	51	68	85	102	119	136	153	170	187	204	221	238	255	272	289	306	323	340
	18	–	18	36	54	72	90	108	126	144	162	180	198	216	234	252	270	288	306	324	342	360
	19	–	19	38	57	76	95	114	133	152	171	190	209	228	247	266	285	304	323	342	361	380
	20	–	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400

Note: For H type, count two windows as one S type window.

Examples:
1. S-type Row: 6 Column: 14 Total: 84
2. T-type Row: 8 Column: 8 Total: 64
3. V-type Row: 5 Column: 18 Total: 90

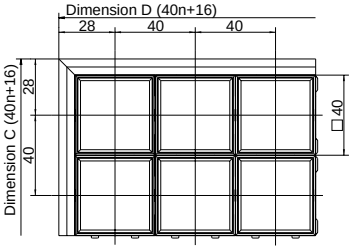
H type (Half size) S type (Square type)

AP40F

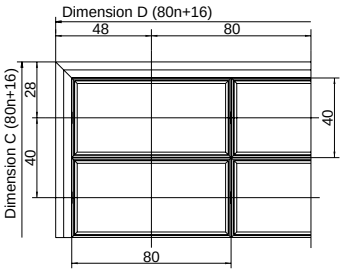
■ Dimensions, mm

Front view

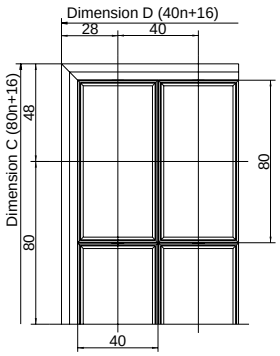
● S-type



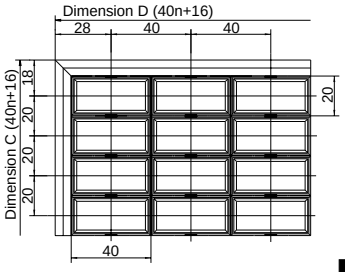
● T-type



● V-type

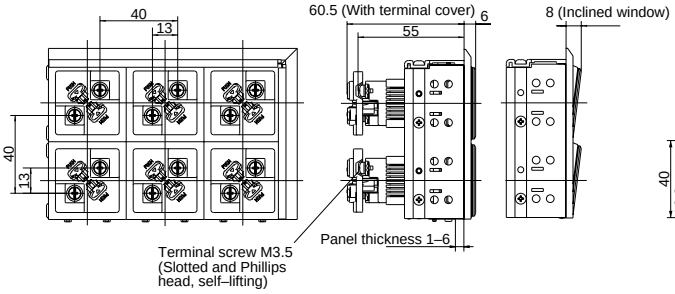


● H-type

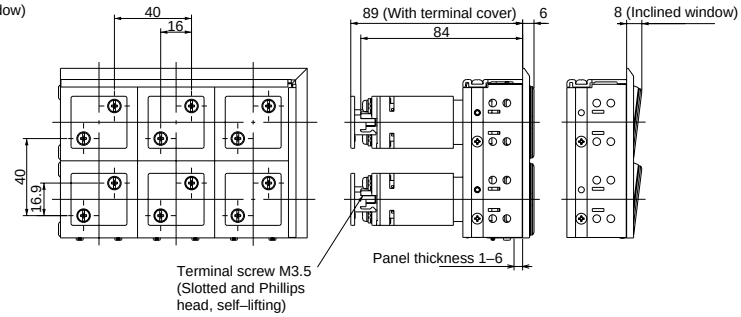


Back view

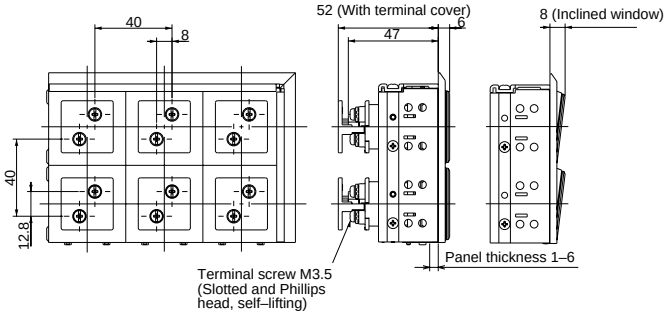
● Full–voltage type (LED)



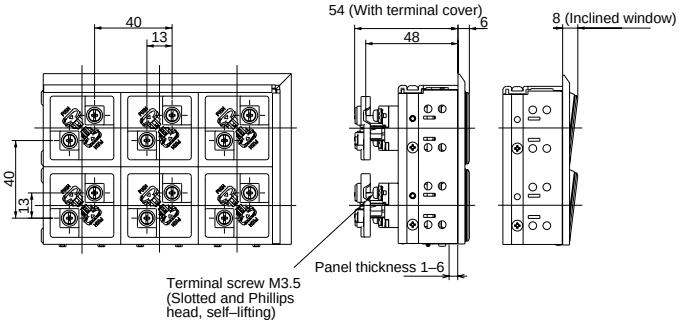
● With transformer unit, with resistor unit, with flicker unit, with voltage stabilizer unit



● Full–voltage type (LED, short body type)

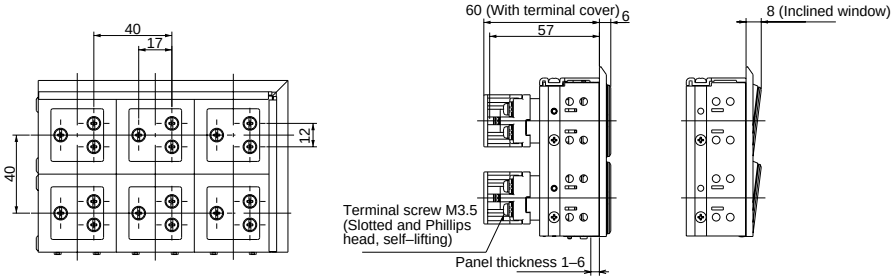


● Full-voltage type (Incandescent)



Half size (Illuminated face)
With check terminal

● Full–voltage type



AP40F

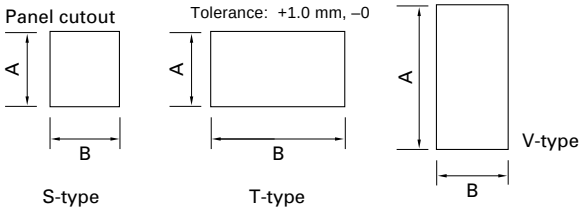
■ Panel cutout and overall dimensions

● S, H-type

Number of windows		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Panel cutout	A	45	85	125	165	205	245	285	–	–	–	–	–	–	–	–
	B	45	85	125	165	205	245	285	325	365	405	445	485	525	565	605
Overall	C	56	96	136	176	216	256	296	–	–	–	–	–	–	–	–
	D	56	96	136	176	216	256	296	336	376	416	456	496	536	576	616

● T-type

Number of windows		1	2	3	4	5	6	7
Panel cutout	A	45	85	125	165	205	245	285
	B *	85	165	245	325	405	485	565
Overall	C	56	96	136	176	216	256	296
	D *	96	176	256	336	416	496	576



● V-type

Number of windows		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Panel cutout	A *	85	165	245	–	–	–	–	–	–	–	–	–	–	–	–
	B	45	85	125	165	205	245	285	325	365	405	445	485	525	565	605
Overall	C *	96	176	256	–	–	–	–	–	–	–	–	–	–	–	–
	D	56	96	136	176	216	256	296	336	376	416	456	496	536	576	616

Note: * Indicates dimensions for rectangular windows.

■ Total numbers of windows

S, V type / T type / V type / S, T type			Number of windows (Column)														
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
			1	2	3	4	5	6	7	–							
Number of windows (Row)	1	1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	2	2	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30
	3	3	3	6	9	12	15	18	21	24	27	30	33	36	39	42	45
	4	–	4	8	12	16	20	24	28	32	36	40	44	48	52	56	60
	5		5	10	15	20	25	30	35	40	45	50	55	60	65	70	75
	6		6	12	18	24	30	36	42	48	54	60	66	72	78	84	90
	7		7	14	21	28	35	42	49	56	63	70	77	84	91	98	105

Note: For H Type, count two-windows as one S-type window.

H type (Half size) S type (Square type)

■ Installation

Mounting panel

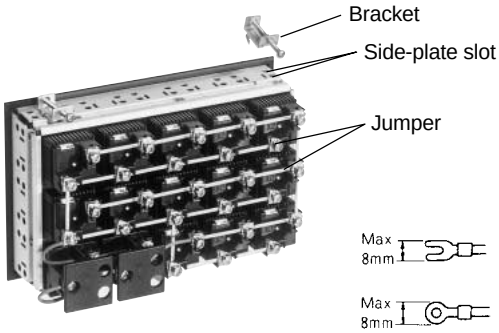
- Panel thickness: 1 to 6mm
- The panel thickness must be able to support the weight of the products and wiring cables. Take particular care in deciding the panel thickness when the products are heavy.

Panel cutout

Cut the mounting panel according to the numbers of rows and columns of windows. (*See the dimensions on page 04/240 and 242.*)

How to install

- Insert the product into the panel cutout from the front of the mounting panel. Make sure the product top and bottom are correctly oriented. The product nameplate is stuck to the top of the product.
- Fix the brackets into the side-plate slots at the back of the panel, as shown in the figure below, and clamp the product with the bracket screws. (Tightening torque : 0.4 to 0.6N•m)



■ Wiring

Terminal size

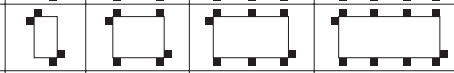
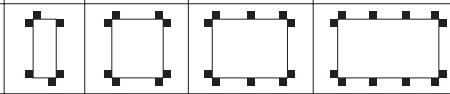
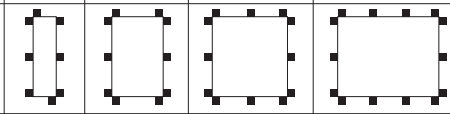
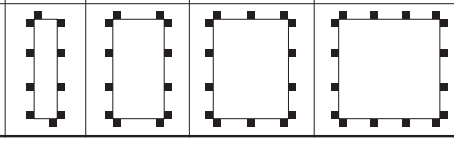
The M3.5 terminal screw is suitable for both phillips and slotted screwdrivers. The terminal washers are the self-lifting type. Use crimp terminals. (Tightening torque : 0.8 to 1.0N•m). Double crimp terminals can be connected.

Staggered terminals

Because the terminals are staggered, jumper connection is simple. Jumpers are supplied with products as standard.
Rated current of jumper : 3A

The number of brackets required depends on the type as follows

Full-voltage type and transformer type with 1 to 20 lamps

Column / Row	AP30F / AP40F	01~02 / 01~02	03~08 / 03~06	09~15 / 07~11	16~20 / 12~15
AP30F 01~02	AP40F 01~02				
03~06	03~04				
07~10	05~07				
11~15	–				
16~20	–				

Transformer type with 21 to 50 lamps

Rows or columns	1–2	3–4	5	6–8	9	10–12	13	14–16	17	18–20
Brackets required	1	2	3	4	5	6	7	8	9	10

The transformer type with over 20 lamps is very heavy and extra brackets are required. Fit brackets at equal intervals.

Transformer type with 51 to 80 lamps

Fit brackets in all slots.

■ Mass (g)

Mass of multi display light = Voltage unit × (rows × columns) + Side plate × (rows + columns)

AP30F

Description			Mass (g)
Voltage unit	Incandescent	Full-voltage type	29
		With transformer (short)	79
		With transformer	107
		With resistor unit	52
	LED	Full-voltage type	29
		With transformer	109
		Short body type	33
		With R/CR voltage dividing type	32
		2-color all surface illumination with check terminal half size	38
		With flicker unit	54
		With voltage stabilizer unit	54
Side plate			27

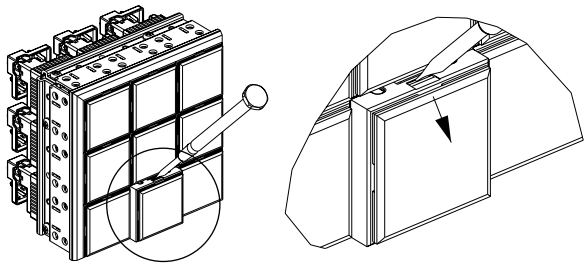
AP40F

Description			Mass (g)
Voltage unit	Incandescent	Full-voltage type	32
		With transformer	110
		With resistor unit	64
	LED	Full-voltage type	38
		With transformer	121
		Short body type	33
		With R/CR voltage dividing type	32
		2-color all surface illumination with check terminal half size	38
		With flicker unit	67
		With voltage stabilizer unit	67
Side plate			28

■ Replacing parts

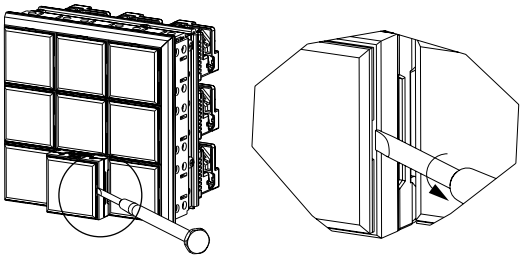
Detaching lens case

To remove a lamp, place the tip of a flat-blade screwdriver in the grove at the edge of the lens case and press it in the direction of the arrow. The tip of the screwdriver should be 4.5mm or less wide and 0.6mm or less thick.
To remove both the LED unit and lens case, place the tip of flat-blade screwdriver in one of the indents on the edges of the lens case and press it in the direction of the arrow.
When installing an LED unit, press it into the frame so that the LED unit side with the arrow faces the top side of the frame (i.e., the side with the unit type nameplate). The LED unit must be in the correct orientation when installing it.
After installing the lens case and lens, use your finger to press the lens part firmly until it stops in place. To prevent defective lighting or other problems caused by static electricity, do not press directly on the LED chip surface with your finger.



■ Replacing color inserts and legend plates

To replace a color insert and legend plate, insert a flat-blade screwdriver and press it to remove the lens.



Using the specially-designed suction cup removal tool DN7Y020, replace a color insert and legend plate by applying the suction cup as shown in the diagram below.

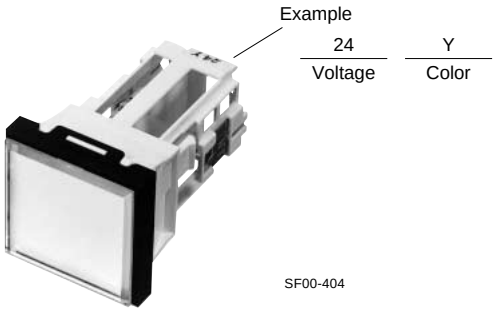
Do not touch the chip when the color insert is removed from the LED unit and the LED chip is exposed. Defective lighting or other problems may be caused by static electricity.
Install a color insert and legend plate by inserting their rough surfaces so that they face the lamp.

Replacing incandescent lamps

Insert and remove lamps using the hollow end of the lamp changer type AHX029.

■ LED unit color display

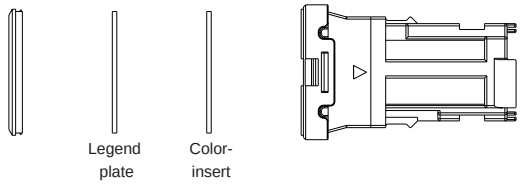
The operating voltage and lamp color are printed on the LED unit lamp using codes.



Rated voltage code \ Color code	R	A	W	Y	G	S	P	F
M	220R	220A	220W	220Y	220G	220S	220P	
L	127R	127A	127W	127Y	127G	127S	127P	
H	110R	110A	110W	110Y	110G	110S	110P	
F	48R	48A	48W	48Y	48G	48S	48P	
E	24R	24A	24W	24Y	24G	24S	24P	24F
C	15R	15A	15W	15Y	15G	15S	15P	
B	12R	12A	12W	12Y	12G	12S	12P	
6	6R	6A	6W	6Y	6G	6S	6P	
E (With check terminal)	24-RC	24-AC	24-WC	24-YC	24-GC	24-SC	24-PC	

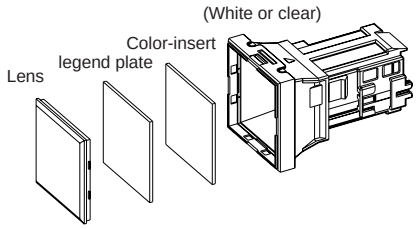
■ Installing color inserts and legend plate

Inserting a color insert and legend plate

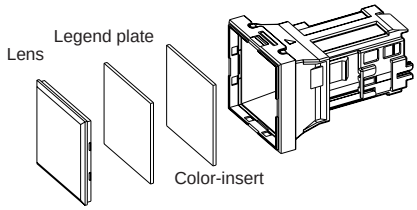


- For a color display when the lamp is OFF, insert first a color insert and then an opaque white legend plate into the lens case.
- For an opaque white display when the lamp is OFF, insert first a transparent color insert and then an opaque white legend plate into the lens case (only with LEDs).
- For smoked lenses, insert first a color insert and then an opaque white legend plate into the lens case.
- The legend plate and color inserts can be engraved.
- Do not touch the chip when the color insert is removed from the LED unit and the LED chip is exposed. Defective lighting or other problems may be caused by static electricity.

Opaque white display with the lamp off

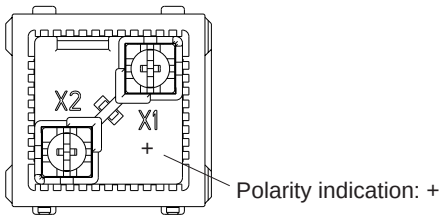


Color display with the lamp off



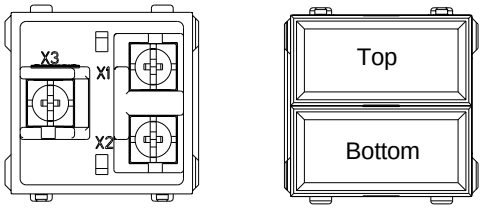
■ LED polarity

The terminals of all 6V DC voltage products and DC flicker units have polarity, so care is needed when installing them. X1 is the positive terminal.



■ Connecting color lamps and half-size lamp windows

Terminals	Light color from two-color lamp	Half-size lamp window
X1 to X3	Green	Top
X1 to X2	Red	Bottom



Assembling lens and lens case
Assemble the lens with lens case by mating lens projections with lens case indents.

■ Other precautions
1. Transformer units
• A maximum of 80 windows can function for a unit with transformers when the windows are square.
• Transformers are designed for a load of one incandescent lamp and one LED unit. It is not possible to connect additional loads.

2. Operating voltage and the rated voltage of incandescent lamp
• Incandescent lamps can be used within the lamp's rated voltage. If you need 5,000 to 10,000 hours of service life for incandescent lamp (at AC circuit), use the lamp within the standard operating voltage. Using incandescent lamps in DC circuit greatly reduces the lamp service life due to notching phenomenon. Use LED units in DC circuit instead.

Lamp rated voltage (V AC)	Standard operating voltage (V AC)
6.3	4 to 5.5
18	12 to 15
24	16 to 20
30	20 to 24

3. Flicker units
• When two or more flicker units are used in a Multi Display Light, they may not illuminate simultaneously because of variations in flicker unit circuits.
• Flicker units can be used only with square Multi Display Lights. They cannot be used with rectangular lights.

4. Continuous lighting
• For continuous light, the duty cycle should be 50% or less. If densely packed LEDs are lit continuously with a high duty cycle, LED life will be reduced.
• With 2-color lighting on the entire surface, do not use continuous lighting when lighting 2 colors simultaneously.

5. Store and operate these units within the temperature and humidity specifications on *page 04/237.*

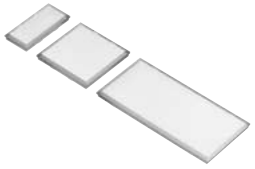
6. Do not use these units at outdoor.

7. Do not use these units in places where dust or cuttings will accumulate. The lights may not turn ON if dust or cuttings penetrate into the units.

■ Accessory

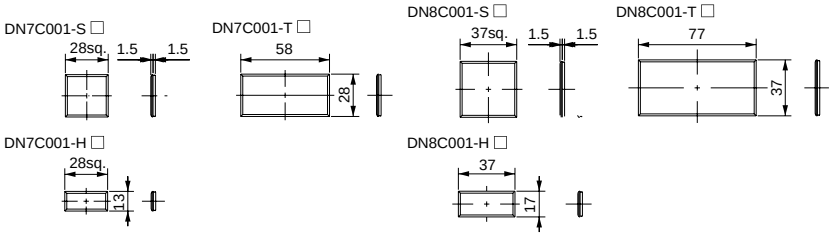
Description	Type and dimensions, mm

Lens



AF00-379

Used with		Type		
		Square(S)	Rectangular(T,V)	Half size(H)
AP30F	Clear	**DN7C001-SC**	**DN7C001-TC**	**DN7C001-HC**
	Smoked	**DN7C001-SS**	**DN7C001-TS**	**DN7C001-HS**
AP40F	Clear	**DN8C001-SC**	**DN8C001-TC**	**DN8C001-HC**
	Smoked	**DN8C001-SS**	**DN8C001-TS**	**DN8C001-HS**



Color-insert and legend plate

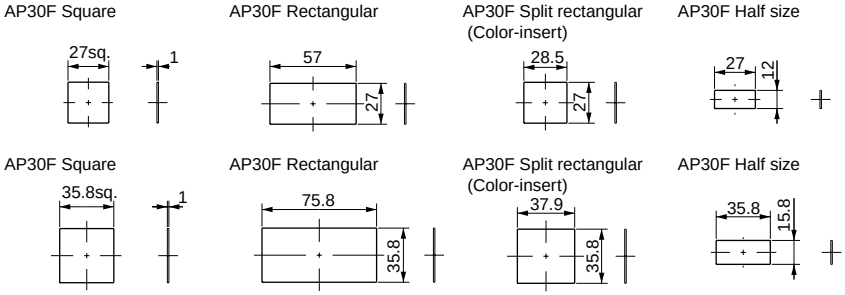
AF00-379

Color-insert

Used with	Code LED	Code Incandescent	Color	Type Square (S)	Rectangular (T, V)	2-way split rectangular	Half size (H)
AP30F	R	R	Red	**APCX016-SR**	**APCX016-TR**	**APCX058-R**	**DN7P002-R**
	O	O	Orange	**APCX016-SO**	**APCX016-TO**	**APCX058-O**	**DN7P002-A**
	P	W	White	**APCX012-LW**	**APCX014-LW**	**APCX058-W**	**DN7P002-W**
	G	–	Green (LED)	**APCX016-SLG**	**APCX016-TLG**	**APCX058-LG**	**DN7P002-G**
	–	G	Green (incandescent)	**DN7P004-G**	**DN7P005-G**	**DN7P006-G**	**–**
	Y	Y	Yellow	**APCX016-SLY**	**APCX016-TLY**	**APCX058-LY**	**DN7P002-Y**
	S	S	Blue	**APCX016-SS**	**APCX016-TS**	**APCX058-S**	**DN7P002-S**
	W, RG, C	–	Clear	**APCX012-C**	**APCX014-C**	**APCX058-C**	**–**
	W, C	–	Clear	**–**	**–**	**–**	**DN7P002-C**
AP40F	R	R	Red	**DN8P004-R**	**DN8P005-R**	**DN8P006-R**	**DN8P002-R**
	O	O	Orange	**DN8P004-A**	**DN8P005-A**	**DN8P006-A**	**DN8P002-A**
	W, RG, C	W	White	**APCX013-LW**	**APCX015-LW**	**APCX059-W**	**DN8P002-W**
	G	–	Green (LED)	**APCX077-SG**	**APCX077-TG**	**APCX079-G**	**DN8P002-G**
	–	G	Green (incandescent)	**DN8P004-G**	**DN8P005-G**	**DN8P006-G**	**–**
	Y	Y	Yellow	**DN8P004-Y**	**DN8P005-Y**	**DN8P006-Y**	**DN8P002-Y**
	S	S	Blue	**APCX017-SS**	**APCX017-TS**	**APCX059-S**	**DN8P002-S**
	P	–	White (LED)	**APCX077-SW**	**APCX077-TW**	**APCX079-W**	**–**
	P	–	White	**–**	**–**	**–**	**DN8P002-W**
	W, C	–	Clear	**–**	**–**	**–**	**DN8P002-C**

Legend plate

Used with		Type		
		Square (S)	Rectangular (T, V)	Half size (H)
AP30F	Clear	**APCX012-LW**	**APCX014-LW**	**DN7P002-W**
	Smoked	**APCX012-LWS**	**APCX014-LWS**	**DN7P002-WS**
AP40F	Clear	**APCX013-LW**	**APCX015-LW**	**DN8P002-W**
	Smoked	**APCX013-LWS**	**APCX015-LWS**	**DN8P002-WS**



Description	Type and dimensions, mm

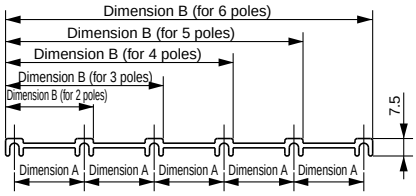
Jumper

AF00-379

Used with	Type				
	2 poles	3 poles	4 poles	5 poles	6 poles
AP30F	**APCX029**	**DN7Y001-03**	**DN7Y001-04**	**DN7Y001-05**	**DN7Y001-06**
AP40F	**APCX030**	**DN8Y001-03**	**DN8Y001-04**	**DN8Y001-05**	**DN8Y001-06**

Jumper dimensions

Used with	Dimension A	Dimension B				
		2 poles	3 poles	4 poles	5 poles	6 poles
AP30F series	30	37.6	67.6	97.6	127.6	157.6
AP40F series	40	47.6	87.6	127.6	167.6	207.6

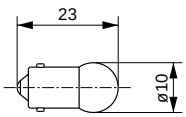


Incandescent lamp

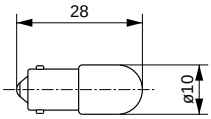
AF00-383

Used with	Socket type	Voltage/capacity	Type	Remarks
AP30F	BA9s/13 bayonet type	6.3V 1W	**AHX135**	Lamp with built-in transformer
		18V 1W	**AHX279**	–
		24V 1W	**AHX144**	–
		30V 1W	**AHX129**	–
		48V 1W	**AHX407**	Lamp with built-in resistor unit
AP40F		18V 2W	**AHX141**	Lamp with built-in transformer
		24V 2W	**AHX142**	–
		30V 2W	**AHX143**	–
		48V 2W	**DN7H001**	Lamp with built-in resistor unit

For AP30F (except 48V 1W)



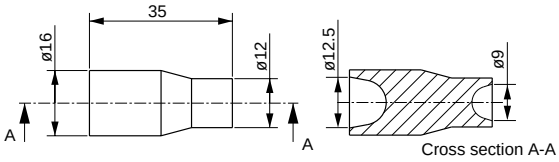
For AP40F, AP30F (48V 1W)



Lamp changer

T-1990

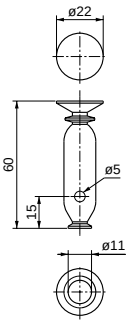
Used with	Type
AP30F, AP40F For incandescent lamp	**AHX029**



Color-insert and legend plate changer

AF00-380

Type	**DN7Y020**



Description	Type and dimensions, mm

LED unit

AF00-374

AF00-373

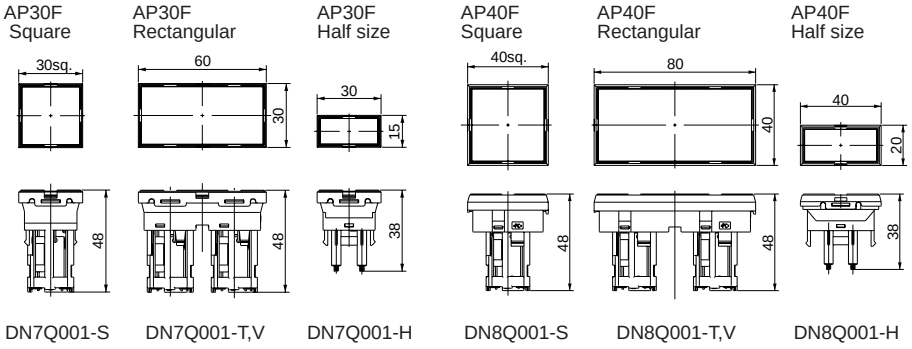
Used with	Emitted color	Color-insert specification	Type			
			Square(S)	Horizontal rectangular (T)	Vertical rectangular (V)	Half size(H)
AP30F Single color All surface illumination Full voltage	Red	Color-insert (color when light turned OFF)	**DN7Q001-S1□R**	**DN7Q001-T1□R**	**DN7Q001-V1□R**	**DN7Q001-H1□R**
	Orange		**DN7Q001-S1□A**	**DN7Q001-T1□A**	**DN7Q001-V1□A**	**DN7Q001-H1□A**
	White		**DN7Q001-S1□W**	**DN7Q001-T1□W**	**DN7Q001-V1□W**	**DN7Q001-H1□W**
	Green		**DN7Q001-S1□G**	**DN7Q001-T1□G**	**DN7Q001-V1□G**	**DN7Q001-H1□G**
	Yellow		**DN7Q001-S1□Y**	**DN7Q001-T1□Y**	**DN7Q001-V1□Y**	**DN7Q001-H1□Y**
	Blue		**DN7Q001-S1□S**	**DN7Q001-T1□S**	**DN7Q001-V1□S**	**DN7Q001-H1□S**
	Pure-white		**DN7Q001-S1□P**	**DN7Q001-T1□P**	**DN7Q001-V1□P**	**DN7Q001-H1□P**
	Red	Color (transparent) -insert (white when light turned OFF)	**DN7Q001-S3□R**	**DN7Q001-T3□R**	**DN7Q001-V3□R**	**DN7Q001-H3□R**
	Orange		**DN7Q001-S3□A**	**DN7Q001-T3□A**	**DN7Q001-V3□A**	**DN7Q001-H3□A**
	Green		**DN7Q001-S3□G**	**DN7Q001-T3□G**	**DN7Q001-V3□G**	**DN7Q001-H3□G**
	Yellow		**DN7Q001-S3□Y**	**DN7Q001-T3□Y**	**DN7Q001-V3□Y**	**DN7Q001-H3□Y**
	Blue		**DN7Q001-S3□S**	**DN7Q001-T3□S**	**DN7Q001-V3□S**	**DN7Q001-H3□S**
AP40F Single color All surface illumination Full voltage	Red	Color-insert (color when light turned OFF)	**DN8Q001-S1□R**	**DN8Q001-T1□R**	**DN8Q001-V1□R**	**DN8Q001-H1□R**
	Orange		**DN8Q001-S1□A**	**DN8Q001-T1□A**	**DN8Q001-V1□A**	**DN8Q001-H1□A**
	White		**DN8Q001-S1□W**	**DN8Q001-T1□W**	**DN8Q001-V1□W**	**DN8Q001-H1□W**
	Green		**DN8Q001-S1□G**	**DN8Q001-T1□G**	**DN8Q001-V1□G**	**DN8Q001-H1□G**
	Yellow		**DN8Q001-S1□Y**	**DN8Q001-T1□Y**	**DN8Q001-V1□Y**	**DN8Q001-H1□Y**
	Blue		**DN8Q001-S1□S**	**DN8Q001-T1□S**	**DN8Q001-V1□S**	**DN8Q001-H1□S**
	Pure-white		**DN8Q001-S1□P**	**DN8Q001-T1□P**	**DN8Q001-V1□P**	**DN8Q001-H1□P**
	Red	Color (transparent) -insert (white when light turned OFF)	**DN8Q001-S3□R**	**DN8Q001-T3□R**	**DN8Q001-V3□R**	**DN8Q001-H3□R**
	Orange		**DN8Q001-S3□A**	**DN8Q001-T3□A**	**DN8Q001-V3□A**	**DN8Q001-H3□A**
	Green		**DN8Q001-S3□G**	**DN8Q001-T3□G**	**DN8Q001-V3□G**	**DN8Q001-H3□G**
	Yellow		**DN8Q001-S3□Y**	**DN8Q001-T3□Y**	**DN8Q001-V3□Y**	**DN8Q001-H3□Y**
	Blue		**DN8Q001-S3□S**	**DN8Q001-T3□S**	**DN8Q001-V3□S**	**DN8Q001-H3□S**

Notes: The LED unit is provided with a lens case and a color-insert.

Replace the □ in the type number with one of the following voltage code.

Voltage	Code	Square, horizontal/ vertical rectangular	Half size
6V DC	6	○	–
12V AC/DC	B	○	○
15V AC/DC	C	○	○
24V AC/DC	E	○	○
48V AC/DC	F	○	–
110V AC/DC	H	○	–
127V AC/DC	L	○	–
220V AC	M	○	–

○: Available – :Not available



Description	Type and dimensions, mm

LED unit

AF00-376

AF00-375

Used with	Emitted color	Color-insert specification	Type		
			Square(S)	Horizontal rectangular (T)	Vertical rectangular (V)
AP30F LED transformer units LED short body type	Red	Color-insert (color when light turned OFF)	**DN7Q004-S1ER**	**DN7Q004-T1ER**	**DN7Q004-V1ER**
	Orange		**DN7Q004-S1EA**	**DN7Q004-T1EA**	**DN7Q004-V1EA**
	White		**DN7Q004-S1EW**	**DN7Q004-T1EW**	**DN7Q004-V1EW**
	Green		**DN7Q004-S1EG**	**DN7Q004-T1EG**	**DN7Q004-V1EG**
	Yellow		**DN7Q004-S1EY**	**DN7Q004-T1EY**	**DN7Q004-V1EY**
	Blue		**DN7Q004-S1ES**	**DN7Q004-T1ES**	**DN7Q004-V1ES**
	Pure-white		**DN7Q004-S1EP**	**DN7Q004-T1EP**	**DN7Q004-V1EP**
	Red	Color (transparent) -insert (white when light turned OFF)	**DN7Q004-S3ER**	**DN7Q004-T3ER**	**DN7Q004-V3ER**
	Orange		**DN7Q004-S3EA**	**DN7Q004-T3EA**	**DN7Q004-V3EA**
	Green		**DN7Q004-S3EG**	**DN7Q004-T3EG**	**DN7Q004-V3EG**
	Yellow		**DN7Q004-S3EY**	**DN7Q004-T3EY**	**DN7Q004-V3EY**
	Blue		**DN7Q004-S3ES**	**DN7Q004-T3ES**	**DN7Q004-V3ES**
AP40F LED transformer units LED short body type	Red	Color-insert (color when light turned OFF)	**DN8Q004-S1ER**	**DN8Q004-T1ER**	**DN8Q004-V1ER**
	Orange		**DN8Q004-S1EA**	**DN8Q004-T1EA**	**DN8Q004-V1EA**
	White		**DN8Q004-S1EW**	**DN8Q004-T1EW**	**DN8Q004-V1EW**
	Green		**DN8Q004-S1EG**	**DN8Q004-T1EG**	**DN8Q004-V1EG**
	Yellow		**DN8Q004-S1EY**	**DN8Q004-T1EY**	**DN8Q004-V1EY**
	Blue		**DN8Q004-S1ES**	**DN8Q004-T1ES**	**DN8Q004-V1ES**
	Pure-white		**DN8Q004-S1EP**	**DN8Q004-T1EP**	**DN8Q004-V1EP**
	Red	Color (transparent) -insert (white when light turned OFF)	**DN8Q004-S3ER**	**DN8Q004-T3ER**	**DN8Q004-V3ER**
	Orange		**DN8Q004-S3EA**	**DN8Q004-T3EA**	**DN8Q004-V3EA**
	Green		**DN8Q004-S3EG**	**DN8Q004-T3EG**	**DN8Q004-V3EG**
	Yellow		**DN8Q004-S3EY**	**DN8Q004-T3EY**	**DN8Q004-V3EY**
	Blue		**DN8Q004-S3ES**	**DN8Q004-T3ES**	**DN8Q004-V3ES**

Note: The LED unit is provided with a lens case and a color-insert.

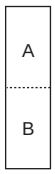
Used with	Horizontal rectangular	Vertical rectangular	Remarks
AP30F	**DN7Q001-T□■AB**	**DN7Q001-V□■AB**	Full-voltage type (R/CR voltage dividing)*
2-way split illumination	**DN7Q004-T□EAB**	**DN7Q004-V□EAB**	Short body type for transformer unit
AP40F	**DN8Q001-T□■AB**	**DN8Q001-V□■AB**	Full-voltage type (R/CR voltage dividing)*
2-way split illumination	**DN8Q004-T□EAB**	**DN7Q008-V□EAB**	Short body type for transformer unit

□: Color-insert specification codes: Colored = 2, Transparent or white: 4
■: Specify the voltage codes. See page *04/249*.
●: Specifying colors for 2-way split illumination.

** For dimensions, See page 04/249.*

Horizontal rectangular (T)
2-way split illumination

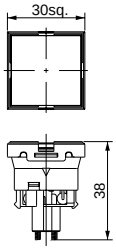
Vertical rectangular (V)
2-way split illumination



Specify the colors by replacing "A" and "B" with the corresponding symbols.
Red: R, Green: G, Orange: A, White: W, Yellow: Y, Blue: S, Pure white: P

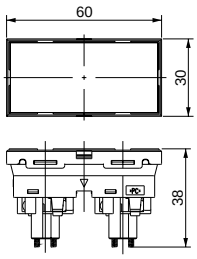
Example
DN7Q001-T2ERG: AP30F horizontal rectangular type with 2-way split illumination with red on the left and green on the right.

AP30F Square



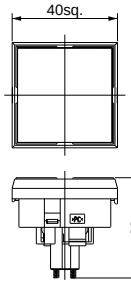
DN7Q004-S

AP30F Rectangular



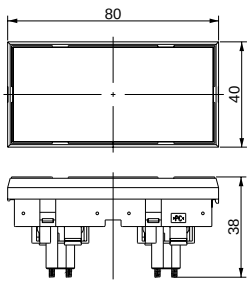
DN7Q004-T,V

AP40F Square



DN8Q004-S

AP40F Rectangular



DN8Q004-T,V

Description	Type and dimensions, mm

LED unit

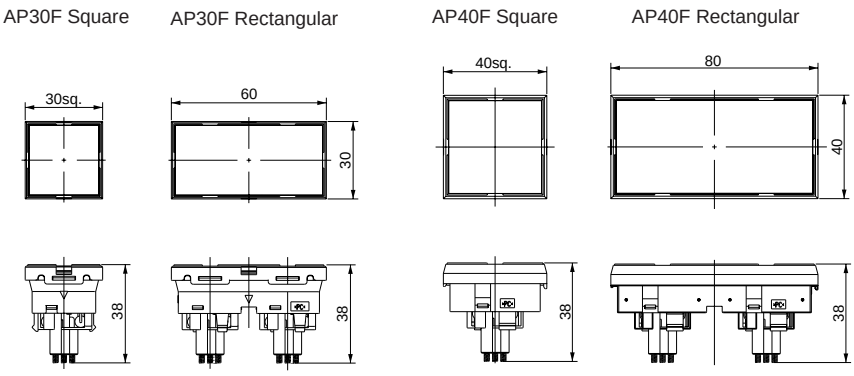
AF00-376

AF00-375

Used with	Emitted color	Color-insert specification	Type			
			Square(S)	Horizontal rectangular (T)	Vertical rectangular (V)	Half size(H)
AP30F Single color All surface illumination with a check terminal (full voltage only 24V type)	Red	Color-insert (color when light turned OFF)	**DN7Q003-S1ER**	**DN7Q003-T1ER**	**DN7Q003-V1ER**	–
	Orange		**DN7Q003-S1EA**	**DN7Q003-T1EA**	**DN7Q003-V1EA**	–
	White		**DN7Q003-S1EW**	**DN7Q003-T1EW**	**DN7Q003-V1EW**	–
	Green		**DN7Q003-S1EG**	**DN7Q003-T1EG**	**DN7Q003-V1EG**	–
	Yellow		**DN7Q003-S1EY**	**DN7Q003-T1EY**	**DN7Q003-V1EY**	–
	Blue		**DN7Q003-S1ES**	**DN7Q003-T1ES**	**DN7Q003-V1ES**	–
	Pure-white		**DN7Q003-S1EP**	**DN7Q003-T1EP**	**DN7Q003-V1EP**	–
	Red	Color (transparent)-insert (white when light turned OFF)	**DN7Q003-S3ER**	**DN7Q003-T3ER**	**DN7Q003-V3ER**	–
	Orange		**DN7Q003-S3EA**	**DN7Q003-T3EA**	**DN7Q003-V3EA**	–
	Green		**DN7Q003-S3EG**	**DN7Q003-T3EG**	**DN7Q003-V3EG**	–
	Yellow		**DN7Q003-S3EY**	**DN7Q003-T3EY**	**DN7Q003-V3EY**	–
	Blue		**DN7Q003-S3ES**	**DN7Q003-T3ES**	**DN7Q003-V3ES**	–
AP40F Single color All surface illumination with a check terminal (full voltage only 24V type)	Red	Color-insert (color when light turned OFF)	**DN8Q003-S1ER**	**DN8Q003-T1ER**	**DN8Q003-V1ER**	–
	Orange		**DN8Q003-S1EA**	**DN8Q003-T1EA**	**DN8Q003-V1EA**	–
	White		**DN8Q004-S1EW**	**DN8Q003-T1EW**	**DN8Q003-V1EW**	–
	Green		**DN8Q003-S1EG**	**DN8Q003-T1EG**	**DN8Q003-V1EG**	–
	Yellow		**DN8Q003-S1EY**	**DN8Q003-T1EY**	**DN8Q003-V1EY**	–
	Blue		**DN8Q003-S1ES**	**DN8Q003-T1ES**	**DN8Q003-V1ES**	–
	Pure-white		**DN8Q003-S1EP**	**DN8Q003-T1EP**	**DN8Q003-V1EP**	–
	Red	Color (transparent)-insert (white when light turned OFF)	**DN8Q003-S3ER**	**DN8Q003-T3ER**	**DN8Q003-V3ER**	–
	Orange		**DN8Q003-S3EA**	**DN8Q003-T3EA**	**DN8Q003-V3EA**	–
	Green		**DN8Q003-S3EG**	**DN8Q003-T3EG**	**DN8Q003-V3EG**	–
	Yellow		**DN8Q003-S3EY**	**DN8Q003-T3EY**	**DN8Q003-V3EY**	–
	Blue		**DN8Q003-S3ES**	**DN8Q003-T3ES**	**DN8Q003-V3ES**	–

Note: The LED unit is provided with a lens case and a color-insert.

Used with	Emitted color	Type		
		Square(S)	Horizontal rectangular (T)	Vertical rectangular (V)
AP30F 2-color illumination	Red and green	**DN7Q002-S3EF**	**DN7Q002-T3EF**	**DN7Q003-V3EF**
AP40F 2-color illumination	Red and green	**DN8Q002-S3EF**	**DN8Q002-T3EF**	**DN8Q003-V3EF**



DN7Q002-S
DN7Q003-S

DN7Q002-T,V
DN7Q003-T,V

DN8Q002-S
DN8Q003-S

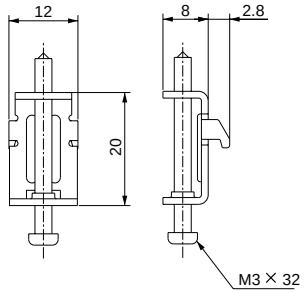
DN8Q002-T,V
DN8Q003-T,V

Description	Type and dimensions, mm

Mounting bracket

AF00-384

Type	**APX111**

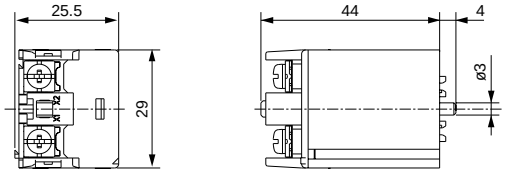


Transformer unit

SF-1111

Type	**AX511-□** **AX503-□** **AX544-□**

Note: Replace the □ mark in the type number with the voltage code.



Voltage	100 to 110V	115 to 127V	200 to 220V	230 to 254V	350 to 380V	400 to 440V	480
Code	H	L	M	Q	S	T	V

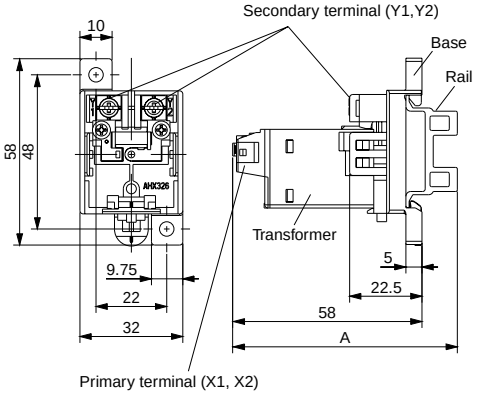
Base unit for separate mounting transformer

AF89-824

Type	**AHX326**

Remarks
- If the power supply voltage is 100V AC or over (or more than 220V for R or CR voltage-dividing types) and the panel has limited depth or there are weight limitations, a full-voltage type can be used with a separate mounted transformer, as shown in the following table below.
- A base unit is required when combining with a transformer unit.
  Mounting is possible using screws or rail.

Rail type	A (mm)
TH35-15AL	69
TH35-7.5, AH35-7.5AL	61.5



■ Separate mounted transformer application table

Used with	LED specification				Incandescent specification			
	Applicable light type	Built-in unit	Transformer unit	Separate base	Applicable light type	Built-in light bulb	Transformer unit	Separate base
AP30F	AP30F-◇◆E3-● AP30F-◇◆ES-●	DN7Q001-□□E□ DN7Q004-□□E□	AHX544-□ × No. of windows	AHX326 × No. of windows	AP30F-◇◆A-●	AHX135 (6.3 V 1W bulb)	AHX511-□ × No. of windows	AHX326 × No. of windows
AP40F	AP40F-◇◆E3-● AP40F-◇◆ES-●	DN8Q001-□□E□ DN8Q004-□□E□			AP40F-◇◆C-●	AHX141 (18 V 2W bulb)	AHX503-□ × No. of windows	

Notes: 1. Replace ◇◆ mark by the number of basic windows. ◇◆ = vertical x horizontal
2. Replace ● mark by the code indicating the shape of illuminated face (S, T, or V, do not specify H).
3. The following depths are available. AP30F-◇◆E3: 60.5mm AP30F-◇◆ES: 52mm AP30F-◇◆A: 54mm
AP40F-◇◆E3: 60.5mm AP40F-◇◆ES: 52mm AP40F-◇◆C: 54mm
4. Refer to pages *04/249* and *04/250* for built-in unit types with LED specifications.

Description	Type and dimensions, mm

Terminal cover

AF00-389

AF00-388

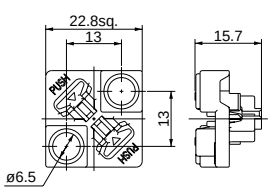
AF00-387

AF00-386

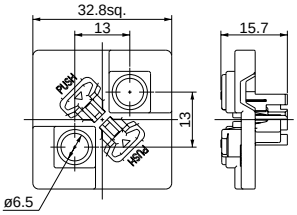
AF00-385

Series	Description		DN7Y002	APCX054	APX131	DN8Y002	APCX055
AP30F	LED single-color, full-surface illumination	Full-voltage type R, CR voltage dividing type	○				
		Transformer type					○
	Half-size, 2-color illumination	Full-voltage type			○		
	LED short body type	Full-voltage type		○			
	Incandescent lamp	Full-voltage type	○				
		Transformer type 110V, 220V	○				
		Transformer type over than 220V					○
AP40F	LED single-color, full-surface illumination	Full-voltage type R, CR voltage dividing type				○	
		Transformer type					○
	Half-size, 2-color illumination	Full-voltage type			○		
	LED short body type	Full-voltage type		○			
	Incandescent lamp	Full-voltage type				○	
		Transformer type					○

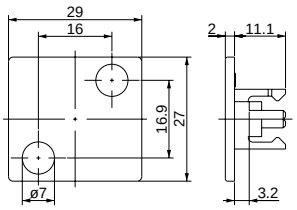
DN7Y002



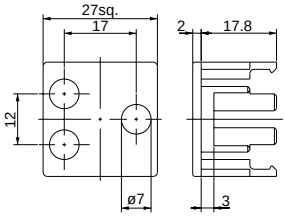
DN8Y002



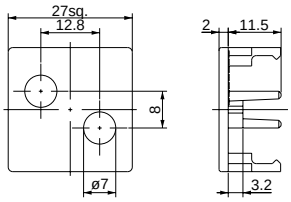
APCX055



APX131



APCX054



■ Window layout ordering sheet

When ordering Multi Display Lights, fill in the necessary items in this ordering sheet on Page 04/255. (It is also recommended that you make copies of the sheet for future use.)

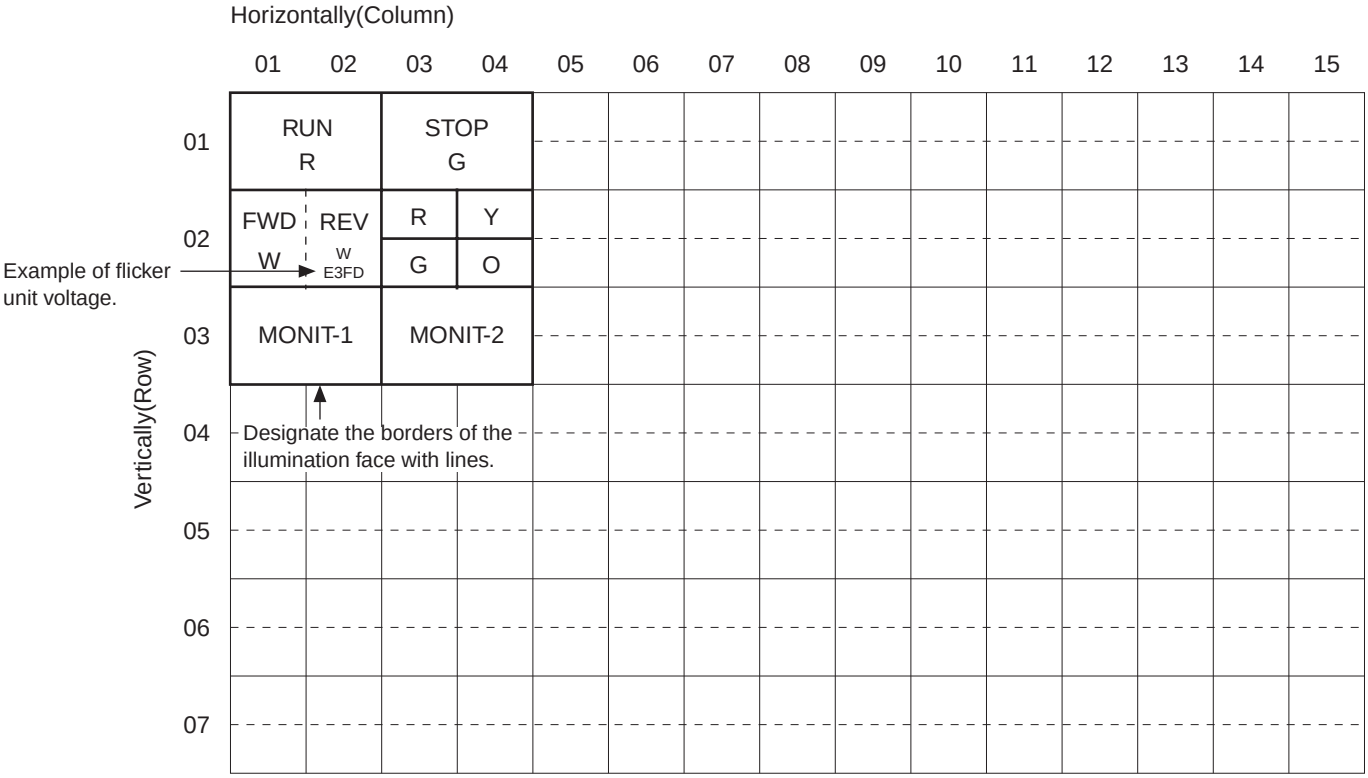
Cases in which you should order with the ordering sheet

- When ordering a mixture of LED luminous colors
- When ordering a mixture of window sizes in the illumination face
- When ordering a mixture of two-color illumination faces
- When ordering a mixture of input voltages
- When requesting embossed characters

Filling in the ordering sheet

1. Use lines to designate the borders of the illumination face.
2. Write the color code (G, R, W, Y, O, S) for each window into the bottom row of the window. For T and V types, write the code in only one place.
3. If you are requesting embossed characters, write the characters into the table.
4. For windows requiring more than 7 (vertical) or 15 (horizontal) spaces, continue writing on a separate ordering sheet.
5. Write in two places for a two-split illumination type.
6. When using a flicker unit or a voltage stabilizer unit, write the unit code into the bottom row of the window.

Specification example



■ **Window layout ordering sheet**

Horizontally(Column)

Vertically(Row)	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
01															
02															
03															
04															
05															
06															
07															

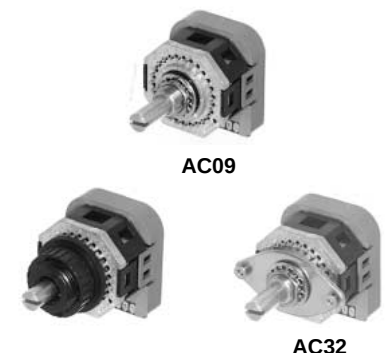
Digital code output type

■ Description

FUJI AC series rotary switches offer a wide choice of output codes. They feature sliding Au-flashed contacts for high contact reliability. Inhibitor and parity check circuits guard against switch malfunctions caused by error signals. With only seven connections to make, these switches are an economical solution to multiposition switching needs.

■ Features

- Au-flashed contacts for high contact reliability.
- The protection of operator section meets the IP65 (IEC), so these switches can be used in oil-splash environments, such as on machine tool control panels. (Except for AC32)
- A wide choice of output codes fits a broad range of applications. Available step angles are 15, 30, and 360°/26 (13.85°). Real binary code, complementary binary code, and real gray code are available.
- Switches are available with connectors or with lock rings for easy handling.
- Stopper screw positions are user selectable.



AF90-209, 210, 211

■ Ratings

Volts	Operational current (A) (resistive load)
50V AC	0.05
5V AC	0.5
25V DC	0.05
5V DC	0.25

■ Performance

Rated insulation voltage		50V
Operating temperature		–20 to +70°C
Humidity		45 to 85%RH (non condensation)
Service life	Mechanical	50,000 operations
	Electrical	50,000 operations
Dielectric strength	Between terminals	250V AC, 1 minute
	Between terminals and ground	1500V AC, 1 minute
Insulation resistance	Between terminals	500MΩ or more
	Between terminals and ground	5,000MΩ or more
Degree of protection (operator section)		AC09, AC16 : IP65 (IEC60529) AC32 : IP40 (IEC60529)

■ Type number nomenclature

AC 09 – C Z 0 / 25 L1 E A01 / 0007

Basic type

Mounting
09: M9 nut
16: M16 adapter
32: Adapter (32mm mounting pitch)

Type of code
R: Real binary code
C: Complementary binary code
G: Real gray code

Angle of step

	Angle	Setting position
X:	30°	0 to 11
W:	360°/13 (27.69°)	0 to 12
Y:	15°	0 to 23
Z:	360°/26 (13.85°)	0 to 25

Start position

	Available step angle
0 to 11:	30°
0 to 12:	360°/13 (27.69°)
0 to 23:	15°
0 to 25:	360°/26 (13.85°)

End position

	Available step angle
0 to 11:	30°
0 to 12:	360°/13 (27.69°)
0 to 23:	15°
0 to 25:	360°/26 (13.85°)

With or without lock ring
Blank: Without lock ring
0007: With lock ring
0009: With adhesive lock ring

With or without connector
Blank: 8-terminal, without connector
A01: 8-terminal, with right-angle connector
A02: 8-termianl, with straight connector
B00: 7-terminal, without connector
B01: 7-terminal, with right-angle connector
B02: 7-terminal, with straight connector

With or without stopper screw
Blank: With stopper screw
E: Without stopper screw

Length of shaft (mm)

	AC09	AC16	AC32
L1:	16	—	14.5
L2:	18	—	16.5
L3:	20	—	18.5
L4:	22	19.5	20.5

Note: When shorter action than the maximum range of switch action is used, stopper screws are used. However, stopper screws are not used if the maximum action range is used when either 15° (symbol Y) or 360°/26 (symbol Z) is specified.

• M9 nut mounting

Angle of step	Connector	Lock ring	Type*1 *2 *3		
			Real binary code	Complementary binary code	Real gray code
30°	Without connector	Without lock ring With lock ring With adhesive lock ring	AC09-RX□/□( )■ AC09-RX□/□( )■/0007 AC09-RX□/□( )■/0009	AC09-CX□/□( )■ AC09-CX□/□( )■/0007 AC09-CX□/□( )■/0009	AC09-GX□/□( )■ AC09-GX□/□( )■/0007 AC09-GX□/□( )■/0009
	With right angle connector	Without lock ring With lock ring With adhesive lock ring	AC09-RX□/□( )■01 AC09-RX□/□( )■01/0007 AC09-RX□/□( )■01/0009	AC09-CX□/□( )■01 AC09-CX□/□( )■01/0007 AC09-CX□/□( )■01/0009	AC09-GX□/□( )■01 AC09-GX□/□( )■01/0007 AC09-GX□/□( )■01/0009
	With straight connector	Without lock ring With lock ring With adhesive lock ring	AC09-RX□/□( )■02 AC09-RX□/□( )■02/0007 AC09-RX□/□( )■02/0009	AC09-CX□/□( )■02 AC09-CX□/□( )■02/0007 AC09-CX□/□( )■02/0009	AC09-GX□/□( )■02 AC09-GX□/□( )■02/0007 AC09-GX□/□( )■02/0009
360°/13 (27.69°)	Without connector	Without lock ring With lock ring With adhesive lock ring	AC09-RW□/□( )■ AC09-RW□/□( )■/0007 AC09-RW□/□( )■/0009	AC09-CW□/□( )■ AC09-CW□/□( )■/0007 AC09-CW□/□( )■/0009	
	With right angle connector	Without lock ring With lock ring With adhesive lock ring	AC09-RW□/□( )■01 AC09-RW□/□( )■01/0007 AC09-RW□/□( )■01/0009	AC09-CW□/□( )■01 AC09-CW□/□( )■01/0007 AC09-CW□/□( )■01/0009	
	With straight connector	Without lock ring With lock ring With adhesive lock ring	AC09-RW□/□( )■02 AC09-RW□/□( )■02/0007 AC09-RW□/□( )■02/0009	AC09-CW□/□( )■02 AC09-CW□/□( )■02/0007 AC09-CW□/□( )■02/0009	
15°	Without connector	Without lock ring With lock ring With adhesive lock ring	AC09-RY□/□( )■ AC09-RY□/□( )■/0007 AC09-RY□/□( )■/0009	AC09-CY□/□( )■ AC09-CY□/□( )■/0007 AC09-CY□/□( )■/0009	AC09-GY□/□( )■ AC09-GY□/□( )■/0007 AC09-GY□/□( )■/0009
	With right angle connector	Without lock ring With lock ring With adhesive lock ring	AC09-RY□/□( )■01 AC09-RY□/□( )■01/0007 AC09-RY□/□( )■01/0009	AC09-CY□/□( )■01 AC09-CY□/□( )■01/0007 AC09-CY□/□( )■01/0009	AC09-GY□/□( )■01 AC09-GY□/□( )■01/0007 AC09-GY□/□( )■01/0009
	With straight connector	Without lock ring With lock ring With adhesive lock ring	AC09-RY□/□( )■02 AC09-RY□/□( )■02/0007 AC09-RY□/□( )■02/0009	AC09-CY□/□( )■02 AC09-CY□/□( )■02/0007 AC09-CY□/□( )■02/0009	AC09-GY□/□( )■02 AC09-GY□/□( )■02/0007 AC09-GY□/□( )■02/0009
360°/26 (13.85°)	Without connector	Without lock ring With lock ring With adhesive lock ring	AC09-RZ□/□( )■ AC09-RZ□/□( )■/0007 AC09-RZ□/□( )■/0009	AC09-CZ□/□( )■ AC09-CZ□/□( )■/0007 AC09-CZ□/□( )■/0009	AC09-GZ□/□( )■ AC09-GZ□/□( )■/0007 AC09-GZ□/□( )■/0009
	With right angle connector	Without lock ring With lock ring With adhesive lock ring	AC09-RZ□/□( )■01 AC09-RZ□/□( )■01/0007 AC09-RZ□/□( )■01/0009	AC09-CZ□/□( )■01 AC09-CZ□/□( )■01/0007 AC09-CZ□/□( )■01/0009	AC09-GZ□/□( )■01 AC09-GZ□/□( )■01/0007 AC09-GZ□/□( )■01/0009
	With straight connector	Without lock ring With lock ring With adhesive lock ring	AC09-RZ□/□( )■02 AC09-RZ□/□( )■02/0007 AC09-RZ□/□( )■02/0009	AC09-CZ□/□( )■02 AC09-CZ□/□( )■02/0007 AC09-CZ□/□( )■02/0009	AC09-GZ□/□( )■02 AC09-GZ□/□( )■02/0007 AC09-GZ□/□( )■02/0009

Notes:
*1 Replace the □□ marks by the Start and End positions

Step angle	30°	360°/13	15°	360°/26
Start and End positions	0 to 11	0 to 12	0 to 23	0 to 25

*2 Replace the ( ) mark by the shaft length code
L1: 16mm L2: 18mm L3: 20mm L4: 22mm

*3 Replace the ■ mark by the connector
Blank: 8-terminal, without connector
A01: 8-terminal, with right angle connector
A02: 8-terminal, with straight connector
B00: 7-terminal, without connector
B01: 7-terminal, with right angle connector
B02: 7-terminal, with straight connector

• M16 adapter mounting

Angle of step	Connector	Type*1 *2		
		Real binary code	Complementary binary code	Real gray code
30°	Without connector With right angle connector With straight connector	AC16-RX□/□L4■ AC16-RX□/□L4■01 AC16-RX□/□L4■02	AC16-CX□/□L4■ AC16-CX□/□L4■01 AC16-CX□/□L4■02	AC16-GX□/□L4■ AC16-GX□/□L4■01 AC16-GX□/□L4■02
360°/13 (27.69°)	Without connector With right angle connector With straight connector	AC16-RW□/□L4■ AC16-RW□/□L4■01 AC16-RW□/□L4■02	AC16-CW□/□L4■ AC16-CW□/□L4■01 AC16-CW□/□L4■02	
15°	Without connector With right angle connector With straight connector	AC16-RY□/□L4■ AC16-RY□/□L4■01 AC16-RY□/□L4■02	AC16-CY□/□L4■ AC16-CY□/□L4■01 AC16-CY□/□L4■02	AC16-GY□/□L4■ AC16-GY□/□L4■01 AC16-GY□/□L4■02
360°/26 (13.85°)	Without connector With right angle connector With straight connector	AC16-RZ□/□L4■ AC16-RZ□/□L4■01 AC16-RZ□/□L4■02	AC16-CZ□/□L4■ AC16-CZ□/□L4■01 AC16-CZ□/□L4■02	AC16-GZ□/□L4■ AC16-GZ□/□L4■01 AC16-GZ□/□L4■02

Notes:
*1 Replace the □□ marks by the Start and End positions

Step angle	30°	360°/13	15°	360°/26
Start and End positions	0 to 11	0 to 12	0 to 23	0 to 25

*2 Replace the ■ mark by the connector
Blank: 8-terminal, without connector
A01: 8-terminal, with right angle connector
A02: 8-terminal, with straight connector
B00: 7-terminal, without connector
B01: 7-terminal, with right angle connector
B02: 7-terminal, with straight connector

• Adaptor mounting (32mm mounting pitch)

Angle of step	Connector	Type*1 *2 *3		
		Real binary code	Complementary binary code	Real gray code
30°	Without connector With right angle connector With straight connector	AC32-RX□/□( )■ AC32-RX□/□( )■01 AC32-RX□/□( )■02	AC32-CX□/□( )■ AC32-CX□/□( )■01 AC32-CX□/□( )■02	AC32-GX□/□( )■ AC32-GX□/□( )■01 AC32-GX□/□( )■02
360°/13 (27.69°)	Without connector With right angle connector With straight connector	AC32-RW□/□( )■ AC32-RW□/□( )■01 AC32-RW□/□( )■02	AC32-CW□/□( )■ AC32-CW□/□( )■01 AC32-CW□/□( )■02	
15°	Without connector With right angle connector With straight connector	AC32-RY□/□( )■ AC32-RY□/□( )■01 AC32-RY□/□( )■02	AC32-CY□/□( )■ AC32-CY□/□( )■01 AC32-CY□/□( )■02	AC32-GY□/□( )■ AC32-GY□/□( )■01 AC32-GY□/□( )■02
360°/26 (13.85°)	Without connector With right angle connector With straight connector	AC32-RZ□/□( )■ AC32-RZ□/□( )■01 AC32-RZ□/□( )■02	AC32-CZ□/□( )■ AC32-CZ□/□( )■01 AC32-CZ□/□( )■02	AC32-GZ□/□( )■ AC32-GZ□/□( )■01 AC32-GZ□/□( )■02

Notes:
*1 Replace the □□ marks by the Start and End positions

Step angle	30°	360°/13	15°	360°/26
Start and End positions	0 to 11	0 to 12	0 to 23	0 to 25

*2 Replace the ( ) mark by the shaft length
L1: 14.5mm L2: 16.5mm L3: 18.5mm L4: 20.5mm

*3 Replace the ■ mark by the connector
Blank: 8-terminal, without connector
A01: 8-terminal, with right angle connector
A02: 8-terminal, with straight connector
B00: 7-terminal, without connector
B01: 7-terminal, with right angle connector
B02: 7-terminal, with straight connector

■ 24-position

R: Real binary code

Terminal No.	Bit No.	Setting position 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
A	1		●		●		●		●		●		●		●		●		●		●		●		●
F	2			●	●			●	●			●	●			●	●			●	●			●	●
B	4					●	●	●	●					●	●	●	●					●	●	●	●
E	8									●	●	●	●	●	●	●	●								
C	16																	●	●	●	●	●	●	●	●
G	INH	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
D	C																								

C: Complementary binary code

Terminal No.	Bit No.	Setting position 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
A	1	●		●		●		●		●		●		●		●		●		●		●		●	
F	2	●	●			●	●			●	●			●	●			●	●			●	●		
B	4	●	●	●	●					●	●	●	●					●	●	●	●				
E	8	●	●	●	●	●	●	●	●									●	●	●	●	●	●	●	●
C	16	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●								
G	INH	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
D	C																								

G: Real gray code

Terminal No.	Bit No.	Setting position 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
A	a		●	●			●	●			●	●			●	●			●	●			●	●	
F	b			●	●	●	●					●	●	●	●					●	●	●	●		
B	c					●	●	●	●	●	●	●	●									●	●	●	●
E	d									●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
C	e																	●	●	●	●	●	●	●	●
G	P		●		●		●		●		●		●		●		●		●		●		●		●
D	C																								

■ 12-position

R: Real binary code

Terminal No.	Bit No.	Setting position 0	1	2	3	4	5	6	7	8	9	10	11
A	1		●		●		●		●		●		●
F	2			●	●			●	●			●	●
B	4					●	●	●	●				
E	8									●	●	●	●
C	P		●	●		●			●	●			●
G	INH	●	●	●	●	●	●	●	●	●	●	●	●
D	C												

C: Complementary binary code

Terminal No.	Bit No.	Setting position 0	1	2	3	4	5	6	7	8	9	10	11
A	1	●		●		●		●		●		●	
F	2	●	●			●	●			●	●		
B	4	●	●	●	●					●	●	●	●
E	8	●	●	●	●	●	●	●	●				
C	P		●	●		●			●	●			●
G	INH	●	●	●	●	●	●	●	●	●	●	●	●
D	C												

G: Real gray code

Terminal No.	Bit No.	Setting position 0	1	2	3	4	5	6	7	8	9	10	11
A	a		●	●			●	●			●	●	
F	b			●	●	●	●					●	●
B	c					●	●	●	●	●	●	●	●
E	d									●	●	●	●
C	P		●		●		●		●		●		●
G													
D	C												

■ 26-position

R: Real binary code

Terminal No.	Bit No.	Setting position 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
A	1		●		●		●		●		●		●		●		●		●		●		●		●		●
F	2			●	●			●	●			●	●			●	●			●	●			●	●		
B	4					●	●	●	●					●	●	●	●					●	●	●	●		
E	8									●	●	●	●	●	●	●	●									●	●
C	16																	●	●	●	●	●	●	●	●	●	●
G	INH	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
D	C																										

C: Complementary binary code

Terminal No.	Bit No.	Setting position 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
A	1	●		●		●		●		●		●		●		●		●		●		●		●		●	
F	2	●	●			●	●			●	●			●	●			●	●			●	●			●	●
B	4	●	●	●	●					●	●	●	●					●	●	●	●					●	●
E	8	●	●	●	●	●	●	●	●									●	●	●	●	●	●	●	●		
C	16	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●										
G	INH	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
D	C																										

G: Real gray code

Terminal No.	Bit No.	Setting position 0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
A	a		●	●			●	●			●	●			●	●			●	●			●	●			●
F	b			●	●	●	●					●	●	●	●					●	●	●	●				
B	c					●	●	●	●	●	●	●	●									●	●	●	●	●	●
E	d									●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
C	e																	●	●	●	●	●	●	●	●	●	●
G	P		●		●		●		●		●		●		●		●		●		●		●		●		●
D	C																										

■ 13-position

R: Real binary code

Terminal No.	Bit No.	Setting position 0	1	2	3	4	5	6	7	8	9	10	11	12
A	1		●		●		●		●		●		●	
F	2			●	●			●	●			●	●	
B	4					●	●	●	●					●
E	8									●	●	●	●	●
C	P		●	●		●			●	●			●	
G	INH	●	●	●	●	●	●	●	●	●	●	●	●	●
D	C													

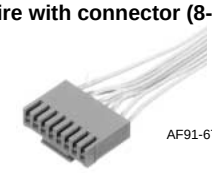
C: Complementary binary code

Terminal No.	Bit No.	Setting position 0	1	2	3	4	5	6	7	8	9	10	11	12
A	1	●		●		●		●		●		●		●
F	2	●	●			●	●			●	●			●
B	4	●	●	●	●					●	●	●	●	
E	8	●	●	●	●	●	●	●	●					
C	P		●	●		●			●	●			●	
G	INH	●	●	●	●	●	●	●	●	●	●	●	●	●
D	C													

INH : Inhibit terminal
P : Parity check terminal
C : Common terminal
● : Turned ON

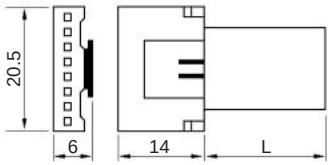
■ Accessories

Lead wire with connector (8-terminal)



AF91-675

Length of lead wire (m)	Type	Mass (g)
0.5	**ACX011-805**	11
1.0 (Standard)	**ACX011-810**	19
2.0	**ACX011-820**	33



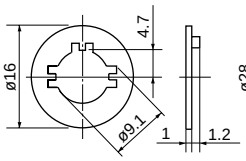
L: 0.5, 1.0, 2.0m

Lock ring

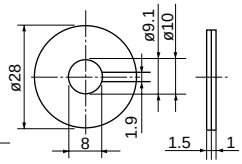
AF91-710

	Type	Mass (g)
Lock ring (inserted)	**ACX001**	2
Lock ring (sealed)	**ACX001A**	5

ACX001

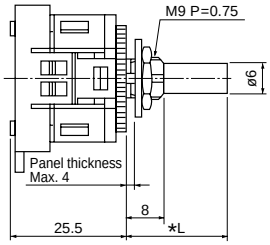


ACX001A

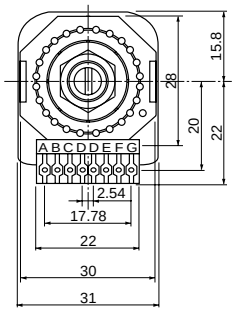


■ Dimensions, mm

AC09

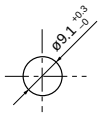


8-terminal

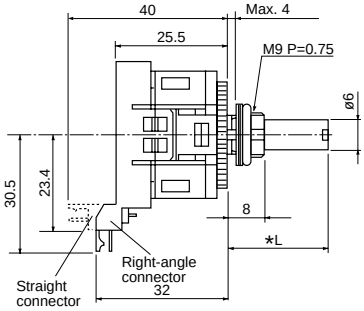


Shaft length *	L1	L2	L3	L4
	16	18	20	22
Mass (g)				
Without connector	41	42	43	44
With connector	42	43	44	45

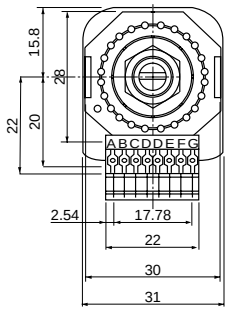
Panel cutting



AC09 (with connector)

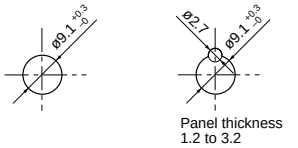


8-terminal

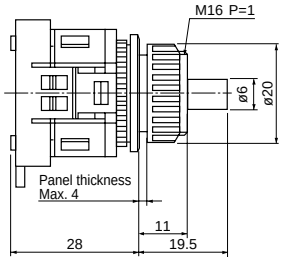


Panel cutting

In case of using lock ring
(AC09-□/0007)

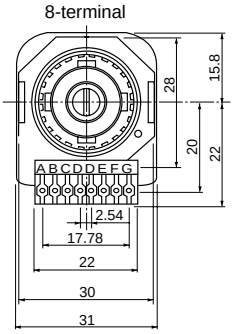


AC16

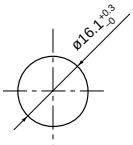


Mass: 47g

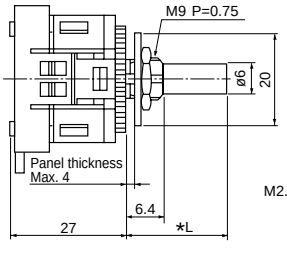
8-terminal



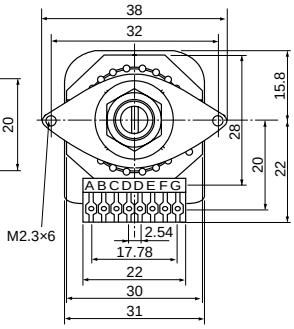
Panel cutting



AC32

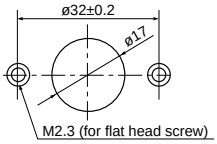


8-terminal

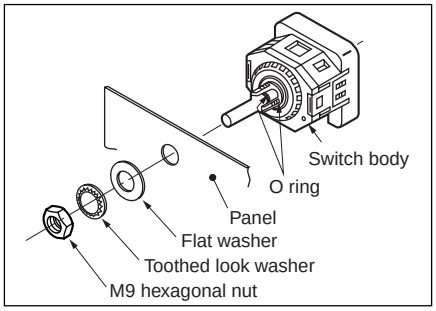


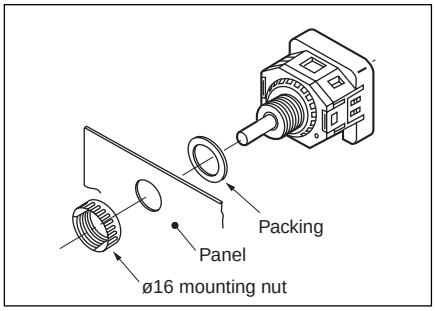
Shaft length *	L1	L2	L3	L4
	14.5	16.5	18.5	20.5
Mass (g)	47	48	49	50

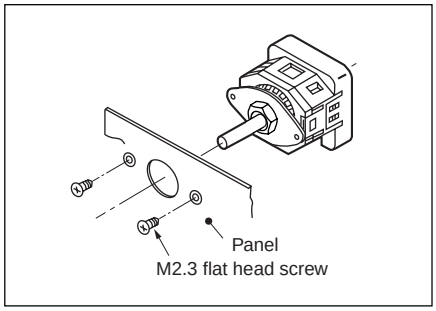
Panel cutting



■ Installation







AC09
Pass the switch body through the hole from the back of the panel, and secure it by tightening the hexagonal nut with a flat washer and a toothed lock washer.
The recommended tightening torque for the hexagonal nut is 1.5 to 2N·m.
Insert the lock ring (ACX001) between the panel and the flat washer, and the adhesive lock ring (ACX001A) between the switch body and the panel.

AC16
Pass the switch body with a bezel through the hole from the back of the panel, and secure it with a ϕ16 mounting nut. The recommended tightening torque for the nut is 0.6 to 1N·m.

AC32
Pass the switch body through the hole from the back of the panel, and secure it with two flat head screws from the face of the panel. The recommended tightening torque for the flat head screws is 0.3 to 0.5N·m.

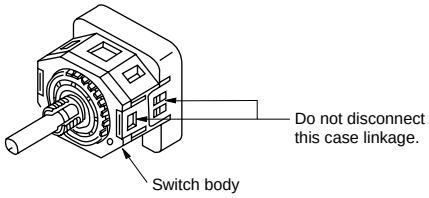
■ Notes on use

1. Connecting wires

Note the following points when soldering:

- The power of the soldering iron must not be over 30W.
- Use solder with resin flux core.
- Complete soldering within 5 seconds if using a 30W soldering iron, or within 10 seconds if using a 20W soldering iron.

2. Note on the case linkage



3. Number of stopper screws shipped

● AC09 and AC32

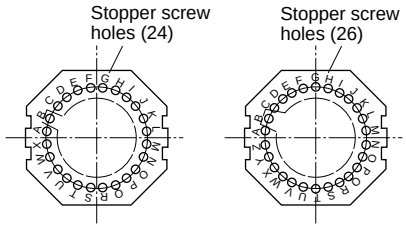
- Step angle: 30° (symbol X)
  Positions 0/11 (0 to 11): one screw. User-selectable start and stop positions: two screws (one for start position, one for end position).
- Step angle: 15° (symbol Y)
  Positions 0/22 (0 to 22): one screw. User-selectable start and stop positions: two screws (one for start position, one for end position).
- Step angle: 360°/26 (symbol Z)
  Positions 0/24 (0 to 24): one screw. User-selectable start and stop positions: two screws (one for start position, one for end position).

● AC16

Customers can specify the stopper screw positions. The switch is then shipped with stopper screws already in the specified positions.

4. Stopper screw positions

Insert stopper screws into the switch body holes marked with letters, as shown in the insertion example on the right. These tables below show that the start position stopper screw is inserted in the hole on the left of the position setting and the end positions stopper screw is inserted in the hole on the right.

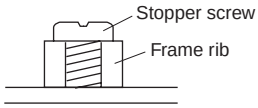


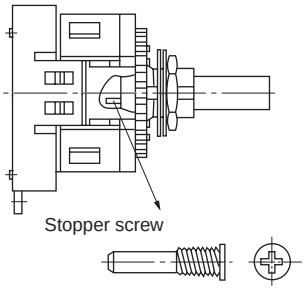
If step angle X (30°) or Y (15°) is specified.

If step angle W (360°/13) or Z (360°/26) is specified.

5. Installing a stopper screw

The maximum tightening torque for a stopper screw is 0.1N·m. Screw the stopper screw into position until it hits the body frame rib. Do not overtighten the screw.





Insertion example 1

AC09-C □ 0/7L1 □

① **Step angle**
X: 30°, W: 360°/13,
Y: 15°, Z: 360°/26

② **Start position setting: 0**

③ **End position setting: 7**

④ **With a stopper screw**
Blank: With stopper screw
E: No stopper screw

• If symbol ① (step angle) is X-----type AC09-CX0/7L1:
Insert the start side stopper screw in hole A and the end side screw in hole Q.

Start position setting — End position setting — Range of switch action

Setting	0	1	2	3	4	5	6	7	8	9	10	11
Stopper screw position	A	C	E	G	I	K	M	O	Q	S	U	W	A

Start side stopper screw position — End side stopper screw position

• If symbol ① (step angle) is W-----type AC09-CW0/7L1:
Insert the start side stopper screw in hole A and the end side screw in hole Q.

Start position setting — End position setting — Range of switch action

Setting	0	1	2	3	4	5	6	7	8	9	10	11	12
Stopper screw position	A	C	E	G	I	K	M	O	Q	S	U	W	Y	A

Start side stopper screw position — End side stopper screw position

• If symbol ① (step angle) is Y-----type AC09-CY0/7L1:
Insert the start side stopper screw in hole A and the end side screw in hole J.

Start position setting — End position setting — Range of switch action

Setting		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Stopper screw position	Start side	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
	End side	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	A	B

Start side stopper screw position — End side stopper screw position

Notes: 1. If the range of action is designated as 0/22 (0 to 22), insert a stopper screw into hole A only.
2. If the range of action is designated as 0/23 (0 to 23), no stopper screws are inserted (symbol ④ is E).

• If symbol ① (step angle) is Z-----type AC09-CZ0/7L1:
Insert the start side stopper screw in hole A and the end side screw in hole J.

Start position setting — End position setting — Range of switch action

Setting		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Stopper screw position	Start side	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
	End side	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	A	B

Start side stopper screw position — End side stopper screw position

Notes: 1. If the range of action is designated as 0/24 (0 to 24), insert a stopper screw in hole A only.
2. If the range of action is designated as 0/25 (0 to 25), no stopper screws are inserted (symbol ④ is E).

Insertion example 2

AC09-RX2/11

Step angle
Start position setting
End position setting

Start position setting — End position setting — Range of switch action

Setting	0	1	2	3	4	5	6	7	8	9	10	11
Stopper screw position	A	C	E	G	I	K	M	O	Q	S	U	W	A

Start side stopper screw position — End side stopper screw position

Cam-type control selector switches

■ Description

FUJI cam-type control switches are recommended for use on switchboards, control panels and switchgear because of their reliability in service. The main type is RC310 with operational current ratings of 10A.
Simplified and economical circuits can be designed around the RC310, since it can handle loads of up to 10A at 220VAC without the need of contactors. Typical examples of complex circuits based on the attractive features of these economical cam-type selector switches are given on pages 04/265 to 04/268.
FUJI is prepared to manufacture other versions to suit your particular applications, and switches with up to 12 selector positions can be made to order.
RC310 switches are normally supplied with H-type handles. Alternative handle shapes available include the pistol-grip P-type, cane-handle shaped S-type and rosette shaped R-type.
Switches with a 2-12 position maintained type, 3-position center spring-return type and center spring-return type with locking device are also available.

■ Ordering information

Specify the following *(See page 04/264):*

1. Type number
2. Mounting method
3. Operation
4. Selector position and notch angles
5. No. of contact blocks
6. Contact arrangement
7. Handle
8. Handle colors

Example

Cam switch,
rated current 10A RC310-1
Flush mounting x
Maintained operation ..... M
Contact arrangement 3201
(3-position, 2 contact blocks,
H type handle ..... H
Black color handle..... B
Type number RC310x-1M3201HB

Note: "C" in the type No. nomenclature must be filled with numbers appearing in the table of "The Contact Arrangement". *(page 04/265)*
When requiring special arrangements not appearing in the list clearly specify the arrangement required. Note that "C" in the type nomenclature must not be removed in this case.
RC310x-1MCHB

Type	Flush mounting x-type	Semi-flush mounting	Enclosed g-type
RC310-1	SG-740 **RC310x-1**	SG-743 **RC310-1**	AF-191 **RC310g-1**

■ Ratings

Type	Rated thermal current (A)	Breaking capacity (A) Voltage (V)	AC Inductive	DC Resistive	DC Inductive
RC310-1	10	24	10	10	5
		110	7.5	3	1.3
		220	7.5	0.8	0.45
		440	2.5	0.4	0.2
		550	2	0.3	0.15

■ Technical data

Insulation resistance: Over 100MΩ at 500VDC
Dielectric strength: 2,500VAC. 1 minute
Ambient temperature: –5° to +60°C
Operating cycle: 600 cycles/hour

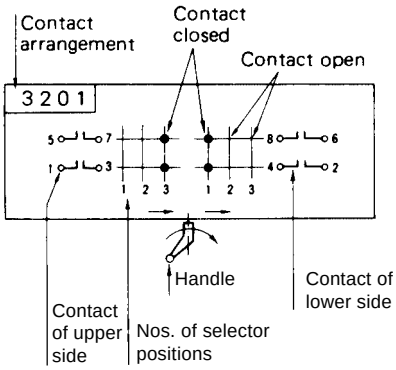
■ Contact arrangement: *See page 04/265.*

■ Life expectancy (operations)

Type	Mechanical	Electrical
RC310-1	5 million	250,000 at 220VAC 7.5A 500,000 at 220VAC 3A

■ Contact arrangement (typical)

(Viewed from the direction of the handle)



Cam Type
RC310
Control selector switches

■ Type number nomenclature

RC310 series

RC310 □ -1□ □ □ □

- Mounting
  - Blank: Semi-flush mounting
  - x: Flush mounting
  - g: With enclosure
- Operation
- Contact arrangement *See page 04/265*
- Handle
- Handle color

• Handle color

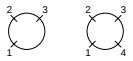
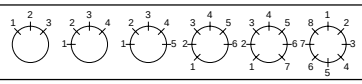
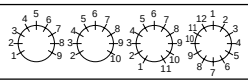
B: Black

• Operation

Model	Description	
M	Maintained	
A	Center spring return	
L	Center spring return with locking device (Pull to turn)	

● Available

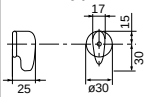
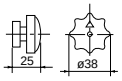
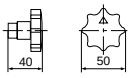
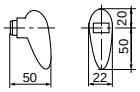
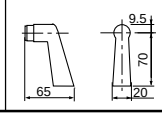
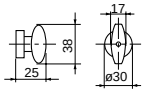
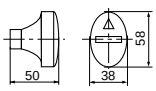
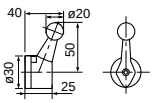
• Selector position and notch angle

Operation	Notch angle	Position
M	90° 2 position	
	90° * 3, 4 position	
	45° * 3-8 position	
	30° 9-12 position	
A	45°	
L	45°	(With locking device)

Note: * 3 or 4-position type notch angle is normally 45 degrees.
Specify when ordering other than this.

● Available

• Handle

Type	Standard	Versions						
	H type	R type	W type	S type	P type	K type	D type	G type
RC310-1								

• Ratings

Type	Rated thermal current (A)	Voltage (VAC)	Number of contact blocks	Selector position and notch angle	Flush mounting (x-type) Type	Semi-flush mounting Type	Enclosed (g-type) Type
RC310-1	10	550	1	*See the table above.*	**RC310x-1□■**	**RC310-1□■**	**RC310g-1□■**
			2		**RC310x-1□■**	**RC310-1□■**	**RC310g-1□■**
			3		**RC310x-1□■**	**RC310-1□■**	**RC310g-1□■**
			4		**RC310x-1□■**	**RC310-1□■**	
			5		**RC310x-1□■**	**RC310-1□■**	
			6		**RC310x-1□■**	**RC310-1□■**	–
			7		**RC310x-1□■**	**RC310-1□■**	–
			8		**RC310x-1□■**	**RC310-1□■**	–
			9		**RC310x-1□■**	**RC310-1□■**	–
			10		**RC310x-1□■**	**RC310-1□■**	–

Note: □: Type of operation ■: Contact arrangement – *See page 04/265.*

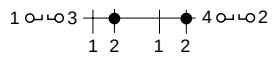
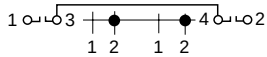
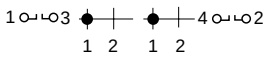
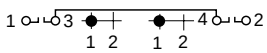
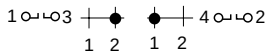
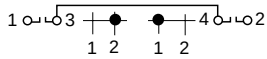
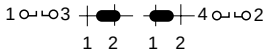
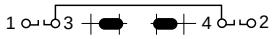
■ Contact arrangement

The following diagrams show the cam-type selector switch contact arrangement. These are only typical examples and other versions can be manufactured to meet your special requirements. Contact FUJI for details.
The figures appearing on the right side indicate the contact arrangement. This information must be given when ordering.

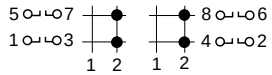
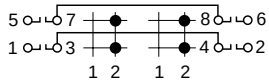
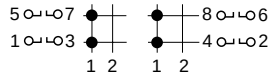
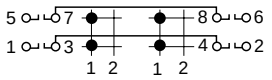
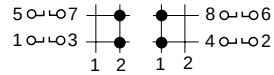
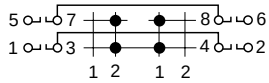
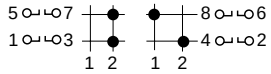
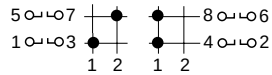
3 2 0 1

- No. of contact arrangements: Indicates the arrangement number.
- No. of contact blocks: Up to 10 blocks can be mounted. (0 indicates 10 blocks)
- No. of selector positions

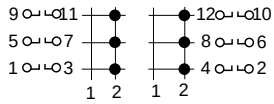
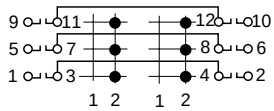
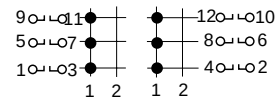
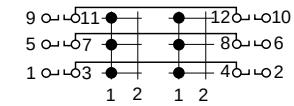
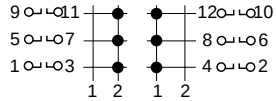
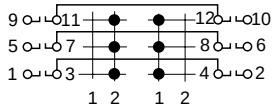
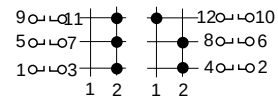
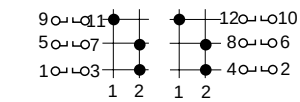
2-position 1-contact block

2101 	2102 	2103 	2104 
2105 	2106 	2107 Over rap contact (early make, late break) 	2108 Over rap contact (early make, late break) 

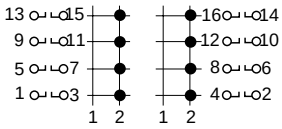
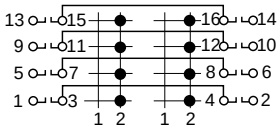
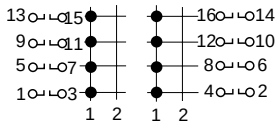
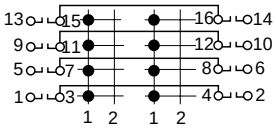
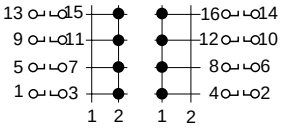
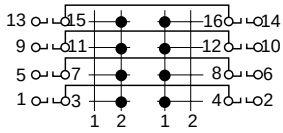
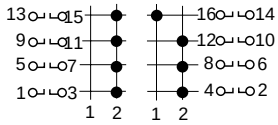
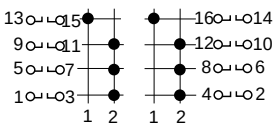
2-position 2-contact block

2201 	2202 	2203 	2204 
2205 	2206 	2207 	2208 

2-position 3-contact block

2301 	2302 	2303 	2304 
2305 	2306 	2307 	2308 

2-position 4-contact block

2401 	2402 	2403 	2404 
2405 	2406 	2407 	2408 

■ Contact arrangement

3-position 1-contact block

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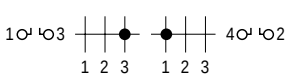

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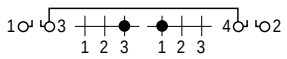

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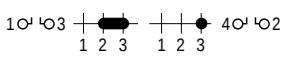

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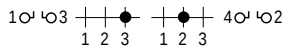

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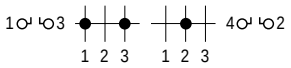

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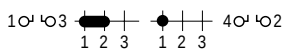

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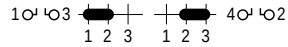

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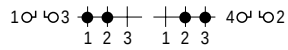

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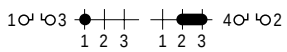

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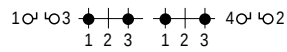

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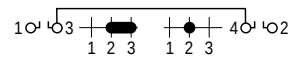

3-position 2-contact block

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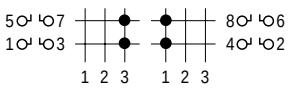

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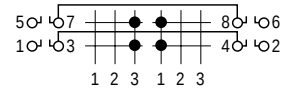

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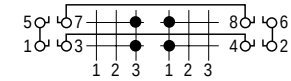

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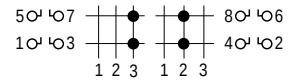

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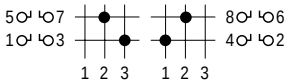

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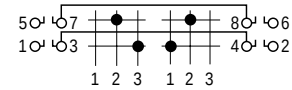

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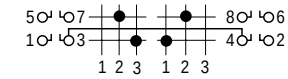

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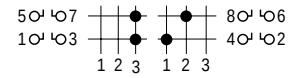

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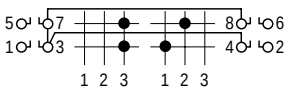

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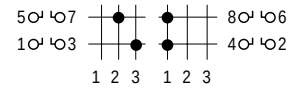

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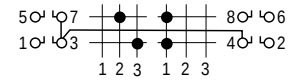

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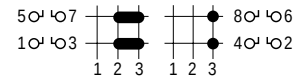

3-position 3-contact block

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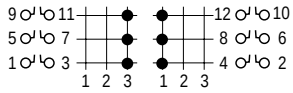

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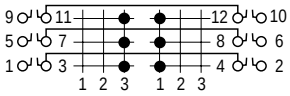

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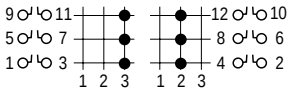

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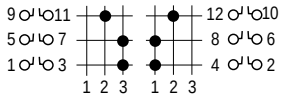

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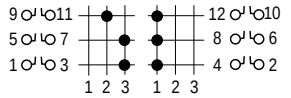

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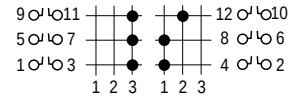

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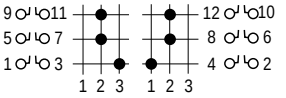

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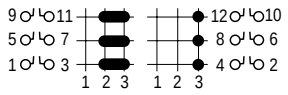

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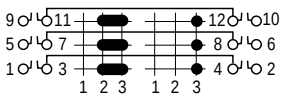

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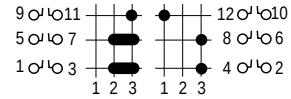

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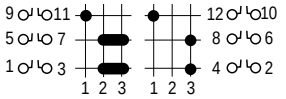

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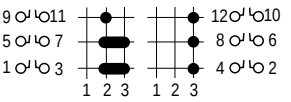

■ Contact arrangement

4-position 2-contact block

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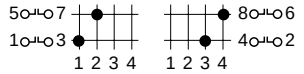

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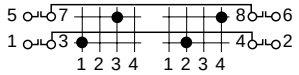

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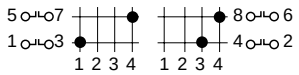

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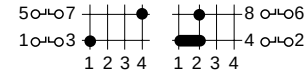

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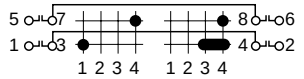

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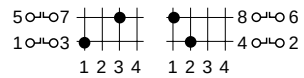

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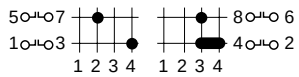

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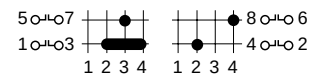

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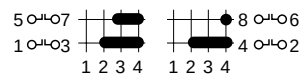

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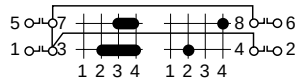

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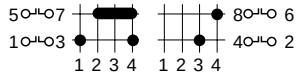

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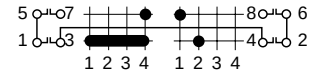

4-position 3-contact block

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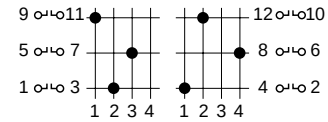

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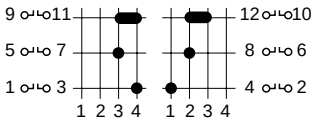

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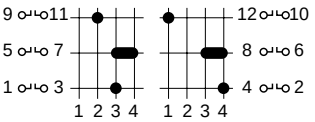

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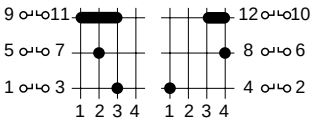

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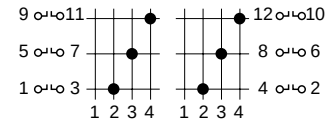

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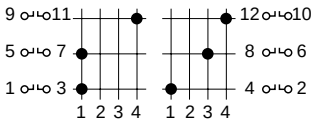

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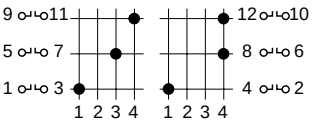

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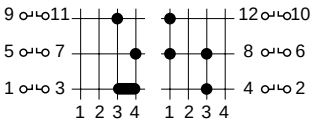

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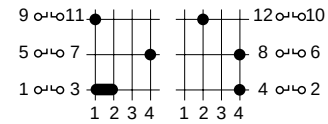

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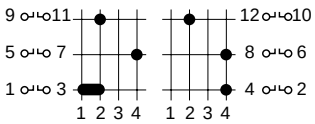

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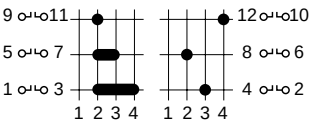

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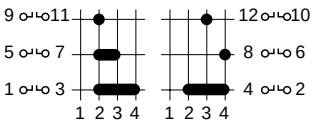

4-position 4-contact block

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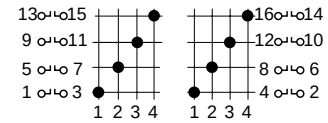

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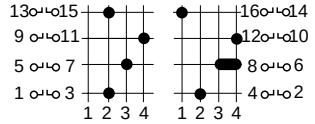

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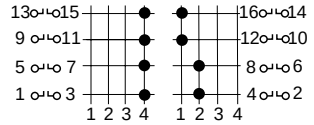

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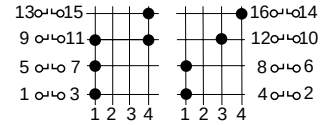

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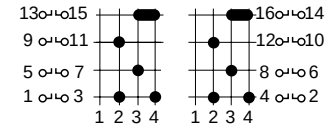

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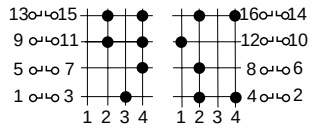

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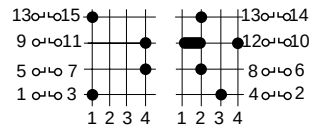

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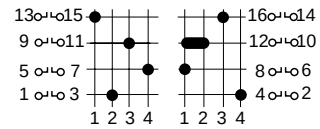

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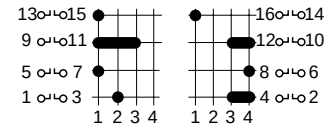

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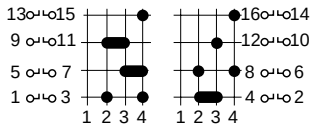

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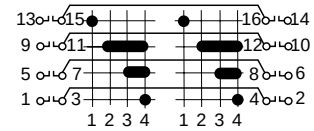

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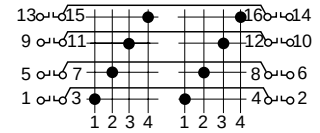

■ Contact arrangement

5-position 2-contact block

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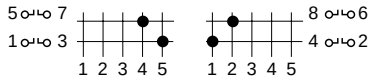

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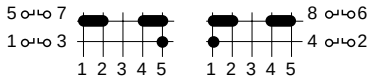

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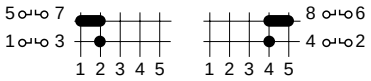

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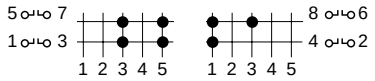

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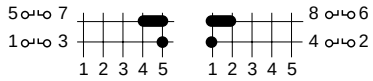

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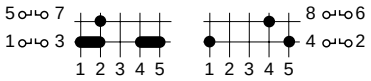

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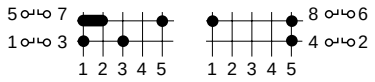

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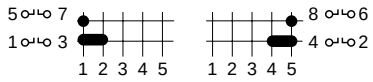

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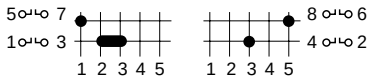

5-position 3-contact block

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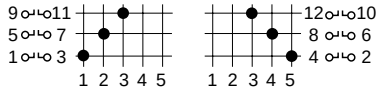

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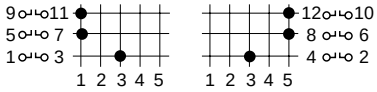

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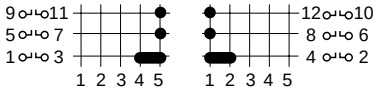

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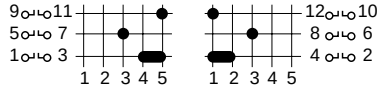

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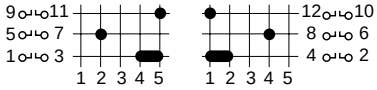

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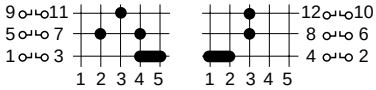

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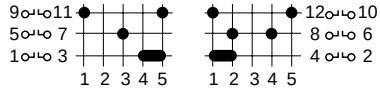

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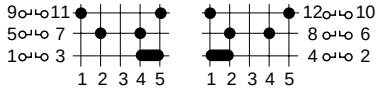

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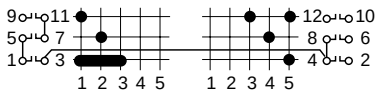

5-position 4-contact block

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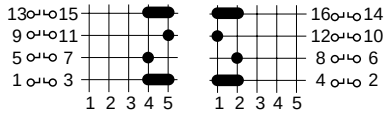

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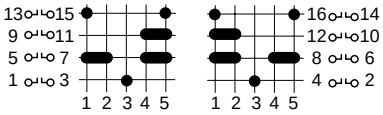

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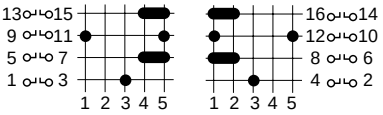

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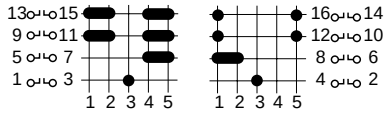

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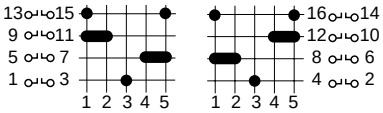

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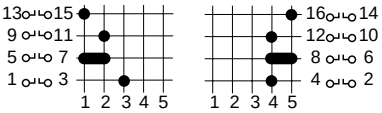

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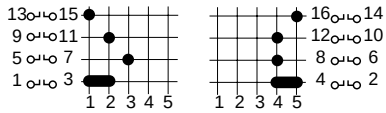

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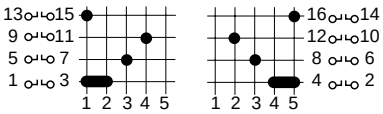

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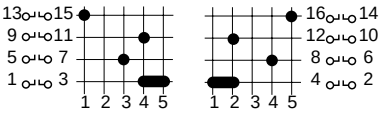
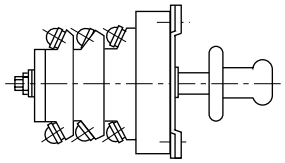
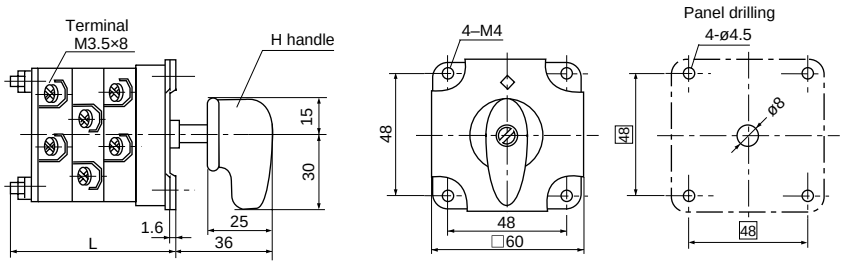


■ Dimensions, mm

Flush mounting
RC310x-1

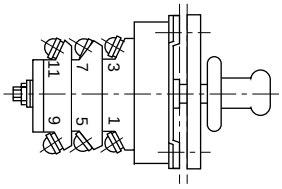
No. of contact blocks	1	2	3	4	5	6	7	8	9	10
L	39.5	51.5	63.5	75.5	87.5	99.5	111.5	123.5	135.5	147.5

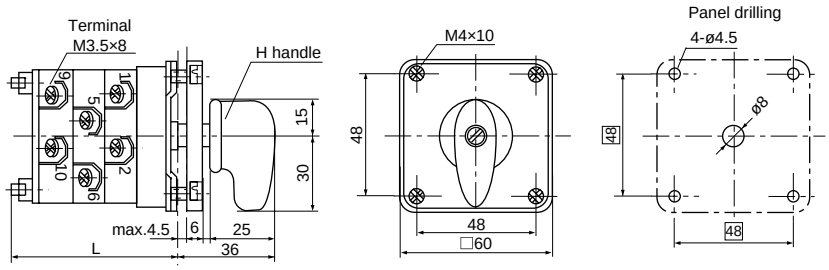




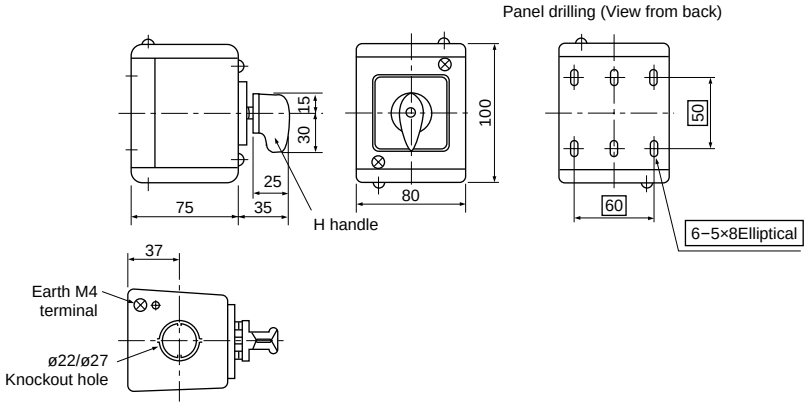
Semi-flush mounting
RC310-1

No. of contact blocks	1	2	3	4	5	6	7	8	9	10
L	39.5	51.5	63.5	75.5	87.5	99.5	111.5	123.5	135.5	147.5





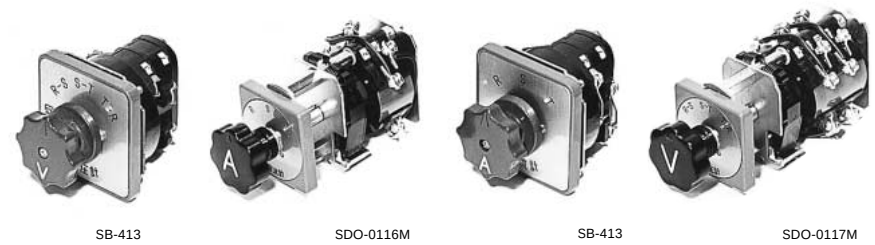
Enclosed (Up to 3-contact block)
RC310g-1



Voltmeter/Ammeter Changeover Switches

■ Description

These switches are used with voltmeters or ammeters in secondary PT or CT circuits. Normally, 3-phase line voltage or phase current is measured with 3 meters provided, which requires considerable switchboard or console space. Space can be saved by using NS387 and RC310 instrument switches, since the phase current or line voltage can be read with a single meter and either VS or AS (Voltmeter or Ammeter switch). FUJI AS's are precisely and ruggedly constructed, and open circuits do not occur at the time of switch-over, so eliminating the possibility of abnormal voltage trouble. NS387 is a blade-type switch and RC310 is a cam-type. Both are compact in size and use highly dependable silver contacts. FUJI can also supply DC voltmeter type switches in addition to these for AC use.



RC310-1V0 **NS387/2M** **RC310-1A20** **NS387/4V**

■ Ordering information

Specify the following:
1. Type number

Series	Application	Type	Ordering code	No. of contact block	Legend plate *	Handle angle	With or without Off position	Mass (kg)
NS387	AC Voltmeter	**NS387/4V**	AC38V4N	4	R-S · S-T · T-R	2 x 45°	Without	0.5
	AC Voltmeter	**NS387/4V0**	AC38V4F	4	OFF · R-S · S-T · T-R	3 x 45°	With	0.5
	DC Voltmeter	**NS387/2V**	AC38V2N	2	I · OFF · II	2 x 45°	With	0.43
	AC Ammeter	**NS387/2M**	AC38A2N	2	R · S · T	2 x 45°	Without	0.43
	AC Ammeter	**NS387/2M0**	AC38A2F	3	OFF · R · S · T	3 x 45°	With	0.47
	AC Ammeter	**NS387/3M**	AC38A3N	3	R · S · T	2 x 45°	Without	0.47
	AC Ammeter	**NS387/4M**	AC38A43F	4	OFF · R · S · T	3 x 45°	With	0.5
RC310	AC Voltmeter	**RC310-1V**	AK2R1-V32	2	R-S · S-T · T-R	2 x 45°	Without	0.22
	AC Voltmeter	**RC310-1V0**	AK2R1-V42	2	OFF · R-S · S-T · T-R	3 x 45°	With	0.22
	AC Ammeter	**RC310-1A2**	AK2R1-A32	2	R · S · T	2 x 45°	Without	0.22
	AC Ammeter	**RC310-1A20**	AK2R1-A42	2	OFF · R · S · T	3 x 45°	With	0.22
	AC Ammeter	**RC310-1A3**	AK2R1-A33	3	R · S · T	2 x 45°	Without	0.25
	AC Ammeter	**RC310-1A30**	AK2R1-A43	3	OFF · R · S · T	3 x 45°	With	0.25

Note: * For standard type legend plate. Other types can be manufactured by request.

■ Ratings

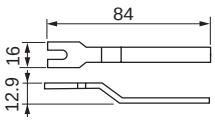
Series	Rated thermal current (A)	Making and breaking capacity AC (inductive) Voltage (V)	Make (A)	Break (A)	DC (inductive) Voltage (V)	Make (A)	Break (A)
NS387	15	110	30	3	24	60	60
		220	30	3	110	15	15
		440	20	2	220	5	5
		550	20	2	440	2.5	2.5
RC310	10	110	37.5	7.5	24	37.5	7.5
		220	37.5	7.5	110	37.5	1.3
		440	37.5	2.5	220	37.5	0.45
		550	37.5	1.5	440	37.5	0.15

■ Handle color (standard)

NS387: Black
RC310: Black

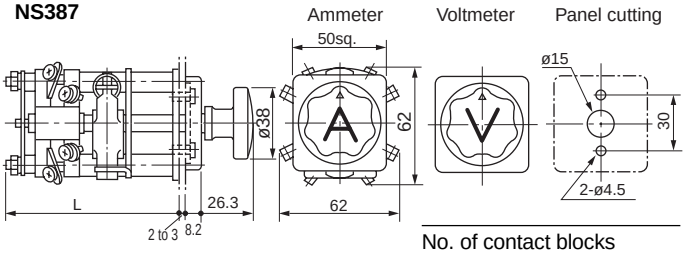
■ Special spanner (for NS387)

Use this spanner for installation or replacement.



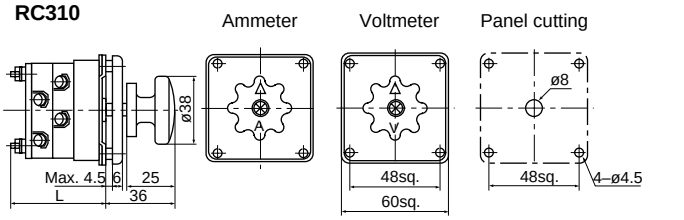
■ Dimensions, mm

NS387



No. of contact blocks	2	3	4
L	90	98	106

RC310



Note: Do not remove the wires connected.

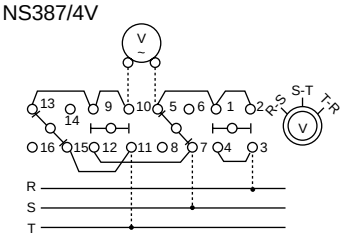
No. of contact blocks	2	3
L	51.5	63.5

■ Wiring diagrams

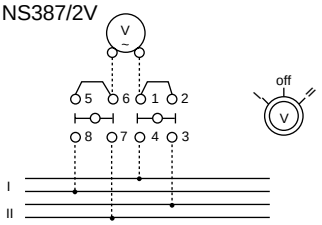
Voltmeter changeover switches

• NS387 series

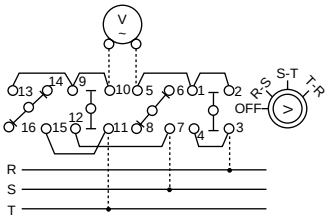
NS387/4V



NS387/2V

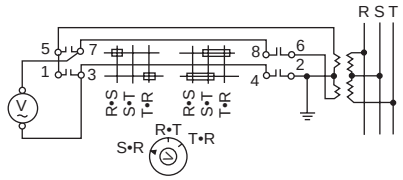


NS387/4V0

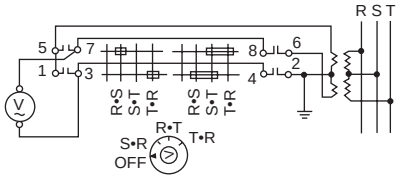


• RC310 series

RC310-1V



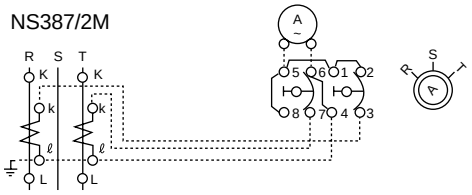
RC310-1V0



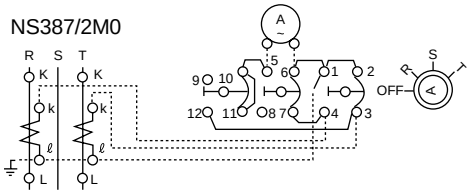
Ammeter changeover switches

• NS387 series

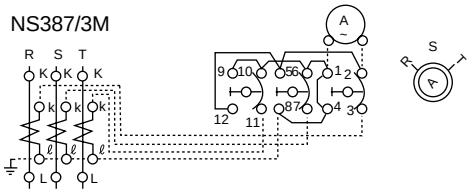
NS387/2M



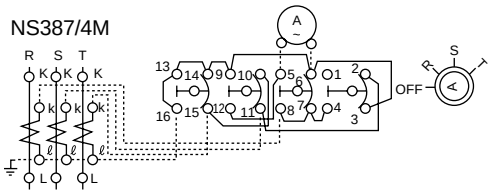
NS387/2M0



NS387/3M

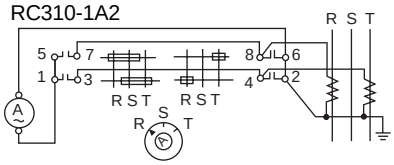


NS387/4M

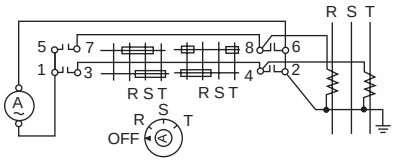


• RC310 series

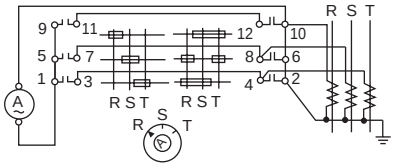
RC310-1A2



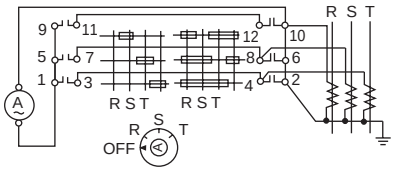
RC310-1A20



RC310-1A3



RC310-1A30



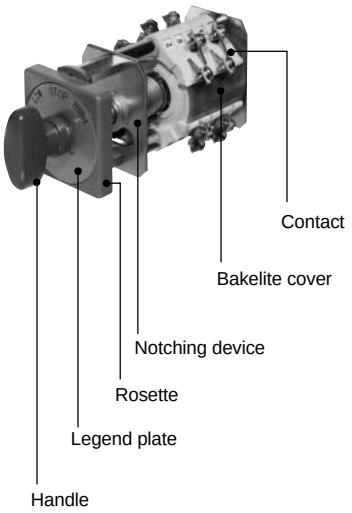
Panel switches for industrial control switchboards

■Description

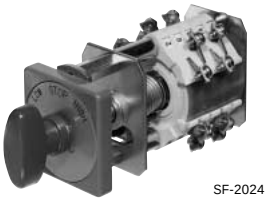
NS387 control switches are used on control panels or consoles to operate H.V. circuit breakers or disconnecting switches. These switches are small in size, dependable and take up little switchboard space. Since they have a large current capacity they can be applied to many types of control circuits.
The movable blade has both an excellent contact performance and a long service life. Switches can be supplied in center spring return for momentary action and maintained versions, with 2, 3 and 4 positions. They can be fitted with H, K or R-type standard FUJI handles. The H-type is used as an ON-OFF switch to control circuit breakers or as a disconnecting switch. The K-type is mainly for regulation use and the R-type is used for controlling the power source. In addition to the standard handles key-controlled handles are also available.
Please refer to page *04/273* of this catalog for typical contact arrangements of these panel switches. We are in a position to supply many other types of switches to meet your particular application needs.

■ Technical data

Insulation resistance: Over 25MΩ at 500V DC
Dielectric strength: 2200V AC rms, 1 minute
Durability
Mechanical: 300,000 operations
Electrical: 100,000 operations at 220V AC 5A
Allowable ambient temperature: –5° to +40°C



NS387/C4+0mHD



NS387/2+2mKD

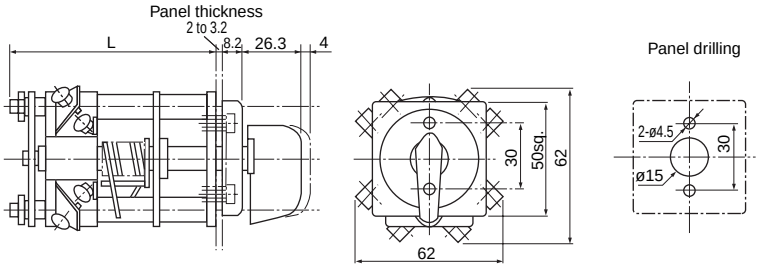
■ Ratings

Contacts	Rated thermal current (A)	Making and breaking capacity DC (inductive) [W] 24V	110V	220V	440V	AC (inductive) [VA] * 110V	220V	440V	550V
Standard contact	15	1440	1650	1100	1100	3300	6600	8800	11000
Residual contact	15	1440	1650	550	220	–	–	–	–
Non-break contact	15	720	825	550	132	–	–	–	–

Note: * When the operated equipment is AC electromagnet, breaking capacity is the above-mentioned 10% or less the cacpacity of the stationary state to which the electromagnet is energized.

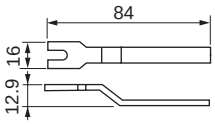
■ Dimensions, mm

With H, I, R, K, KP, KQ, KX, KY type handle



Type	No. of contact blocks 1	2	3	4	5	6
NS387/	82	90	98	106	114	123
NS387S/	82	90	98	106	114	123
NS387/C	82	90	98	106	114	139
NS387/A	82	90	98	106	114	123
NS387/D	82	90	98	106	114	123
Mass (kg)	0.4	0.43	0.47	0.5	0.54	0.57

Special spanner
Use this spanner for installation or replacement



■ Ordering information

Specify the following (*See page 04/273*)
1. Type number
2. Letters or symbols to be printed on legend plate
3. Color of rosette (if you require other color but black standard color)
4. Color of handle
5. Options if required

■ Type number nomenclature

□ NS387 / 1 + 1 + 1m + 1m S1 H1 B L2

Basic type — ① ② ③ ④ ⑤ ⑥ ⑦ ⑧

Construction
Blank: Open type
C: With transparent cover

Operation
C: Maintained, 2-position
A: Maintained, 3-position
Blank: Spring return, 3-position

Handle locking device
See page 04/274

Color of handle and rosette
B: Black
D: Dark green
Note: The standard: Black (B).

Type of handle
See page 04/274

With or without of micro switch
Blank: Without
S1: With a micro switch
S2: With two micro switch
Note: Specify the type of handle locking device when ordering a model equipped with a micro switch.

Note: Specify the embossed characters when ordering a model equipped with a legend plate.

Contact arrangement

Contact arrangement	Code	Contact position	Contact (varies depending on operation)			No. of combinations (varies depending on operation)		
			Blank	C	A	C	A	Blank
①	0–10	Contacts at right angles to the operating handle (in parallel to the operating handle only in the case of the 4-position changeover type)				①+③+④ ≤ 6-block ③+④ ≤ 4-block	①+②+③ +④ ≤ 6-block ③+④ ≤ 6-block	①+②+③ +④ ≤ 6-block ③+④ ≤ 4-block
②	Blank, 1–10	The above contacts ① shifted clockwise by 45°		–				
③	0m–6m	Non-interrupting contacts at right angles to the operating handle (in parallel to the operating handle only in the case of the 4-position changeover type) Code "m" is added after the number of blocks.						
④	Blank, 1m–6m	The above contacts ③ shifted clockwise by 45° Code "m" is added after the number of blocks.						

Notes: • In each of the above contact forms, the symbol ▯ refers to the position of the operating handle.
• If no contacts are required, leave ② and ④ blank and enter "0" for ① and ③.

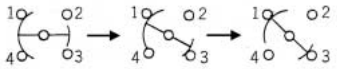
• Operation

Operation	No. of positions	Handle position	Operation angle	Code
Maintained	2		90°	C
	3		45°	A
	4			D
Spring return	(3)			Blank
Spring / manual return	(3)			F
	(3)			E

• Contact

Standard contact

Non-break contact

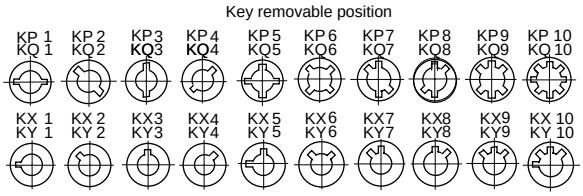


For clockwise rotation, terminals 1, 3, and 4 are conductive before the continuity of terminals 1 and 4 is interrupted. After that, only terminals 1 and 3 are conductive.

■ Operating handle

• Combination of rosette and handle

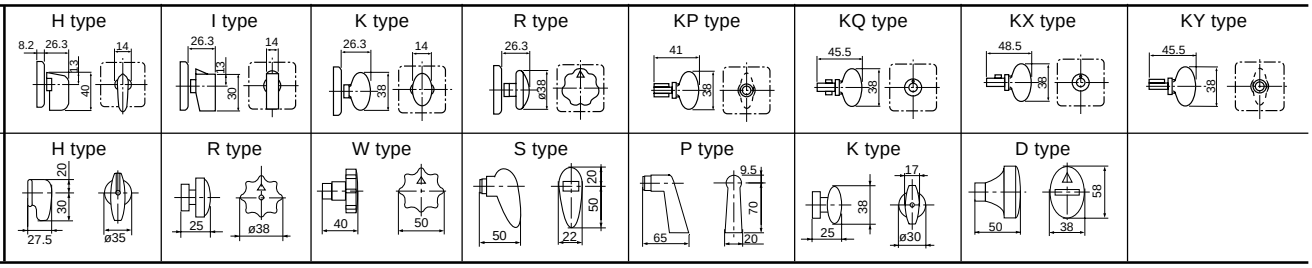
Rosette	Handle	Type of handle (refer to 2. Shape of handle, table below)	
For NS387	For NS387	Without micro switch: H, I, K KP1 – KP10 KQ1 – KQ10 KX1 – KX10 KY1 – KY10 R	
	For RC310	Without micro switch: P, S, D, W	With micro switch: H, P, S, K, D, R, W



Notes: • With micro switch equipped, NS387 panel switch are provided with NS387-use rosette as standard, and with the handle for RC310-1 cam switch.
• The large handle (P, S, D, or W) for the RC310-1 is not compatible with any other handle.

• Shape of handle

For NS387	H type	I type	K type	R type	KP type	KQ type	KX type	KY type
For RC310	H type	R type	W type	S type	P type	K type	D type	

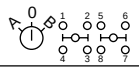
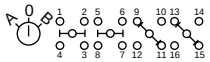
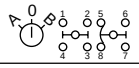
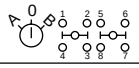
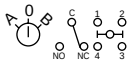
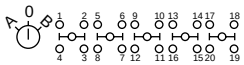
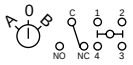
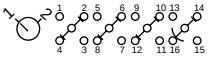
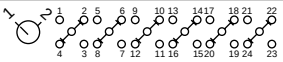
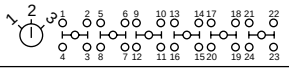
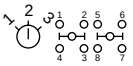
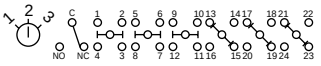


• Types of handle locking

Code	Center spring return type	Maintained type
Blank	In the case of the NS387, the handle can be turned after being pulled, and the handle then returns to the center position automatically when it is released. If the handle needs to be turned without being pulled, order a model with "no handle lock". The RC310 handle can be turned without being locked.	The handle can be turned without being locked.
L1	With a handle for the RC310. The handle can be turned after being pulled, and the handle then returns to the center position automatically when it is released.	The handle can be turned after being pulled, and the handle stops at each notch when it is released.
L2	The handle can be turned without being pulled, and will return to the center position automatically when it is released. The micro switch is activated while the handle is pulled in the center position, and the switch is reset when the handle is released. The handle, however, does not turn left or right when it is pulled.	The handle can be turned after being pulled, and when it is released in any notch position, the handle will stop at that notch position. Moreover, when the handle is pulled in any notch position, the micro switch will be activated, and both the micro switch and handle will be reset when the handle is released. However, the handle cannot be switched to any other notch while it is in the pulled condition.
L3	The handle can be turned without being pulled, and will return to the center position automatically when it is released. When the handle is pulled in the left position, the lock mechanism will activate and no other notch can be selected. In that case, the handle will automatically return to the center position when it is pressed in the shaft direction.	–
L4	The handle can be turned after being pulled. When it is released, the handle will automatically return to the center position in the pulled condition. The handle will return when it is pressed in the shaft direction.	–
L5	The handle can be turned without being pulled, and will return to the center position automatically when it is released. The micro switch will be activated when the handle is pulled in the center position, and the handle will return when the handle is pressed in the shaft direction.	–

Note: If a micro switch is equipped, it will be activated when the handle is pulled.

■ Assembled typical switches

Operation	Type(example)	Contact arrangement	Description
Center spring return	**NS387/2 + 0mHD**		• The handle can be turned after being pulled, and will return to the center position automatically when it is released.
	NS387/2 + 2 + 0mHB		• The handle can be turned after being pulled, and will return to the center position automatically when it is released.
	NS387/1 + 1mHB		• The handle can be turned after being pulled, and will return to the center position automatically when it is released.
	NS387/2 + 0mS1B		• RC310-1 handle, equipped with a rosette. • Add L1 for the pull-and-turn type.
	NS387/1 + 0mS1HDL2		• Provided with a micro switch, RC310-1 handle, and a rosette for the NS387. • The handle can be turned without being pulled, and will return to the center position automatically when it is released. The micro switch will be activated while the handle is pulled in the center position.
	NS387/5 + 0mSBL3		• RC310-1 handle, equipped with the NS387 rosette. • When the handle is pulled in the left position, it will be locked, and the handle will automatically return to the center position when it is pressed in the shaft direction.
	NS387/1 + 0mS1H1BL4		• Equipped with a micro switch, RC310-1 handle, and a rosette for the NS387. • The handle can be turned after being pulled, and will return to the center position automatically when it is released, but the handle remains in the pulled condition. The handle will be reset when it is pressed. • The micro switch will be activated while the handle is pulled.
Maintained 2-position	**NS387/C3 + 1mKB**		–
	NS387/C6 + 0mW1D		• RC310-1 cam switch handle, equipped with a rosette.
Maintained 3-position	**NS387/A6 + 0mRB**		–
	NS387/A2 + 0mH1B		• RC310-1 cam switch handle, equipped with a rosette.
	NS387/A3 + 3 + 0mS1KDL2		• RC310-1 cam switch handle, equipped with the NS387 rosette. • The handle can be turned left or right without being pulled. The micro switch will be activated while the handle is pulled.

For other than above, contact FUJI.

General Information

■ Description

FUJI can supply a variety of terminal blocks for switchboard or switchgear use. FUJI terminal blocks and end barriers are strongly constructed from a phenol resin and have adequate creepage distance and excellent insulation characteristics. Good connections are assured by convenient screw terminals and solderless box lugs. All terminal blocks are designed to carry their rated amperage without danger of overheating. FUJI terminal blocks are available in a variety of types, some of which are illustrated on this page.

AYBN type is simple to assemble and is designed to speed up installation. It is available in up to 12 poles and 600 Amps versions.

AYBS type terminal blocks are made from the highest quality phenol resin and resists tracking. Current ratings are available up to 115 Amps and 12 poles. The customer is required to assemble the channel-mounted type himself. The modular construction allows the number of blocks in a channel to be increased or decreased very easily.

In addition we can also supply the **LT4D type** which is provided with an isolating switch, and **SKT type** power terminal blocks, which are used in motor circuits, power source and similar circuits.

Testing terminals type **LT5** for CT, VT secondary circuits are also available.

Type LT2E

Rail mounted type terminal blocks
600 volts 22 to 600 Amps

■ **Further information:** *See page 04/283.*

SB-232

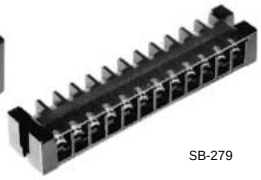
SB-277

Type AYBN

General purpose terminal blocks
600 Volts 15 to 600 Amps

■ **Further information:** *See page 04/277.*

SB-279



SB-279

Type AYBS

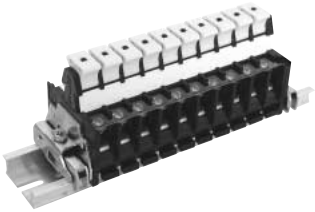
High quality terminal blocks
600 Volts 49 to 115 Amps

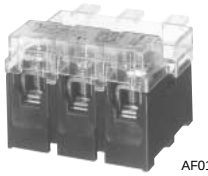
■ **Further information:** *See page 04/279.*

Type LT4D

Rail mounted terminal blocks with isolating switch
660 Volts 20 Amps

■ **Further information:** *See page 04/280.*





AF01-220

Type SKT

Terminal block with pressure solderless box lug type connector on one side and screw type connector on the other.
600 Volts 50 to 200 Amps

■ **Further information:** *See page 04/281.*

Type LT5

Testing terminal and link for VT and CT circuit
250 Volts AC/DC 30 Amps

■ **Further information:** *See page 04/288.*

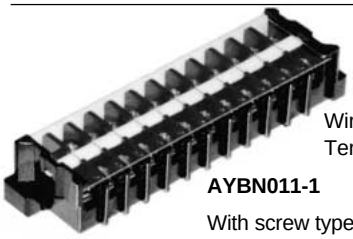
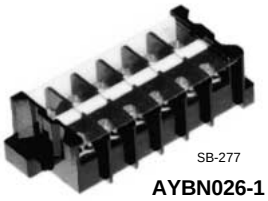
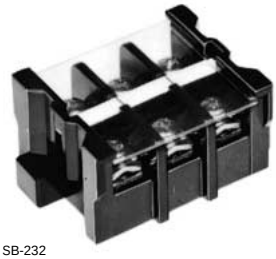
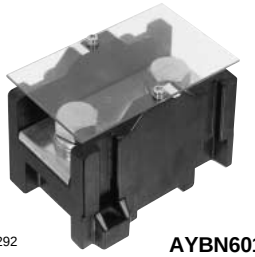
■ Wire gauge and square

The following table shows the relationship between B.W.G., A.W.G. wire gauge and mm^2 cross-sections. In this catalog wire sizes are quoted in mm^2. Please use this table for reference.

Gauge B.W.G.	A.W.G.	Square mm^2	Gauge B.W.G.	A.W.G.	Square mm^2
	4/0	107.2		9	6.6
4/0		104.2	12		6.0
3/0		91.6		10	5.3
	3/0	85.2	13		4.6
2/0		73.2		11	4.2
	2/0	67.5	14		3.5
0		58.6		12	3.3
	0	53.5	15	13	2.63
1		45.6	16		2.14
	1	42.4		14	2.08
2		40.9	17		1.71
3		34.0		15	1.65
	2	33.6		16	1.32
4		28.7	18		1.22
	3	26.7		17	1.03
5		24.5	19		0.89
	4	21.2		18	0.81
6		20.9		19	0.66
	5	16.8	20		0.62
7		16.4	21	20	0.52
8		13.8		21	0.41
	6	13.3	22		0.40
9		11.1		22	0.32
	7	10.5	23		0.32
10		9.1		23	0.26
	8	8.3	24		0.25
11		7.3		24	0.20

B.W.G. Birminghan Wire Gauge
A.W.G. American Wire Gauge

General purpose terminal blocks 600 Volts

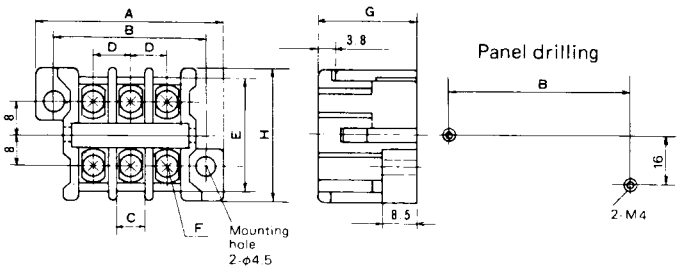
Typical illustration and description	Amps	No. of poles	With spring washer Type	Ordering code	With turtle-shaped washer Type	Ordering code
 Wire size: Max. 2mm² Terminal screw: M3.5 **AYBN011-1** With screw type connectors, marking strip and cover SB-277	15	3	**AYBN013-5**	LT1N-0203B	**AYBN013-1**	LT1N-0203A
		4	**AYBN014-5**	LT1N-0204B	**AYBN014-1**	LT1N-0204A
		6	**AYBN016-5**	LT1N-0206B	**AYBN016-1**	LT1N-0206A
		8	**AYBN018-5**	LT1N-0208B	**AYBN018-1**	LT1N-0208A
		10	**AYBN010-5**	LT1N-0210B	**AYBN010-1**	LT1N-0210A
		12	**AYBN011-5**	LT1N-0212B	**AYBN011-1**	LT1N-0212A
 Wire size: Max. 5.5mm² Terminal screw: M4 SB-277 **AYBN026-1** With screw type connectors, marking strip and cover	25	3	**AYBN023-5**	LT1N-0503B	**AYBN023-1**	LT1N-0503A
		4	**AYBN024-5**	LT1N-0504B	**AYBN024-1**	LT1N-0504A
		6	**AYBN026-5**	LT1N-0506B	**AYBN026-1**	LT1N-0506A
		8	**AYBN028-5**	LT1N-0508B	**AYBN028-1**	LT1N-0508A
		10	**AYBN020-5**	LT1N-0510B	**AYBN020-1**	LT1N-0510A
		12	**AYBN021-5**	LT1N-0512B	**AYBN021-1**	LT1N-0512A
 Wire size: Max. 14mm² Terminal screw: M5	40	3	**AYBN043-5**	LT1N-1403B	**AYBN043-1**	LT1N-1403A
		4	**AYBN044-5**	LT1N-1404B	**AYBN044-1**	LT1N-1404A
Wire size: Max. 22mm² Terminal screw: M6	60	3	**AYBN063-5**	LT1N-2203B	**AYBN063-1**	LT1N-2203A
		4	**AYBN064-5**	LT1N-2204B	**AYBN064-1**	LT1N-2204A
SB-232 **AYBN043-1** With screw type connectors, marking strip and cover						
Wire size: Max. 60mm² Terminal screw: M8	150	3	–		**AYBN103-5** *1	LT1N-6003B
		4	–		**AYBN104-5** *1	LT1N-6004B
Wire size: Max. 100mm² Terminal screw: M10	200	3	–		**AYBN203-5** *2	LT1N-1X03B
		4	–		**AYBN204-5** *2	LT1N-1X04B
Wire size: Max. 200mm² Terminal screw: M12	400	3	–		**AYBN403-5** *2	LT1N-2X03B
		4	–		**AYBN404-5** *2	LT1N-2X04B
SB-277 **AYBN204-5** With screw type connectors, marking strip and cover						
 Wire size: Max. 325mm² Terminal screw: M16	600	1	–		**AYBN601-5** *2	LT1N-3X01B
SG-292 **AYBN601-5**						

Notes: *1 Cross recessed pan head screw type.
*2 Hexagonal bolt

04

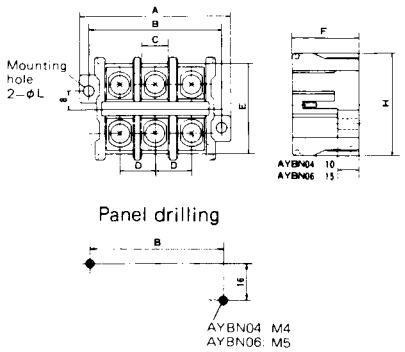
■ Dimensions, mm

15A, 25A Terminal blocks



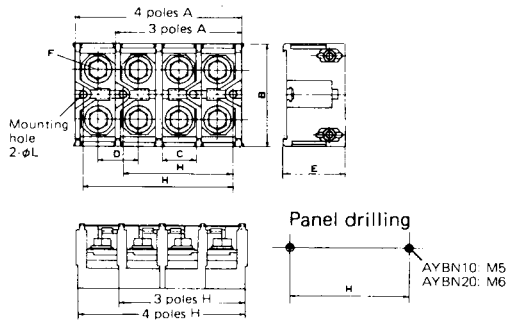
Type	No. of poles	A	B	C	D	E	F	G	H	Mass (g)
AYBN013-1, -5	3	45	37	6.9	9	28	M3.5	23.8	32	20
AYBN014-1, -5	4	54	46	6.9	9	28	M3.5	23.8	32	30
AYBN016-1, -5	6	72	64	6.9	9	28	M3.5	23.8	32	40
AYBN018-1, -5	8	90	82	6.9	9	28	M3.5	23.8	32	50
AYBN010-1, -5	10	108	100	6.9	9	28	M3.5	23.8	32	60
AYBN011-1, -5	12	126	118	6.9	9	28	M3.5	23.8	32	75
AYBN023-1, -5	3	52.5	44.5	9.9	11.5	30	M4	26.8	36	35
AYBN024-1, -5	4	64	56	9.9	11.5	30	M4	26.8	36	40
AYBN026-1, -5	6	87	79	9.9	11.5	30	M4	26.8	36	60
AYBN028-1, -5	8	110	102	9.9	11.5	30	M4	26.8	36	80
AYBN020-1, -5	10	133	125	9.9	11.5	30	M4	26.8	36	95
AYBN021-1, -5	12	156	148	9.9	11.5	30	M4	26.8	36	115

40A, 60A Terminal blocks



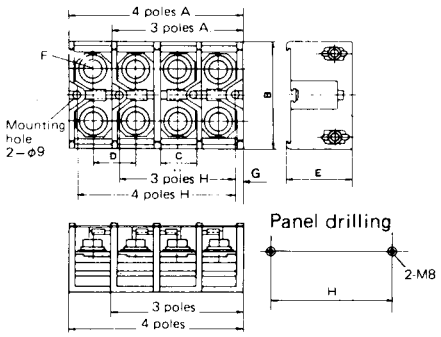
Type	No. of poles	A	B	C	D	E	F	H	L	Mass (g)
AYBN043-1, -5	3	67	59	12.4	16	40	31.8	45	φ4.5	80
AYBN044-1, -5	4	83	75	12.4	16	40	31.8	45	φ4.5	110
AYBN063-1, -5	3	90	78	16.9	20	52	39	60	φ6	160
AYBN064-1, -5	4	113	101	16.9	20	52	39	60	φ6	210

150A, 200A Terminal blocks



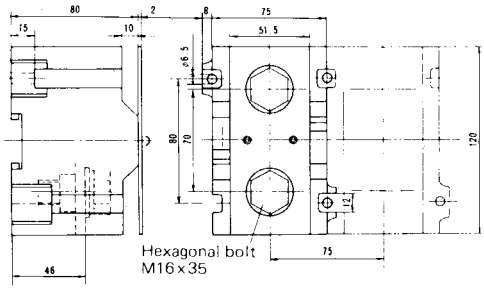
Type	No. of poles	A	B	C	D	E	F	H	L	Mass (g)
AYBN103-5	3	85	79	23	27	51	M8	72	φ6	390
AYBN104-5	4	112	79	23	27	51	M8	99	φ6	510
AYBN203-5	3	110	90	29.7	35	63	M10	96	φ7	740
AYBN204-5	4	145	90	29.7	35	63	M10	131	φ7	970

400A Terminal blocks



Type	No. of poles	A	B	C	D	E	F	G	H	Mass (g)
AYBN403-5	3	175	120	45	55	82	M12	9.5	156	1670
AYBN404-5	4	230	120	45	55	82	M12	9.5	211	2170

600A Terminal blocks



Mass: 1040g

■ Ordering information

Specify the following:

1. Ordering code or type number

■ Technical data

Insulation resistance: Over 100MΩ at 500V DC
Dielectric strength: 2500V AC rms. 1 minute
Ambient temperature: –20° to +40°C

High quality terminal blocks 600 Volts

Typical illustration and description	Volts	Amps	No. of poles	With spring washer Type	Ordering code	With turtle-shaped washer Type	Ordering code
Wire size: Max. 5.5mm² Terminal screw: M4 SB-244 **AYBS021-1**	600	49	6	**AYBS026-5**	LT1S-0506B	**AYBS026-1**	LT1S-0506A
			12	**AYBS021-5**	LT1S-0512B	**AYBS021-1**	LT1S-0512A
Wire size: Max. 14mm² Terminal screw: M5 SB-241 **AYBS044-1**	600	88	3	**AYBS043-5**	LT1S-1403B	**AYBS043-1**	LT1S-1403A
			4	**AYBS044-5**	LT1S-1404B	**AYBS044-1**	LT1S-1404A
			12	**AYBS041-5**	LT1S-1412B	**AYBS041-1**	LT1S-1412A
Wire size: Max. 22mm² Terminal screw: M6 SB-239 **AYBS064-1**	600	115	3	**AYBS063-5**	LT1S-2203B	**AYBS063-1**	LT1S-2203A
			4	**AYBS064-5**	LT1S-2204B	**AYBS064-1**	LT1S-2204A

04

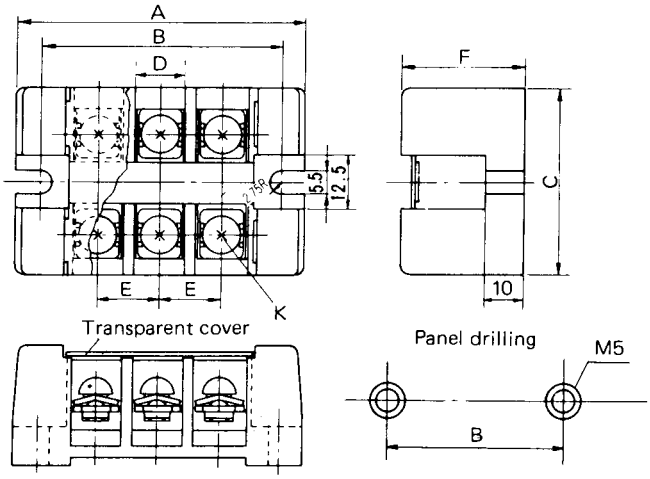
■ Ordering information

Specify the following:
1. Ordering code or type number

■ Technical data

Insulation resistance: Over 100MΩ at 500V DC
Dielectric strength: 2500V AC rms 1 minute
Ambient temperature: –20° to +40°C
–20° to +60°C (at 70% ratings)

■ Dimensions, mm



Type	No. of poles	A	B	C	D	E	F	K	Mass (g)
AYBS026-1, -5	6	101	91	40	10	13	28	M4	120(110)*
AYBS021-1, -5	12	179	169	40	10	13	28	M4	220
AYBS043-1, -5	3	72	60.5	46	12.5	15.5	32	M5	110
AYBS044-1, -5	4	88	76	46	12.5	15.5	32	M5	130
AYBS041-1, -5	12	212	200	46	12.5	15.5	32	M5	300
AYBS063-1, -5	3	89	77	60	17	21	35.5	M6	190
AYBS064-1, -5	4	110	98	60	17	21	35.5	M6	240

* For AYBS026-5 type

Channel mounted type terminal blocks with isolating switch

660 Volts 20 Amps
Wire size: Maximum 5.5mm^2
Terminal screw: M4

These blocks are provided with isolating switches.
When opening the control circuit tentatively for testing or inspection purposes please operate the switch knob. If the leads of an ammeter are connected to both ends of the terminal block and then open the switch the ammeter will then be connected in series and this will allow measurement.
Warning
Do not use this switch for secondary CT circuits.
Incorrect operation could be dangerous.

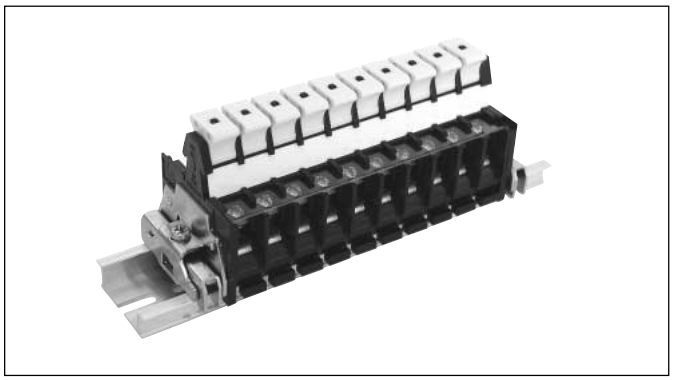
Illustration	Description	Type	*Minimum quantity per order*
	Terminal block section with isolating switch	**LT4D-020Y**	100 pcs
	End barrier	**LT9D-E1**	50 pcs
	End clamp kit	**LT9E-T2**	50 pcs
	Mounting rail	**LT9E-R1**	1 pcs (1m)
	Marking strip sheet	**LT9D-M1**	1 sheets (900mm)

■ Ordering information

Specify the following:
1. Type number
2. Quantity: *Specify in minimum quantity or multiples of minimum quantity per order.*
   Examples: minimum quantity per order: 20 pcs. To order, 20 pcs, 40 pcs, 60 pcs, ..., 100 pcs, etc. Should be specified.

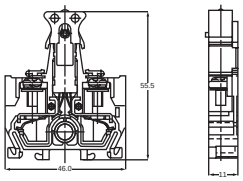
■ Technical data

Insulation resistance: Over 100MΩ at 500V DC
Dielectric strength: 2500V AC rms. 1 minute
Ambient temperature: –20° to +60°C

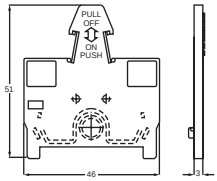


■ Dimensions, mm

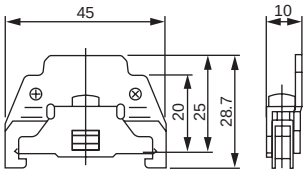
• Terminal block section LT4D
mass: 50g



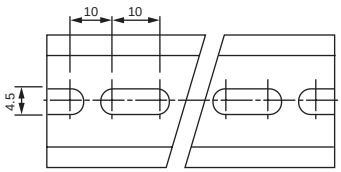
• End barrier LT9D-E1
mass: 5g



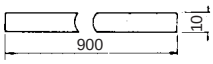
• End clamp kit LT9E-T2
mass: 12g



• Mounting rail LT9E-R1
mass: 200g

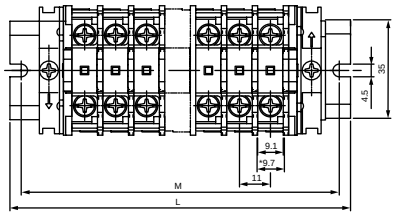


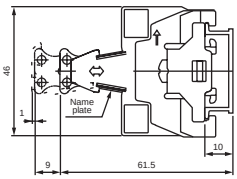
• Marking strip sheet LT9D-M1
mass: 2g



thickness :0.5mm

• Assembled LT4D-020Y-□□





M: Mounting hole pitch
L : Full length

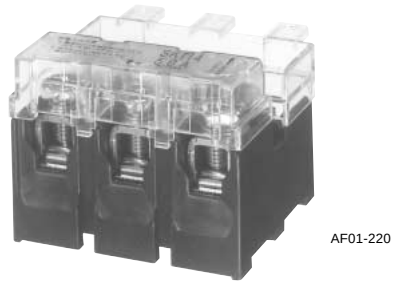
No. of poles	M	L	No. of poles	M	L
8	132	140	22	292	300
10	152	172	24	312	320
12	172	180	30	372	380
			40	492	500
14	192	200			
16	232	240	50	592	600
18	252	260	85	992	1000
	272	280			

Note: 1 to 85 poles can also be assembled except those listed above.

With transparent cover power terminal blocks

600 Volts 50 to 200 Amps
Wire size: 2 to 100 mm^2

- Transparent terminal cover allows the wiring configuration to be checked externally.
- Slotted hexagon head bolts that can be tightened with screwdrivers or box wrenches are used for the terminals.
- The line side and load side are provided with hinged terminal covers to ensure safety and allow easier maintenance and inspections.
- cUL approved, file No. E45457
  SKT14A-3C to SKT100A-3C only.



SKT14A-3C

■ Types and ratings

• Terminal blocks

Pole	Rated insulation voltage (V AC)	Rated continuous current (A)	Wire size (mm^2)	Type	Mass (g)
3	600	50	2 to 14	**SKT14A-3C**	300
		100	2 to 38	**SKT38A-3C**	310
		150	14 to 60	**SKT60A-3C**	450
		200	30 to 100	**SKT100A-3C**	730
3 + 1 (Earth terminal)	600	50	2 to 14	**SKT14A-3CG**	440
		100	2 to 38	**SKT38A-3CG**	450
		150	14 to 60	**SKT60A-3CG**	690
		200	30 to 100	**SKT100A-3CG**	1120

• Connectors

Rated voltage (V AC)	Rated continuous current (A)	Wire size (mm^2)	Type	Mass (g)
600	50	2 to 14	**SKT14-S**	52
	100	2 to 38	**SKT38-S**	55
	150	14 to 60	**SKT60-S**	80
	200	30 to 100	**SKT100-S**	135

■ Specifications

Insulation resistance	100MΩ or more (500V DC megger)
Withstand voltage	2500V AC 1minute
Ambient temperature	-20 to +55°C
Humidity	85%RH or less
Flammability	UL94V-2 (Cover), UL94V-0 (Frame)
Temperature rise	45K or less (JIS C 2811)

■ Ordering information

Specify the following:
1. Type number

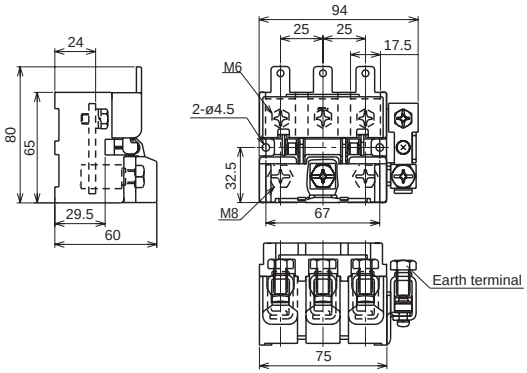
■ Tightening torque

Type	Recommended tightening torque (N•m)		Cable pull-out (UL486A) min. force (N)	
	Line side	Load side	Min. cable	Max. cable
SKT14A-3C	5.1–6.5	11.5–15.5	222	400
SKT14A-3CG	(M6)	(M8)	(14AWG)	(8AWG)
SKT38A-3C	5.1–6.5	11.5–15.5	222	445
SKT38A-3CG	(M6)	(M8)	(14AWG)	(6AWG)
SKT60A-3C	11.5–15.5	11.5–15.5	311	623
SKT60A-3CG	(M8)	(M8)	(12AWG)	(4AWG)
SKT100A-3C	23–31	23–31	311	801
SKT100A-3CG	(M10)	(M10)	(12AWG)	(2AWG)

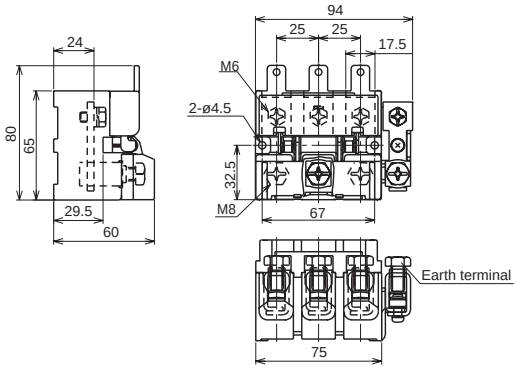
■ Dimensions, mm

• Terminal block

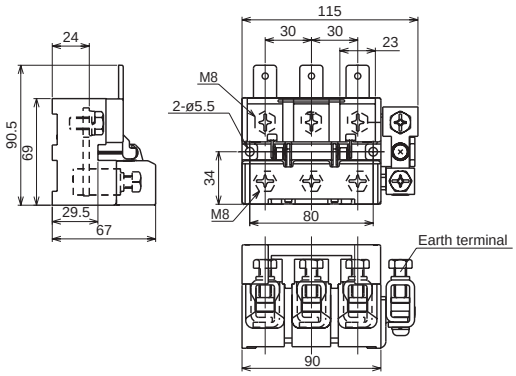
SKT14A-3C (Without earth terminal)
SKT14A-3CG (With earth terminal)



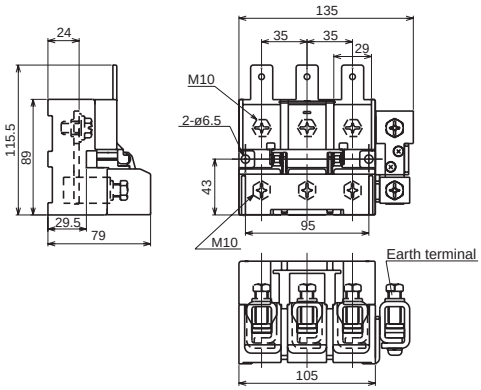
SKT38A-3C (Without earth terminal)
SKT38A-3CG (With earth terminal)



SKT60A-3C (Without earth terminal)
SKT60A-3CG (With earth terminal)

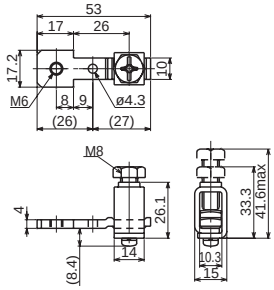


SKT100A-3C (Without earth terminal)
SKT100A-3CG (With earth terminal)

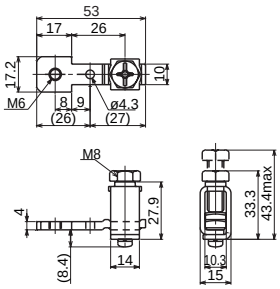


• Connector

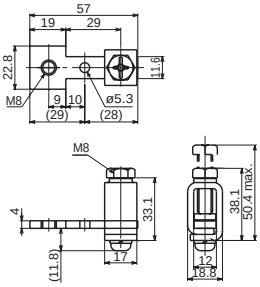
SKT14-S



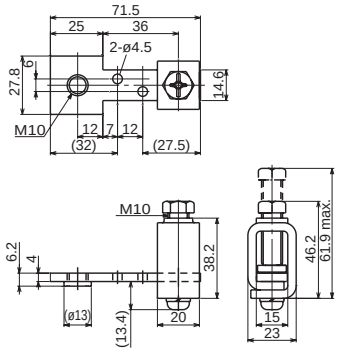
SKT38-S



SKT60-S

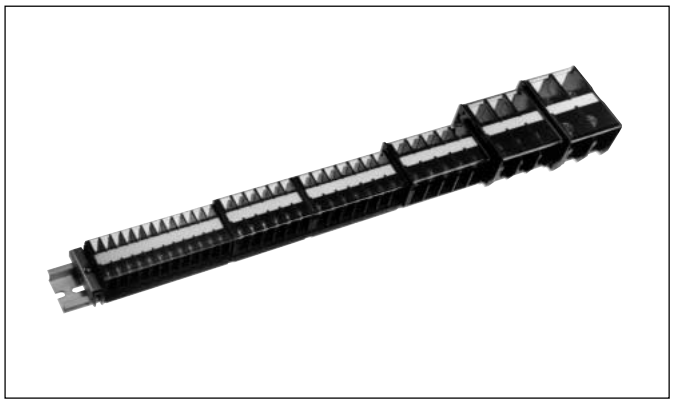


SKT100-S



■ Features

- Any number of poles can be assembled on a 35mm DIN rail.
- A lineup of 10 models supporting screw sizes from M3.5 to M16 and a maximum current of 600A is available.
- Our standard models are approved by UL, CSA, and TÜV.
- The molded material conforms to the UL standard for self-extinguishing materials (UL94V-0).
- Mounting is performed by simply pressing the block down onto the rail (except for models LT2E-200 to 600).



■ Specifications

Rated thermal current (A)	Terminal screw	Applicable wire size and maximum current	Terminal block	End barrier	Cover	Legend plate	End clamp	Rail
22	M3.5	1.25mm^2-16A 2mm^2-22A	**LT2E-020**	LT9E-E1	LT9E-C1	LT9E-M1	LT9E-T1	LT9E-R1 LT9E-R2
30	M4	1.25mm^2-16A 2mm^2-22A 3.5mm^2-30A	**LT2E-030**	LT9E-E2	LT9E -C2			
40	M4	3.5mm^2-30A 5.5mm^2-40A	**LT2E-040**	LT9E-E3				
75	M5	5.5mm^2-40A 8mm^2-50A 14mm^2-75A	**LT2E-080**	LT9E-E4	LT9E-C3			
95	M6	8mm^2-50A 14mm^2-75A 22mm^2-95A	**LT2E-090**	LT9E-E5	LT9E-C4			
160	M8	22mm^2-95A 38mm^2-130A 60mm^2-160A	**LT2E-150**	LT9E-E6	LT9E-C5			
200	M10	38mm^2-130A 60mm^2-160A 100mm^2-200A	**LT2E-200**	LT9E-E7	LT9E-C6 (Standard provided) LT9E-C7	LT9E-M3 (Standard provided)	LT9E-T2	
300	M10	60mm^2-160A 100mm^2-240A 150mm^2-300A	**LT2E-300**	LT9E-E7	LT9E-C8 (Standard provided) LT9E-C9			
400	M12	100mm^2-240A 150mm^2-310A 200mm^2-400A	**LT2E-400**	LT9E-E7	LT9E-C10 (Standard provided) LT9E-C11			
600	M16	150mm^2-310A 200mm^2-400A 325mm^2-600A	**LT2E-600**	LT9E-E7	LT9E-C12 (Standard provided) LT9E-C13			

■ Performance

Rated insulation voltage	600V
Ambient operating conditions	Temperature -25 to 60˚C (with no icing or condensation) Relative humidity 45% to 85%
Temperature rise	Temperature rise in conducting metal is less than 35K.
Insulation resistance	200MΩ between charged parts, and between charged parts and the metal mounting plate (Measured at 500V DC megger.)
Dielectric strength	2,500V AC (1 min)
Applicable standards	Conforms to JIS C 2811

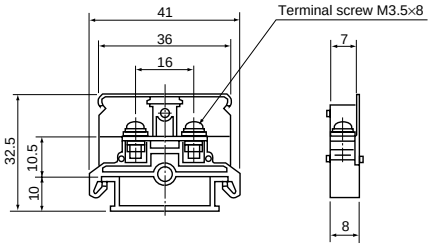
■ Material

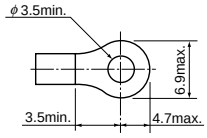
Main body	PPE (modified polyphenylene ether resin) (black) UL94V-0
Conductive plate	C2680R (Ni-plated)
Terminal screws	SWRM (Zn-plated)
Side panel	PPE (modified polyphenylene ether resin) (black) UL94V-0
Cover	PC (translucent polycarbonate resin) UL94V-0
Legend plate	PVC (white)

■ Dimensions, mm

● Terminal blocks

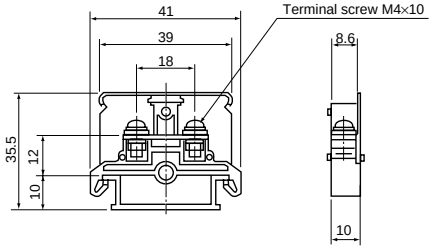
LT2E-020

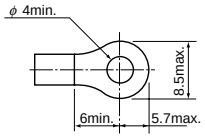




Applicable crimp terminal

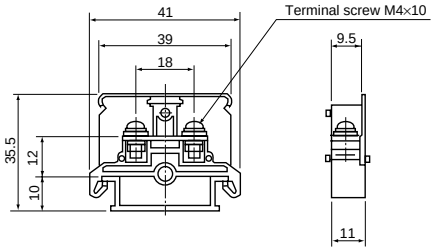
LT2E-030

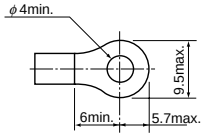




Applicable crimp terminal

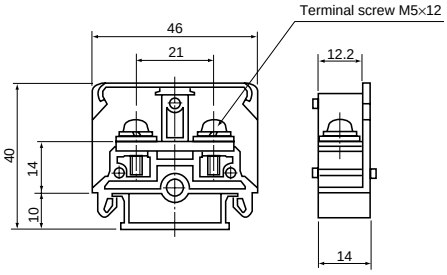
LT2E-040

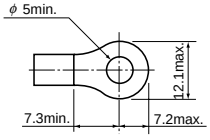




Applicable crimp terminal

LT2E-080

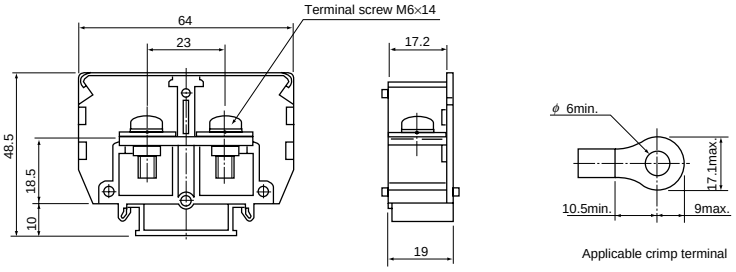




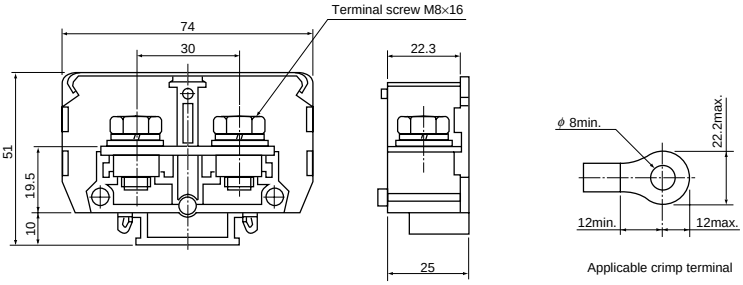
Applicable crimp terminal

● Terminal blocks

LT2E-090

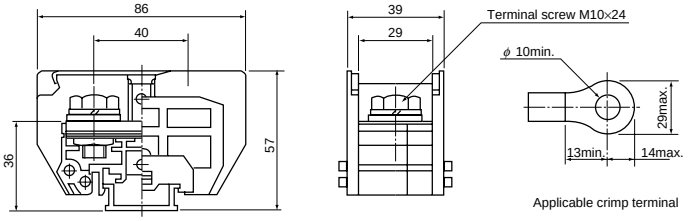


LT2E-150



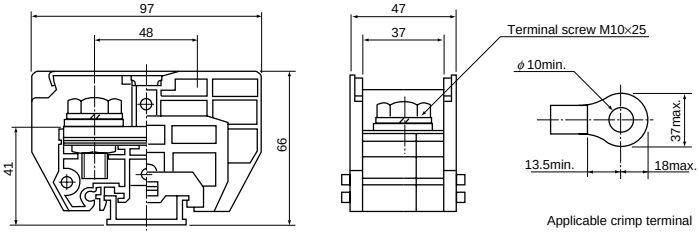
LT2E-200

(Cover, supplied with a legend plate)



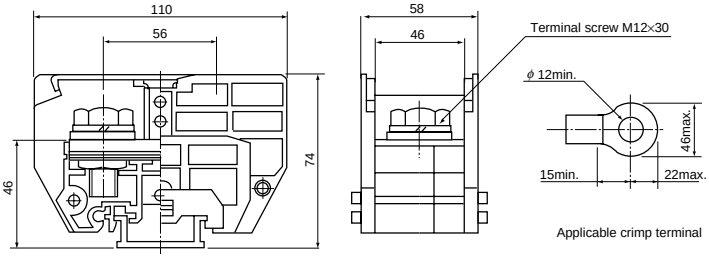
LT2E-300

(Cover, supplied with a legend plate)



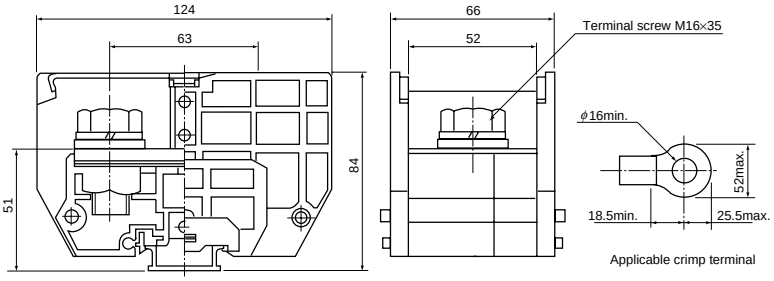
LT2E-400

(Cover, supplied with a legend plate)



LT2E-600

(Cover, supplied with a legend plate)



● End barriers

LT9E-E1

Sold in units of 100.

LT9E-E2

Sold in units of 100.

LT9E-E3

Sold in units of 100.

LT9E-E4

Sold in units of 50.

LT9E-E5

Sold in units of 20.

LT9E-E6

Sold in units of 10.

LT9E-E7

Sold in units of 1.

● Covers

LT9E-C1

Length: 1m
Sold in units of 20.

LT9E-C2

Length: 1m
Sold in units of 20.

LT9E-C3

Length: 1m
Sold in units of 20.

LT9E-C4

Length: 1m
Sold in units of 20.

LT9E-C5

Length: 1m
Sold in units of 20.

LT9E-C6
Standard cover
(Standard provided)

Sold in units of 1.

LT9E-C7
Special cover

Sold in units of 1.

LT9E-C8
Standard cover
(Standard provided)

Sold in units of 1.

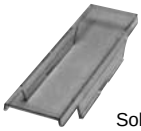
LT9E-C9
Special cover

Sold in units of 1.

LT9E-C10
Standard cover
(Standard provided)

Sold in units of 1.

LT9E-C11
Special cover



Sold in units of 1.

LT9E-C12
Standard cover
(Standard provided)

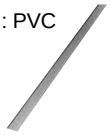
Sold in units of 1.

LT9E-C13
Special cover

Sold in units of 1.

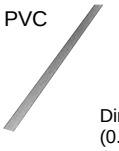
● Legend plates

LT9E-M1
Material: PVC



Dimensions
(0.5t×10W×1200L)
Sold in units of 50

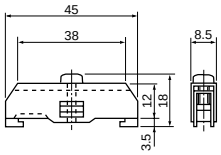
LT9E-M3
Material: PVC



Dimensions
(0.5t×12W×900L)
Sold in units of 50

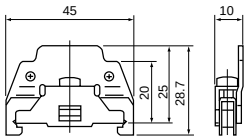
● End clamps

LT9E-T1



Sold in units of 100.

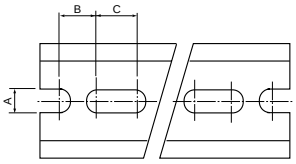
LT9E-T2



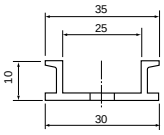
Sold in units of 50.

● Mounting rails

LT9E-R1
LT9E-R2



Material: aluminum A6063



Type	A	B	C	Length	Sold in units
LT9E-R1	4.5	10	10	1000mm	100
LT9E-R2				2000mm	50

04

■ Application to products satisfying international standards

Dielectric strength: 2,200V AC for 1 min.
Operating temperature range: -25 to 60˚C

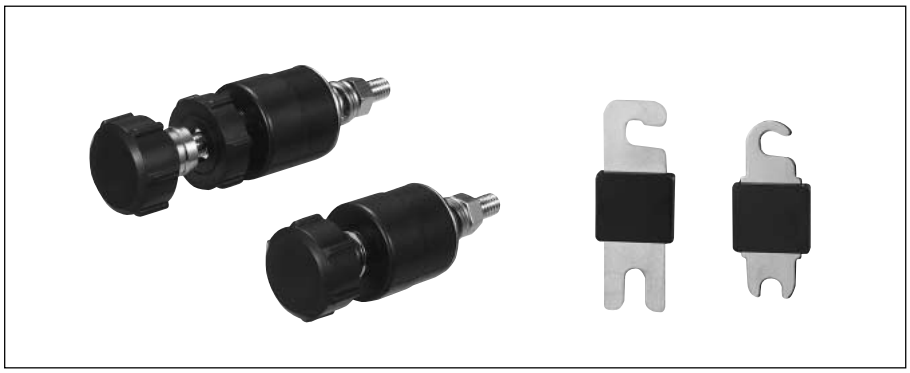
Type	Standard		Rated insulation voltage (V)	Rated continuous current (A)	Applicable wire size for stranded wires (AWG)	International standards
LT2E-020	UL	E45457	600	20	20–14	UL approved
	CSA	109308-M-001		20	20–14	CSA approved
	TÜV	R9551146		22	20–14	TÜV approved
LT2E-030	UL	E45457	600	30	18–12	
	CSA	109308-M-001		30	18–12	
	TÜV	R9551147		30	18–12	
LT2E-040	UL	E45457	600	40	18–10	
	CSA	109308-M-001		40	18–10	
	TÜV	R9551148		40	18–10	
LT2E-080	UL	E45457	600	75	10–6	
	CSA	109308-M-001		75	10–6	
	TÜV	J9551159		75	12–6	
LT2E-090	UL	E45457	600	95	8–4	
	CSA	109308-M-001		95	8–4	
	TÜV	J9551160		95	10–4	
LT2E-150	UL	E45457	600	150	4–2/0	
	CSA	109308-M-001		150	4–2/0	
	TÜV	J9551161		160	6–2/0	
LT2E-200	UL	E45457	600	200	2–4/0	
	CSA	109308-M-001		200	2–4/0	
	TÜV	J9551162	660	200	2–250	
LT2E-300	UL	E45457	600	300	2/0–300	
	CSA	109308-M-001		300	2/0–300	
	TÜV	J9551163	660	300	1/0–300	
LT2E-400	UL	E45457	600	400	4/0–350	
	CSA	109308-M-001		400	4/0–350	
	TÜV	J9551164	660	400	3/0–500	
LT2E-600	UL	E45457	600	550	300–600	
	CSA	109308-M-001		550	300–600	
	TÜV	J9551165	660	600	250–600	

Note: The values in the above table are for when strandard wires and crimp terminals are used for connection. Use the terminal block together with the crimp terminals and wires approved for the desired standard.

Testing terminals for VT, CT circuit – For panel mounting

250 Volts AC or DC, 30 Amps
Wire size: Maximum 8 mm^2

These terminals are used in VT and CT secondary circuits.
These are used to test protective relays or meters or for carrying out calibration.



■ Ordering information

Specify the following:
1. Ordering code or type number
2. Quantity: One pack (10 pcs) is minimum.

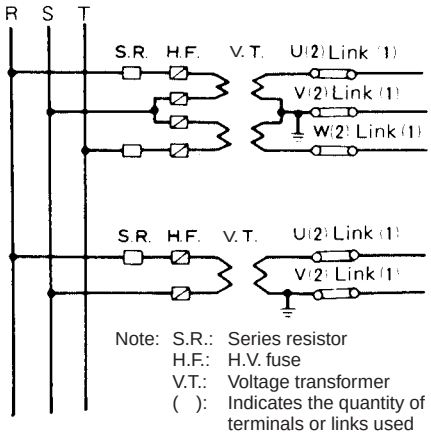
■ Technical data

Insulation resistance: Over 100MΩ at 500V DC
Dielectric strength: 2000V AC rms. 1 minute
Ambient temperature: –25° to +50°C

Illustration	Description	Etched letters (Standard)	Type
SDO-0095M	VT circuit Black	U V W O –	**LT5S-B2** **LT5S-B3** **LT5S-B4** **LT5S-B1** **LT5S-B**
SB-260	CT circuit Black	R S T O –	**LT5D-B5** **LT5D-B6** **LT5D-B7** **LT5D-B1** **LT5D-B**
Q-482	Link, black		**LT95S-B1**
SDO-0099M	Link, black (small type)		**LT95S-B2**

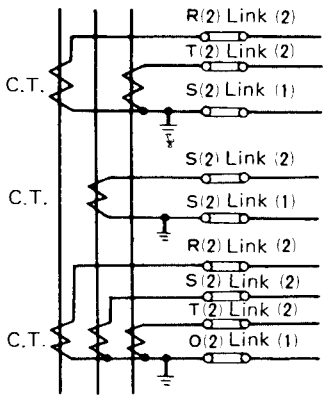
■ Applications

VT circuit



Note: S.R.: Series resistor
H.F.: H.V. fuse
V.T.: Voltage transformer
( ): Indicates the quantity of terminals or links used at this circuit.

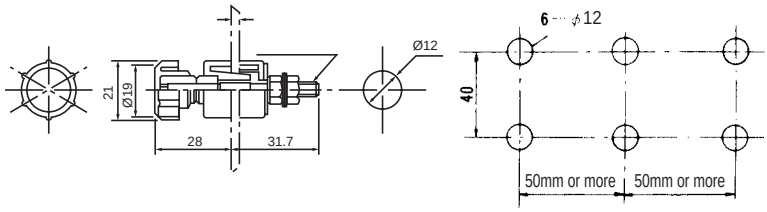
CT circuit



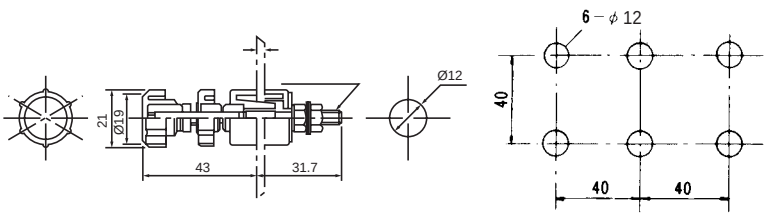
Note: C.T.: Current transformer
( ): Indicates the quantity of terminals or links used at this circuit.

■ Dimensions, mm

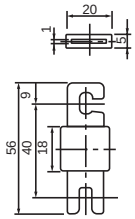
LT5S – for VT circuits Mass: 30g



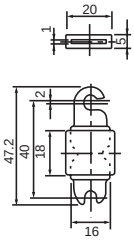
LT5D – for CT circuits Mass: 50g



LT95S – Link
Mass: 10g
LT95S – B1



LT95S – B2



■ CCC approved

● AR22/DR22 and AD30/DR30 series

Pushbutton switches

Bezel	Operator	Type			
		AR22		AR30	
		Momentary action	Alternate action (Turn-reset for V5R)	Momentary action	Alternate action (Turn-reset for V5R)
Round bezel	Flush round head	AR22F0R	AR22F5R	AR30F0R	AR30F5R
	Extended round head	AR22E0R	AR22E5R	AR30E0R	AR30E5R
	Flush round head (symbol mark type)	AR22FAR	AR22FBR	AR30FAR	AR30FBR
	Extended round head (symbol mark type)	AR22EAR	AR22EBR	AR30EAR	AR30EBR
	Extended with half guard	AR22G0R	AR22G5R	AR30G0R	AR30G5R
	Extended with full guard (24mm dia.)	AR22G3R	AR22G8R	AR30G1R	AR30G6R
	Flush with full guard (24mm dia.)	AR22G2R	–	–	–
	Mushroom head with full guard (40mm dia.)	AR22M3R	–	AR30M3R	AR30M8R
	Mushroom head with full guard (35mm dia. metal nut)	–	–	AR30GSR	–
	Mushroom head (29mm dia.)	AR22M4R	AR22M9R	AR30M4R	–
	Mushroom head (40mm dia.)	AR22M0R	AR22M5R	AR30M0R	AR30M5R
	Giant head	–	–	AR30B0R	–
	Giant head with guard	–	–	AR30B1R	–
	Giant head with full guard	–	–	AR30B2R	–
	Giant head with full guard	–	–	AR30B3R	–
	Push-lock, turn-reset (40mm dia, with white arrow)	–	AR22V5R	–	AR30V5R
Square bezel	Flush square head	AR22F0S	AR22F5S	–	–
	Extended square head	AR22E0S	AR22E5S	–	–
	Flush round head	AR22F0Y	AR22F5Y	–	–
	Extended round head	AR22E0Y	AR22E5Y	–	–
	Mushroom head	AR22M4Y	–	–	–
Certificate No.		2003010305063372		2003010305063384	

Note: Certified contact of AR22 type: Momentary action: within 6 contacts
Alternate action : within 4 contacts
Certified contact of AR30 type: Momentary action: within 8 contacts
Alternate action : within 4 contacts

Ring selection type pushbutton switches

Bezel	Operator	Type	
		AR22	AR30
Round bezel	With selector ring	AR22S1R	AR30S1R
		AR22S2R	AR30S2R
		AR22S3R	AR30S3R
		AR22S6R	AR30S6R
Certificate No.		2003010305063372	2003010305063384

Note: Certified contact: 2NO+2NC (S2R: 2NO is also certified)

Emergency stop pushbutton switches

Bezel	Operator	Type			
		AR22		AR30	
		With white arrow (soft-touch)	No white arrow	With white arrow (soft-touch)	No white arrow
Round bezel	Push-lock, turn-reset (29mm dia.)	AR22VSR	AR22V4R	–	–
	Push-lock, turn-reset (40mm dia.)	AR22V0R	AR22V2R	AR30V0R	AR30V2R
	Push-lock, turn-reset (65mm dia.)	–	–	AR30V1R	–
	Key-release push-lock, turn-reset (40mm dia.)	–	AR22V7R	–	–
	Push-look, pull-reset (35mm dia.)	–	AR22Q2R	–	AR30Q2R
	Unibody push-lock, turn-reset (40mm dia.)	AR22VGE	–	–	–
Certificate No.		2003010305063372 (except for AR22VGE) 2005010305156646 (for AR22VGE)		2003010305063384	

Notes: • Certified contact: 1NC, 1NO+1NC, 2NC, 3NC, 2NO+2NC, 4NC (except for Q2R, VGE type)
• Certified contact of Q2R, VGE type: 1NC, 1NO+1NC and 2NC only
• Certified button color: red (R) only

Illuminated pushbutton switches

Bezel	Operator	Type			
		AR22		AR30	
		Momentary	Alternate	Momentary	Alternate
Round bezel	Flush round head	AR22F0L	AR22F5L	–	–
	Extended round head	AR22E0L	AR22E5L	AR30E0L	AR30E5L
	Mushroom head (29mm dia.)	AR22M4L	AR22M9L	–	–
	Mushroom head (40mm dia.)	AR22M0L	AR22M5L	–	–
	Extended with transparent full guard (24mm dia.)	AR22G4L	AR22G9L	AR30G4L	AR30G9L
	Extended with full guard (24mm dia. with openings)	AR22G2L	AR22G7L	AR30G2L	AR30G7L
	Extended with full guard (24mm dia.)	AR22G1L	AR22G6L	AR30G3L	AR30G8L
	Push-lock, turn-reset (40mm dia. with white arrow)	–	–	–	AR30V5L
Square bezel	Flush square head	AR22F0M	AR22F5M	–	–
	Extended square head	AR22E0M	AR22E5M	–	–
	Flush round head	AR22F0P	AR22F5P	–	–
	Extended round head	AR22E0P	AR22E5P	–	–
	Mushroom head	AR22M4P	–	–	–
Certificate No.		2003010305063372		2003010305063384	
Specifications		· Contact Without transformer Momentary action: within 5 contacts Alternate action: within 3 contacts With transformer Momentary action: within 3 contacts Alternate action: within 2 contacts		· Contact Without transformer Momentary action: within 6 contacts Alternate action: within 3 contacts With transformer Momentary action: within 4 contacts Alternate action: within 2 contacts	
		· Color of button Green, red, white, yellow, orange, blue · Light source LED lamp, incandescent lamp · Operating voltage of lamp Without transformer LED: 6V AC, 6V DC, 12V AC/DC Incandescent lamp: 5.5V AC/DC, 20V AC/DC LED, incandescent lamp: 15V AC/DC, 24V AC/DC With transformer LED, incandescent lamp: 100-110V AC, 115-127V AC, 200-220V AC, 230-254V AC, 350-380V AC, 400-440V AC, 480V AC, 500-550V AC			

Emergency stop illuminated pushbutton switches

Bezel	Operator	Type			
		AR22		AR30	
		With white arrow (soft-touch)	No white arrow	With white arrow (soft-touch)	No white arrow
Round bezel	Push-lock, turn-reset (29mm dia.)	AR22VSL	–	–	–
	Push-lock, turn-reset (40mm dia.)	AR22V0L	AR22V2L	AR30V0L	AR30V2L
	Push-lock, turn-reset (40mm dia. transparent in all colors)	AR22VDL	AR22VAL	–	–
	Unibody push-lock, turn-reset (40mm dia.)	AR22VGF	–	–	–
Certificate No.		2003010305063372 (except for AR22VGF) 2005010305156646 (for AR22VGF)		2003010305063384	

Notes: • Certified contact without transformer: 1NC, 1NO+1NC, 2NC, 3NC (except for VGF type)
• Certified contact with transformer: 1NC, 1NO+1NC, 2NC (except for VGF type)
• Certified contact of VGF type: 1NC, 1NO+1NC and 2NC only,
• Certified lamp voltage of VGF type: LED lamp: 24V AC/DC, neon lamp: 110, 120, 220, 240V AC
• Certified button color: red (R) only

Selector switches

Bezel	Operator	Type			
		AR22		AR30	
		Standard type	Control type	Standard type	Control type
Round bezel	Knob	AR22PR	AR22PCR	AR30PR	AR30PCR
	Lever	AR22WR	AR22WCR	AR30WR	AR30WCR
	Cylindrical knob	AR22RR	AR22RCR	–	–
	Key	AR22JR	AR22JCR	AR30JR	AR30JCR
	Key (long durability)	AR22JAR	–	AR30JAR	–
Square bezel	Knob	AR22PY	AR22PCY	–	–
	Lever	AR22WY	AR22WCY	–	–
	Cylindrical knob	AR22RY	AR22RCY	–	–
	Key	AR22JY	AR22JCY	–	–
Certificate No.		2003010305063372		2003010305063384	

Note: Certified contact of AR22 type: Mainted: within 6 conrtacts
Control type, spring return and spring / manurl return: within 4 contacts
Certified contact of AR30 type: Momentary action: within 8 conrtacts
Control type, spring return and spring / manurl return: within 4 contacts

Illuminated selector switches

Bezel	Operator	Type	
		AR22	AR30
		Standard type	Standard type
Round bezel	Knob	AR22PL	AR30PL
Square bezel	Knob	AR22PP	–
Certificate No.		2003010305063372	2003010305063384

Notes: • Certified contact of AR22 type :
Without transformer
Maintained : within 4 contacts
Spring return and spring / manual return: within 3 contacts
With transformer
Maintained : within 3 contacts
Spring return and spring / manual return: within 2 contacts

• Certified contact of AR30 type :
Without transformer
Maintained : within 6 contacts
Spring return and spring / manual return: within 3 contacts
With transformer
Maintained : within 4 contacts
Spring return and spring / manual return: within 2 contacts

Pilot lights

Bezel	Lens	Type	
		DR22	DR30
Round bezel	Dome	DR22D0L	DR30D0L
	Extended round	DR22E3L	DR30E3L
	Faceted	DR22K0L	DR30K0L
Square bezel	Flush square	DR22F3M	–
	Flush square (Transparent lens)	DR22F4M	DR30F4M
	Flush square (12mm high frame)	DR22F5M	–
	Extended square	DR22E3M	–
	Flush rectangular	DR22E3N	–
	Flush rectangular (Transparent lens)	–	DR30F4N
	Flush square large type (Transparent lens)	–	DR30M4M
	Extended round	DR22E3P	–
Certificate No.		2003010305063383	2003010305063487

Notes: • Certified lamp: both LED and incandescent lamp
• Certified transformer type: standard and short-body
• Except for with resistor/resistor unit

Item with degree of protection IP2X (IP20)

Type	Certificate No.
AR22 □ZB	2003010305063372
AR30 □ZB	2003010305063384
DR22 □ZB	2003010305063383
DR30 □ZB	2003010305063487

Notes: • Certified for all types listed on the table in page 04/289 to 04/291 except for unibody push-lock, turn-reset (40mm dia.) types of emergency stop illuminated pushbutton switches and short-body transformer of pilot light.
• The terminal section of standard emergency stop illuminated pushbutton switches has degree of protection, IP2X.

● AH164, 165, 165-2 series

Pushbutton switches

Operator	Type					
	AH164		AH165		AH165-2	
	Momentary action	Alternate action	Momentary action	Alternate action (Turn-reset for V, V1)	Momentary action	Alternate action (Turn-reset for 2V, 2YV)
Flush round head	–	–	–	–	AH165-2F	AH165-2F5
Extended round head	AH164-E	AH164-E5	AH165-E	AH165-E5	AH165-2E	AH165-2E5
Extended square head	–	–	–	–	AH165-2SE	AH165-2SE5
Extended square concave head	–	–	–	–	AH165-2SCE	AH165-2SCE5
Flush square head	AH164-SF	AH164-SF5	AH165-SF	AH165-SF5	AH165-2SF	AH165-2SF5
Flush rectangular head	AH164-TF	AH164-TF5	AH165-TF	AH165-TF5	–	–
Flush square head with guard	AH164-SGF	AH164-SGF5	AH165-SGF	AH165-SGF5	–	–
Flush rectangular head with guard	AH164-TGF	AH164-TGF5	AH165-TGF	AH165-TGF5	–	–
Mushroom head (round bezel)	–	–	–	–	AH165-2M	–
Mushroom head (square bezel)	–	–	–	–	AH165-2YM	–
Mushroom head	AH164-M	AH164-M5	AH165-M	AH165-M5	–	–
Convex square head	AH164-SM	AH164-SM5	AH165-SM	AH165-SM5	–	–
Convex rectangular head	AH164-TM	AH164-TM5	AH165-TM	AH165-TM5	–	–
Push-locked (round bezel)	–	–	–	AH165-V	–	AH165-2V
Push-locked large type	–	–	–	AH165-V1	–	–
Push-locked (square bezel)	–	–	–	–	–	AH165-2YV
Certificate No.	2003010305071068					

Notes: • Certified contact: 1NO+1NC, 2NO+2NC, 3NO+3NC. AH165-V and -V1: 1NC and 2NC only.
• Certified button color: all in manufactured range of corresponding type. AH165-V and -V1: red (R) only.
• Certified terminal shape: for soldering and tab, and for wrapping. AH165-V and -V1: soldering and tab only.

Ring selection type pushbutton switches

Operator	Type
	AH165-2
With selector ring (round bezel)	AH165-2S2
With selector ring (square bezel)	AH165-2YS2
Certificate No.	2003010305071068

Note: Certified contact: 2NO+2NC

Emergency stop pushbutton switches

Operator	Type
	AH165
Push-lock, turn-reset (ø32)	AH165-V5
Push-lock, turn-reset (ø40)	AH165-V6
Certificate No.	2003010305071068

Notes: • Certified contact: 1NC and 2NC only
• Certified button color: red (R) only
• Certified terminal shape: soldering and tab only

Illuminated pushbutton switches

Operator	Type					
	AH164		AH165		AH165-2	
	Momentary action	Alternate action	Momentary action	Alternate action	Momentary action	Alternate action (Turn-reset for 2VL, 2YVL)
Flush round head	–	–	–	–	AH165-2FL	AH165-2FL5
Extended round head	AH164-L	AH164-L5	AH165-L	AH165-L5	AH165-2EL	AH165-2EL5
Extended square head	–	–	–	–	AH165-2SEL	AH165-2SEL5
Concave square head	–	–	–	–	AH165-2SCL	AH165-2SCL5
Flush square head	AH164-SL	AH164-SL5	AH165-SL	AH165-SL5	AH165-2SFL	AH165-2SFL5
Flush rectangular head	AH164-TL	AH164-TL5	AH165-TL	AH165-TL5	–	–
Flush square head with guard	AH164-SGL	AH164-SGL5	AH165-SGL	AH165-SGL5	–	–
Flush rectangular head with guard	AH164-TGL	AH164-TGL5	AH165-TGL	AH165-TGL5	–	–
Mushroom head (round bezel)	–	–	–	–	AH165-2ML	–
Mushroom head (square bezel)	–	–	–	–	AH165-2YML	–
Push-locked (round bezel)	–	–	–	–	–	AH165-2VL
Push-locked (square bezel)	–	–	–	–	–	AH165-2YVL
Certificate No.	2003010305071068					

Notes: • Certified contact: 1NO+1NC, 2NO+2NC, 3NO+3NC
• Certified terminal shape: for soldering and tab, and for wrapping.
• Certified lamp: LED, incandescent lamp and neon
• Certified operating lamp voltage: 6, 12 and 24V DC (LED)/ 5, 12, 15 and 24V AC/DC (incandescent lamp) / 110, 120, 220 and 240V AC (neon) /110, 220V AC (LED and incandesent lamps with transformer)
• The spot LED type have not been approved.

Selector switches (Standard)

Operator	Type		
	AH164	AH165	AH165-2
Knob (round bezel)	–	–	AH165-2P
Knob (rectangular bezel)	AH164-P	AH165-P	–
Knob (square bezel)	AH164-SP	AH165-SP	AH165-2YP
Key (round bezel)	–	–	AH165-2J
Key (rectangular bezel)	AH164-J	AH165-J	–
Key (square bezel)	AH164-SJ	AH165-SJ	AH165-2YJ
Key, 45-degree notch (rectangular bezel)	AH164-JK	AH165-JK	–
Certificate No.	2003010305071068		

Notes: • Certified contact: 1NO+1NC, 2NO+2NC, 3NO+3NC
• Certified terminal shape: for soldering and tab, and for wrapping

Selector switches (Direct opening action)

Operator	Type
Key (rectangular bezel)	AH165-JM2
Key (round bezel)	AH165-RJM2
Certificate No.	2003010305071068

Notes: • Certified contact: 1NO+1NC, 2NO+2NC
• Certified position quantity: 2-position only.
Certified returning method: maintained only.

Illuminated selector switches

Operator	Type
knob (round bezel)	AH165-2PL
Certificate No.	2003010305071068

Notes: • Certified contact: 1NO+1NC, 2NO+2NC
• Certified operating lamp voltage: 6, 12 and 24V DC (LED)/ 5, 12, 15 and 24V AC/DC (incandescent lamp)

Pilot lights

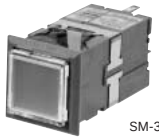
Lens	Type		
	AH164	AH165	AH165-2
Flush round	–	–	AH165-2Z
Extended round	AH164-Z	AH165-Z	AH165-2ZE
Extended square	–	–	AH165-2SZE
Flush square	AH164-ZS	AH165-ZS	AH165-2SZ
Flush rectangular	AH164-ZT	AH165-ZT	–
Certificate No.	2003010305071044		

Notes: • Certified lamp: LED, incandescent lamp and neon
• Certified operating lamp voltage: 6, 12 and 24V DC (LED)/ 5, 12, 15 and 24V AC/DC (incandescent lamp)/ 110, 120, 220 and 240V AC (neon) /110, 220V AC (LED and incandesent lamps with transformer)
• The spot LED type have not been approved.

■ Description

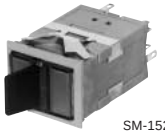
AG series Command Switches are designed to be installed in a square or rectangular hole. AG23 series are 25 x 32mm rectangular type while AG22 series are 25mm regular square type. Either of them comprises illuminated pushbutton switch and pilot light. The illuminated pushbutton switches are available either in momentary action or alternative action. Moreover, their light sources are also available in either incandescent lamp or LED lamp. These AG series Command Switches are highly suitable for use with instrumentation panels or control panels. Their contacts use Au-flashed Ag contacts and adopt a sliding mechanism, thus ensuring a high contact reliability. The color inserts for indicators are available up to 4-way split types. Each indicator is provided with 5-color inserts and the color you desire can be easily replace.

Illuminated pushbutton



AG22-L

Illuminated levers

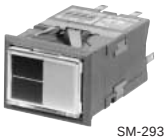


AG23-HL

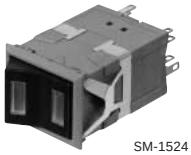
Pilot lights

AG22-Z

Illuminated rockers



AG23-L



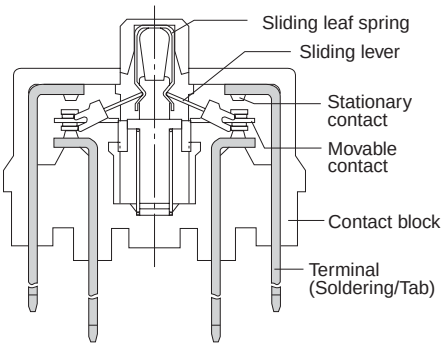
AG23-RL

AG23-Z

■ Features

• Excellent contact reliability

These switches combine Au-flashed Ag contact and sliding mechanism features so as to ensure a high contact reliability even when used with low-voltage, small current circuits of 5V 1mA range. Therefore, they allow direct input to IC's. Moreover, their contacts are a double-break type, thus permitting their application to 240V AC circuits.



• Terminals are both use of soldering and tab terminal types

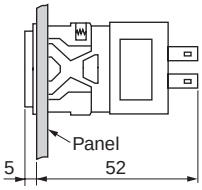
They are subjected to "solder plated" so as to permit accurate soldering.

• Contact can be added or replaced

The contact block comprises 1NO and 1NC. In AG23 series the contact arrangement is available up to 4NO+4NC and in AG22 series up to 2NO+2NC.

• Small in depth and compactly built

Both AG22 and AG23 series Command Switches are as small as 52mm in depth and their buttons are extruded only 5mm from the panel surface.



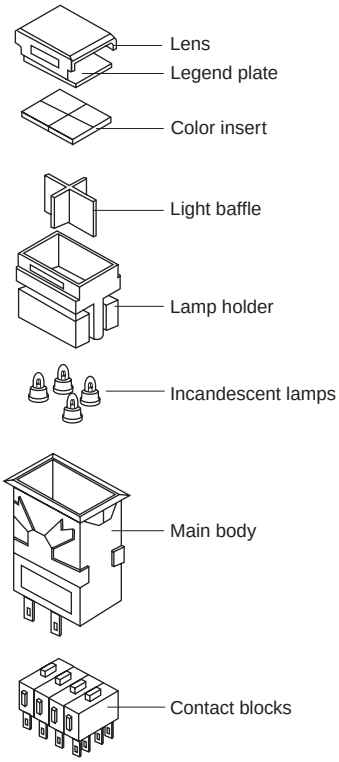
• The color inserts are available in max. 4-way split

The 4-color inserts can be positioned in any of the four quarters of the total display area. 6 combinations are available.

In these switches with incandescent lamp, their lens colors can be replaced with one from the "colored plate kit" which is provided for illuminated pushbutton switches or pilot lights.

■ Construction

AG23 (Incandescent lamp)



■ Approvals

For further information related to approved type, *see page 04CD/1/2 to 04CD/1/3.*

AG22 and AG23
Quick reference guide

AG22 series

■ Illuminated pushbutton switches
Incandescent lamp

Indicator split — *See page 04CD/1/8*

A:	B:
AG22-LAX SP-1099	**AG22-LBX** SP-1120

LED lamp: Indicators

Indicator split — *See page 04CD/1/9*

A:	B:
AG22-LA□3 SP-1101	**AG22-LB□3** SP-1121

LED lamp: Contact unit

AG22-L□ — *See page 04CD/1/9*

SP-1100

■ Pilot lights
Incandescent lamp

Indicator split — *See page 04CD/1/8*

A:	B:
AG22-ZAX SP-1099	**AG22-ZBX** SP-1120

LED lamp: Indicators

Indicator split — *See page 04CD/1/9*

A:	B:
AG22-ZA□3 SP-1101	**AG22-ZB□3** SP-1121

LED lamp: Contact socket

AG22-Z6 — *See page 04CD/1/9*

SP-1100

AG23 series

■ Illuminated pushbutton switches
Incandescent lamp

Indicator split — *See page 04CD/1/8*

A:	B:	C:	D:	E:	F:
AG23-LAX SP-1102	**AG23-LBX** SP-1105	**AG23-LCX** SP-1116	**AG23-LDX** SP-1114	**AG23-LEX** SP-1112	**AG23-LFX** SP-1118

LED lamp: Indicators

Indicator split — *See page 04CD/1/9*

A:	B:	C:	D:	E:	F:
AG23-LA□3 SP-1122	**AG23-LB□3** SP-1104	**AG23-LC□3** SP-1117	**AG23-LD□3** SP-1115	**AG23-LE□3** SP-1113	**AG23-LF□3** SP-1119

LED lamp: Contact unit

AG23-L□ — *See page 04CD/1/9*

SP-1103

■ Pilot lights

Incandescent lamp

Indicator split *See page 04CD/1/8*

A:	B:	C:	D:	E:	F:
AG23-ZAX	**AG23-ZBX**	**AG23-ZCX**	**AG23-ZDX**	**AG23-ZEX**	**AG23-ZFX**
SP-1102	SP-1105	SP-1116	SP-1114	SP-1112	SP-1118

LED lamp: Indicators

Indicator split *See page 04CD/1/9*

A:	B:	C:	D:	E:	F:
AG23-ZA□3	**AG23-ZB□3**	**AG23-ZC□3**	**AG23-ZD□3**	**AG23-ZE□3**	**AG23-ZF□3**
SP-1112	SP-1104	SP-1117	SP-1115	SP-1113	SP-1119

LED lamp: Socket

AG23-Z6 *See page 04CD/1/9*

SP-1103

■ Illuminated lever switches

2-position	3-position	*See page 04CD/1/10*
Mainteined, Spring return	Spring/manual return	
AG23-HL□	**AG23-HL□**	
SP-1108	SP-1108	

■ Illuminated rocker switches

2-position	3-position	*See page 04CD/1/11*
Mainteined, Spring return	Spring/manual return	
AG23-RL□	**AG23-RL□**	
SP-1107	SP-1107	

■ Type number nomenclature

• Illuminated pushbutton switch (Incandescent lamp)

AG 23–L 5 A X 1 E – □ □

Basic type

Mounting hole dimensions
22: 23.5 × 22.5mm
23: 23.5 × 30.5mm

Operation
L : Illuminated pushbutton/Momentary action
L5: Illuminated pushbutton/Alternate action*

Indicator split
A: B: C:
D: E: F:
(C, D, E, F: for AG23 only)

Color insert kits *(See page 04CD/1/8)*
X: Provided

Contact arrangement
1: 1NO+1NC, 3: 3NO+3NC (AG23 series only)
2: 2NO+2NC, 4: 4NO+4NC (AG23 series only)

Lamp voltage
A: 5 V AC/DC B: 12 V AC/DC C: 15 V AC/DC E: 24 V AC/DC

Mounting *(See page 04CD/1/13)*
Blank : Horizontal mounting
T : Vertical mounging

Color of flange
Blank : Grey (standard)
B : Black

• Illuminated pushbutton switch (LED lamp)

Indicator

1 2 3 4
AG 23–L A E 3 – □□□□

Basic type

Mounting hole dimensions
22: 23.5 × 22.5mm
23: 23.5 × 30.5mm

Illuminated unit

Indicator split
A: B: C:
D: E: F:
(C, D, E, F: for AG23 only)

Lamp voltage
E3: 24 V DC

Color insert sequence
Replace the □ (1, 2, 3, 4) by color code depending on the type of split patterns.
G: Green, R: Red, W: White, O: Orange, Y: Yellow

A B C D E F

Contact unit

AG 23–L 5 1 – □ □

Basic type

Mounting hole dimensions
22: 23.5 × 22.5mm
23: 23.5 × 30.5mm

Operation
L : Illuminated pushbutton/Momentary action
L5: Illuminated pushbutton/Alternate action*

Contact arrangement
1: 1NO+1NC, 3: 3NO+3NC (AG23 series only)
2: 2NO+2NC, 4: 4NO+4NC (AG23 series only)

Mounting *(See page 04CD/1/13)*
Blank : Horizontal mounting
T : Vertical mounging

Color of flange
Blank : Grey (standard)
B : Black

• Pilot light (Incandescent lamp)

AG 23 – Z A X E– □ □

Basic type

Mounting hole dimensions
22: 23.5 × 22.5mm
23: 23.5 × 30.5mm

Pilot light

Indicator split
A: B: C:
D: E: F:
(C, D, E, F: for AG23 only)

Color insert kits *(See page 04CD/1/8)*
X: Provided

Lamp voltage
A: 5 V AC/DC B: 12 V AC/DC C: 15 V AC/DC E: 24 V AC/DC

Mounting *(See page 04CD/1/13)*
Blank : Horizontal mounting
T : Vertical mounging

Color of flange
Blank : Grey (standard)
B : Black

• Pilot light (LED lamp)

Indicator

1 2 3 4
AG 23–Z A E 3 – □□□□

Basic type

Mounting hole dimensions
22: 23.5 × 22.5mm
23: 23.5 × 30.5mm

Pilot light

Indicator split
A: B: C:
D: E: F:
(C, D, E, F: for AG23 only)

Lamp voltage
E3: 24 V DC

Color insert sequence
Replace the □ (1, 2, 3, 4) by color code depending on the type of split patterns.
G: Green, R: Red, W: White, O: Orange, Y: Yellow

A B C D E F

Socket

AG 23 – Z 6 – □ □

Basic type

Mounting hole dimensions
22: 23.5 × 22.5mm
23: 23.5 × 30.5mm

Pilot light

Socket

Mounting
Blank : Horizontal mounting
T : Vertical mounging

Color of flange
Blank : Grey (standard)
B : Black

Notes: * When the button is depressed the contacts are maintained and remain so even if the finger is removed. The button will not return to its free position. In order to remove the lock, the button must be given a second pressure before the button will return to its free position.

AG22 and AG23
Type number nomenclature

● **Illuminated lever switch and illuminated rocker switch**

AG 23–RL 2 R 4 E 3–1 □ □/□

Basic type

Mounting hole dimensions
23: 23.5× 30.5mm

Operator shape
HL: Lever type
RL: Rocker type

Operation
2: 2-position, maintained
0: 2-position, spring return (Upper to lower)
3: 3-position, maintained
1: 3-position, spring return (To center)
6: 3-position, maintained and spring return (Upper to center)

Operator color (Also available with 2-color indicators when requiring 2-lamp type, Example: AG23-RL2RG)
G: Green
R: Red
W: White
Y: Yellow
O: Orange
S: Blue (For Incandescent lamp only)

Contact arrangement
1: 1NO+1NC 3: 3NO+3NC
2: 2NO+2NC 4: 4NO+4NC

Color of lever (Lever type only)
Blank: Black
H: Gray
R: Red

Color of flange
Blank: Gray (Standard)
B: Black

Mounting
Blank: Horizontal mounting
T: Vertical mounting (Standard)

Number of lamps
1: 1-lamp
2: 2-lamp

Type of lamps
Blank: Incandescent
2: Spot LED
3: Flat LED

Lamp voltage

Incandescent	LED
A: 5 V AC/DC	AA: 5 V DC
B: 12 V AC/DC	A: 6 V DC
C: 15 V AC/DC	B: 12 V DC
E: 24 V AC/DC	E: 24 V DC

■ Standards approved

UL508	File No. E44592
CSA C22.2 No.14	File No. LR20479

■ Specifications (Indoor use)

Item		Illuminated pushbutton switch	Illuminated lever switch Illuminated rocker switch	Pilot light
Rated insulation voltage		250V AC/DC		
Ambient temperature (no condensation or no icing)		–5 to +40°C		
Humidity		45 to 85%RH (at –5 to +40°C), no condensation or no icing		
Durability (operations)	Mechanical	1NO+1NC, 2NO+2NC Momentary action: 1 million Alternate action: 250,000 3NO+3NC*, 4NO+4NC*: 100,000	100,000	–
	Electrical	100,000 (220V AC 0.7A)		–
Dielectric strength		2000V AC, 1 minute (Between lamp and contact terminals: 1500V AC, 1 minute)		
Pollution degree		3		
Vibration		Resonance: 10 to 55Hz, double amplitude 0.1mm Constant: 16.7Hz, double amplitude 3mm		
Shock		Malfunction durability: 100m/s^2 Mechanical durability: 500m/s^2		Mechanical durability: 500m/s^2
Insulation resistance		100MΩ or more (500V DC megger)		
Degree of protection		IP40		

Notes: * AG23 type only.

■ Contact ratings

• UL/CSA standards

Rated thermal current	Rated operational voltage	Maximum current	
		AC (Res. load)	DC (Res. load)
5A	24V	–	1.0A
	125V	–	0.2A
	250V	5.0A	–

• NECA C 4521 standards

Rated thermal current	Rated operational voltage	Rated operational current				
		AC 15 (Ind. load)	AC 13 (Ind. load)	AC 12 (Res. load)	DC 13* (Ind. load)	DC 12 (Res. load)
5A	24V	–	–	–	0.7A	1.0A
	110V	0.3A	1.0A	1.5A	–	–
	220V	0.3A	0.7A	1.0A	0.15A	0.2A

Notes: * $T_{0.95}$ = 21ms

■ Contact reliability

FUJI has confirmed that the unit can be used in 1mA circuit conditions at 5V AC or DC. The operable range may vary depending on the ambient conditions and type of load.

■ Power consumption

• AG22, 23

Operating Voltage (V)	LED Lamp [w/split]						Incandescent lamp [W/1-lamp]
	Illuminated pushbutton switch, pilot light				Lever switch, rocker switch		
	0-split	2-split	3-split	4-split	1-lamp	2-lamp	
5	–	–	–	–	0.04*1	0.04*1 0.04*1	0.45
6	–	–	–	–	0.05*2	0.05*2 0.05*2	–
12	–	–	–	–	0.09	0.09 0.09	0.55
24	0.36	0.36 0.36 0.36 0.36	0.36 0.36 0.36 0.36 0.36 0.36	0.36 0.36 0.36 0.36	0.17	0.17 0.17	0.55

*1 Yellow: 0.14w/split

*2 Yellow: 0.17w/split

■ Illuminated pushbutton switches (Incandescent lamp)

Momentary action

Description	Color insert split	1NO+1NC *1 *2 *3 Type	2NO+2NC *1 *2 *3 Type
SM-346 **AG22-L**	A	**AG22-LAX1■-( )□**	**AG22-LAX2■-( )□**
	B	**AG22-LBX1■-( )□**	**AG22-LBX2■-( )□**
SM-293 **AG23-L**	A	**AG23-LAX1■-( )□**	**AG23-LAX2■-( )□**
	B	**AG23-LBX1■-( )□**	**AG23-LBX2■-( )□**
	C	**AG23-LCX1■-( )□**	**AG23-LCX2■-( )□**
	D	**AG23-LDX1■-( )□**	**AG23-LDX2■-( )□**
	E	**AG23-LEX1■-( )□**	**AG23-LEX2■-( )□**
	F	**AG23-LFX1■-( )□**	**AG23-LFX2■-( )□**

Alternate action

Description	Color insert split	1NO+1NC *1 *2 *3 Type	2NO+2NC *1 *2 *3 Type
SM-345 **AG22-L5**	A	**AG22-L5AX1■-( )□**	**AG22-L5AX2■-( )□**
	B	**AG22-L5BX1■-( )□**	**AG22-L5BX2■-( )□**
SM-295 **AG23-L5**	A	**AG23-L5AX1■-( )□**	**AG23-L5AX2■-( )□**
	B	**AG23-L5BX1■-( )□**	**AG23-L5BX2■-( )□**
	C	**AG23-L5CX1■-( )□**	**AG23-L5CX2■-( )□**
	D	**AG23-L5DX1■-( )□**	**AG23-L5DX2■-( )□**
	E	**AG23-L5EX1■-( )□**	**AG23-L5EX2■-( )□**
	F	**AG23-L5FX1■-( )□**	**AG23-L5FX2■-( )□**

■ Pilot lights (Incandescent lamp)

Description	Color insert split	1NO+1NC *1 *2 *3 Type
SM-346 **AG22-Z**	A	**AG22-ZAX■-( )□**
	B	**AG22-ZBX■-( )□**
SM-294 **AG23-Z**	A	**AG23-ZAX■-( )□**
	B	**AG23-ZBX■-( )□**
	C	**AG23-ZCX■-( )□**
	D	**AG23-ZDX■-( )□**
	E	**AG23-ZEX■-( )□**
	F	**AG23-ZFX■-( )□**

Notes:

*1
Replace the ■ mark by the lamp voltage code
A: 5V AC/DC
B: 12V AC/DC
C: 15V AC/DC
E: 24V AC/DC

*2
Replace the ( ) mark by the mounting angle code
Blank: Horizontal mounting
T: Vertical mounting

*3
Replace the □ mark by the flange color code
Blank: Gray (Standard)
B: Black

For AG23 type illuminated pushbutton switch, 3NO+3NC and 4NO+4NC are also available.

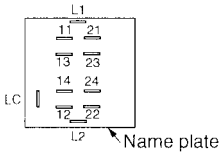
■ Color insert kits

Illuminated pushbutton switches and pilot lights with an incandescent lamp comprise the following number of green, red, white, orange and blue inserts, legend plates and light baffle plates.

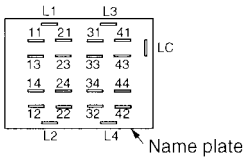
Color insert split	Color insert: Full	Half		Quarter	Light baffle: Half		Quarter		Legend plate
A	5	–	–	–	–	–	–	–	1
B	–	5	–	–	1	–	–	–	1
C	–	–	5	–	–	1	–	–	1
D	–	5	–	5	1	–	–	1	1
E	–	–	5	5	–	1	1	–	1
F	–	–	–	10	1	–	–	2	1

■ Wiring diagrams

AG22 (2NO+2NC)
• Terminal arrangement



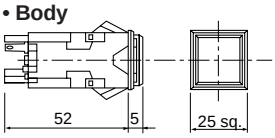
AG23 (4NO+4NC)
• Terminal arrangement



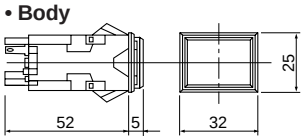
View from terminal side

■ Dimensions, mm

AG22
• Body

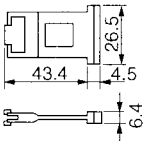


AG23
• Body

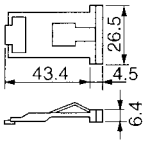


• Barrier

Center barrier AGX008-C

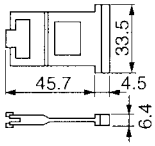


End barrier AGX008-E

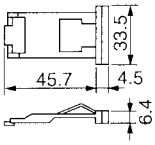


• Barrier

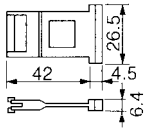
Long center barrier AGX003-LC



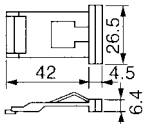
Long end barrier AGX003-LE



Short center barrier AGX003-SC



Short end barrier AGX003-SE



■ Illuminated pushbutton switches (LED lamp)

• Indicators

Description	Color insert split	Type*1 *2
SK-1016 **AG22-L**	A	**AG22-LA■-△**
	B	**AG22-LB■-△△**
SM-348 **AG23-L**	A	**AG23-LA■-△**
	B	**AG23-LB■-△△**
	C	**AG23-LC■-△△**
	D	**AG23-LD■-△△△**
	E	**AG23-LE■-△△△**
	F	**AG23-LF■-△△△△**

• Contact unit

Description	Contact	Momentary action Type*3 *4	Alternate actionn Type*3 *4
SM-347 **AG22-L**	1NO+1NC	**AG22-L1-( )□**	**AG22-L51-( )□**
	2NO+2NC	**AG22-L2-( )□**	**AG22-L52-( )□**
SM-298 **AG23-L**	1NO+1NC	**AG23-L1-( )□**	**AG23-L51-( )□**
	2NO+2NC	**AG23-L2-( )□**	**AG23-L52-( )□**
	3NO+3NC	**AG23-L3-( )□**	**AG23-L53-( )□**
	4NO+4NC	**AG23-L4-( )□**	**AG23-L54-( )□**

■ Pilot lights (LED lamp)

• Indicators

Description	Color insert split	Type*1 *2
SM-349 **AG22-Z**	A	**AG22-ZA■-△**
	B	**AG22-ZB■-△△**
SM-304 **AG23-Z**	A	**AG23-ZA■-△**
	B	**AG23-ZB■-△△**
	C	**AG23-ZC■-△△**
	D	**AG23-ZD■-△△△**
	E	**AG23-ZE■-△△△**
	F	**AG23-ZF■-△△△△**

Notes:
*1 Replace the ■ mark by the lamp voltage code.
E3: 24V DC
*2 Replace the △ mark by color code depending on the type of split patterns.
G: Green, R: Red, W: White, O: Orange, Y: Yellow
(For color insert sequence, *see page 04CD/1/4*)
*3 Replace the ( ) mark by the mounting code.
Blank: Horizontal mounting
T: Vertical mounting
*4 Replace the □ mark by the flange color code.
Blank: Gray, B: Blank

■ Ordering information

Example

• Indicator

AG23 series AG23
Illuminated pushbutton L
4-way split color insert ..... F
LED lamp 24V DC (Anode common) E3
Color sequence

1: Green	2: Red
4: Orange	3: White

..... GRWO

Type number AG23-LFE3-GRWO

• Contact unit

Momentary action L
Contact block 2NO+2NC 2
Horizontal mounting ..... Blank
Color of flange Gray ..... Blank

Type number AG23-L2

• Sockets

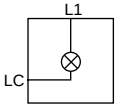
Description	Type code*3 *4
SM-347 **AG22-Z6**	**AG22-Z6-( )□**
SM-298 **AG23-Z6**	**AG23-Z6-( )□**

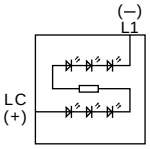
■ Wiring diagrams (Lamp circuit)

AG22

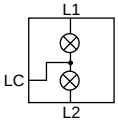
• Incandescent lamp **• LED lamp**

Full face

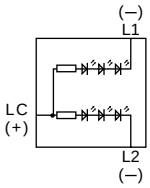




2-way



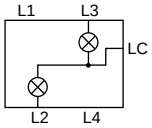
View from terminal side

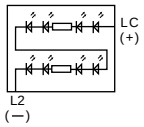


AG23

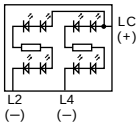
• Incandescent lamp **• LED lamp (24V)**

Full face

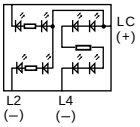




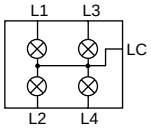
2 - way
Vertical split



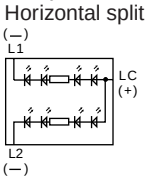
3 - way split
(Half at left)



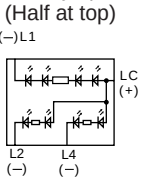
2, 3, 4 - way split



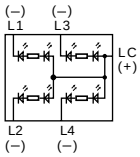
2-way
Horizontal split



3 - way split
(Half at top)



4 - way split



■ Illuminated lever switches/Incandescent lamps

Description	Contact block	No. of lamp	Operation	2-position Type*	3-position Type*
Incandescent lamp	1NO+1NC	1 2	Maintained	**AG23-HL2△1■-1( )□/▲** **AG23-HL2△1■-2( )□/▲**	— —
	2NO+2NC	1 2		**AG23-HL2△2■-1( )□/▲** **AG23-HL2△2■-2( )□/▲**	**AG23-HL3△2■-1( )□/▲** **AG23-HL3△2■-2( )□/▲**
	3NO+3NC	1 2		**AG23-HL2△3■-1( )□/▲** **AG23-HL2△3■-2( )□/▲**	**AG23-HL3△3■-1( )□/▲** **AG23-HL3△3■-2( )□/▲**
	1NO+1NC	1 2	Spring return	**AG23-HL0△1■-1( )□/▲** **AG23-HL0△1■-2( )□/▲**	— —
	2NO+2NC	1 2		**AG23-HL0△2■-1( )□/▲** **AG23-HL0△2■-2( )□/▲**	**AG23-HL1△2■-1( )□/▲** **AG23-HL1△2■-2( )□/▲**
SP-1108	3NO+3NC	1 2		**AG23-HL0△3■-1( )□/▲** **AG23-HL0△3■-2( )□/▲**	**AG23-HL1△3■-1( )□/▲** **AG23-HL1△3■-2( )□/▲**
	2NO+2NC	1 2	Spring/ manual return	—	**AG23-HL6△2■-1( )□/▲** **AG23-HL6△2■-2( )□/▲**
	3NO+3NC	1 2		—	**AG23-HL6△3■-1( )□/▲** **AG23-HL6△3■-2( )□/▲**

■ Illuminated lever switches/LED lamps

Description	Contact block	No. of lamp	Operation	2-position Type*	3-position Type*
Spot LED	1NO+1NC	1 2	Maintained	**AG23-HL2△1■2-1( )□/▲** **AG23-HL2△1■2-2( )□/▲**	— —
	2NO+2NC	1 2		**AG23-HL2△2■2-1( )□/▲** **AG23-HL2△2■2-2( )□/▲**	**AG23-HL3△2■2-1( )□/▲** **AG23-HL3△2■2-2( )□/▲**
	3NO+3NC	1 2		**AG23-HL2△3■2-1( )□/▲** **AG23-HL2△3■2-2( )□/▲**	**AG23-HL3△3■2-1( )□/▲** **AG23-HL3△3■2-2( )□/▲**
	1NO+1NC	1 2	Spring return	**AG23-HL0△1■2-1( )□/▲** **AG23-HL0△1■2-2( )□/▲**	— —
	2NO+2NC	1 2		**AG23-HL0△2■2-1( )□/▲** **AG23-HL0△2■2-2( )□/▲**	**AG23-HL1△2■2-1( )□/▲** **AG23-HL1△2■2-2( )□/▲**
KK04-047A	3NO+3NC	1 2		**AG23-HL0△3■2-1( )□/▲** **AG23-HL0△3■2-2( )□/▲**	**AG23-HL1△3■2-1( )□/▲** **AG23-HL1△3■2-2( )□/▲**
	2NO+2NC	1 2	Spring/ manual return	—	**AG23-HL6△2■2-1( )□/▲** **AG23-HL6△2■2-2( )□/▲**
	3NO+3NC	1 2		—	**AG23-HL6△3■2-1( )□/▲** **AG23-HL6△3■2-2( )□/▲**
Flat LED	1NO+1NC	1 2	Maintained	**AG23-HL2△1■3-1( )□/▲** **AG23-HL2△1■3-2( )□/▲**	— —
	2NO+2NC	1 2		**AG23-HL2△2■3-1( )□/▲** **AG23-HL2△2■3-2( )□/▲**	**AG23-HL3△2■3-1( )□/▲** **AG23-HL3△2■3-2( )□/▲**
	3NO+3NC	1 2		**AG23-HL2△3■3-1( )□/▲** **AG23-HL2△3■3-2( )□/▲**	**AG23-HL3△3■3-1( )□/▲** **AG23-HL3△3■3-2( )□/▲**
	1NO+1NC	1 2	Spring return	**AG23-HL0△1■3-1( )□/▲** **AG23-HL0△1■3-2( )□/▲**	— —
	2NO+2NC	1 2		**AG23-HL0△2■3-1( )□/▲** **AG23-HL0△2■3-2( )□/▲**	**AG23-HL1△2■3-1( )□/▲** **AG23-HL1△2■3-2( )□/▲**
SP-1108	3NO+3NC	1 2		**AG23-HL0△3■3-1( )□/▲** **AG23-HL0△3■3-2( )□/▲**	**AG23-HL1△3■3-1( )□/▲** **AG23-HL1△3■3-2( )□/▲**
	2NO+2NC	1 2	Spring/ manual return	—	**AG23-HL6△2■3-1( )□/▲** **AG23-HL6△2■3-2( )□/▲**
	3NO+3NC	1 2		—	**AG23-HL6△3■3-1( )□/▲** **AG23-HL6△3■3-2( )□/▲**

* • Replace the △ mark by the lamp color codes.
G: Green R: Red W: White Y: Yellow O: Orange
S: Blue (Incandescent Lamp only)
• Replace the ■ mark by the lamp voltage codes
Incandescent A: 5V AC/DC B: 12V AC/DC C: 15V AC/DC E: 24V AC/DC
LED AA: 5V DC A: 6V DC B: 12V DC E: 24V DC
• Replace the ( ) mark by the mounting angle code.
Blank: Horizontal mounting
T: Vertical mounting
• Replace the □ mark by the flange color codes.
Blank: Gray (Standard) B: Black
• Replace the ▲ mark by the lever color codes.
Blank: Black (Standard) H: Gray R: Red

■ Illuminated rocker switches/Incandescent lamps

Description	Contact block	No. of lamp	Operation	2-position Type*	3-position Type*
Incandescent	1NO+1NC	1 2	Maintained	**AG23-RL2△1■-1( )□** **AG23-RL2△1■-2( )□**	— —
	2NO+2NC	1 2		**AG23-RL2△2■-1( )□** **AG23-RL2△2■-2( )□**	**AG23-RL3△2■-1( )□** **AG23-RL3△2■-2( )□**
	3NO+3NC	1 2		**AG23-RL2△3■-1( )□** **AG23-RL2△3■-2( )□**	**AG23-RL3△3■-1( )□** **AG23-RL3△3■-2( )□**
	1NO+1NC	1 2	Spring return	**AG23-RL0△1■-1( )□** **AG23-RL0△1■-2( )□**	— —
	2NO+2NC	1 2		**AG23-RL0△2■-1( )□** **AG23-RL0△2■-2( )□**	**AG23-RL1△2■-1( )□** **AG23-RL1△2■-2( )□**
SP-1107	3NO+3NC	1 2		**AG23-RL0△3■-1( )□** **AG23-RL0△3■-2( )□**	**AG23-RL1△3■-1( )□** **AG23-RL1△3■-2( )□**
	2NO+2NC	1 2	Spring/ manual return	—	**AG23-RL6△2■-1( )□** **AG23-RL6△2■-2( )□**
	3NO+3NC	1 2		—	**AG23-RL6△3■-1( )□** **AG23-RL6△3■-2( )□**

■ Illuminated rocker switches/LED lamps

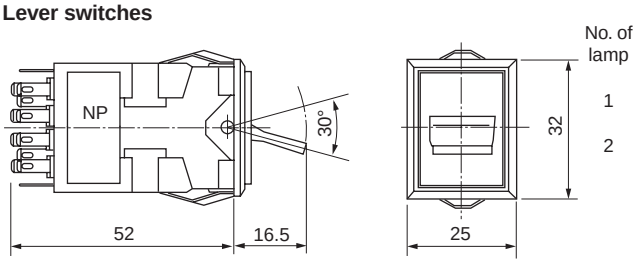
Description	Contact block	No. of lamp	Operation	2-position Type*	**3-**position Type*
Spot LED	1NO+1NC	1 2	Maintained	**AG23-RL2△1■2-1( )□** **AG23-RL2△1■2-2( )□**	— —
	2NO+2NC	1 2		**AG23-RL2△2■2-1( )□** **AG23-RL2△2■2-2( )□**	**AG23-RL3△2■2-1( )□** **AG23-RL3△2■2-2( )□**
	3NO+3NC	1 2		**AG23-RL2△3■2-1( )□** **AG23-RL2△3■2-2( )□**	**AG23-RL3△3■2-1( )□** **AG23-RL3△3■2-2( )□**
	1NO+1NC	1 2	Spring return	**AG23-RL0△1■2-1( )□** **AG23-RL0△1■2-2( )□**	— —
	2NO+2NC	1 2		**AG23-RL0△2■2-1( )□** **AG23-RL0△2■2-2( )□**	**AG23-RL1△2■2-1( )□** **AG23-RL1△2■2-2( )□**
KK04-048A	3NO+3NC	1 2		**AG23-RL0△3■2-1( )□** **AG23-RL0△3■2-2( )□**	**AG23-RL1△3■2-1( )□** **AG23-RL1△3■2-2( )□**
	2NO+2NC	1 2	Spring/ manual return	—	**AG23-RL6△2■2-1( )□** **AG23-RL6△2■2-2( )□**
	3NO+3NC	1 2		—	**AG23-RL6△3■2-1( )□** **AG23-RL6△3■2-2( )□**
Flat LED	1NO+1NC	1 2	Maintained	**AG23-RL2△1■3-1( )□** **AG23-RL2△1■3-2( )□**	— —
	2NO+2NC	1 2		**AG23-RL2△2■3-1( )□** **AG23-RL2△2■3-2( )□**	**AG23-RL3△2■3-1( )□** **AG23-RL3△2■3-2( )□**
	3NO+3NC	1 2		**AG23-RL2△3■3-1( )□** **AG23-RL2△3■3-2( )□**	**AG23-RL3△3■3-1( )□** **AG23-RL3△3■3-2( )□**
	1NO+1NC	1 2	Spring return	**AG23-RL0△1■3-1( )□** **AG23-RL0△1■3-2( )□**	— —
	2NO+2NC	1 2		**AG23-RL0△2■3-1( )□** **AG23-RL0△2■3-2( )□**	**AG23-RL1△2■3-1( )□** **AG23-RL1△2■3-2( )□**
SP-1107	3NO+3NC	1 2		**AG23-RL0△3■3-1( )□** **AG23-RL0△3■3-2( )□**	**AG23-RL1△3■3-1( )□** **AG23-RL1△3■3-2( )□**
	2NO+2NC	1 2	Spring/ manual return	—	**AG23-RL6△2■3-1( )□** **AG23-RL6△2■3-2( )□**
	3NO+3NC	1 2		—	**AG23-RL6△3■3-1( )□** **AG23-RL6△3■3-2( )□**

* • Replace the △ mark by the lamp color codes
G: Green R: Red W: White Y: Yellow O: Orange
S: Blue (Incandescent Lamp only)
• Replace the ■ mark by the lamp voltage codes
Incandescent A: 5V AC/DC B: 12V AC/DC C: 15V AC/DC E: 24V AC/DC
LED AA: 5V DC A: 6V DC B: 12V DC E: 24V DC
• Replace the ( ) mark by the mounting angle code
Blank: Horizontal mounting
T: Vertical mounting
• Replace the □ mark by the flange color codes
Blank: Gray (Standard) B: Black

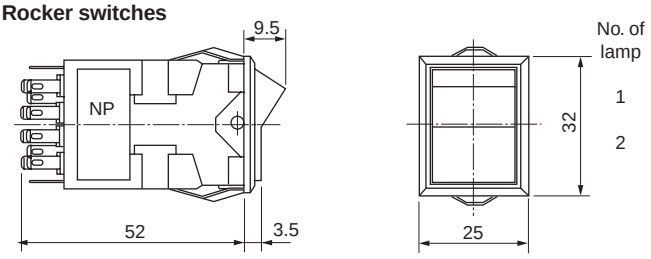
AG23
Dimensions

■ Dimensions, mm

Lever switches

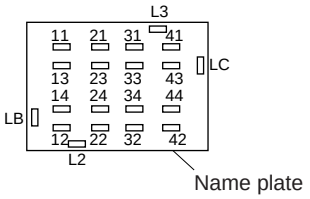


Rocker switches



■ Wiring diagrams (AG23 4NO+4NC)

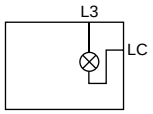
● Terminal arrangement



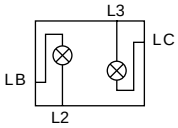
■ Wiring diagrams (Lamp circuit)

● Incandescent lamp

1 - lamp

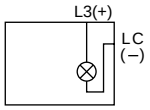


2 - lamp

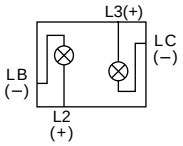


● LED lamp

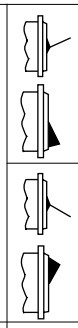
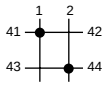
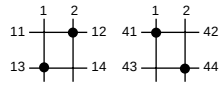
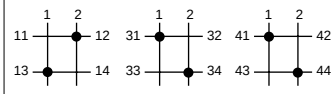
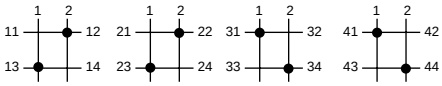
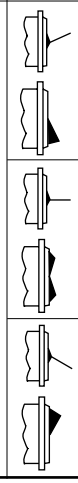
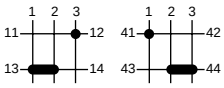
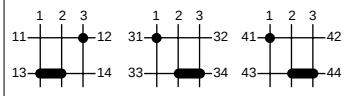
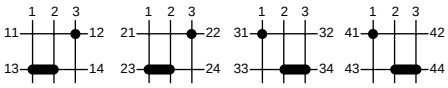
1 - lamp



2 - lamp



■ Contact arrangement

Operator positon		1NO+1NC	2NO+2NC	3NO+3NC	4NO+4NC
2-position					
3-position		–			

Note: The operator position shown is where the nameplate-stuck-surface is positioned toward you.

Notes on use

■ Mounting the Switches (Pilot lights)

Mounting the switches by inserting them into place in the front of the mounting panel.
The switches will be held in position by the mounting springs.

■ Panel cutting

• AG 22

Description		Mounting design	Panel cutting	Remarks
Flange mounting	Individual mounting (Horizontal)	25 ± 0.1 25 ± 0.1	23.5 ± 0.3 22.5 ± 0.3	Panel cutting space between rows of units Over 3 Over 6
	Manifold mounting (Horizontal)	25 ± 0.1 25n ± 0.5	23.5 ± 0.3 24.9n–2.4 ± 0.3 (32.5n–10 ± 0.3)	
Barrier mounting	Individual mounting (Horizontal)	26.5 32	23.5 ± 0.3 27.8 ± 0.3	Panel cutting space between rows of units Dotted line indicates the position of each mounting barrier 1.3 Over 6 Over 6
	Manifold mounting (Horizontal)	26.5 26n+6.5 ± 1	23.5 ± 0.3 25.9n+1.9 ± 0.3	

Notes • n: Number of mounted unit Max 10 Panel thickness: 1 to 5 mm (with dust covers: 1 to 4 mm)
• For vertical mounting, contact FUJI
• The dimensions in parentheses are for tandem mounting of switches with dust covers.

• AG 23

Description		Mounting design	Panel cutting	Remarks
Flange mounting	Individual mounting (Horizontal)	25 ± 0.1 32 ± 0.1	23.5 ± 0.3 30.5 ± 0.3	Panel cutting space between rows of units Over 3 Over 6
	Manifold mounting (Horizontal)	25 ± 0.1 32n ± 0.5	23.5 ± 0.3 31.9n–1.5 ± 0.3 (39.5n–9 ± 0.3)	
	Individual mounting (Vertical)	32 ± 0.1 25 ± 0.1	30.5 ± 0.3 23.5 ± 0.3	
	Manifold mounting (Vertical)	32 ± 0.1 25n ± 0.5	30.5 ± 0.3 24.9n–1.5 ± 0.3 (32.5n–9 ± 0.3)	
Barrier mounting	Individual mounting (Horizontal)	26.5 39	23.5 ± 0.3 36.4 ± 0.3	Panel cutting space between rows of units Dotted line indicates the position of each mounting barrier 1.3 Over 6 Over 6
	Manifold mounting (Horizontal)	26.5 33n+6 ± 1	23.5 ± 0.3 32.8n+3.5 ± 0.3	
	Individual mounting (Vertical)	33.5 32 ± 0.3	30.5 ± 0.3 29.4 ± 0.3	
	Manifold mounting (Vertical)	33.5 26n+6 ± 1	30.5 ± 0.3 25.8n+3.5 ± 0.3	

Notes • n: Number of mounted unit Max10 Panel thickness: 1 to 5 mm (with dust covers: 1 to 4 mm)
• The dimensions in parentheses are for tandem mounting of switches with dust covers.

■ Installing or removing switches

- To install switches in the standard mounting or barrier-isolated single-unit mounting method, insert the switches one at a time from the front of the panel.
- Installing the main bodies of the switches
  If the mounting panel is vatical, install the switches with their nameplates positioned at the bottom. If the mounting panel is horizontal, install the switches with their nameplates positioned on this side.
- If the mounting panel is thin (1 to 2 mm thick), make panel cutouts smaller.

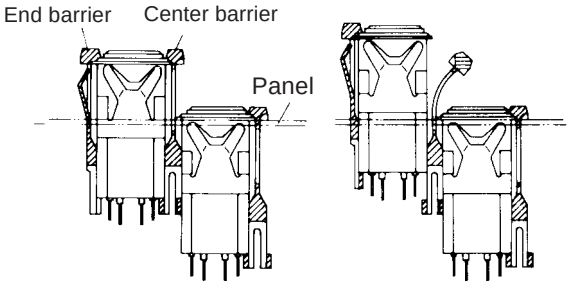


Fig.1 Fig.2

- When the barrier-isolated tandem-mounting method is employed, you can sequentially install switches one by one. For the final one, place a part of the center barrier in the mounting hole beforehand, and then insert the switch into the mounting hole so that the end barrier is in close contact with the main body of the switch (procedure: Fig.2 to Fig.1)
- To remove a switch which has been installed in the standard mounting or barrier-isolated single-uint monting method, push out the switch by pushing it from the back of the panel while holding the panel bay pushing it inward.
- To remove switches which have been installed in the barrier-isolated tandem-mounting method, proceed as follows:disengage the rear of the barrier on both sides of the switch to be removed so that the barriers are attached to the switch and, push the switch outward from the back of the panel while holding the front of the mounting panel firm, and take out the switch by opening the barriers by bending them to both sides on the front side of the panel (procedure: Fig.1 to Fig.2)

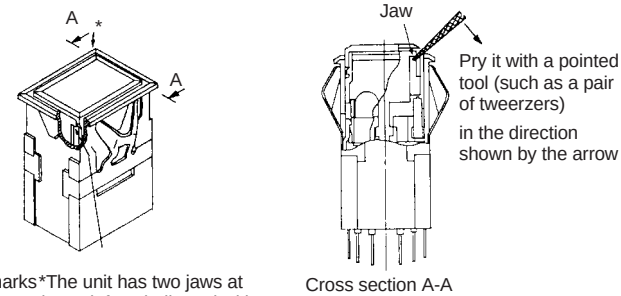
■ Operating voltage and rated voltage of incandescent lamps

Rated voltage	Operating voltage
6V	4 to 5V
14V	10 to 12V
18V	12 to 15V
28V (Standard)	20 to 24V

Incandescent lamps should be operated at the operating voltages if a lamp service life of 5,000 to 10,000 hours are needed. The ambient temperature must not exceed 30°C if the lamp is used at the rated voltage continuously.

■ Removing the lighting unit...AG23 (Oblong)

To remove the lighting unit, refer to the illlustraions given in the below. (Especially when removing the unit installed on a panel)



Remarks *The unit has two jaws at lower left as indicated with the asterisks

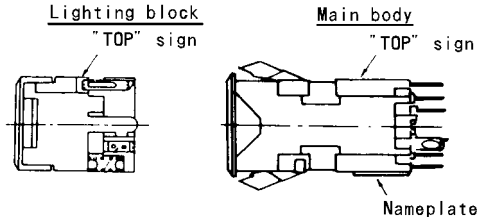
Cross section A-A
(main components only)

■ Lamp replacement (For illuminated pushbutton and pilot lights)

To replace a lamp, pull out the entire lighting unit and replace the lamp from the back of the lamp holder.
Install the lighting unit so that it conforms with the contact end inside the switch main-body. The inserting force must not be greater than 60N.

■ Installing the lighting section

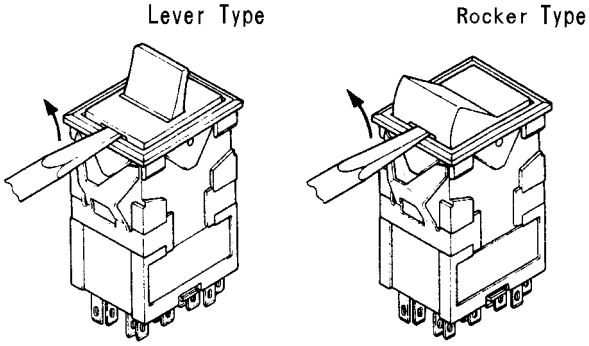
Install the lighting unit aligning the "TOP" display on the lighting uint and switch main-body as shown in the below.



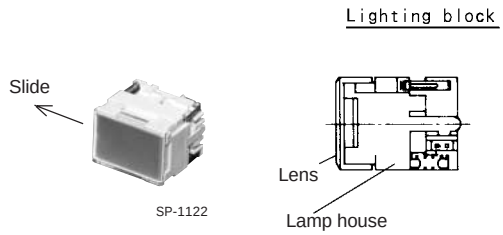
Do not push the internal mechanism of the switch main body while the lamp unit has been removed. Deformation of contact piece for the lamp may result in poor lighting or malfunction.

■ Replacing the lamp (Lever type or rocker type)

To remove the lamp, remove the lens by using a screwdriver or other pointed tool (see.the illustrations in the below) and then pull out the lamp by using a lamp remover (Type AHX672) .To install the lamp, insert it with your fingers and then put back the lens.

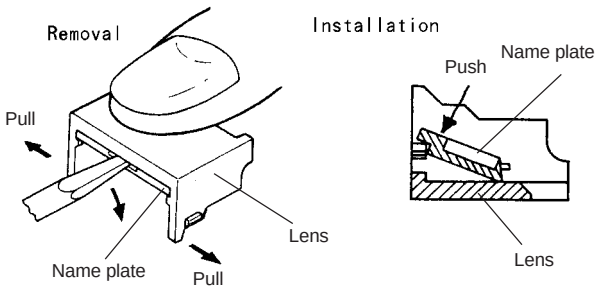


■ Removeing or installing the lens
To remove the lens, slide it horizontally. To install the lens, align it with the lamp house and insert it from the top.



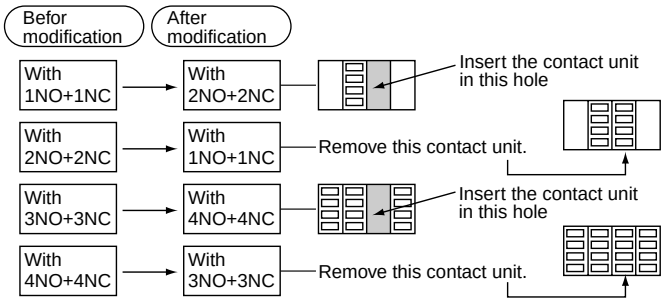
■ Installing the color plate and nameplate
Install the color plate and Nameplate in the lens section with their grained surfaces directed inward.

■ Removeing or installing the nameplate (Lever type)
To remove the nameplate from the lens, press the studs of the lens against a flat plane so that the lens is widened slightly, and insert a screwdriver or other pointed tool into the groove of the nameplate. (See the illustration in the below.)
To install the nameplate into the cover, put the end of thenameplate in the cover and then press the nameplate into the cover by pinching them with your fingers. (See the illustration in the below.)



■ Contact block
To replace a contact block, use removing tool AGX012. If excessive force is applied when attempting to open the support legs for the contact block holder, deformation or damage may occur.

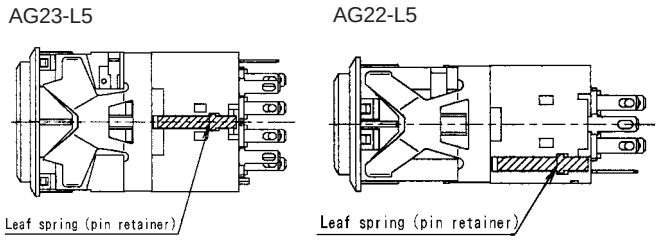
■ Contacts configuration modifications
Note that there are certain restrictions on contact configureation modifications.
No modifications other than those below are available. Although it is not impossible to modify a switch with 3a3b or 4a4b into that with 2a2b, do not attempt this modification because the layout of the contacts of the former differs from that of the latter.
Caution: never remove any of the contact units or dummy units which are located at both ends. If you do, the main units of the switches may be damaged, may become unable to be installed, or other troubles may result.



■ Wiring connections
- Use a soldering iron with a wattage of not more than 30W and a tip length of more than 20mm.
  Use a rosin-core solder
  With a 30W iron complete soldering within 5 seconds, or 10 seconds with a 20W iron. Do not apply external force to the terminals. Do not deform the terminals.
  Because lead-free solder's melting point is slightly high, soldering work may be difficult. Use a soldering iron whose tip is rather large or whose calorie is rather high.
- Wires that can be connected
  Two solid wires with a maximum diameter of 0.8mm (solder)
  One stranded wire with a maximum area of 0.75mm^2 (solder)
- Using contact blocks
  When using NO and NC contacts in the same contact block, avoid connection that involves opposite polarity or wiring from different types of power supply.
- For wiring to adjacent terminals, use insulated tubing to prevent short-circuit and to assure isolation. For solder terminals, be careful when connecting thick wires. Do not use too much solder.

■ Installing lamps in close order
When continuously lighting pilot lights or pressing illuminated pushbuttons installed in close order, care must be taken that the ambient temperature does not exceed the rated value.

■ Alternate types

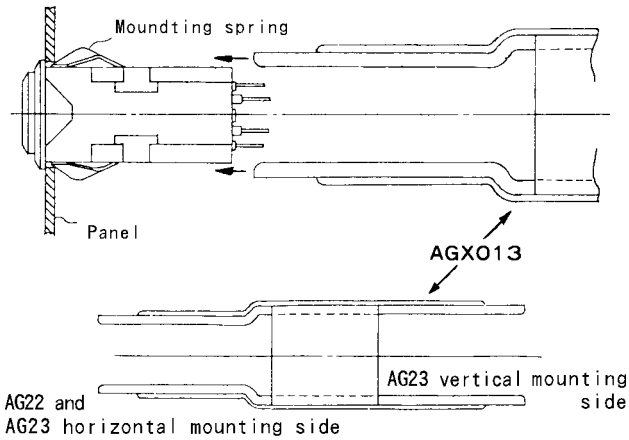


Do not open/close the switch with its leaf spring held pressed.If you do, the alternate mechanism can be damaged.

■ **Dismounting the switch (Main body)**

① To remove the main body of a rectangular command switch installed on a panel, bend the mounting springs and push them outside of the main body.If it is densely packed with other devices, use the removeing tool (Type AGX013) for ease of removal.

② For how to use the removing tool, see the illustration in the below.Insert the tool from back of the switch (main-body) and then push out the switch.



■ **Operation**

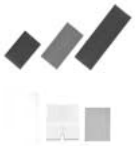
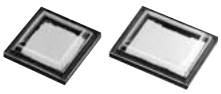
Do not use a hitting or bouncing action to operate the button, or the switch may break. Always operate the switch by hand.

■ **Storage and operating environment**

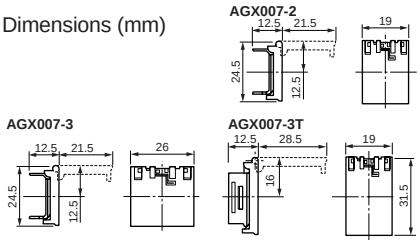
Observe the operating ambient temperature and humidity specifications indicated in the catalog or other related material. Do not use the switches in a location where they are exposed to being splashed with oil or water. The location must not be dusty.

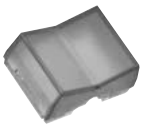
- If it is inevitable that the installed switches will be exposed to dust or metallic particles caused by factory installation work or other tasks, cover the switches with suitable sheets to protect them.
- If using the switches in a dusty atmosphere cannot be avoided protect the switches with dust covers.

■ Accessories

Description	Type		
Barrier		Color	Type
SM-337	For AG22		
	Center	Black	**AGX008-CB**
	-barrier	Gray	**AGX008-CH**
	End-barrier	Black	**AGX008-EB**
		Gray	**AGX008-EH**
SM-313	For AG23		
	Long center	Black	**AGX003-LCB**
	-barrier	Gray	**AGX003-LCH**
	Long end	Black	**AGX003-LEB**
	-barrier	Gray	**AGX003-LEH**
	Short center	Black	**AGX003-SCB**
	-barrier	Gray	**AGX003-SCH**
	Short end	Black	**AGX003-SEB**
	-barrier	Gray	**AGX003-SEH**
Bezel		Color	Type
SM-354	For AG22	Black	**AGX010-2B**
		Gray	**AGX010-2H**
	For AG23	Black	**AGX010-3B**
		Gray	**AGX010-3H**
Color insert kit		Split	Type
	For AG22-L, Z	Full face	**AGX019-2A**
		2-way split	**AGX019-2B**
	For AG23-L, Z		
		Full face	**AGX019-3A**
		2-way split	**AGX019-3B**
			AGX019-3C
		3-way split	**AGX019-3D**
			AGX019-3E
This kit contains green, red, white, orange and blue color-inserts, legend plates and light baffle plates. *See page 04CD/1/8*		4-way split	**AGX019-3F**
Legend plate		Color	Type
SM-355	For AG22-L, Z	Clear*	**AGX009-2C**
		White	**AGX009-2W**
	For AG23-L, Z	Clear*	**AGX009-3C**
		White	**AGX009-3W**
	*:Standard Dimension (mm) • 15sq.×1 (AGX009-2) • 15×23×1 (AGX009-3)		
Dust-tight cover			
 SM-1528			

Type	Used with
AGX011-3	AG23-L
AGX011-2	AG22-L

Description	Type		
Protection cover			Type
SM-375	For AG22-L		**AGX007-2**
	For AG23-L		**AGX007-3**
			AGX007-3T
	(vertical mounting) The cover portects against accidental operation. The cover lid is returned home with a spring force.		
	Dimensions (mm) 		
Panel plug		Color	Type
SM-338	For AG22	Black	**AGX006-2B**
		Gray	**AGX006-2H**
	For AG23	Black	**AGX006-3B**
		Gray	**AGX006-3H**
Contact block	**AGX001** Soldering/Tab use		
KKD06-305			
Dummy unit	**AGX002** The dummy unit installs in the part which does not use the contact unit.		

Description	Type			
Lens For AG23-HL SP-124	Type		Color	Split
	Incandescent, Flat LED	Spot LED		
	AGX034-R	**AGX038-R**	Red	Two-way split
	AGX034-G	**AGX038-G**	Green	
	AGX034-W	**AGX038-W**	White	
	AGX034-Y	**AGX038-Y**	Yellow	
	AGX034-S[*1]	**–**	Blue	
	AGX034-O	**AGX038-O**	Orange	
	AGX034-B[*2]	**–**	Black	
	*[1] Used with the incandecent lamp only *[2] Used with non illuminated side of spot LED(1-lamp types)			
Lens For AG23-RL  SP-123	Type		Color	Split
	Incandescent, Flat LED	Spot LED		
	AGX032-R	**–**	Red	Full face
	AGX032-G	**–**	Green	
	AGX032-W	**–**	White	
	AGX032-Y	**–**	Yellow	
	AGX032-S[*1]	**–**	Blue	
	AGX032-O	**–**	Orange	
	AGX033-R	**AGX037-R**	Red	Two-split
	AGX033-G	**AGX037-G**	Green	
	AGX033-W	**AGX037-W**	White	
	AGX033-Y	**AGX037-Y**	Yellow	
	AGX033-S[*1]	**–**	Blue	
	AGX033-O	**AGX037-O**	Orange	
	AGX033-B[*2]	**–**	Black	
	*[1] Used with the incandecent lamp only *[2] Used with non illuminated side of spot LED(1-lamp types)			
Legend plate For AG23-HL SP-115	**AGX036-W** Dimension (mm) 8.5×16.5×2			
Legend plate For AG23-RL SP-116	**AGX035-W** Dimension (mm) 9.5×16×8.5			
Remover SM-334, 335	For contact unit **AGX012** For body **AGX013**			
Remover SP-1142	**AGX039** This tool is used to remove the indicator of illuminated pushbutton or pilot light.			

Description	Type	
Lamp changer For AG23-HL, RL AF02-117	**Type: AHX672** If the switch is fitted with a lamp, use this tool to remove the lamp. The tool is unnecessary when installing a lamp.	
Incandescent lamp KKD06-333	Voltage	Type
	6V, 0.6W	**AHX641**
	14V, 0.7W	**AHX642**
	18V, 0.7W	**AHX612**
	28V, 0.7W	**AHX643**

Socket

AGX005

AF02-129

Terminal	Type	Contact arrangement	Used with
Solder/tab	**AGX005-S**	1a1b	AG22
Wire wrap	**AGX005-W**	2a2b	
PC board	**AGX005-P**		
Solder/tab	**AGX004-2S**	1a1b	AG23
Wire wrap	**AGX004-2W**	2a2b	
PC board	**AGX004-2P**		
Solder/tab	**AGX004-4S**	3a3b	
Wire wrap	**AGX004-4W**	4a4b	
PC board	**AGX004-4P**		

AGX004

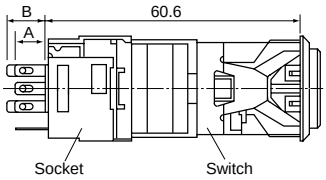
AF02-130

For wiring to wire-wrap pin terminals, select appropriate wire sizes and tool from the table below.

Wire size	Bit	Sleeve	Number of effective wraps
0.4mm dia.	3-A	1-B	About 8
0.5mm dia.	1-A	2-B	About 6
(0.65mm dia.)	(2-A)	(2-B)	(About 6)

Use ordinary wrapping for connection. Wires of 0.65mm dia. must not be used on adjacent terminals. Howerver, 0.65mm dia. wire can be mixed with 0.4mm and 0.5mm dia. wires.

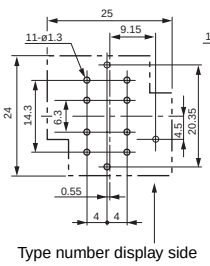
Dimension (mm)



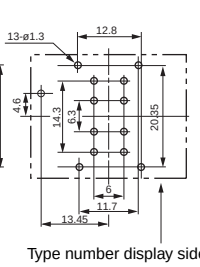
Terminal	A	B
Solder/tab	7.5	8.8
Wire wrap	18.5	19.8
PC board	3.5	4.8

PC board mounting

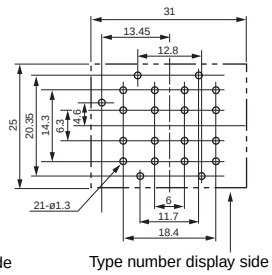
AGX005-P



AGX004-2P



AGX004-4P

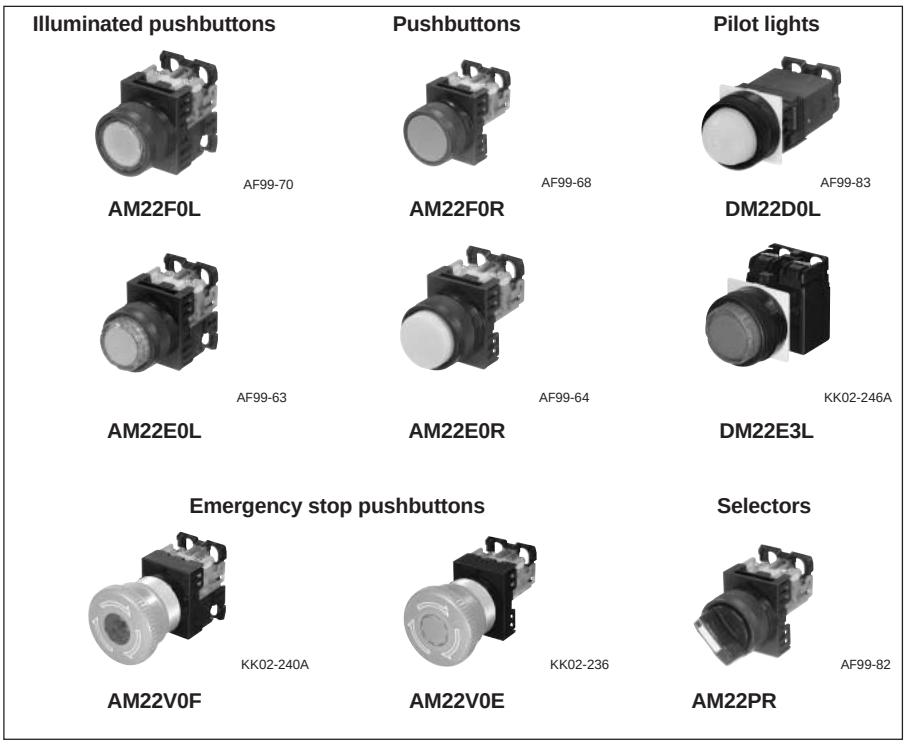


■ Mass, gram

Lamp type	Illuminated pushbuttons	1NO + 1NC	2NO + 2NC	3NO + 3NC	4NO + 4NC	Pilot lights		Illuminated rocker and lever switches	1NO + 1NC	2NO + 2NC	3NO + 3NC	4NO + 4NC
Incandescent lamp	AG22-LA, L5A	21.5	22.5	–	–	AG22-ZA	18.5	AG23-RL·-1	26	27	28	29
	B, L5B	22.5	23.5	–	–	B	19.3	AG23-RL·-2	28	29	30	31
	AG23-LA, L5A	27	28	29	30	AG23-ZA	23.5	AG23-HL·-1	26	27	28	29
	B, L5B	29.2	30.2	31.2	32.2	B	25.7	AG23-HL·-2	28	29	30	31
	C, L5C	29.2	30.2	31.2	32.2	C	25.7					
	D, L5D	29.4	30.4	31.4	32.4	D	25.9					
	E, L5E	29.4	30.4	31.4	32.4	E	25.9					
	F, L5F	29.5	30.5	31.5	32.5	F	26					
LED lamp	*1AG22-LA, L5A	21.8	22.8	–	–	*2AG22-ZA	19	AG23-RL·2-1	25	26	27	28
	B, L5B	22.2	23.2	–	–	B	19	AG23-RL·2-2	27.5	28.5	29.5	30.5
	*2AG23-LA, L5A	27.5	28.5	29.5	30.5	*2AG23-ZA	24	AG23-RL·3-1	25.5	27.2	27.5	28.5
	B, L5B	28	29	30	31	B	24.5	AG23-RL·3-2	28	29	30	31
	C, L5C	28	29	30	31	C	24.5	AG23-HL·2-1	25	26	27	28
	D, L5D	28.2	29.2	30.2	31.2	D	24.7	AG23-HL·2-2	27.5	28.5	29.5	30.5
	E, L5E	28.2	29.2	30.2	31.2	E	24.7	AG23-HL·3-1	25.5	26.5	27.5	28.5
	F, L5F	28.3	29.3	30.3	31.3	F	24.8	AG23-HL·3-2	28	29	30	31

L5: Alternate action
*1 Combined indicators and contact unit. *2 Combined indicators and sockets.

The full range of the contact blocks and transformer units suitable for the AR22 and DR22 series may also be fitted to the AM22 and DM22 series.

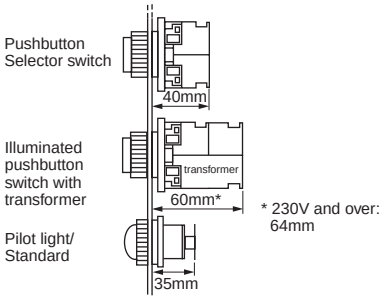


■ Features

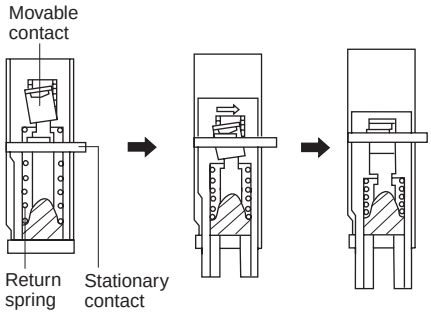
Quick-replacement contact blocks and transformer units
The snap-on construction makes replacement and addition of contact blocks and transformer units very simple and straightforward.

Oil-and dust-proof operator module construction
The protection level of the AM22/DM22 operator modules conforms to IEC Standard IP65. The special seals protect the operator modules and switch mechanisms against oil, dust, and grime, thus ensuring high performance in dusty and moist environments.

Miniaturization
- Pushbutton and selector switches with 1NO+1NC: 40mm deep
  Pilot lights: 35mm deep
- The transformer now occupies far less space.

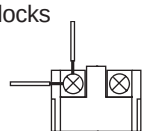


Self-cleaning contacts
All the contacts are double break type and feature self-cleaning action.
Every time the switch is operated, the contact surfaces are wiped with a sliding movement, thus ensuring high contact reliability even at low voltage and small current levels (5V, 5mA).



Metal nut
Safer model with metal nut is also available

Wiring
- Wiring from two directions is possible.
- Wiring in both vertical and lateral directions facilitates wiring in narrow spaces.
- Color coding of contact blocks makes wiring easy.
  1NO: Blue, 1NC: Red
  Lamp terminal and transformer unit: Black



Safety
- A terminal cover is provided, assuring safety and security.
- FUJI's original Trigger Action mechanism is used in the emergency stop pushbuttons. They are suitable for emergency stop and safety. This mechanism prevents the contacts from moving until the button is pushed and locked.

Protection
- Excellent oil-tight construction (IP65) of the operator.
- Closure of the contact block has been improved.

■ Approvals

For further information related to approved type, *see page 04CD/2/2 to 04CD/2/3.*

AM22 and DM22
Quick reference guide

■ Illuminated pushbutton switches

Operator	Type	Operator	Type	Operator	Type
Flush round head *See page 04CD/2/13, 04CD/2/29*	**AM22F0L, F5L** AF99-70	Mushroom head (40mm dia.) *See page 04CD/2/13, 04CD/2/29*	**AM22M0L, M5L** AF99-59	Extended with transparent full guard *See page 04CD/2/14, 04CD/2/29*	**AM22G4L, G9L** AF99-66
Extended round head *See page 04CD/2/13, 04CD/2/29*	**AM22E0L, E5L** AF99-63	Mushroom head (29mm dia.) *See page 04CD/2/13, 04CD/2/29*	**AM22M4L, M9L** AF99-61	Extended with full guard (With openings) *See page 04CD/2/14, 04CD/2/29*	**AM22G2L, G7L** AF99-69

■ Pushbutton switches

Operator	Type	Operator	Type	Operator	Type
Flush round head *See page 04CD/2/15, 04CD/2/30*	**AM22F0R, F5R** AF99-68	Mushroom head (40mm dia.) *See page 04CD/2/15, 04CD/2/30*	**AM22M0R, M5R** AF99-58	Extended with full guard (24mm dia.) *See page 04CD/2/15, 04CD/2/30*	**AM22G3R, G8R** AF99-65
Extended round head *See page 04CD/2/15, 04CD/2/30*	**AM22E0R, E5R** AF99-64	Mushroom head (29mm dia.) *See page 04CD/2/15, 04CD/2/30*	**AM22M4R** AF99-67	Mushroom head with full guard (40mm dia.) *See page 04CD/2/15, 04CD/2/30*	**AM22M3R, M8R** AF99-89

■ Emergency stop pushbutton switches (conform to EN418)

Operator	Type	Operator	Type	Operator	Type
Push-lock, turn-reset (40mm dia. with white arrow) *See page 04CD/2/16, 04CD/2/31*	**AM22V0E** KK02-236A	Push-lock, turn-reset (29mm dia. with white arrow) *See page 04CD/2/16, 04CD/2/31*	**AM22VSE** KK02-237A	Push-lock, turn-reset (40mm dia. with mechanical indicator) *See page 04CD/2/16, 04CD/2/31*	**AW22VME** KKD07-091

Note (CCC) : *See page 04CD/2/50*

■ Emergency stop illuminated pushbutton switches (conform to EN418)

Operator	Type	Operator	Type	Operator	Type
Push-lock, turn-reset (40mm dia. with white arrow) *See page 04CD/2/17, 04CD/2/32*	**AM22V0F** KK02-339A	Push-lock, turn-reset (29mm dia. with white arrow) *See page 04CD/2/17, 04CD/2/32*	**AM22VSF** KK02-241A	Push-lock, turn-reset (40mm dia. transparent in all colors with white arrow) *See page 04CD/2/17, 04CD/2/32*	**AM22VDF** KK02-243A

Note: Provided with the (Direct opening action)

■ Selector switches

Operator	Type	Operator	Type	Operator	Type
Knob *See page 04CD/2/18, 04CD/2/33*	**AM22PR, PCR** AF99-82	Lever *See page 04CD/2/18, 04CD/2/33*	**AM22WR, WCR** AF99-76	Key *See page 04CD/2/18, 04CD/2/33*	**AM22JR, JCR** KKD09-014

■ Illuminated selector

Operator	Type
Knob *See page 04CD/2/25, 04CD/2/34*	**AM22PL** AF99-79

■ Pilot lights

Operator	Type	Operator	Type	Operator	Type
Dome *See page 04CD/2/27, 04CD/2/34*	**DM22D0L** AF99-88	Extended round *See page 04CD/2/27, 04CD/2/35*	**DM22E3L** AF99-85	Faceted *See page 04CD/2/27, 04CD/2/35*	**DM22K0L** AF99-87

Notes: With resitor unit type: Not approved standard
: *See page 04CD/2/50*

AM22 and DM22
Type number nomenclature

Illuminated pushbuttons

AM22 E0L – 10 E3 R □
① ② ③ ④ ⑤ ⑥

① **Product category**
AM22: 22mm-dia. illuminated pushbutton
22mm-dia. emergency stop illuminated pushbutton

② **Operator**
• Illuminated pushbutton
F0L: Flush round head
F5L: Flush round head (Alternate)
E0L: Extended round head
E5L: Extended round head (Alternate)
M0L: Mushroom head (40mm dia.)
M5L: Mushroom head (40mm dia. alternate)
M4L: Mushroom head (29mm dia.)
M9L: Mushroom head (29mm dia. alternate)
G4L: Extended with transparent full guard
G9L: Extended with transparent full guard (Alternate)
G2L: Extended with full guard (With openings)
G7L: Extended with full guard (With openings, alternate)
• Emergency stop illuminated pushbutton
V0F: Push-lock, turn-reset (40mm dia. with white arrow)
VSF: Push-lock, turn-reset (29mm dia. with white arrow)
VDF: Push-lock, turn-reset (40mm dia. transparent in all colors with white arrow)

③ **Contact arrangement**

10: 1NO	30: 3NO
01: 1NC	03: 3NC
11: 1NO+1NC	33: 3NO+3NC
20: 2NO	40: 4NO
02: 2NC	04: 4NC
22: 2NO+2NC	50: 5NO
	05: 5NC

④ **Lamp voltage**
• Incandescent lamp *1
54: 5.5V AC/DC, without transformer
C4: 15V AC/DC, without transformer
D4: 20V AC/DC, without transformer
E4: 24V AC/DC, without transformer
H4: 100-110V AC, with transformer
L4: 115-127V AC, with transformer
M4: 200-220V AC, with transformer
Q4: 230-254V AC, with transformer
S4: 350-380V AC, with transformer
T4: 400-440V AC, with transformer
V4: 480V AC, with transformer
W4: 500-550V AC, with transformer
• LED lamp
A3: 6V AC, without transformer
63: 6V DC, without transformer *1
B3: 12V AC/DC, without transformer *1
C3: 15V AC/DC, without transformer *1
E3: 24V AC/DC, without transformer
H3: 100-110V AC, with transformer
L3: 115-127V AC, with transformer
M3: 200-220V AC, with transformer
Q3: 230-254V AC, with transformer
S3: 350-380V AC, with transformer
T3: 400-440V AC, with transformer
V3: 480V AC, with transformer
W3: 500-550V AC, with transformer

⑤ **Color of lens**

G: Green	Y: Yellow
R: Red *2	A: Orange
W: White	S: Blue

⑥ **Special product**
Z9: Resisting water-soluble cutting oils and heat
Z8: With a contact protection cover
Z4: Resisting sulfuration gas
ZB: Meeting IP2X finger-protection standards
ZM: Metal nut

Notes: *1 Except for emergency stop illuminated pushbutton.
*2 Button color of emergency stop illuminated switches are Red only.
• The manufacturing range varies depending on the model. For details, refer to the contents of this catalog.

Pushbuttons

AM22 E0R – 10 R □
① ② ③ ④ ⑤

① **Product category**
AM22: 22mm-dia. pushbutton

② **Operator**
- Pushbutton switch

F0R: Flush round head
F5R: Flush round head (Alternate)
E0R: Extended round head
E5R: Extended round head (Alternate)
M0R: Mushroom head (40mm dia.)
M5R: Mushroom head (40mm dia. alternate)
M4R: Mushroom head (29mm dia.)
G3R: Extended with full guard (24mm dia.)
G8R: Extended with full guard (24mm dia. alternate)
M3R: Mushroom head with full guard (40mm dia.)
M8R: Mushroom head with full guard (40mm dia. alternate)

- Emergency stop pushbutton switch

V0E: Push-lock, turn-reset (40mm dia. with white arrow)
VSE: Push-lock, turn-reset (29mm dia. with white arrow)
VME: Push-lock, turn-reset (40mm dia. with mechanical indicator)

③ **Contact arrangement**

10:	1NO	30:	3NO
01:	1NC	03:	3NC
11:	1NO+1NC	33:	3NO+3NC
20:	2NO	40:	4NO
02:	2NC	04:	4NC
22:	2NO+2NC	44:	4NO+4NC
		50:	5NO
		05:	5NC

④ **Color of button**

G:	Green	Y:	Yellow
R:	Red*	A:	Orange
B:	Black	S:	Blue
W:	White		
T:	Green, Red, Black (For AM22F0R)		

⑤ **Special product**
Z9: Resisting water-soluble cutting oils and heat
Z8: With a contact protection cover
Z4: Resisting sulfuration gas
ZB: Meeting IP2X finger-protection standards
ZM: Metal nut

Notes: * Button color of emergency stop switches are Red only.
• The manufacturing range varies depending on the model. For details, refer to the contents of this catalog.

AM22 and DM22
Type number nomenclature

Selector and illuminated selector switches

AM22 PL – 2 □ 10 E3 G □ □
① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

① **Product category**
AM22: 22mm dia. selector switch and illuminated selector switch

② **Operator**
- Selector switch

PR: Knob
PCR: Knob operated control type
WR: Lever
WCR: Lever operated control type
JR: Key
JCR: Key operated control type
- Illuminated selector switch

PL: Knob

③ **Operation**
2: 2-position, maintained
0: 2-position, spring return
3: 3-position, maintained
6: 3-position, spring/manual return (Left to center)
7: 3-position, spring/manual return (Right to center)
1: 3-position, spring return
4: 4-position, maintained (For AM22PCR, WCR)
5: 5-position, maintained (For AM22PCR, WCR)

④ **Key removable position**
A: Left
B: Left and right
C: Left, right and center
D: Right
E: Center
F: Right and center
G: Left and center

⑤ **Contact arrangement**

10:	1NO	30:	3NO
01:	1NC	03:	3NC
11:	1NO+1NC	33:	3NO+3NC
20:	2NO	40:	4NO
02:	2NC	04:	4NC
22:	2NO+2NC	44:	4NO+4NC
		50:	5NO
		05:	5NC

Note: Control type: *See page 04CD/2/22 to 04CD/2/24*

⑥ **Lamp voltage**
- Incandescent lamp

54: 5.5V AC/DC, without transformer
C4: 15V AC/DC, without transformer
D4: 20V AC/DC, without transformer
E4: 24V AC/DC, without transformer
H4: 100-110V AC, with transformer
L4: 115-127V AC, with transformer
M4: 200-220V AC, with transformer
Q4: 230-254V AC, with transformer
S4: 350-380V AC, with transformer
T4: 400-440V AC, with transformer
V4: 480V AC, with transformer
W4: 500-550V AC, with transformer
- LED lamp

A3: 6V AC, without transformer
63: 6V DC, without transformer
B3: 12V AC/DC, without transformer
C3: 15V AC/DC, without transformer
E3: 24V AC/DC, without transformer
H3: 100-110V AC, with transformer
L3: 115-127V AC, with transformer
M3: 200-220V AC, with transformer
Q3: 230-254V AC, with transformer
S3: 350-380V AC, with transformer
T3: 400-440V AC, with transformer
V3: 480V AC, with transformer
W3: 500-550V AC, with transformer

⑦ **Color of knob**
B: Black (Not available for illuminated selector switch)
G: Green
R: Red
W: White (Not available for selector switch)
Y: Yellow (Not available for selector switch)
A: Orange (Not available for selector switch)
S: Blue (Not available for selector switch)

⑧ **Key type No.**
A, B, C, D, E or F
("A" is standard)

⑨ **Special product**
Z9: Resisting water-soluble cutting oils and heat
Z8: With a contact protection cover
Z4: Resisting sulfuration gas
ZB: Meeting IP2X finger-protection standards
ZM: Metal nut

Notes: •The manufacturing range varies depending on the model. For details, refer to the contents of this catalog.

Pilot lights

DM22 D0L – E3 W □
① ② ③ ④ ⑤

① **Product category**
DM22: 22mm dia. pilot light

② **Lens**
D0L: Dome
E3L: Extended round
K0L: Faceted

③ **Lamp voltage**
- Incandescent lamp

54: 5.5V AC/DC, without transformer
C4: 15V AC/DC, without transformer
D4: 20V AC/DC, without transformer
E4: 24V AC/DC, without transformer
H4: 100-110V AC, with transformer
L4: 115-127V AC, with transformer
M4: 200-220V AC, with transformer
Q4: 230-254V AC, with transformer
S4: 350-380V AC, with transformer
T4: 400-440V AC, with transformer
V4: 480V AC, with transformer
W4: 500-550V AC, with transformer
H8: 100-110V AC/DC, short-body with transformer
L8: 115-127V AC/DC, short-body with transformer
M8: 200-220V AC/DC, short-body with transformer

- LED lamp

A3: 6V AC, without transformer
63: 6V DC, without transformer
B3: 12V AC/DC, without transformer
C3: 15V AC/DC, without transformer
E3: 24V AC/DC, without transformer
H3: 100-110V AC, with transformer
L3: 115-127V AC, with transformer
M3: 200-220V AC, with transformer
Q3: 230-254V AC, with transformer
S3: 350-380V AC, with transformer
T3: 400-440V AC, with transformer
V3: 480V AC, with transformer
W3: 500-550V AC, with transformer
H7: 110V DC, with resistor unit
H9: 100-110V AC, short-body with transformer
L9: 115-127V AC, short-body with transformer
M9: 200-220V AC, short-body with transformer

④ **Color of lens**
G: Green
R: Red
W: White
Y: Yellow
A: Orange
S: Blue

⑤ **Special product**
Z9: Resisting water-soluble cutting oils and heat
Z4: Resisting sulfuration gas
ZB: Meeting IP2X finger-protection standards
ZM: Metal nut

Notes: • The manufacturing range varies depending on the model. For details, refer to the contents of this catalog.

AM22 and DM22
Ratings and specifications

■ Standards approved

UL508	File No. E44592
CSA C22.2 No.14	File No. LR20479
TÜV: EN60947-5-1	Pushbutton, Illuminated pushbutton: R9551062 Selector, Illuminated selector: R9551060 Pilot lights: R9551061
TÜV: EN60947-5-1 EN60947-5-5	Emergency stop pushbutton Emergency stop illuminated pushbutton : R50028146

■ Specifications (Indoor use)

Description	Pushbutton switch Illuminated pushbutton switch Emergency stop pushbutton switch Emergency stop illuminated pushbutton switch Selector switch Illuminated selector switch	Pilot light
Rated insulation voltage	600V AC/DC *1	
Mechanical durability	*See page 04CD/2/9*	–
Electrical durability	500,000 operations at 220V AC 6A 1 million operations at 220V AC 3A	–
Operating frequency	1200 operations/hour (On-load factor: 40%)	–
Dielectric strength	2500V AC, 1 minute *2	
Insulation resistance	100MΩ or more (500V DC megger)	
Rated impulse dielectric strength	6kV	
Conditional short-circuit current	1000A	–
Short-circuit protective device	Fuse 15A	–
Pollution degree	3	
Vibration	Resonance: 10 to 55Hz, double amplitude 0.1mm *3 Constant: 16.7Hz, double amplitude 3mm	
Shock	Malfunction durability: 100m/s^2 *4 Mechanical durability: 500m/s^2	Mechanical durability: 500m/s^2
Ambient temperature (No condensation or no icing)	-10 to +70°C, *5 (Illuminated type: -10 to +50°C *6)	-10 to +50°C
Storage temperature	-40 to +80°C	
Humidity	45 to 85% RH (within -5 to +40°C)	
Degree of protection	IP65	

Notes: *1 Illuminated type without transformer: 250V AC/DC
*2 Illuminated type without transformer: 2000V AC, 1 minute
*3 Emergency stop type: 10 to 500Hz, double amplitude 0.7mm (acceleration 50m/s^2), according to the test condition of EN60947-5-5 (1997)
*4 Emergency stop type: 150m/s^2
*5 AM22V0E, VSE type: -20 to +60°C
*6 AM22V0F, VDF, VSF type: -20 to +50°C

● **Mechanical durability**

Description			Operations
Pushbutton switch Illuminated pushbutton switch Emergency stop pusubutton switch Emergency stop illuminated pusubutton	Momentary action Alternate action		5 million 1 million 300,000
Selector switch	Maintained 1, 2, 3, 4-contact Maintained 5, 6, 7, 8-contact Control type, spring return, spring/manual return		1 million 500,000 200,000
Illuminated selector switch	Maintained Without transformer With transformer Spring return, spring/manual return	 1, 2, 3-contact 4-contact 1, 2-contact 3-contact	 1 million 500,000 1 million 500,000 200,000

Notes: Key insertion/removal durability for selector switch key types
• Key type 10,000

■ Contact ratings

• UL/CSA standards

AC (COS ø=0.35)

Contact rated code	120V		240V		480V		600V	
	Making current	Breaking current	Making current	Breaking current	Making current	Breaking current	Making current	Breaking current
A600	60A	6.0A	30A	3.0A	15A	1.5A	12A	1.2A

DC $T_{0.95}$= 6P (Max. 300ms)

Descripton	Contact rated code	Making current · Breaking current		
		125V	250V	301V–600V
Illuminated pushbutton switch Pushbutton (Except the overlap contact types)	P600	1.1A	0.55A	0.2A
Overlap contact types of products shown above Pushbutton Selector switch (2-position only, except the overlap contact types) Illuminated selector switch (2-position only, except the overlap contact types) Emergency stop pushbutton switch Emergency stop illuminated pushbutton switch	Q600	0.55A	0.27A	0.1A
Selector switch (2-pos./overlap contact type, 3-, 4-, 5-pos. type) Illuminated selector switch (2-pos./overlap contact type, 3-pos. type)	R300	0.22A	0.11A	–

• EN standard/TÜV approved

Descripton	Rated operational current			
	Rated thermal current	Rated operational voltage	AC15 (Ind. load)	DC13 (Ind. load)
			Rated operational current	Rated operational current
Illuminated pushbutton switch	10A	24V	6.0A	4.0A
Pushbutton		120V	6.0A	–
Selector switch (2-position)		125V	–	1.3A
Illuminated selector switch (2-position)		240V	6.0A	–
		250V	–	0.45A
		480V	2.5A	–
		600V	2.0A	–
Selector switch (3, 4, 5-position)	10A	24V	6.0A	2.0A
Illuminated selector switch (3-position)		120V	6.0A	–
Emergency stop pushbutton switch		125V	–	0.65A
Emergency stop illuminated pushbutton switch		240V	6.0A	–
		250V	–	0.23A
		480V	2.5A	–
		600V	2.0A	–

Lamp rated voltage UL/CSA Standards, TÜV approved

	LED lamp	Incandescent lamp
Full-voltage (without transformer)	Max. 24V AC/DC	Max. 30V AC/DC
With transformer	Max. 550V AC (Short-body type: Max. 220V AC)	

■ **Operating characteristic** (1NO+1NC)

Description	Pushbutton Illuminated pushbutton	Emergency stop pushbutton Emergency stop illuminated pushbutton	Selector * Illuminated selector		
		Push-lock type	Maintained	Spring/manual return	Spring return
Ave. required operating force	9N	22N	0.15N•m	0.13N•m	0.1N•m
Operating travel	Approx. 6mm	Approx. 9mm (Operation angle: Approx. 60°)	2-position: Approx. 90° 3-position: Approx. 45° 4-position: Approx. 40° 5-position: Approx. 30°	3-position: Approx. 45°	2-position: Approx. 60° 3-position: Approx. 45°
Required return force	–	0.25N•m	0.15N•m	0.13N•m	–

Note: * 4-position, 5-position : 2NO+2NC

■ **Lamp ratings**

• **Illuminated pushbuttons, illuminated selectors, pilot lights**

Transformer	Lamp voltege	LED (lamp base: BA9S/13)			Incandescent (lamp base: BA9S/13)		
		Type	Rated voltage	Consumption	Type	Rated voltage	Consumption
Without transformer	5.5V AC/DC	–	–	–	AHX135	6.3V AC/DC	0.9W
	6V AC	APX510-6□	6V AC	Green, red, orange, amber, blue: 7mA AC Yellow: 50mA AC	–	–	–
	6V DC	APX510-D6□	6V DC	Green, red, orange, amber, blue: 11mA DC Yellow: 33mA DC	–	–	–
	12V AC/DC	APX510-12□	12V AC/DC	Green, red, orange, amber, blue: 14mA AC, 11mA DC Yellow: 28mA AC, 22mA DC	–	–	–
	15V AC/DC	APX510-15□	15V AC/DC	Green, red, orange, amber, blue: 13mA AC, 11mA DC Yellow: 26mA AC, 22mA DC	AHX279	18V AC/DC	0.8W
	20V AC/DC	–	–	–	AHX144	24V AC/DC	0.9W
	24V AC/DC	APX510-24□	24V AC/DC	12mA AC, 11mA DC	AHX129	30V AC/DC	0.8W
With transformer (Standard type: AR9T511)	110V AC	APX510-6□	6V AC	1.5VA	AHX135	6.3V AC/DC	2VA
	127V AC						2VA
	220V AC						2VA
	254V AC	APX510-6□	6V AC	2.5VA	AHX135	6.3V AC/DC	2.5VA
	380V AC						2.5VA
	440V AC						2.5VA
	480V AC						2.5VA
	550V AC						2.5VA
With resistor unit (AR9T519-H)	110V DC	APX510-24□	24V AC/DC	1.2W	–	–	–

Notes: • Short body pilot lights: 110V AC, 127V AC, 220V AC only
• Replace the □ mark by the lamp luminous color code, *see page 04CD/2/12*
• Except AM22V0F, VDF, VSF type

• Emergency stop illuminated pushbutton swtiches

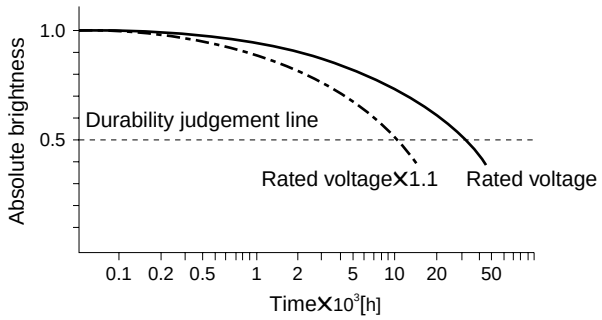
Transformer	Lamp voltage	LED		
		Type	Rated voltage	Consumption
Without transformer	6V AC 24V AC/DC	AR9L001-6R AR9L001-24R	6V AC 24V AC/DC	9mA AC 15mA AC, 14mA DC
With transformer (Type: AM9T511)	110V AC 127V AC 220V AC	AR9L001-6R	6V AC	1.5VA
	254V AC 380V AC 440V AC 480V AC 550V AC			3.0VA

■ Lamp durability

Lamp	Durability (reference)	Judgement criterion
LED	Approx. 30000h	When brightness is less than 50% of initial value
Incandescent	Approx. 5000h (AC)	When the bulb burns out

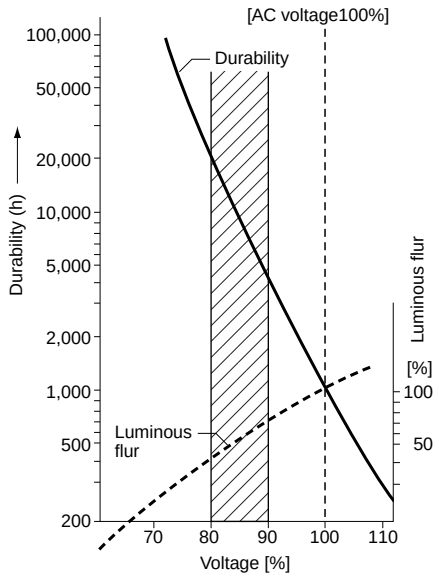
Note: • The operating voltage for incandescent lamps is set at 80 to 90% of the lamp's rated voltage.
• The durability of LED lamp is a mean value in all colors.

Estimated durability for LED lamps



Notes: • Durability at Ta=25˚C
• Durability is affected by temperature, humidity, and voltage fluctuation.

Incandescent lamp voltage characteristics



■ Combination of lens color and LED lamp luminous color

Button Color	Code	LED lamp Luminous color	Type
Green	G	Green	APX510-■G
Red	R	Red	APX510-■R
White	W	Orange	APX510-■O
Yellow	Y	Yellow	APX510-■Y
Orange	A	Amber	APX510-■A
Blue	S	Blue	APX510-■S
Red (AM22V0F, VDF, VSF)	R	Red	AR9L001-■R

Note: Replace the ■ mark by Lamp voltage. *See page 04CD/2/11*

■ Illuminated pushbutton switches

Operator	Trans-former	Contact	LED lamp Momentary action Type	LED lamp Alternate action Type	Incandescent lamp Momentary action Type	Incandescent lamp Alternate action Type
Flush round head AF99-70	Without	1NO	**AM22F0L-10■3□**	**AM22F5L-10 ■3□**	**AM22F0L-10 ■4□**	**AM22F5L-10 ■4□**
		1NC	**AM22F0L-01■3□**	**AM22F5L-01 ■3□**	**AM22F0L-01 ■4□**	**AM22F5L-01 ■4□**
		1NO+1NC	**AM22F0L-11■3□**	**AM22F5L-11 ■3□**	**AM22F0L-11 ■4□**	**AM22F5L-11 ■4□**
		2NO	**AM22F0L-20■3□**	**AM22F5L-20 ■3□**	**AM22F0L-20 ■4□**	**AM22F5L-20 ■4□**
		2NC	**AM22F0L-02■3□**	**AM22F5L-02 ■3□**	**AM22F0L-02 ■4□**	**AM22F5L-02 ■4□**
		2NO+2NC	**AM22F0L-22■3□**	**—**	**AM22F0L-22 ■4□**	**—**
	With	1NO	**AM22F0L-10■3□**	**AM22F5L-10 ■3□**	**AM22F0L-10 ■4□**	**AM22F5L-10 ■4□**
		1NC	**AM22F0L-01■3□**	**AM22F5L-01 ■3□**	**AM22F0L-01 ■4□**	**AM22F5L-01 ■4□**
		1NO+1NC	**AM22F0L-11■3□**	**AM22F5L-11 ■3□**	**AM22F0L-11 ■4□**	**AM22F5L-11 ■4□**
		2NO	**AM22F0L-20■3□**	**AM22F5L-20 ■3□**	**AM22F0L-20 ■4□**	**AM22F5L-20 ■4□**
		2NC	**AM22F0L-02■3□**	**AM22F5L-02 ■3□**	**AM22F0L-02 ■4□**	**AM22F5L-02 ■4□**
Extended round head AF99-63	Without	1NO	**AM22E0L-10■3□**	**AM22E5L-10 ■3□**	**AM22E0L-10 ■4□**	**AM22E5L-10 ■4□**
		1NC	**AM22E0L-01■3□**	**AM22E5L-01 ■3□**	**AM22E0L-01 ■4□**	**AM22E5L-01 ■4□**
		1NO+1NC	**AM22E0L-11■3□**	**AM22E5L-11 ■3□**	**AM22E0L-11 ■4□**	**AM22E5L-11 ■4□**
		2NO	**AM22E0L-20■3□**	**AM22E5L-20 ■3□**	**AM22E0L-20 ■4□**	**AM22E5L-20 ■4□**
		2NC	**AM22E0L-02■3□**	**AM22E5L-02 ■3□**	**AM22E0L-02 ■4□**	**AM22E5L-02 ■4□**
		2NO+2NC	**AM22E0L-22■3□**	**—**	**AM22E0L-22 ■4□**	**—**
	With	1NO	**AM22E0L-10■3□**	**AM22E5L-10 ■3□**	**AM22E0L-10 ■4□**	**AM22E5L-10 ■4□**
		1NC	**AM22E0L-01■3□**	**AM22E5L-01 ■3□**	**AM22E0L-01 ■4□**	**AM22E5L-01 ■4□**
		1NO+1NC	**AM22E0L-11■3□**	**AM22E5L-11 ■3□**	**AM22E0L-11 ■4□**	**AM22E5L-11 ■4□**
		2NO	**AM22E0L-20■3□**	**AM22E5L-20 ■3□**	**AM22E0L-20 ■4□**	**AM22E5L-20 ■4□**
		2NC	**AM22E0L-02■3□**	**AM22E5L-02 ■3□**	**AM22E0L-02 ■4□**	**AM22E5L-02 ■4□**
Mushroom head (40mm dia.) AF99-59	Without	1NO	**AM22M0L-10■3□**	**AM22M5L-10 ■3□**	**AM22M0L-10 ■4□**	**AM22M5L-10 ■4□**
		1NC	**AM22M0L-01■3□**	**AM22M5L-01 ■3□**	**AM22M0L-01 ■4□**	**AM22M5L-01 ■4□**
		1NO+1NC	**AM22M0L-11■3□**	**AM22M5L-11 ■3□**	**AM22M0L-11 ■4□**	**AM22M5L-11 ■4□**
		2NO	**AM22M0L-20■3□**	**AM22M5L-20 ■3□**	**AM22M0L-20 ■4□**	**AM22M5L-20 ■4□**
		2NC	**AM22M0L-02■3□**	**AM22M5L-02 ■3□**	**AM22M0L-02 ■4□**	**AM22M5L-02 ■4□**
		2NO+2NC	**AM22M0L-22■3□**	**—**	**AM22M0L-22 ■4□**	**—**
	With	1NO	**AM22M0L-10■3□**	**AM22M5L-10 ■3□**	**AM22M0L-10 ■4□**	**AM22M5L-10 ■4□**
		1NC	**AM22M0L-01■3□**	**AM22M5L-01 ■3□**	**AM22M0L-01 ■4□**	**AM22M5L-01 ■4□**
		1NO+1NC	**AM22M0L-11■3□**	**AM22M5L-11 ■3□**	**AM22M0L-11 ■4□**	**AM22M5L-11 ■4□**
		2NO	**AM22M0L-20■3□**	**AM22M5L-20 ■3□**	**AM22M0L-20 ■4□**	**AM22M5L-20 ■4□**
		2NC	**AM22M0L-02■3□**	**AM22M5L-02 ■3□**	**AM22M0L-02 ■4□**	**AM22M5L-02 ■4□**
Mushroom head (29mm dia.) AF99-61	Without	1NO	**AM22M4L-10■3□**	**AM22M9L-10 ■3□**	**AM22M4L-10 ■4□**	**AM22M9L-10 ■4□**
		1NC	**AM22M4L-01■3□**	**AM22M9L-01 ■3□**	**AM22M4L-01 ■4□**	**AM22M9L-01 ■4□**
		1NO+1NC	**AM22M4L-11■3□**	**AM22M9L-11 ■3□**	**AM22M4L-11 ■4□**	**AM22M9L-11 ■4□**
		2NO	**AM22M4L-20■3□**	**AM22M9L-20 ■3□**	**AM22M4L-20 ■4□**	**AM22M9L-20 ■4□**
		2NC	**AM22M4L-02■3□**	**AM22M9L-02 ■3□**	**AM22M4L-02 ■4□**	**AM22M9L-02 ■4□**
		2NC+2NC	**AM22M4L-22■3□**	**—**	**AM22M4L-22 ■4□**	**—**
	With	1NO	**AM22M4L-10■3□**	**AM22M9L-10 ■3□**	**AM22M4L-10 ■4□**	**AM22M9L-10 ■4□**
		1NC	**AM22M4L-01■3□**	**AM22M9L-01 ■3□**	**AM22M4L-01 ■4□**	**AM22M9L-01 ■4□**
		1NO+1NC	**AM22M4L-11■3□**	**AM22M9L-11 ■3□**	**AM22M4L-11 ■4□**	**AM22M9L-11 ■4□**
		2NO	**AM22M4L-20■3□**	**AM22M9L-20 ■3□**	**AM22M4L-20 ■4□**	**AM22M9L-20 ■4□**
		2NC	**AM22M4L-02■3□**	**AM22M9L-02 ■3□**	**AM22M4L-02 ■4□**	**AM22M9L-02 ■4□**

Note: ■ □ *See page 04CD/2/14*

■ Illuminated pushbutton switches

Operator	Trans-former	Contact	LED lamp Momentary action Type	LED lamp Alternate action Type	Incandescent lamp Momentary action Type	Incandescent lamp Alternate action Type
Extended with transparent full guard (24mm dia.) AF99-66	Without	1NO	**AM22G4L-10■3□**	**AM22G9L-10■3□**	**AM22G4L-10■4□**	**AM22G9L-10■4□**
		1NC	**AM22G4L-01■3□**	**AM22G9L-01■3□**	**AM22G4L-01■4□**	**AM22G9L-01■4□**
		1NO+1NC	**AM22G4L-11■3□**	**AM22G9L-11■3□**	**AM22G4L-11■4□**	**AM22G9L-11■4□**
		2NO	**AM22G4L-20■3□**	**AM22G9L-20■3□**	**AM22G4L-20■4□**	**AM22G9L-20■4□**
		2NC	**AM22G4L-02■3□**	**AM22G9L-02■3□**	**AM22G4L-02■4□**	**AM22G9L-02■4□**
		2NO+2NC	**AM22G4L-22■3□**	**—**	**AM22G4L-22■4□**	**—**
	With	1NO	**AM22G4L-10■3□**	**AM22G9L-10■3□**	**AM22G4L-10■4□**	**AM22G9L-10■4□**
		1NC	**AM22G4L-01■3□**	**AM22G9L-01■3□**	**AM22G4L-01■4□**	**AM22G9L-01■4□**
		1NO+1NC	**AM22G4L-11■3□**	**AM22G9L-11■3□**	**AM22G4L-11■4□**	**AM22G9L-11■4□**
		2NO	**AM22G4L-20■3□**	**AM22G9L-20■3□**	**AM22G4L-20■4□**	**AM22G9L-20■4□**
		2NC	**AM22G4L-02■3□**	**AM22G9L-02■3□**	**AM22G4L-02■4□**	**AM22G9L-02■4□**
Extended with full guard (24mm dia. with openings) AF99-69	Without	1NO	**AM22G2L-10■3□**	**AM22G7L-10■3□**	**AM22G2L-10■4□**	**AM22G7L-10■4□**
		1NC	**AM22G2L-01■3□**	**AM22G7L-01■3□**	**AM22G2L-01■4□**	**AM22G7L-01■4□**
		1NO+1NC	**AM22G2L-11■3□**	**AM22G7L-11■3□**	**AM22G2L-11■4□**	**AM22G7L-11■4□**
		2NO	**AM22G2L-20■3□**	**AM22G7L-20■3□**	**AM22G2L-20■4□**	**AM22G7L-20■4□**
		2NC	**AM22G2L-02■3□**	**AM22G7L-02■3□**	**AM22G2L-02■4□**	**AM22G7L-02■4□**
		2NO+2NC	**AM22G2L-22■3□**	**—**	**AM22G2L-22■4□**	**—**
	With	1NO	**AM22G2L-10■3□**	**AM22G7L-10■3□**	**AM22G2L-10■4□**	**AM22G7L-10■4□**
		1NC	**AM22G2L-01■3□**	**AM22G7L-01■3□**	**AM22G2L-01■4□**	**AM22G7L-01■4□**
		1NO+1NC	**AM22G2L-11■3□**	**AM22G7L-11■3□**	**AM22G2L-11■4□**	**AM22G7L-11■4□**
		2NO	**AM22G2L-20■3□**	**AM22G7L-20■3□**	**AM22G2L-20■4□**	**AM22G7L-20■4□**
		2NC	**AM22G2L-02■3□**	**AM22G7L-02■3□**	**AM22G2L-02■4□**	**AM22G7L-02■4□**

• Lens color

Replace the □ mark by the lens color code

Color	Green	Red	White	Blue	Yellow	Orange
Code	G	R	W	S	Y	A

• Contact arrangements

Contact arrangements other than above are available

Contact arrangement	1NO	1NC	1NO+1NC	2NO	2NC	3NO
Code	10	01	11	20	02	30

Contact arrangement	3NC	2NO+2NC	4NO	4NC	5NO	5NC	3NO+3NC
Code	03	22	40	04	50	05	33

Available numbers of contact blocks

Operation	Without transformer	With transformer
Momentary action	6-contact block	4-contact block
Alternate action	3-contact block	2-contact block

• Voltage

Replace the ■ mark by the lamp voltage code

Transformer		Code LED	Incandescent
Without transformer	6V DC	6	—
	6V AC	A	—
	5.5V AC/DC	—	5
	12V AC/DC	B	—
	15V AC/DC	C	C
	20V AC/DC	—	D
	24V AC/DC	E	E
With transformer	100-110V AC	H	H
	115-127V AC	L	L
	200-220V AC	M	M
	230-254V AC	Q	Q
	350-380V AC	S	S
	400-440V AC	T	T
	480V AC	V	V
	500-550V AC	W	W

■ Pushbutton switches

Operator	Contact	Momentary action Type	Alternate action Type
Flush round head AF99-68	1NO	**AM22F0R-10□**	**AM22F5R-10□**
	1NC	**AM22F0R-01□**	**AM22F5R-01□**
	1NO+1NC	**AM22F0R-11□**	**AM22F5R-11□**
	2NO	**AM22F0R-20□**	**AM22F5R-20□**
	2NC	**AM22F0R-02□**	**AM22F5R-02□**
	2NO+2NC	**AM22F0R-22□**	**AM22F5R-22□**
Extended round head AF99-64	1NO	**AM22E0R-10□**	**AM22E5R-10□**
	1NC	**AM22E0R-01□**	**AM22E5R-01□**
	1NO+1NC	**AM22E0R-11□**	**AM22E5R-11□**
	2NO	**AM22E0R-20□**	**AM22E5R-20□**
	2NC	**AM22E0R-02□**	**AM22E5R-02□**
	2NO+2NC	**AM22E0R-22□**	**AM22E5R-22□**
Mushroom head (40mm dia.) AF99-58	1NO	**AM22M0R-10□**	**AM22M5R-10□**
	1NC	**AM22M0R-01□**	**AM22M5R-01□**
	1NO+1NC	**AM22M0R-11□**	**AM22M5R-11□**
	2NO	**AM22M0R-20□**	**AM22M5R-20□**
	2NC	**AM22M0R-02□**	**AM22M5R-02□**
	2NO+2NC	**AM22M0R-22□**	**AM22M5R-22□**

Operator	Contact	Momentary action Type	Alternate action Type
Mushroom head (29mm dia.) AF99-67	1NO	**AM22M4R-10□**	—
	1NC	**AM22M4R-01□**	—
	1NO+1NC	**AM22M4R-11□**	—
	2NO	**AM22M4R-20□**	—
	2NC	**AM22M4R-02□**	—
	2NO+2NC	**AM22M4R-22□**	—
Extended with full guard (24mm dia.) AF99-65	1NO	**AM22G3R-10□**	**AM22G8R-10□**
	1NC	**AM22G3R-01□**	**AM22G8R-01□**
	1NO+1NC	**AM22G3R-11□**	**AM22G8R-11□**
	2NO	**AM22G3R-20□**	**AM22G8R-20□**
	2NC	**AM22G3R-02□**	**AM22G8R-02□**
	2NO+2NC	**AM22G3R-22□**	**AM22G8R-22□**
Mushroom head with full guard (40mm dia.) AF99-89	1NO	**AM22M3R-10□**	**AM22M8R-10□**
	1NC	**AM22M3R-01□**	**AM22M8R-01□**
	1NO+1NC	**AM22M3R-11□**	**AM22M8R-11□**
	2NO	**AM22M3R-20□**	**AM22M8R-20□**
	2NC	**AM22M3R-02□**	**AM22M8R-02□**
	2NO+2NC	**AM22M3R-22□**	**AM22M8R-22□**

• Button color

Replace the □ mark by the button color code

Color	Green	Red	White	Blue	Yellow	Orange	Black
Code	G	R	W	S	Y	A	B

• Contact arrangements

Contact arrangements other than above are available

Contact arrangement	1NO	1NC	1NO+1NC	2NO	2NC	3NO	3NC
Code	10	01	11	20	02	30	03

Contact arrangement	2NO+2NC	4NO	4NC	5NO	5NC	3NO+3NC	4NO+4NC
Code	22	40	04	50	05	33	44

• Available numbers of contact blocks

Momentary action	Alternate action
8-contact block	4-contact block

■ Emergency stop pushbutton switches

⊖ (Direct opening action), conform to EN418

Operator	Contact	Type
Push-lock, turn-reset (40mm dia. with white arrow) KK02-236A	1NC	**AM22V0E-01R**
	1NO+1NC	**AM22V0E-11R**
	2NC	**AM22V0E-02R**
	3NC	**AM22V0E-03R**
	2NO+2NC	**AM22V0E-22R**
	4NC	**AM22V0E-04R**
Push-lock, turn-reset (29mm dia. with white arrow) KK02-237A	1NC	**AM22VSE-01R**
	1NO+1NC	**AM22VSE-11R**
	2NC	**AM22VSE-02R**
	3NC	**AM22VSE-03R**
	2NO+2NC	**AM22VSE-22R**
	4NC	**AM22VSE-04R**
Push-lock, turn-reset (40mm dia. with mechanical indicator) KKD07-091	1NC	**AM22VME-01R**
	1NO+1NC	**AM22VME-11R**
	2NC	**AM22VME-02R**
	3NC	**AM22VME-03R**
	2NO+2NC	**AM22VME-22R**
	4NC	**AM22VME-04R**

Notes: • Button color: Red only
• Used with AR9B290-S for NO contact.
• Contact arrangements indicated in the table can be supplied.

■ Emergency stop illuminated pushbutton switches

⊖ (Direct opening action), conform to EN418

Operator	Transformer	Contact	LED lamp Type
Push-lock, turn-reset (40mm dia. with white arrow) KK02-240A	Without	1NC 1NO+1NC 2NC 3NC	**AM22V0F-01■ 3R** **AM22V0F-11■ 3R** **AM22V0F-02■ 3R** **AM22V0F-03■ 3R**
	With	1NC 1NO+1NC 2NC	**AM22V0F-01■ 3R** **AM22V0F-11■ 3R** **AM22V0F-02■ 3R**
Push-lock, turn-reset (29mm dia. with white arrow) KK02-241A	Without	1NC 1NO+1NC 2NC 3NC	**AM22VSF-01■ 3R** **AM22VSF-11■ 3R** **AM22VSF-02■ 3R** **AM22VSF-03■ 3R**
	With	1NC 1NO+1NC 2NC	**AM22VSF-01■ 3R** **AM22VSF-11■ 3R** **AM22VSF-02■ 3R**
Push-lock, turn-reset (40mm dia. transparent in all colors with white arrow) KK02-243A	Without	1NC 1NO+1NC 2NC 3NC	**AM22VDF-01■ 3R** **AM22VDF-11■ 3R** **AM22VDF-02■ 3R** **AM22VDF-03■ 3R**
	With	1NC 1NO+1NC 2NC	**AM22VDF-01■ 3R** **AM22VDF-11■ 3R** **AM22VDF-02■ 3R**

Notes: • Button color: Red only
• Contact arrangements indicated in the table can be supplied.
• Used with AR9B290-S for NO contact.

• Voltage

Replace the ■ mark by the lamp voltage code

Transformer		Code LED
Without	6V AC	A
	24V AC/DC	E

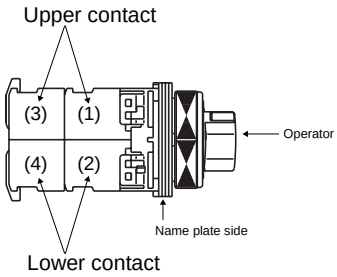
Transformer		Code LED
With	100–110V AC	H
	115–127V AC	L
	200–220V AC	M
	230–254V AC	Q
	350–380V AC	S
	400–440V AC	T
	480V AC	V
	500–550V AC	W

■ Selector switches
2-position

Operator	Operation	Knob color or key removable position	Contact	Type Switch with round bezel
Knob AF99-82	Maintained each 90°	B: Black (Standard) Color other than above are available (G: Green R: Red)	1NO 1NC 1NO+1NC 2NO 2NC 2NO+2NC	**AM22PR-210B** **AM22PR-201B** **AM22PR-211B** **AM22PR-020B** **AM22PR-202B** **AM22PR-222B**
	Spring return ↖ 60°		1NO 1NC 1NO+1NC 2NO 2NC 2NO+2NC	**AM22PR-010B** **AM22PR-001B** **AM22PR-011B** **AM22PR-020B** **AM22PR-002B** **AM22PR-022B**
Lever AF99-76	Maintained each 90°		1NO 1NC 1NO+1NC 2NO 2NC 2NO+2NC	**AM22WR-210B** **AM22WR-201B** **AM22WR-211B** **AM22WR-220B** **AM22WR-202B** **AM22WR-222B**
	Spring return ↖ 60°		1NO 1NC 1NO+1NC 2NO 2NC 2NO+2NC	**AM22WR-010B** **AM22WR-001B** **AM22WR-011B** **AM22WR-020B** **AM22WR-002B** **AM22WR-022B**
Key KKD09-014	Maintained each 90°	■: Key removable position ( ): Key type *See page 04CD/2/20*	1NO 1NC 1NO+1NC 2NO 2NC 2NO+2NC	**AM22JR-2■10( )** **AM22JR-2■01( )** **AM22JR-2■11( )** **AM22JR-2■20( )** **AM22JR-2■02( )** **AM22JR-2■22( )**
	Spring return ↖ 60°		1NO 1NC 1NO+1NC 2NO 2NC 2NO+2NC	**AM22JR-0A10( )** **AM22JR-0A01( )** **AM22JR-0A11( )** **AM22JR-0A20( )** **AM22JR-0A02( )** **AM22JR-0A22( )**

Contact operation (Example)

Contact arrangement	Operator position: Left ↖ / Right ↗
1NO (1)	Upper contact ③ ● ④
1NC (1)	Upper contact ① ● ②
1NO+1NC (1)	Upper contact ③ ● ④
(2)	Lower contact ① ● ②
2NO+2NC (1)	Upper contact ③ ● ④
(3)	③ ● ④
(2)	Lower contact ① ● ②
(4)	① ● ②



Notes: • (1) to (4): Contact block mounting position
• ① – ②, ③ – ④: Contact block terminal No.
• Contact arrangements: *See page 04CD/2/20*

● Contact closed

3-position

Operator	Operation	Knob color	Contact	Type Switch with round bezel	Contact operation (Example)		
					Contact arrange-ment	Operation position L C R	Operation position L C R
Knob AF99-82	Maintained each 45°	Color code: B: Black (Standard) Color other than above are available (G: Green R: Red)	1NO+1NC 2NO 2NC 2NO+2NC	**AM22PR-311B** **AM22PR-320B** **AM22PR-302B** **AM22PR-322B**	1NO+1NC (1) (2)	Upper contact ③ ④	Lower contact ① ②
	Spring/manual return each 45°		1NO+1NC 2NO 2NC 2NO+2NC	**AM22PR-611B** **AM22PR-620B** **AM22PR-602B** **AM22PR-622B**			
	Spring/manual return each 45°		1NO+1NC 2NO 2NC 2NO+2NC	**AM22PR-711B** **AM22PR-720B** **AM22PR-702B** **AM22PR-722B**	1NO+1NC (1) (2)	Upper contact ③ ④	Lower contact ① ②
	Spring return each 45°		2NO+2NC	**AM22PR-122B**	2NO+2NC (1) (2) (3) (4)	Upper contact ① ② ③ ④	Lower contact ① ② ③ ④
Lever AF99-76	Maintained each 45°		1NO+1NC 2NO 2NC 2NO+2NC	**AM22WR-311B** **AM22WR-320B** **AM22WR-302B** **AM22WR-322B**	1NO+1NC (1) (2)	Upper contact ③ ④	Lower contact ① ②
	Spring/manual return each 45°		1NO+1NC 2NO 2NC 2NO+2NC	**AM22WR-611B** **AM22WR-620B** **AM22WR-602B** **AM22WR-622B**			
	Spring/manual return each 45°		1NO+1NC 2NO 2NC 2NO+2NC	**AM22WR-711B** **AM22WR-720B** **AM22WR-702B** **AM22WR-722B**	1NO+1NC (1) (2)	Upper contact ③ ④	Lower contact ① ②
	Spring return each 45°		2NO+2NC	**AM22WR-122B**	2NO+2NC (1) (2) (3) (4)	Upper contact ① ② ③ ④	Lower contact ① ② ③ ④

Note: • Contact arrangements: *See page 04CD/2/20*

● Contact closed

Operator	Operation	Key removable position	Contact	Type Switch with round bezel	Contact operation (Example)		
					Contact arrange-ment	Operator position L C R	Operator position L C R
Key KKD09-014	Maintained each 45°	■: Key removable position ( ): Key type	1NO+1NC 2NO 2NC 2NO+2NC	**AM22JR-3■11( )** **AM22JR-3■20( )** **AM22JR-3■02( )** **AM22JR-3■22( )**	1NO+1NC (1) (2)	Upper contact ③ ④	Lower contact ① ②
	Spring/manual return each 45°		1NO+1NC 2NO 2NC 2NO+2NC	**AM22JR-6■11( )** **AM22JR-6■20( )** **AM22JR-6■02( )** **AM22JR-6■22( )**			
	Spring/manual return each 45°		1NO+1NC 2NO 2NC 2NO+2NC	**AM22JR-7■11( )** **AM22JR-7■20( )** **AM22JR-7■02( )** **AM22JR-7■22( )**	1NO+1NC (1) (2)	Upper contact ③ ④	Lower contact ① ②
	Spring return each 45°		2NO+2NC	**AM22JR-1E22( )**	2NO+2NC (1) (2) (3) (4)	Upper contact ① ② ③ ④	Lower contact ① ② ③ ④

Notes: • Operator position L: Left, C: Center, R: Right
• (1) to (4): Contact block mounting position
• ① – ②, ③ – ④: Contact block terminal No.

● Contact closed

• Contact arrangements

Contact arrangements other than above are available

Contact arrangement	1NO	1NC	1NO+1NC	2NO	2NC	3NO	3NC
Code	10	01	11	20	02	30	03

Contact arrangement	2NO+2NC	4NO	4NC	5NO	5NC	3NO+3NC	4NO+4NC
Code	22	40	04	50	05	33	44

• Available numbers of contact blocks

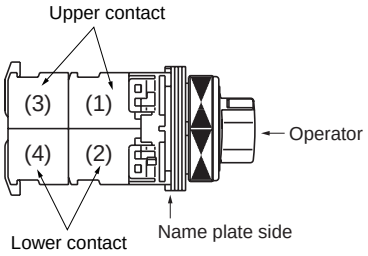
Mainted	Spring return Spring/manual return
8-contact block	4-contact block

• Key removable positions

Code	A	B	C	D	E	F	G
Removable position	45° 45°	45° 45°	45° 45°	45° 45°	45° 45°	45° 45°	45° 45°
AM22JR-2	●	●	–	●	–	–	–
AM22JR-0	●	–	–	–	–	–	–
AM22JR-3	●	●	●	●	●	●	●
AM22JR-6	–	–	–	●	●	●	–
AM22JR-7	●	–	–	–	●	–	●
AM22JR-1	–	–	–	–	●	–	–

●: Available –: Not available

• Position of contact block



• Key code No.

Replace the ( ) mark with one of the following key code.
A, B, C, D, E and F
Standard key code is A.

■ Selector switches (control type)

3-position

Operator	Operation	Knob color or key removable position	Contact arrangement	Type Switch with round bezel
Knob KK02-248A	Maintained each 45°	Color code: B: Black (Standard) Color other than above are available (G: Green R: Red)	Replace the ■ mark by the contact arrangement code (shown on next page).	**AM22PCR-3■B**
	Spring/manual return each 45°			**AM22PCR-6■B**
	Spring/manual return each 45°			**AM22PCR-7■B**
	Spring return each 45°			**AM22PCR-1■B**
Lever KK02-249A	Maintained each 45°		Replace the ■ mark by the contact arrangement code (shown on next page).	**AM22WCR-3■B**
	Spring/manual return each 45°			**AM22WCR-6■B**
	Spring/manual return each 45°			**AM22WCR-7■B**
	Spring return each 45°			**AM22WCR-1■B**
Key KKD09-013	Maintained each 45°	Replace the □ mark by the key removable position code: A, B, C, D, E F or G	Replace the ■ mark by the contact arrangement code (shown on next page).	**AM22JCR-3□■( )**
	Spring/manual return each 45°			**AM22JCR-6□■( )**
	Spring/manual return each 45°			**AM22JCR-7□■( )**
	Spring return each 45°			**AM22JCR-1E■( )**

- **Key removable positions**

Code	A	B	C	D	E	F	G
Removable position							
AM22JCR-3	●	●	●	●	●	●	●
AM22JCR-6	–	–	–	●	●	●	–
AM22JCR-7	●	–	–	–	●	–	●
AM22JCR-1	–	–	–	–	●	–	–

●: Available –: Not available

- **Key code No.**
  Replace the ( ) mark with one of the following key code.
  A, B, C, D, E and F
  Standard key code is A.

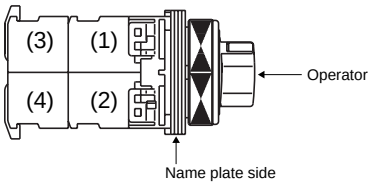
• Contact arrangement code (Typical example)

Contact arrangement	Contact arrangement code	Contact operation: Contact block: Mounting position	Contact block: Type	Operator position: Left	Center	Right
2NC	01F	(1)	NC	▬	▬	
		(2)	NC		▬	▬
		–	–	–	–	–
		–	–	–	–	–
2NO+2NC	014	(1)	NC	▬	▬	
		(2)	NC		▬	▬
		(3)	NO			●
		(4)	NO	●		
4NC	01J	(1)	NC	▬	▬	
		(2)	NC		▬	▬
		(3)	NC	▬	▬	
		(4)	NC		▬	▬
2NO+2NC	024	(1)	NC	▬	▬	
		(2)	NC		●	
		(3)	NO			●
		(4)	NO	●		●
2NO+2NC	03C* (Maintained only)	(1)	NC	▬	▬	
		(2)	NC			●
		(3)	NO			●
		(4)	NO	●		
2NO+2NC	044*	(1)	NC	▬	▬	
		(2)	NC		●	
		(3)	NO			●
		(4)	NO	●		
2NO+2NC	054	(1)	NC	▬	▬	
		(2)	NC		●	
		(3)	NO			●
		(4)	NO			●

Contact arrangement	Contact arrangement code	Contact operation: Contact block: Mounting position	Contact block: Type	Operator position: Left	Center	Right
2NO+2NC	064	(1)	NC		▬	▬
		(2)	NC		●	
		(3)	NO	●		
		(4)	NO	●		●
1NO+1NC	07F	(1)	NC		▬	▬
		(2)	NO			●
		–	–	–	–	–
		–	–	–	–	–
2NO+2NC	07C* (Maintained only)	(1)	NC		▬	▬
		(2)	NC			●
		(3)	NO	●		
		(4)	NO	●		
2NO+2NC	084	(1)	NC		▬	▬
		(2)	NC		●	
		(3)	NO	●		
		(4)	NO	●		
2NO+2NC	094*	(1)	NC		▬	▬
		(2)	NC		●	
		(3)	NO	●		
		(4)	NO			●
2NO+2NC	104	(1)	NC		●	
		(2)	NC		●	
		(3)	NO	●		●
		(4)	NO	●		●
2NO+2NC	11C* (Maintained only)	(1)	NC		●	
		(2)	NC			●
		(3)	NO	●		●
		(4)	NO	●		

Notes: ●: Contact closed Blank: Contact open
* These may be some overlap in the contact when switching between notches.

• Position of contact block



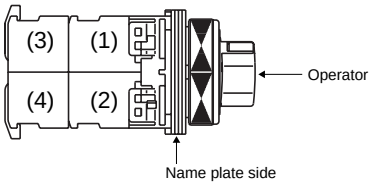
• Contact arrangement code (Typical example)

Contact arrangement	Contact arrangement code	Contact operation				
		Contact block		Operator position		
		Mounting position	Type	Left	Center	Right
2NO+2NC	124*	(1)	NC		●	
		(2)	NC		●	
		(3)	NO	●		●
		(4)	NO	●		
2NO+2NC	134*	(1)	NC		●	
		(2)	NC		●	
		(3)	NO	●		●
		(4)	NO			●
3NO+1NC	14D* (Maintained only)	(1)	NO	●		
		(2)	NC		●	
		(3)	NO	●		
		(4)	NO			●
3NO+1NC	15A*	(1)	NO			●
		(2)	NC		●	
		(3)	NO			●
		(4)	NO	●		
2NO+2NC	164	(1)	NC		●	
		(2)	NC		●	
		(3)	NO	●		
		(4)	NO	●		
2NO+2NC	174*	(1)	NC		●	
		(2)	NC		●	
		(3)	NO	●		
		(4)	NO			●
2NO+2NC	184	(1)	NC		●	
		(2)	NC		●	
		(3)	NO			●
		(4)	NO			●

Contact arrangement	Contact arrangement code	Contact operation				
		Contact block		Operator position		
		Mounting position	Type	Left	Center	Right
2NO+2NC	194	(1)	NC		▬	▬
		(2)	NC	▬	▬	
		(3)	NO	●		
		(4)	NO			●
4NO	20B	(1)	NO			●
		(2)	NO	●		
		(3)	NO			●
		(4)	NO	●		

Notes: ●: Contact closed Blank: Contact open
* These may be some overlap in the contact when switching between notches.

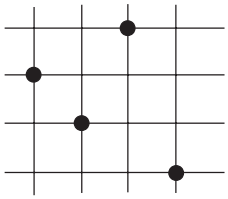
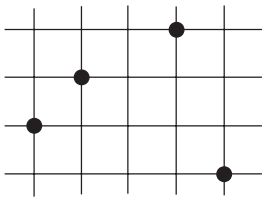
• Position of contact block



4, 5-position

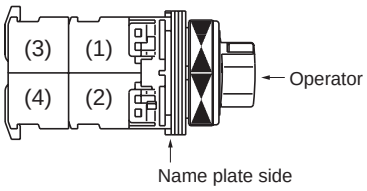
Operator	Contact (The following contact is only available.)	Operation	Knob color	Contact arrangement	Type Switch with round bezel
Knob KK02-248A	2NO+2NC	4-position maintained	Color code: B: Black (Standard) Color other than above are available (G: Green R: Red)	Replace the ■ mark by the contact arrangement code (shown below)	**AM22PCR-4■B**
		5-position maintained			**AM22PCR-5■B**
Lever KK02-249A	2NO+2NC	4-position maintained			**AM22WCR-4■B**
		5-position maintained			**AM22WCR-5■B**

● Contact arrangement code

Position	Contact arrange-ment	Contact arrange-ment code	Contact operation: Contact block: Mounting position	Contact block: Type	Operator position 1 2 3 4 5
4-position	2NO+2NC	41C* (Main-tained only)	(1)	NC	
			(2)	NC	
			(3)	NO	
			(4)	NO	
5-position	2NO+2NC	51C* (Main-tained only)	(1)	NC	
			(2)	NC	
			(3)	NO	
			(4)	NO	

Notes: ●: Contact closed
* There may be some overlap in the contact when switching between notches.

• Position of contact block



Operator position

4-position **5-position**

■ Illuminated selector switches

2-position

Operator	Operation	Contact	LED lamp		Incandescent lamp	
			Transformer	Type	Transformer	Type
Knob	Maintained	1NO 1NC 1NO+1NC 2NO 2NO+2NC	Without	**AM22PL-210■3□** **AM22PL-201■3□** **AM22PL-211■3□** **AM22PL-020■3□** **AM22PL-222■3□**	Without	**AM22PL-210■4□** **AM22PL-201■4□** **AM22PL-211■4□** **AM22PL-020■4□** **AM22PL-222■4□**
	each 90°	1NO 1NC 1NO+1NC 2NO	With	**AM22PL-210■3□** **AM22PL-201■3□** **AM22PL-211■3□** **AM22PL-220■3□**	With	**AM22PL-210■4□** **AM22PL-201■4□** **AM22PL-211■4□** **AM22PL-220■4□**
	Spring return	1NO 1NC 1NO+1NC 2NO	Without	**AM22PL-010■3□** **AM22PL-001■3□** **AM22PL-011■3□** **AM22PL-020■3□**	Without	**AM22PL-010■4□** **AM22PL-001■4□** **AM22PL-011■4□** **AM22PL-020■4□**
AF99-79	60°	1NO 1NC 1NO+1NC 2NO	With	**AM22PL-010■3□** **AM22PL-001■3□** **AM22PL-011■3□** **AM22PL-020■3□**	With	**AM22PL-010■4□** **AM22PL-001■4□** **AM22PL-011■4□** **AM22PL-020■4□**

3-position

Operator	Operation		Contact	LED lamp		Incandescent lamp	
				Transformer	Type	Transformer	Type
Knob	Maintained		1NO+1NC 2NO+2NC	Without	**AM22PL-311■3□** **AM22PL-322■3□**	Without	**AM22PL-311■4□** **AM22PL-322■4□**
	each 45°		1NO+1NC	With	**AM22PL-311■3□**	With	**AM22PL-311■4□**
	Spring/manual return		1NO+1NC 1NO+1NC	Without With	**AM22PL-611■3□** **AM22PL-611■3□**	Without With	**AM22PL-611■4□** **AM22PL-611■4□**
AF99-79	each 45°		1NO+1NC 1NO+1NC	Without With	**AM22PL-711■3□** **AM22PL-711■3□**	Without With	**AM22PL-711■4□** **AM22PL-711■4□**

Note: □ , ■ *See page 04CD/2/26*

• Replace the ■ mark by the following lamp voltage code

Transformer	Voltage	Code LED	Incandescent
Without	5V AC/DC	–	5
	6V DC	6	–
	6V AC	A	–
	12V AC/DC	B	–
	15V AC/DC	C	C
	20V AC/DC	–	D
	24V AC/DC	E	E
With	100-110V AC	H	H
	115-127V AC	L	L
	200-220V AC	M	M
	230-254V AC	Q	Q
	350-380V AC	S	S
	400-440V AC	T	T
	480V AC	V	V
	500-550V AC	W	W

• Replace the □ mark by the following knob color code

Color	Green	Red	White	Blue	Yellow	Orange
Code	G	R	W	S	Y	A

• Up to 4-contact of contact arrangement can be made.
Available numbers of contacts are as follow.

No. of position	Operation	Without transformer	With transformer
2-position	Maintained	6-contact	4-contact
	Spring return	3-contact	2-contact
3-position	Maintained	6-contact	4-contact
	Spring/manual return	3-contact	2-contact

● Contact arrangement and operator position

2-position

Transformer	Contact arrangement	Contact block		Operator position	
		Mounting position	Type	Left	Right
With/without	1NO	(1)	NO	–	●
With/without	1NC	(1)	NC	●	–
Without	1NO+1NC	(1)	NO	–	●
		(2)	NC	●	–
With	1NO+1NC	(1)	NC	●	–
		(2)	NO	–	●
With/without	2NO	(1)	NO	–	●
		(2)	NO	–	●
Without	2NO+2NC	(1)	NO	–	●
	*1	(2)	NC	●	–
		(3)	NO	–	●
		(4)	NC	●	–
With	2NO+2NC	(1)	NC	●	–
	*1	(2)	NC	●	–
		(3)	NO	–	●
		(4)	NO	–	●

Notes: *1 : AM22PL-2
● : Contact closed, – : Contact open

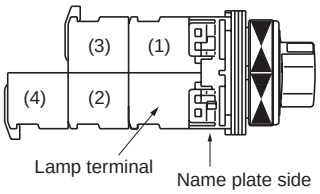
3-position

Transformer	Contact arrangement	Contact block		Operator position		
		Mounting position	Type	Left	Center	Right
Without	1NO+1NC	(1)	NO	●	–	–
	*1	(2)	NC	–	–	●
	1NO+1NC	(1)	NO	–	–	●
	*2	(2)	NC	●	–	–
	2NO+2NC	(1)	NO	●	–	–
	*3	(2)	NC	–	–	●
		(3)	NO	●	–	–
		(4)	NC	–	–	●
With	1NO+1NC	(1)	NC	–	–	●
	*1	(2)	NO	●	–	–
	1NO+1NC	(1)	NC	●	–	–
	*2	(2)	NO	–	–	●
	2NO+2NC	(1)	NC	–	–	●
	*3	(2)	NC	–	–	●
		(3)	NO	●	–	–
		(4)	NO	●	–	–

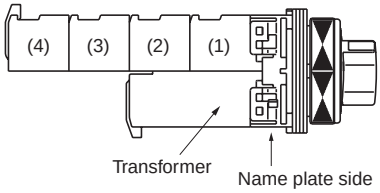
Notes: *1 : AM22PL-3, 6 *3 : AM22PL-3
*2 : AM22PL-7
● : Contact closed, – : Contact open

● Position of contact block

Without transformer



With transformer



■ Pilot lights/standard

Lens	Transformer	LED lamp Lamp voltage	LED lamp Type	Incandescent lamp Lamp voltage	Incandescent lamp Type
Dome AF99-88	Without	6V AC	**DM22D0L-A3**□	5.5V AC/DC	**DM22D0L-54**□
		6V DC	**DM22D0L-63**□	—	**—**
		12V AC/DC	**DM22D0L-B3**□	15V AC/DC	**DM22D0L-C4**□
		24V AC/DC	**DM22D0L-E3**□	24V AC/DC	**DM22D0L-E4**□
	With	100–110V AC	**DM22D0L-H3**□	100–110V AC	**DM22D0L-H4**□
		200–220V AC	**DM22D0L-M3**□	200–220V AC	**DM22D0L-M4**□
Extended round AF99-85	Without	6V AC	**DM22E3L-A3**□	5.5V AC/DC	**DM22E3L-54**□
		6V DC	**DM22E3L-63**□	—	**—**
		12V AC/DC	**DM22E3L-B3**□	15V AC/DC	**DM22E3L-C4**□
		24V AC/DC	**DM22E3L-E3**□	24V AC/DC	**DM22E3L-E4**□
	With	100–110V AC	**DM22E3L-H3**□	100–110V AC	**DM22E3L-H4**□
		200–220V AC	**DM22E3L-M3**□	200–220V AC	**DM22E3L-M4**□
Faceted AF99-87	Without	6V AC	**DM22K0L-A3**□	5.5V AC/DC	**DM22K0L-54**□
		6V DC	**DM22K0L-63**□	—	**—**
		12V AC/DC	**DM22K0L-B3**□	15V AC/DC	**DM22K0L-C4**□
		24V AC/DC	**DM22K0L-E3**□	24V AC/DC	**DM22K0L-E4**□
	With	100–110V AC	**DM22K0L-H3**□	100–110V AC	**DM22K0L-H4**□
		200–220V AC	**DM22K0L-M3**□	200–220V AC	**DM22K0L-M4**□

■ Pilot lights/short-body with transformer

Lens	LED lamp Lamp voltage	LED lamp Type	Incandescent lamp Lamp voltage	Incandescent lamp Type
Dome KK02-245A	100–110V AC	**DM22D0L-H9** □	100–110V AC	**DM22D0L-H8** □
	200–220V AC	**DM22D0L-M9**□	200–220V AC	**DM22D0L-M8**□
Extended round KK02-246A	100–110V AC	**DM22E3L-H9** □	100–110V AC	**DM22E3L-H8** □
	200–220V AC	**DM22E3L-M9**□	200–220V AC	**DM22E3L-M8**□
Faceted KK02-247A	100–110V AC	**DM22K0L-H9** □	100–110V AC	**DM22K0L-H8** □
	200–220V AC	**DM22K0L-M9**□	200–220V AC	**DM22K0L-M8**□

Note: □ *See page 04CD/2/28*

- **Lens color**

Replace the ☐ mark by the following lens color code

Color	Green	Red	White	Blue	Yellow	Orange
Code	G	R	W	S	Y	A

- **Lamp voltage**

Available lamp voltage are as follow.

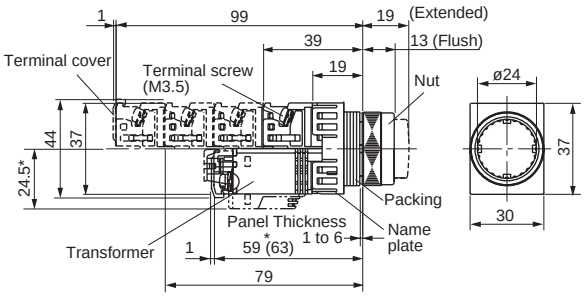
Description	Voltage	Code			
		Standard type		Short-body type	
		LED	Incandescent	LED	Incandescent
Without transformer	5.5V AC/DC	–	54	–	–
	6V AC	A3	–	–	–
	6V DC	63	–	–	–
	12V AC/DC	B3	–	–	–
	15V AC/DC	C3	C4	–	–
	20V AC/DC	–	D4	–	–
	24V AC/DC	E3	E4	–	–
With transformer	100-110V AC	H3	H4	H9	H8
	115-127V AC	L3	L4	L9	L8
	200-220V AC	M3	M4	M9	M8
	230-254V AC	Q3	Q4	–	–
	350-380V AC	S3	S4	–	–
	400-440V AC	T3	T4	–	–
	480V AC	V3	V4	–	–
	500-550V AC	W3	W4	–	–
With resistor unit	110V DC	H7	–	–	–

■ Dimensions, mm

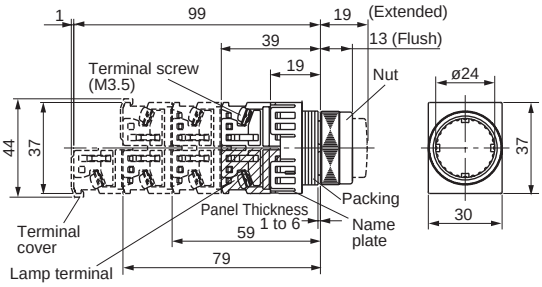
• Illuminated pushbutton switches

Flush/Extended

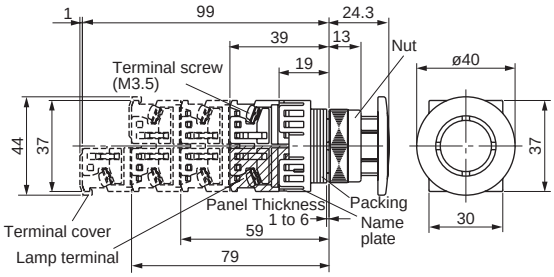
AM22F0L, F5L, E0L, E5L
With transformer



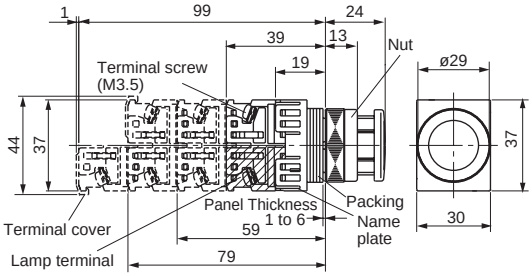
Without transformer



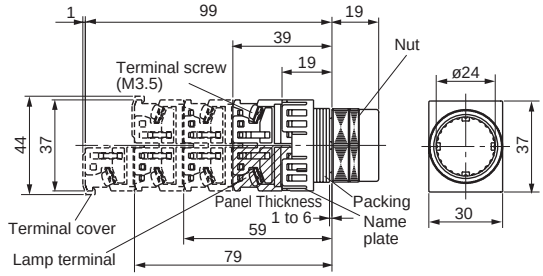
Mushroom (40mm dia.)
AM22M0L, M5L



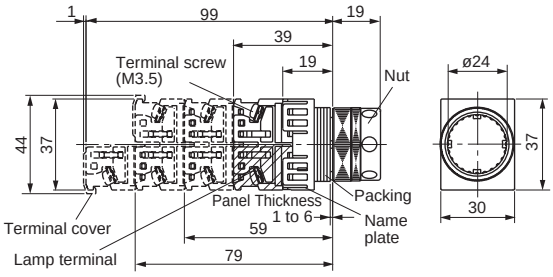
Mushroom (29mm dia.)
AM22M4L, M9L



Extended with transparent full guard
AM22G4L, G9L



Extended with full guard (with openings)
AM22G2L, G7L



Note: * Except for the types 110V AC, 127V AC and 220V AC.

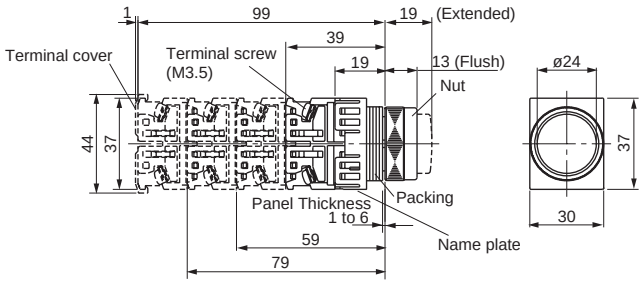
AM22 and DM22
Dimensions

■ **Dimensions, mm**

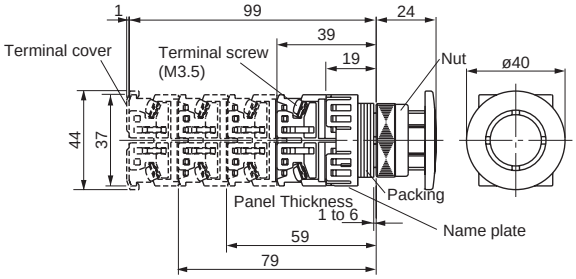
• **Pushbutton switches**

Flush/Extended

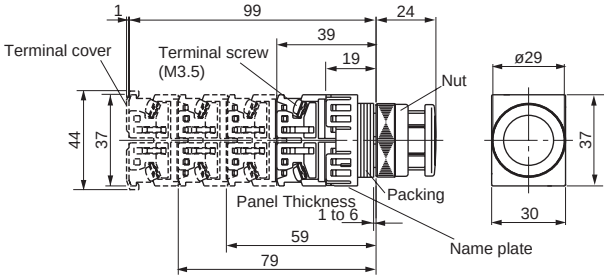
AM22F0R, F5R
AM22E0R, E5R



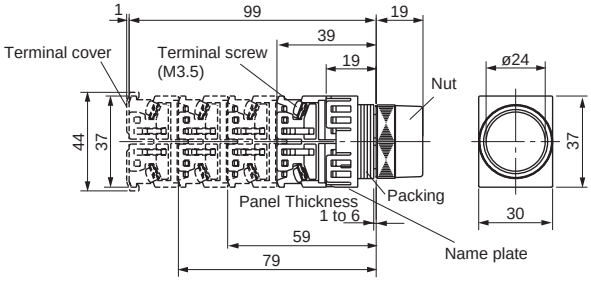
Mushroom (40mm dia.)
AM22M0R, M5R



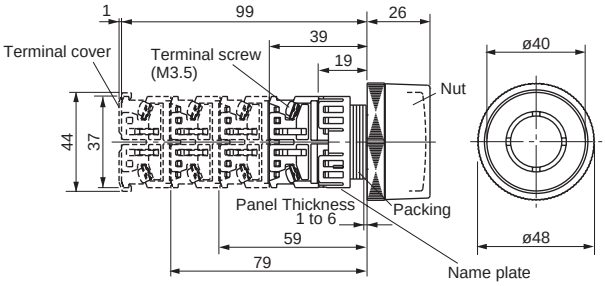
Mushroom (29mm dia.)
AM22M4R



Extended with full guard (24mm dia.)
AM22G3R, G8R

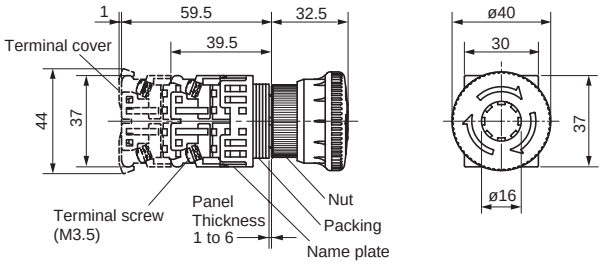


Mushroom with full guard (40mm dia.)
AM22M3R, M8R

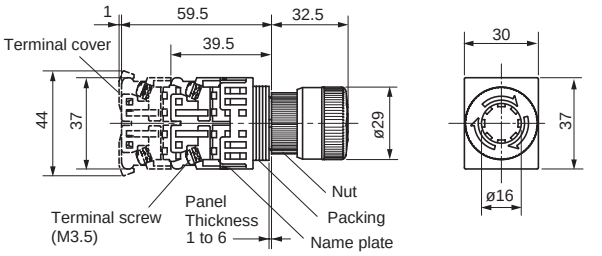


■ **Dimensions, mm**
• **Emergency stop pushbutton switches**

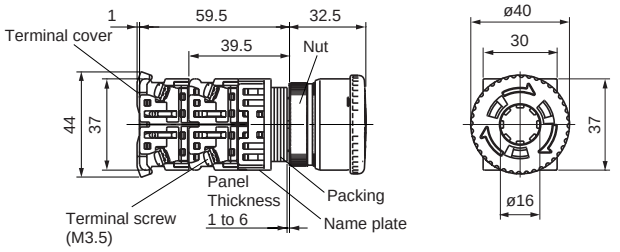
Push-lock, turn-reset (40mm dia. with white arrow)
AM22V0E



Push-lock, turn-reset (29mm dia. with white arrow)
AM22VSE



Push-lock, turn-reset (40mm dia. with mechanical indicator)
AM22VME



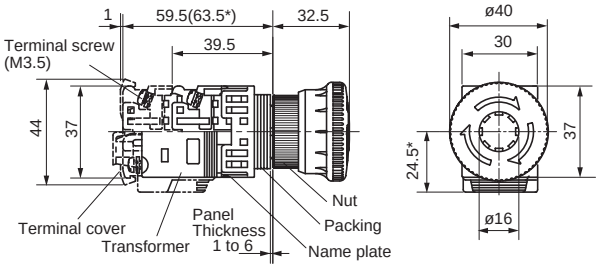
AM22 and DM22
Dimensions

■ Dimensions, mm
• Emergency stop illuminated pushbutton switches

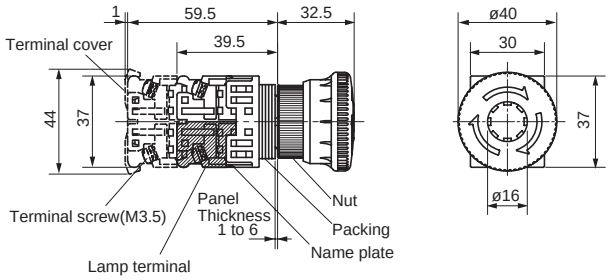
Push-lock, turn-reset (40mm dia. with white arrow)

AM22V0F

With transformer



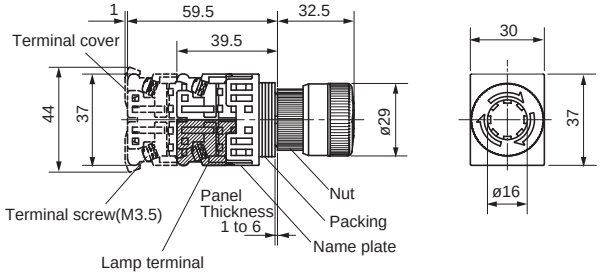
Without transformer



Push-lock, turn-reset (29mm dia. with white arrow)

AM22VSF

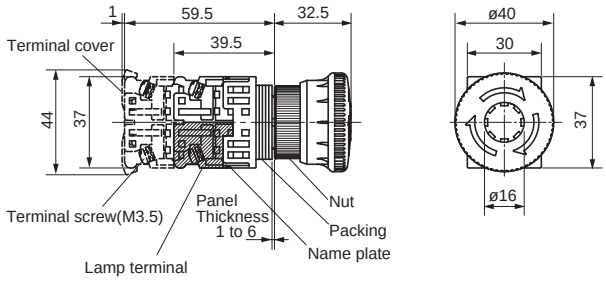
Without transformer



Push-lock, turn-reset (40mm dia. transparent in all colors with white arrow)

AM22VDF

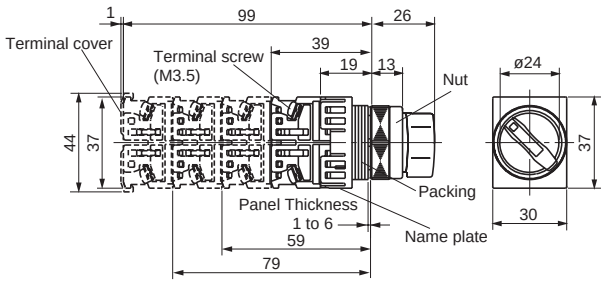
Without transformer



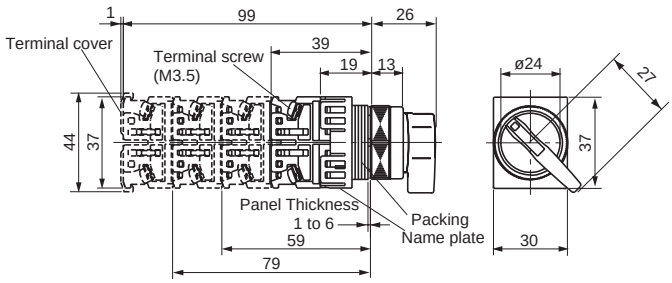
Note: * Except for the types 110V AC, 127V AC and 220V AC.

■ **Dimensions, mm**
• **Selector switches**

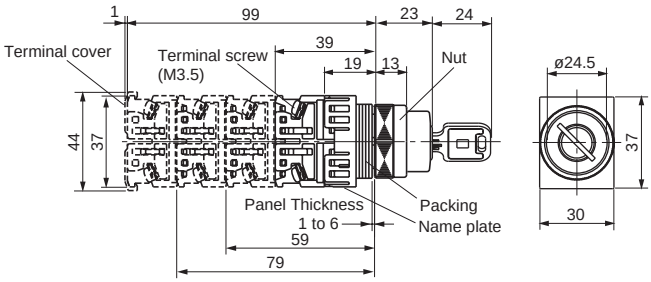
Knob
AM22PR, PCR



Lever
AM22WR, WCR



Key
AM22JR, JCR



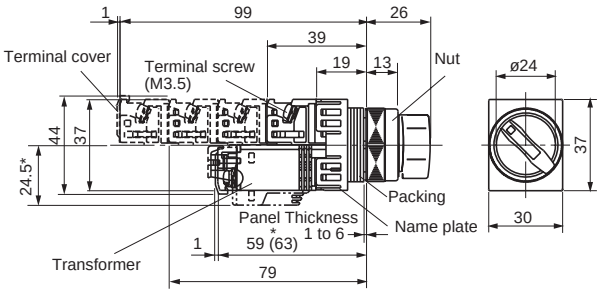
AM22 and DM22
Dimensions

■ Dimensions, mm

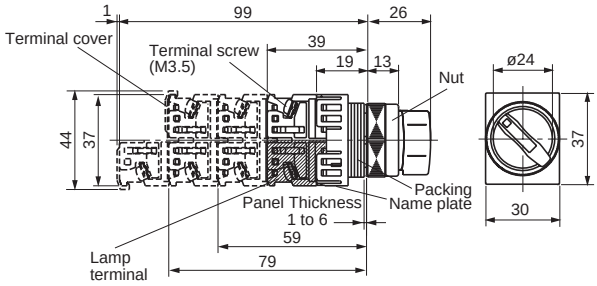
• Illuminated selector switches

Knob AM22PL

With transformer



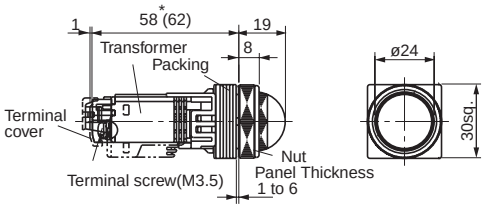
Without transformer



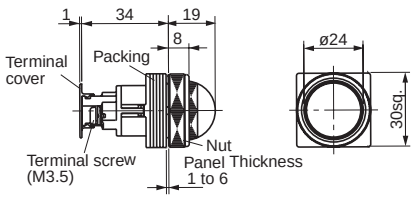
• Pilot lights

Dome DM22D0L

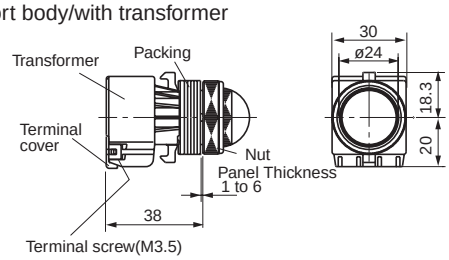
With transformer, with resistor unit



Without transformer



Short body/with transformer



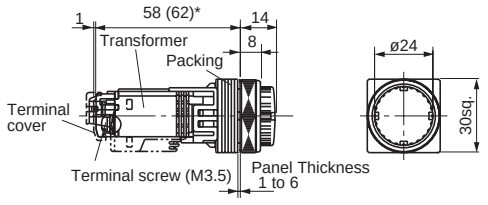
Note: * Except for the types 110V AC, 127V AC and 220V AC.

■ Dimensions, mm

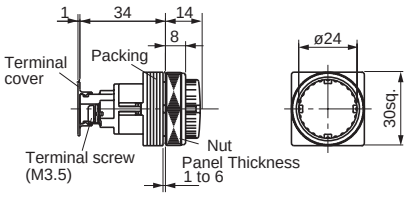
• Pilot lights

Extended DM22E3L

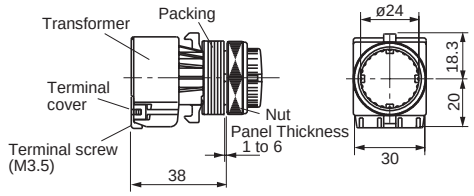
With transformer, with resistor unit



Without transformer

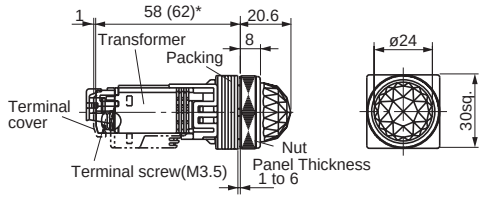


Short body/with transformer

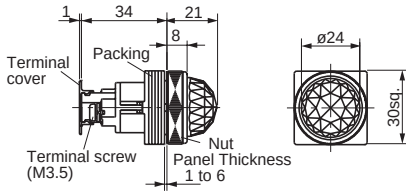


Faceted DM22K0L

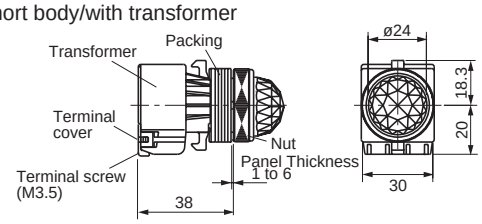
With transformer, with resistor unit



Without transformer



Short body/with transformer

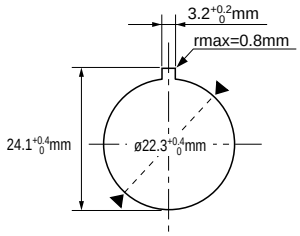


Note: * Except for the types 110V AC, 127V AC and 220V AC.

Notes on use

■ Panel cutout hole

Fig. 1 Panel cutout hole dimensions, mm



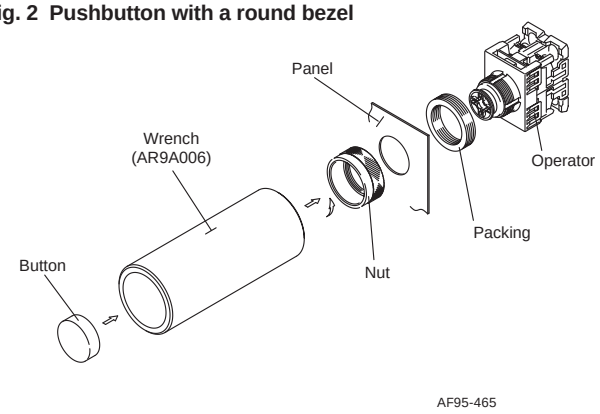
Note : If key-washer or legend plate are not used, 3.2mm-wide. location holes shown in Fig. 1 need not be cutout.

■ Mounting operator to panel

1. Pushbutton with a round bezel (ordinary mounting)

Insert the operator into the cutout hole from the back of the panel, and tighten the nut with the AR9A006 wrench from the front of the panel to secure the operator as shown in Fig.2.

Fig. 2 Pushbutton with a round bezel

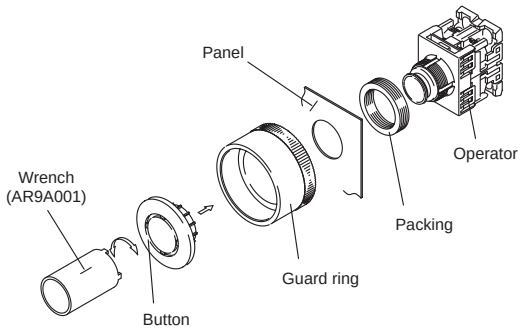


Note : Recommended tightening torque is from 1.0 to 1.5N·m.

2. Mounting Procedure for the M3R and M8R

- Insert the operator through the cutout hole from behind the panel and secure it by the guard ring from the front of the panel.
  Note: The correct tightening torque is 1.0 to 1.5 N•m.
- Use the wrench (AR9A001) to mount the button.
  Note: The correct tightening torque is 0.5 to 1.0 N•m.

Fig. 3



■ Method for changing the button, lens, and nameplate

● AM22F0R, F5R, E0R, E5R, G3R, G8R

- To remove the button, insert a small flat-tip screwdriver in the groove around the periphery of the button, and gently pry it off working the screwdriver around the entire periphery.
- To attach the button, align the I-shaped protrusion on the back side of the button with the cross-shaped groove on the plunger and push the button in.

Fig. 4a

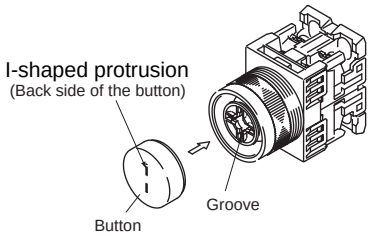
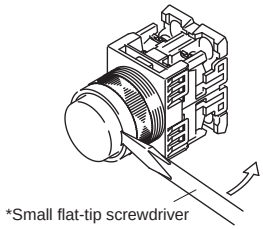
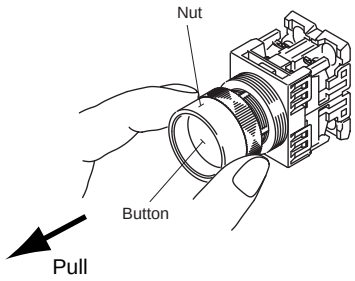


Fig. 4b



- In case of G3R, G8R: Loosen and pull the nut, and the button will come off.

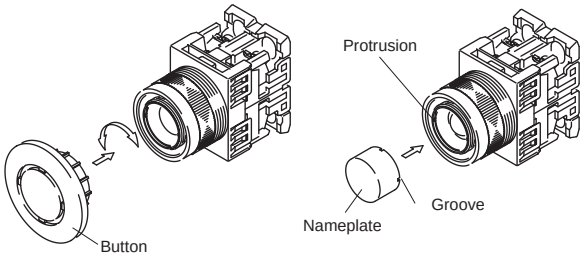
Fig. 5



● AM22M0R, M5R, M4R, M0L, M4L, M5L, M9L

- The button is threaded. Attach it and remove it by hand. When attaching the button, make sure that it is screwed in completely.
  Note: The correct tightening torque is 0.5 to 1.0 N•m.
- For illuminated pushbutton switches, insert the groove of the nameplate onto the protrusion on the plunger and push in the nameplate.

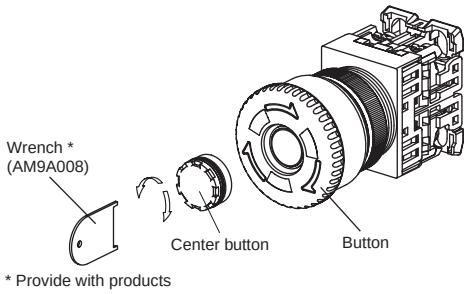
Fig. 6



● **AM22V0E, VSE, VME, V0F, VDF, VSF**

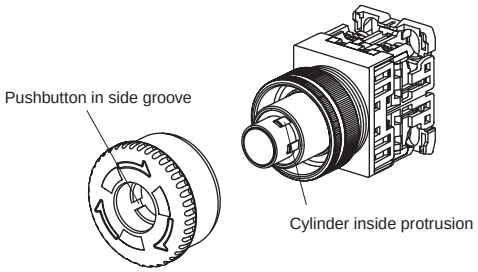
As shown in Fig.7, engage the tips of the AM9A008 wrench into the indentations around the pushbutton center button, and turn the wrench to loosen and remove the pushbutton center button, then remove the pushbutton.
Note: The correct tightening torque is 0.5 to 1.0N•m.

Fig. 7



Insert the operator into the cutout hole from the back of the panel, and as shown in Fig.8, insert the pushbutton into the operator cylinder while aligning the grooves inside the pushbutton with the protrusions on the operator.
Note: The correct tightening torque is 0.5 to 1.0N•m.

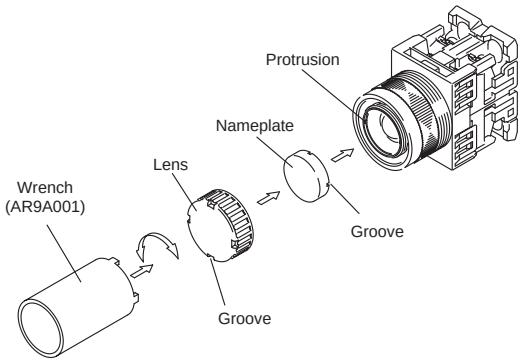
Fig. 8 Setting pushbutton to operator cylinder



● **AM22F0L, F5L, E0L, E5L, G4L, G9L, G2L, DM22E3L**

- Engage the protrusions on the front end of the wrench (AR9A001) with the groove on the lens and screw on the lens.
  Note: The correct tightening torque is 0.5 to 1.0 N•m.
- Attaching the nameplate
  Insert the groove of the nameplate onto the protrusion on the plunger.

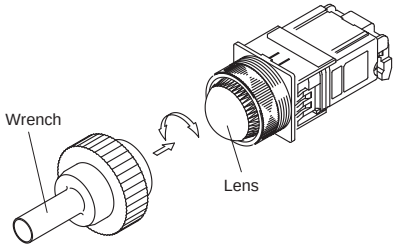
Fig. 9



● **DM22D0L, K0L**

- Push the end of the wrench (AHX702) onto the lens and turn the wrench to attach or remove the lens.
  Note: The correct tightening torque is 0.5 to 1.0 N•m.

Fig. 10



● **AM22PR, PCR, WR, WCR**

(1) As shown in the following figure, insert the tip of a small flathead screwdriver into the selector tip groove. Rotate the screwdriver in the direction indicated by the arrow until the selector tip rises, and draw out the knob.
(2) Attach the operator in the same manner as described in step 1.
(3) Insert the knob, with the selector tip in the floated state, into the original position of the rotation tube, and push the selector tip into place.

Fig. 11a

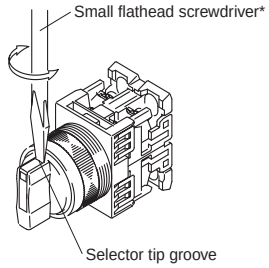
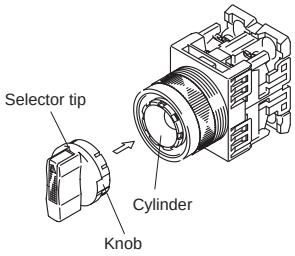


Fig. 11b



● **AM22PL**

- To remove an illuminated switch, insert a small flathead screwdriver or the like into the groove around the periphery of the knob and pry it off.

Fig. 12a

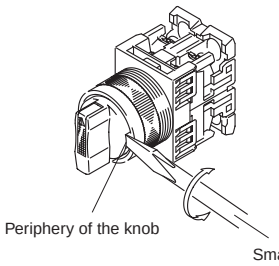
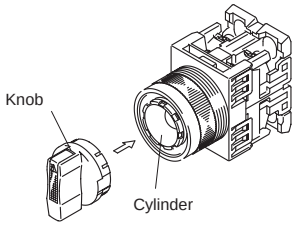


Fig. 12b

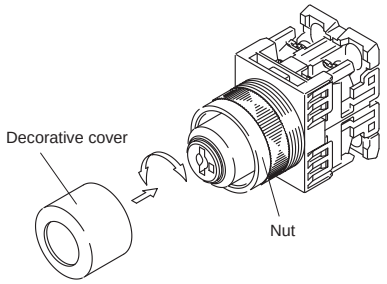


*Use a small flathead screwdriver with a head that is about 4 mm wide.

● **AM22JR, JCR**

- For key type switches, the decorative cover and nut are threaded. Removing the decorative cover enables the nut to be removed. Make sure to tighten the decorative cover so that there is no play.
  Note: The correct tightening torque is 0.3 to 0.5 N•m.

Fig. 13

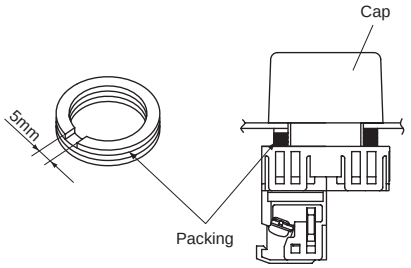


■ Water-proof and dust-proof cap

Applicable type: Water-proof cap AHX797
Dust-proof cap AM9D797

When attached to the panel in combination with a water-proof or dust-proof cap, the water-proof cap or dust-proof cap may sink downward and prevent the depressed button from returning to its original position.
As shown in the following figure, cut an approximately 5-mm air outlet in the portion of the ring packing touching the panel surface. Also, reduce the number of packing rings by one below the standard number. The clamp ring tightening torque is 1 to 1.5 N•m.

Fig. 14



Degree of protection

The water-proof cap or dust-proof cap seals the panel surface to provide IP65 protection.

- AM9D797 : Air outlet groove packing provided.

■ Using accessory ring-packings

Use the required number of ring-packings (1.3mm-thick, 5 pieces, resin mold).
Table below is a guideline for using the packings.
If a locking nut or legend plate is used, the thickness must be counted as an additional panel thickness.

Panel thickness vs. number of packings (reference data)

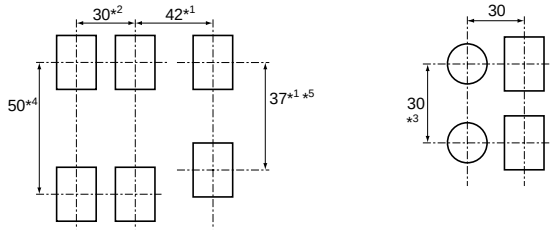
Effective panel thickness including lock-ring and legend plate thicknesses	Number of packings
1.0mm to less than 1.6mm	
1.6mm to less than 2.8mm	
2.8mm to less than 3.8mm	
3.8mm to less than 4.8mm	
4.8mm to less than 6.0mm	

■ Minimum mounting space, mm

The minimum mounting spaces required for AM22•DM22 command switches are given below. (Fig. 15)

Fig. 15

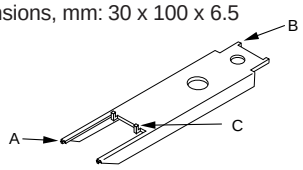
- Illuminated pushbutton and pushbutton
- Emergency stop illuminated pushbutton and emergency stop pushbutton
- Illuminated and non-illuminated selectors
- Pilot light



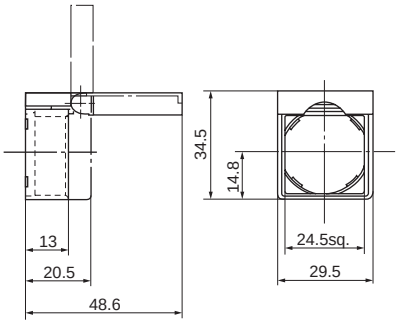
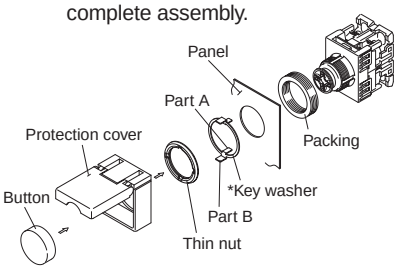
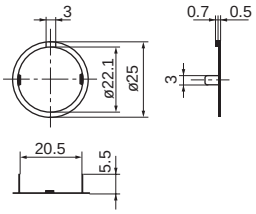
Notes:
*1 • AM22M0L, M5L, M0R, M5R, V0E, V0F, VDF: 42
• AM22M3R, M8R: 49
• AM22WR, WCR: 40
*2 When mounting contact blocks at 30mm pitch, use it circuit of 380V or less.
*3 Short body with transformer types: 50mm.
*4 This dimension applies when transformer units or contact blocks face each other.
*5 This dimension applies when transformer unit or contact block is mounted on only one side.

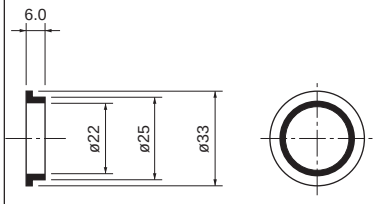
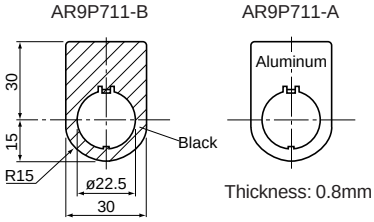
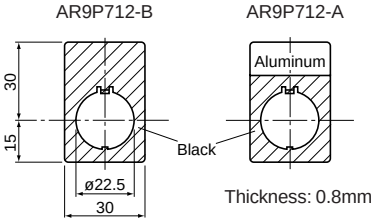
Other items are the same as for the AR22 and DR22 series,
see page 04/53 to 04/57

■ Accessories

Discription	Type
Wrench KK02-261	**AR9A004** Dimensions, mm: 30 x 100 x 6.5  Section “B” Use this section to tighten or remove the lens. Applicable type: AM22M3R, M8R, F0L, F5L, E0L, E5L, G4L, G9L, G2L, G7L, DM22E3L Remarks Section “A” : (For AR22 nut tightening) Section “C” : (For AR22V□□, AR30V□□ center button tighting)
Wrench KKD07-096	**AM9A008** Dimensions, mm: 16 x 23 x 0.8 Application: AM22V□□ center button
Wrench KK02-098A	**AR9A001** Dimensions, mm: ø22 x 35 Application: AM22M3R, M8R, F0L, F5L, E0L, E5L, G4L, G9L, G2L, G7L, DM22E3L lens tightening
Wrench for ø22, ø30 For ø30 For ø22 AF96-241	**AR9A006** Dimensions, mm: ø40 x 100 Application: AM22, DM22 nut tightening
Wrench SI-303	**AHX701** Dimensions, mm: ø25 x 72.5 Application: To mount on Protection cover (AM9D762), use this wrench to tighten the nut.

Discription	Type
Special tool AHX321 SG-873 DR9A321-T AF95-21	**AHX321** Dimensions, mm: 42 x 130 x 6.5 For all types except pilot lights **DR9A321-T** Dimensions, mm: 57 x 130 x 30 For pilot lights • This tool is used to remove contact blocks and transformer units. • The AHX321 can remove round color lens of switches.
Wrench/Lamp changer SI-1030	**AHX702** Dimensions, mm: ø36 x 55 Use this wrench to tighten or remove the lens and lamp. Used with: Lens of DM22D0L, K0L Incandescent lamp of pilot lights and illuminated pushbuttons
Lamp changer For BA9S/13 lamp (For E12/15 lamp) AF95-22	**AHX790** Dimensions, mm: ø14 x 55 • Use this rubber wrench for mounting or removing LED lamps from pilot lights and illuminated pushbutton switches.
Lamp changer (for AM22 V□F type) KK02-261	**AM9A009** Dimensions, mm: ø8 x 50 • Application AM22V0F, VSF, VDF

Discription	Type
Protection cover	**AM9D762** This cover protects against accidental operation. Used with: AM22F□R, E□R AM22F□L, E□L Dimensions, mm:  Notes : Assemble in the following order. 1. Remove the tightening ring. 2. Set protrusion A of the retaining washer in the groove of the operator. 3. Use the wrench (AHX701) to tighten the thin nut. 4. Align protrusion B of the retaining washer with the groove of the protective cover, and press the protective cover onto the thin nut. 5. Mount the button and lens to complete assembly.  *Provided SP183
Key washer	**AHX715** Use this metal washer when securing an operator. Dimension, mm:  SP-214
Operator base cover	**AR9Y002** Attach this cover to the operator base of a pushbutton switch with only one contact block (1NO or 1NC) to protect against dust. AF95-26

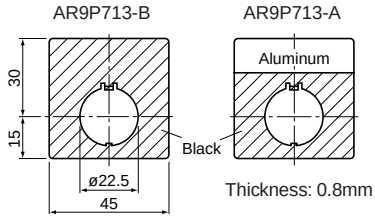
Discription	Type
Adapter	**AHX718** Use this adapter to mount a 22-mm-diameter command switch to a 25-mm-diameter cutout hole. Note that a 25-mm-diameter packing (AHX283, resin) must be purchased separately and used with the adapter. Dimensions, mm:  Panel cutout: ø25.5 $^{+0.5}_{0}$ mm SK-596
Legend plate	**AR9P711-①②③** ① Color B: Black A: Aluminum This aluminum legend plate is for a 22.3mm dia. panel cutout hole. (Packing provided) Legend / Code ② / Code ③ Blank 0 0 ON 0 A OFF 0 B START 0 C STOP 0 D OFF-ON 2 A Dimensions, mm:  SI-1033
Legend plate	**AR9P712-①②③** ① Color B: Black A: Partially black This aluminum legend plate is for a 22.3mm dia. panel cutout hole. (Packing provided) Legend / Code ② / Code ③ Blank 0 0 ON 0 A OFF 0 B START 0 C STOP 0 D OFF-ON 2 A Dimensions, mm:  SI-1032

Discription	Type
Legend plate	**AR9P713-**①②③ ① Color B: Black A: Partially black This aluminum legend plate is for a 22.3mm dia. panel cutout hole. (Packing provided)

Legend	Code ②	Code ③
Blank	0	0
ON	0	A
OFF	0	B
START	0	C
STOP	0	D
OFF-ON	2	A

AF95-114

Dimensions, mm:



Discription	Type
Legend plate for emergency stop	**AR9P719-**①② Plate color: Yellow Letter color: Black This aluminum legend plate is for a 22.3mm dia. panel cutout hole. (Packing provided)

Legend	Code ①	Code ②	Letter hight
Blank	0	0	–
EMERGENCY STOP	5	A	7mm
	5	B	13mm
EMERGENCY OFF	5	C	13mm

KK02-265A

Dimensions, mm:

Thickness: 0.8mm

Note: Engraving for making letters is not available.

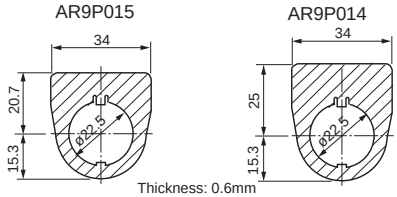
Discription	Type
Legend plate (width: 34mm)	**AR9P015-B**①② : Hight 36mm **AR9P014-B**①② : Hight 40.3mm Color: black

Legend	code ①	code ②
Blank	0	0
ON	0	A
OFF	0	B
START	0	C
STOP	0	D
OFF-ON	2	A

.AF96-190

Optimal for use in combination with a 3-position selector switch.
Legend plates are available in two types: short, 36 mm; and long, 40.3mm.

Dimensions, mm:



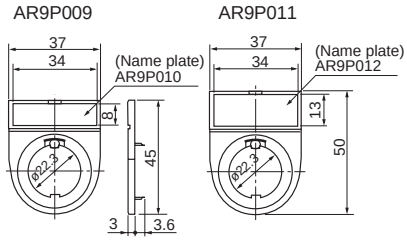
Thickness: 0.6mm

Discription	Type
Legend plate with name plate	Legend plate **AR9P009-B** Name plate **AR9P010-B** ①② (34 × 8mm) Legend plate **AR9P011-B** Name plate **AR9P012-B** ①② (34 × 13mm) Legend plate **AR9P007-B** Name plate **AR9P008-B** ①② (27 × 16mm)

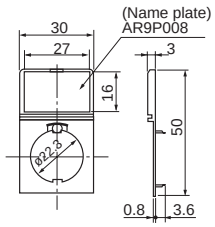
Name plate	Code ①	Code ②
ON	0	A
OFF	0	B
START	0	C
STOP	0	D
OFF-ON	2	A

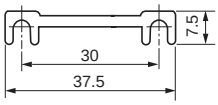
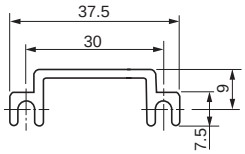
.AF96-190

Dimensions, mm:



AR9P007



Discription	Type
Panel plug SI-1027	Round: **AHX725-B** Black **AHX725-H** Gray Square: **AHX726-B** Black **AHX726-H** Gray Dimensions, mm: ø29.5 x 17 (AHX725) 29.5 sq. x 17 (AHX726) Use this plug to cover up unused panel cutout holes. For oil proof usage, use together with packing (AR9Y730) and a nut (AR9R744).
Jumper AF95-153 AF95-27	**APCX029** (For pilot light without transformer) **DR9Y001** (For pilot light with transformer) Use this jumper to connect terminals allocated in a 30mm pich. Rated current is 3A Dimensions, mm APCX029  DR9Y001  Thickness: 0.5mm
Lens for illuminated pushbutton switch and pilot lights KK02-266A KK02-267A KK02-268A KK02-269A KK02-270A	Type / Used with **AR9C011-□*** AM22F0L, F5L **AM9C012-□*** AM22E0L, E5L, G4L, G9L, G2L, G7L, DM22E3L **AM9C015-□** AM22M4L, M9L **AM9C016-□** AM22M0L, M5L **DM9C011-□** DM22D0L **DM9C012-□** DM22K0L Replace the □ mark by the lens color code Color: Green, Red, Clear, Yellow Code: G, R, C, Y Color: Orange, Blue, White Code: A, S, W Notes: * When the code is "W" (white), use a lens of clear color.

Discription	Type
Lens for pushbutton switch KK02-266A KK02-268A KK02-269A	Type / Used with **AM9C001-□** AM22F0R, F5R **AM9C003-□** AM22E0R, E5R, G3R, G8R **AM9C006-□** AM22M4R **AM9C007-□** AM22M0R, M3R, M5R, M8R Replace the □ mark by the lens color code Color: Green, Red, Black, White Code: G, R, B, W Color: Yellow, Orange, Blue Code: Y, A, B
Center button (for AM22V□□ type) KK02-267A	Type / Used with **AM9C034-R** AM22V0E, VSE **AM9C035-R** AM22V0F, VSF, VDF Center button color: Red only
Push-lock, turn-reset button (for AM22V□□ type) KK02-271A KK02-270A KK02-272A	Type / Used with **AM9C036-R** AM22V0E, V0F **AM9C037-R** AM22VSE, VSF **AM9C040-R** AM22VDF Button color: Red only
Knob AF95-43	Type / Used with **AR9M006-□** AM22PR, PCR Replace the □ mark by the knob color code Color: Black, Green, Red Code: B, G, R

Discription	Type

Lever

AF95-42

Type	Used with
AR9M007-□	AM22WR, WCR

Replace the □ mark by the lever color code

Color	Black	Green	Red
Code	B	G	R

Knob (for illuminated selector switch)

AF94-465

Type	Used with
AR9M005-□	AM22PL

Replace the □ mark by the knob color code

Color	Green	Red	White
Code	G	R	W

Color	Yellow	Orange	Blue
Code	Y	A	S

Key

KKD09-012

Type	Used with
AR9C022-□	AM22JR, JCR

Replace the □ mark by the key type code.
Code: A, B, C, D, E or F, 6 types.

Legend plate

AF94-459

Type	Used with
AR9P001-W	AM22F0L, F5L

This part is made of acrylic resin.
Use paint or thinner compatible with resin.

Dimensions, mm: ø17.8 x 0.9

Legend plate

KK02-273A

Type	Used with
AR9P002-W	AM22E0L, E5L, G4L, G9L, G2L, G7L

This part is made of acrylic resin.
Use paint or thinner compatible with resin.

Dimensions, mm: ø17.8 x 4.5

Legeng plate

KK02-273A

Type	Used with
AM9P024-W	AM22M0L, M5L, M4L, M9L

- This part is made of acrylic resin.
  Use paint or thinner compatible with resin.
- Dimensions, mm: ø17.8 x 10.2

Discription	Type

LED lamp

KKD06-208

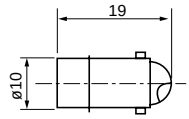
Type	Lamp voltage
APX510-6 □	6V AC
APX510-D6 □	6V DC
APX510-12 □	12V AC/DC
APX510-15 □	15V AC/DC
APX510-24 □	24V AC/DC

Replace the □ mark by the luminous color code

Luminous color	Yellow	Red	Green
Code	Y	R	G
Lens color	Y	R	G

Luminous color	Amber	Orange	Blue
Code	A	O	S
Lens color	A	W	S

Dimensions, mm:



Lamp base: BA9s/13

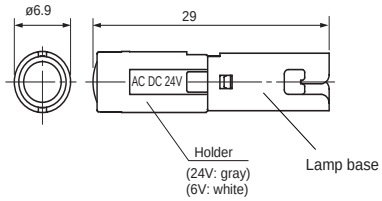
LED lamp (for AM22V0F, VSF, VDF type)

KK02-273A

Type	Lamp voltage
AR9L001-6R	6V AC
AR9L001-24R	24V AC/DC

Luminous color: Red only

Dimensions, mm:

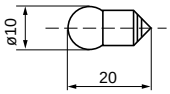


Incandescent lamp

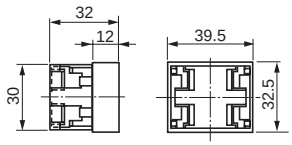
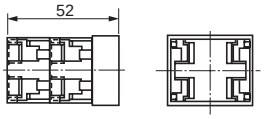
KKD06-307

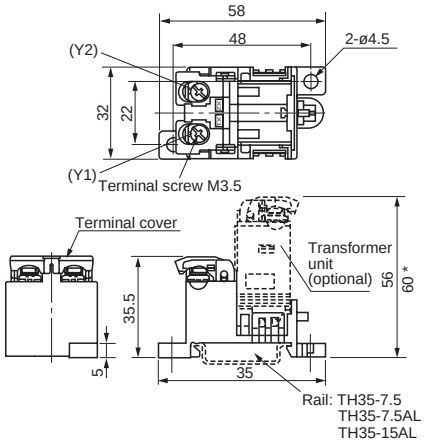
Type	Lamp voltage	Rated voltage, consumption
AHX135	5.5V AC/DC	6.3V AC/DC, 1W
AHX279	15V AC/DC	18V AC/DC, 1W
AHX144	20V AC/DC	24V AC/DC, 1W
AHX129	24V AC/DC	30V AC/DC, 1W

Dimensions, mm:



Lamp base: BA9s/13

Discription	Type
Contact block (1NO) AF94-455	**AR9B290** Standard **AR9B290-S** Overlap Color: Blue Dimensions, mm: 19.3 x 29 x 27 Note: Terminal cover is not supplied with this.
Contact block (1NC) AF94-455	**AR9B291** Standard **AR9B291-S** Overlap Color: Red Dimensions, mm: 19.3 x 29 x 27 Note: Terminal cover is not supplied with this.
Lamp terminal AF94-456	**AR9B292** Color: Black Dimensions, mm: 19.3 x 29 x 27 Note: Terminal cover is not supplied with this.
Contact protection cover KK02-118A	Type / Used with* **AR9D002-1** AM22, 1step contact **AR9D002-2** AM22, 2step contact • The contact is covered with a silicon rubber cover to keep out foreign matter such as dust, etc. * See page 04CD/2/46(AM22□Z8 types) Dimensions, mm: AR9D002-1  AR9D002-2 

Discription	Type
Transformer unit AF94-457 AF95-33	Type / Primary voltage / Used with **AR9T511-H** 100-110V AC — Standard type **AR9T511-L** 115-127V AC **AR9T511-M** 200-220V AC **AR9T511-Q** 230-254V AC **AR9T511-S** 350-380V AC **AR9T511-T** 400-440V AC **AR9T511-V** 480V AC **AR9T511-W** 500-550V AC **AM9T511-H** 100-110V AC — AM22V0F, VDF, VSF **AM9T511-L** 115-127V AC **AM9T511-M** 200-220V AC **AM9T511-Q** 230-254V AC **AM9T511-S** 350-380V AC **AM9T511-T** 400-440V AC **AM9T511-V** 480V AC **AM9T511-W** 500-550V AC Dimensions, mm: Up to 220 V 22.4 x 30 x 45 Over 220 V 25.3 x 29 x 48 Note: With terminal cover
Base unit for transformer separate mounting KK02-118A	**AR9T003** Use this base in combination with a transformer unit. This base unit can be mounted using screws or rails. Dimensions, mm  * Except for the types 110V AC, 127V AC and 220V AC.
Resistor Voltage stabilizer Device for LED lamp flickering AF95-33	Resistor: **AR9T519-H** (110V DC) Fit this resistor when using LED of 24V DC rating with 110V DC power. Voltage stabilizer: **AR9T001-E** This unit allows an LED lamp of 24V DC rating to be used in a circuit with voltage from 27V to 35V (AC or DC). Flickering device: 6V AC: **AR9T002-A** 6V DC: **AR9T002-6** 12 to 24V AC: **AR9T002-G *** 12 to 24V DC: **AR9T002-E *** * Used in combination with 12V, 15V, or 24V rated LED lamp. Note: With terminal cover

Discription	Type

Nut

KK02-274A

KK02-275A

KK02-276A

Type	Used with
AM9R744*1	AM22F0R, F5R, E0R, E5R, M0R, M5R, M4R, F0L, F5L, E0L, E5L, M0L, M5L, M4L, M9L, PR, PCR, WR, WCR, JR, JCR, PL
DM9R744*1	DM22D0L, E3L, K0L
AM9R057*3	AM22V0E, V0F, VDF
AM9R057*2	AM22F0R, F5R, E0R, E5R, M4R, F0L, F5L, E0L, E5L, M4L, M9L, PR, PCR, WR, WCR, JR, JCR, PL
AM9R058*3	AM22VSE, VSF
DM9R057*2	DM22D0L, E3L, K0L

*1 Resin types are black (standard)
*2 Aluminum types are silver
*3 Aluminum types are silver (standard)

Guard-ring

AM9R003 **AM9R054**

KK02-277A

AM9R056

KK02-274A

AM9R223

KK02-278A

Type	Used with
AM9R003*1	AM22G4L, G9L
AM9R054*2	AM22G3R, G8R
AM9R056*2	AM22G2L, G7L
AM9R223*2	AM22M3R, M8R

*1 Resin types are transparent
*2 Resin types are black

Nut

AF94-462

AR9R744

For AHX725*, 726*

* When use the panel plug as IP65, then use with packing(AR9Y730)

Water-tight cap

SK-594

AHX797

This rubber cap protects the operator and switch mechanism against dust and water. Use this cap in a dusty or moist environment. The only color available is transparent.

Used with:
AM22E0R, E5R, E0L, E5L

Dimensions, mm: ø36 x 22.5

Discription	Type

Dust-proof cap

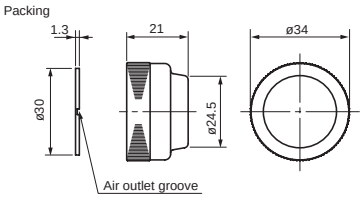
KK02-279A

AM9D797-□

Replace the □ mark by the cap color code

Color	Green	Red	Black
Code	G	R	B

Dimensions, mm:



Used for sealing the operator from foreign debris such as dust in environments where the unit is in contact with such elements.

Packing

SI-299

AHX730

AF94-462

AHX283

SF-1113

AR9Y730

AHX730:
For all AM22 and DM22 (Resin)
Note: 5 pieces of packing per delivery

AHX283:
For AHX728 (Resin)
Note: 4 pieces of packing per delivery

AR9Y730:
For AHX725*, 726* (Rubber)
* When use the panel plug as IP65, then use with nut (AR9R744)

Terminal cover

AF94-466

Type	Used with	Dimensions, mm
AR9Y305	Contact unit Lamp terminal Transformer unit *	18.4 x 29 x 8.4
DR9Y320	Pilot lights (without transformer)	ø22 x 5.8

* Rated up to 220V.

The terminal cover is provided as standard with the applicable types listed above. (Except for contact block alone and lamp terminal alone)

Terminal cover

SG-5

Type	Used with	Dimensions, mm
AHX376	With transformer * With short-body transformer With resistor unit	13 x 29 x 6.5

* Use types that exceed the standard 220V rating for products with standard type transformer.

The terminal cover is provided as standard with the applicable types listed above.

Products equipped with contact protection cover

■ Features
A silicon rubber cover is provided for the contact block to keep out foreign matter such as dust, etc.
Other ratings and specifications are the same as those of the standard type.

■ Type
AM22 □ Z8
Specify “Z8” at the end of the type number of the standard type.

■ Dimensions
The only thing different from the standard product is the addition of a 1-mm thick silicon rubber cover around the contact block.

■ Applicable types

Type	Contact arrangement	Remarks
• Pushbuttons • Emergency stop pushbuttons • Selectors	1NO+1NC, 2NO*1, 2NC	For use with a 1-step contact
	1NO+3NC, 2NO+2NC, 3NO+1NC, 4NO*1, 4NC	For use with a 2-step contact
• Illuminated pushbuttons (without transformer) • Emergency stop illuminated pushbuttons (without transformer) • Illuminated selectors (without transformer)	1NO*2, 1NC	For use with a 1-step contact
	1NO+2NC, 2NO+1NC, 3NO*2, 3NC	For use with a 2-step contact

Notes: *1 Except for emergency stop pushbutton switch
*2 Except for emergency stop illuminated pushbutton switch

Resisting water-soluble cutting oils and heat

■ Features
Safer operation in environments exposed to water-miscible cutting fluids, machining oils, lubricating oils, cleaning oils and high humidity (up to 95%) is made possible by using materials that protect against rust and corrosion of components.
Other ratings and specifications are the same as those of the standard type.

■ Type
AM22 □ Z9, DM22 □ Z9
Specify “Z9” at the end of the type number of the standard type.

■ Dimensions
Same as those of the standard type

■ Applicable types
• AM22, DM22 series
AM22 (Except for emergency stop pushbutton switch and emergency stop illuminated pushbutton switch)
DM22 (Except for pilot lights with resistor unit)

Meeting IP2X finger protection standards

■ Features

Conforms to EN standard EN60204-1 (protecting against electric shock). The terminal has IEC60529 degree of protection; IP2X finger protection secured (a mock human finger used in testing did not come into contact with charged parts). The contact block and lamp terminal can be easily mounted or removed with the terminal cover mounted.

■ Type

AM22 □ ZB, DM22 □ ZB

Specify “ZB” at the end of the type number of the standard type.

■ Accessories

• Contact block (plus terminal cover)
NO contact: AR9B290-□ D
NC contact: AR9B291-□ D
•Transformer unit (plus terminal cover)
AR9T511-□ D

■ Ratings and specifications

- Protection degree: IP2X
- Terminal screw: M3.5
  Wiring can be done with a solid wire or fork shaped crimp terminal.

  Note: Ring-type crimp terminals cannot be used.

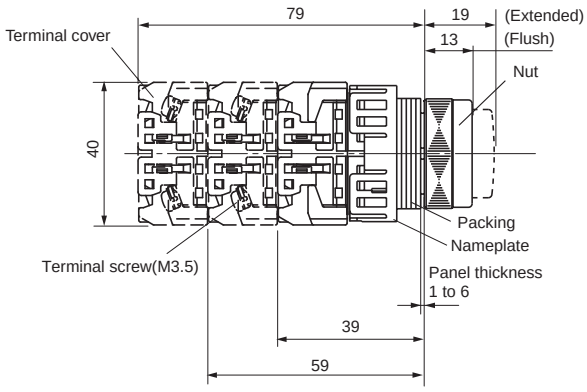
- Other ratings and specifications are the same as those of the standard type.

■ Applicable types

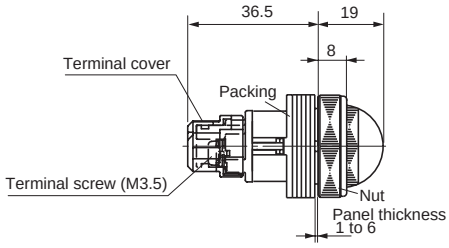
AM22
DM22: Without transformer, with transformer (except for short-body types)

■ Dimensions, mm

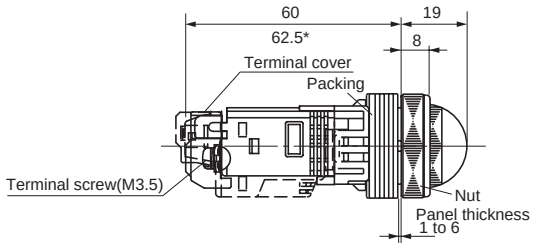
AM22/Pushbutton switches



DM22/Without transformer



DM22/With transformer



Note : * Except for the types 110V AC, 127V AC and 220V AC.

Metal nut (aluminum) types

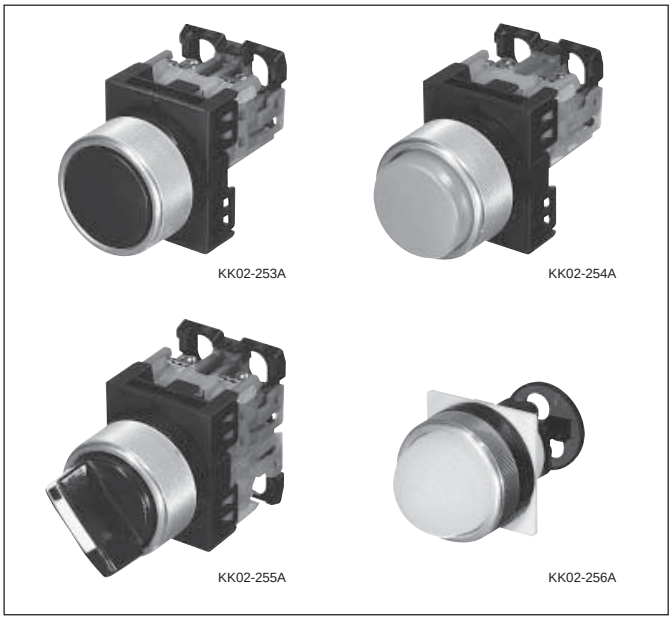
■ Features
The nut is an aluminum ring.
Other ratings and specifications are the same as those of the standard model.

■ Type
AM22 □ ZM
DM22 □ ZM
Specify “ZM” at the end of the type number of the standard type.

■ Dimensions, mm
Same as those of the standard types.

■ Applicable types
AM22 (except for G4L, G9L, M3R, M8R, V□E*, V□F* types)
DM22 with round bezel

Note: * Standard type is a metallic ring (chrome plated).



Resisting sulfuration gas

■ Features
These products can be used in environments having a concentration of hydrogen sulfide gas of 0.5 ppm or less.
The metallic parts have been subjected to an anti-corrosion treatment (see note).
The contacts of the AM series are gold plated.

Note: The body is made of resin and cannot be used with gases that affect resins (plastics).

■ Type
AM22 □ Z4, DM22 □ Z4
Specify “Z4” at the end of the type number of the standard type.

■ Notes on use
- This product is resistant to light corrosive gas exposure.
- Other measures, such as covering the entire switch with a box, and the degree of protection of the panel should be taken into consideration.

■ Ratings and specifications
Hydrogen sulfide gas concentration of 0.5 ppm max.
Ambient storage temperature: 8 to 37°C
Humidity: 62 to 81%
Other ratings and specifications are the same as those of the standard type.

■ Dimensions, mm
Same as those of the standard types.

■ Applicable types
AM22
DM22 (except for pilot lights with resistor unit)
(except for emergency stop pushbutton switch and emergency stop illumingted pushbutton switch)

■ Mass, gram

• Pushbutton switches

Type	1-contact	2-contact	4-contact
F0R F5R	28	38	57
E0R E5R	29	39	58
G3R, M4R G8R	31	41	60
M0R M5R	33	43	62
M3R M8R	49	59	78

• Illuminated pushbutton switches

Type	Without transformer			With transformer*	
	1-contact	2-contact	4-contact	1-contact	2-contact
F0L	42	51	70	88	97
F5L	42	51	–	88	97
E0L	43	53	72	89	99
E5L	43	53	–	89	99
M4L, G4L, G2L	44	54	73	90	100
M9L, G9L, G7L	44	54	–	90	100
M0L	45	55	74	91	101
M5L	45	55	–	91	101

• Emergency stop pushbutton switches

Type	1-contact	2-contact	4-contact
VSE	42	52	71
V0E	51	61	80
VME	53	63	82

• Emergency stop illuminated pushbutton switches

Type	Without transformer		With transformer*	
	1-contact	2-contact	1-contact	2-contact
VSF	53	62	99	108
VDF	60	69	106	115
V0F	62	71	108	117

• Pilot lights

Type	Without transformer	With transformer		With resistor
	Standard	Standard*	Short body	unit
D0L	22	74	72	36
E3L, K0L	23	75	73	37

• Selector switches

Type	1-contact	2-contact	4-contact
PR	33	43	62
PCR	–	43	62
WR	34	44	63
WCR	–	44	63
JR	58	68	87
JCR	–	68	87

• Illuminated selector switches

Type	Without transformer			With transformer*	
	1-contact	2-contact	4-contact	1-contact	2-contact
PL	44	54	73	90	100

Note: *230V and over : +17grams

■ CCC approved

● AM22/DM22 series

Pushbutton switches

Bezel	Operator	Type	
		AM22	
		Momentary action	Alternate action (Turn-reset for V5R)
Round bezel	Flush round head	AM22F0R	AM22F5R
	Extended round head	AM22E0R	AM22E5R
	Extended with full guard (24mm dia.)	AM22G3R	AM22G8R
	Mushroom head with full guard (40mm dia.)	AM22M3R	AM22M8R
	Mushroom head (29mm dia.)	AM22M4R	–
	Mushroom head (40mm dia.)	AM22M0R	AM22M5R
Certificate No.		2003010305063372	

Note: • Certified contact: Momentary action: within 8 contacts
Alternate action: within 4 contacts

Emergency stop pushbutton switches

Bezel	Operator	Type
		AM22
Round bezel	Push-lock, turn-reset (29mm dia.)	AM22VSE
	Push-lock, turn reset (40mm dia.)	AM22V0E
	Push-lock, turn-reset (40mm dia.)	AM22VME
Certificate No.		2003010305063372

Notes: • Certified contact: 1NC, 1NO+1NC, 2NC, 3NC, 2NO+2NC, 4NC
• Certified button color: red (R) only

Illuminated pushbutton switches

Bezel	Operator	Type	
		AM22	
		Momentary	Alternate
Round bezel	Flush round head	AM22F0L	AM22F5L
	Extended round head	AM22E0L	AM22E5L
	Mushroom head (29mm dia.)	AM22M4L	AM22M9L
	Mushroom head (40mm dia.)	AM22M0L	AM22M5L
	Extended with transparent full guard (24mm dia.)	AM22G4L	AM22G9L
	Extended with full guard (24mm dia. with openings)	AM22G2L	AM22G7L
Certificate No.		2003010305063372	
Specifications		· Contact Without transformer Momentary action: within 6 contacts Alternate action: within 3 contacts With transformer Momentary action: within 4 contacts Alternate action: within 2 contacts · Color of button Green, red, white, yellow, orange, blue · Light source LED lamp, incandescent lamp · Operating voltage of lamp Without transformer LED: 6V AC, 6V DC, 12V AC/DC Incandescent lamp: 5.5V AC/DC, 20V AC/DC LED, incandescent lamp: 15V AC/DC, 24V AC/DC With transformer LED, incandescent lamp: 100-110V AC, 115-127V AC, 200-220V AC, 230-254V AC, 350-380V AC, 400-440V AC, 480V AC, 500-550V AC	

Emergency stop illuminated pushbutton switches

Bezel	Operator	Type
		AM22
Round bezel	Push-lock, turn-reset (29mm dia.)	AM22VSF
	Push-lock, turn reset (40mm dia.)	AM22V0F
	Push-lock, turn-reset (40mm dia. transparent in all colors)	AM22VDF
Certificate No.		2003010305063372

Notes: • Certified contact without transformer: 1NC, 1NO+1NC, 2NC, 3NC
• Certified contact with transformer: 1NC, 1NO+1NC, 2NC
• Certified light source: LED lamp only
• Certified operating lamp voltage: Without transfomer: 6A AC, 24V AC/DC
With transfomer: 100-110V AC, 115-127V AC, 200-220V AC, 230-254V AC, 350-380V AC, 400-440V AC, 480V AC, 500-550V AC
• Certified button color: red (R) only

Selector switches

Bezel	Operator	Type	
		AM22	
		Standard type	Control type
Round bezel	Knob	AM22PR	AM22PCR
	Lever	AM22WR	AM22WCR
	Key	AM22JR	AM22JCR
Certificate No.		2003010305063372	

Note: • Certified contact:
Maintained: within 8 contacts
Control type, spring return and spring/manual return: within 4 contacts

Illuminated selector switches

Bezel	Operator	Type
		AM22
		Standard type
Round bezel	Knob	AM22PL
Certificate No.		2003010305063372

Notes: • Certified contact: Without transformer
Maintained: within 6 contacts
Spring return and spring/manual return: within 3 contacts
With transformer
Maintained: within 4 contacts
Spring return and spring/manual return: within 2 contacts
• Certified lamp: both LED and incandescent lamp

Pilot lights

Bezel	Lens	Type
		DM22
Round bezel	Dome	DM22D0L
	Extended round	DM22E3L
	Faceted	DM22K0L
Certificate No.		2003010305063383

Notes: • Certified lamp: both LED and incandescent lamp
• Certified transformer type: standard and short-body
• Except for with resistor unit

Item with degree of protection IP2X (IP20)

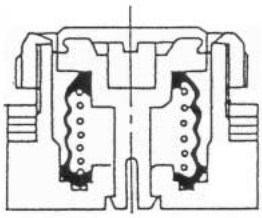
Type	Certificate No.
AM22□ZB	2003010305063372
DM22□ZB	2003010305063383

Note: Certified for all types listed in the above items except for short-body transformer of pilot light.

Features

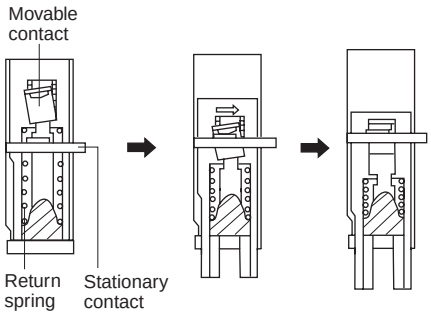
■ Oil and dust-proof construction

Protection complies with IEC Standard IP65.Special seals keep out oil, water, dust, and chips. This gives FUJI switches superior performance where dampness and dirt are likely to cause trouble .FUJI recommended where reliability is important.



■ Slide-action self-cleaning contacts

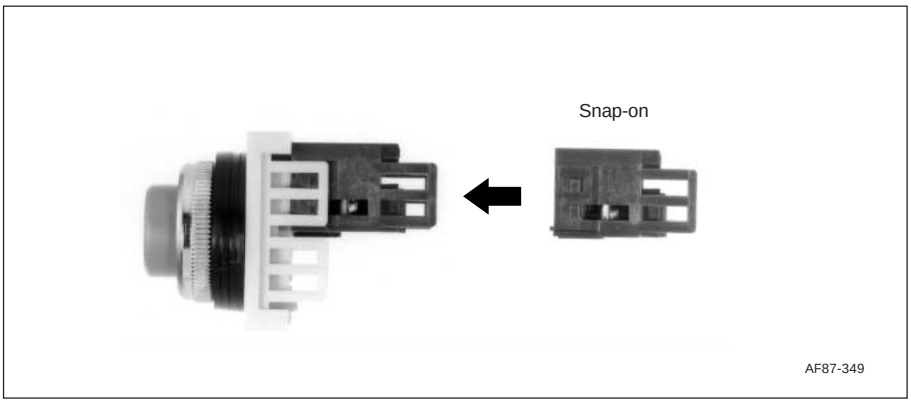
All contacts are double-break and self-cleaning.
With each operation, the contact surfaces are wiped by sliding that ensures positive engagement and excellent conductivity even in very low level circuits (5V, 5mA) and in corrosive environments.



Scrubbing contact action

■ Snap-on contact blocks and transformer

The contact blocks are easily snapped on, without using screws. Light transformers can also be mounted without tools.



■ A wide variety of operators

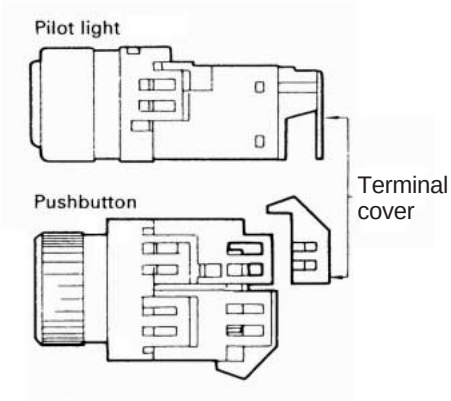
Pushbuttons, illuminated pushbuttons,2- or 3-position selector switches, and key-operated selector switches, etc. Choose the one you need.

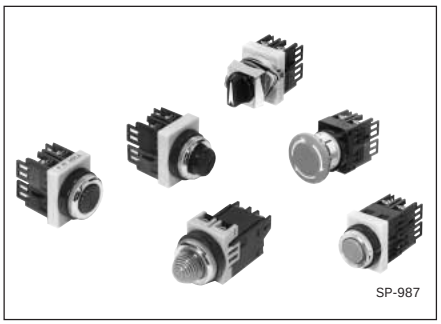
■ Contact blocks available up to 4NO+4NC

The AH25 series controls from one to eight control blocks in combination.Each contact block contains a set of 1NO or 1NC contacts.

■ Terminal covers

Terminal covers make mounting safe. These covers can be used to indicate device numbers.



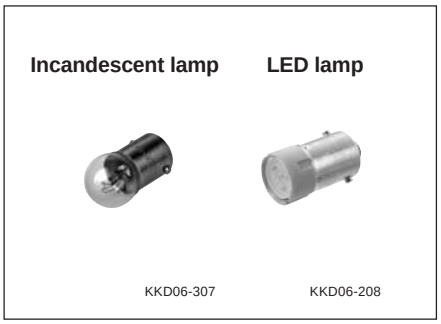


■ Easily replaced color tips

Only a screwdriver is needed to replace the buttons. A wide variety of colors available to suit to your needs.

■ Bright, long-life lamp

LED lamps that have a longer service life than standard incandescent lamps are available. FUJI LED lamps are bright and can be used with both AC and DC, much the same way as incandescent lamps.



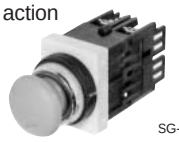
■ Approvals

UL listed
CSA certified

For further infomation related to approved type, *see page 04CD/3/2 to 04CD/3/4*

AH25
Quick reference guide

■ Pushbutton switches

Type	Description	Type	Description
AH25-F Flush round head AF87-312	The button surface is flush with the locking nut. Momentary type. *See page 04CD/3/10*	**AH25-M** Mushroom head SG-185	Mushroom head button. Momentary type. *See page 04CD/3/10*
AH25-F5 Flush round head /Alternate action SG-166	The button surface is flush with the locking nut. Push-ON/push-OFF type. *See page 04CD/3/10*	**AH25-M5** Mushroom head /Alternate action  SG-183	Mushroom head button. Push-ON/push-OFF type. *See page 04CD/3/10*
AH25-E Extended round head AF87-314	The button surface projects 7mm from the locking nut. Momentary type. *See page 04CD/3/10*	**AH25-V** Push-lock, turn-reset AF89-414	Locked when the button is pushed. To reset turn the button to the right. *See page 04CD/3/11*
AH25-E5 Extended round head /Alternate action SG-175	The button surface projects 7mm from the locking nut. Push-ON/push-OFF type. *See page 04CD/3/10*	**AH25-U** Wobble stick SG-202	The contact works when the lever is moved in any direction. Spring return action. *See page 04CD/3/11*
AH25-G Extended with half guard SG-171	The upper half of the button has a guard ring to help prevent operating errors. Momentary type. *See page 04CD/3/10*	**AH25-SF** Flush square head SG-208	The button surface is flush with the guard. Momentary type. Operator protection conforms to IP40. *See page 04CD/3/11*
AH25-G5 Extended with half guard /Alternate action SG-172	The upper half of the button has a guard ring to help prevent operating errors. Push-ON/push-OFF type. *See page 04CD/3/10*	**AH25-SF5** Flush square head /Alternate action SG-210	The button surface is flush with the guard. Push-ON/push-OFF type. Operator protection conforms to IP40. *See page 04CD/3/11*
AH25-G1 Extended with full guard AF87-179	The button has a guard ring to help prevent operating errors. Momentary type. *See page 04CD/3/10*	**AH25-SE** Extended square head SG-206	The button surface projects 7mm from the guard. Momentary type. Operator protection conforms to IP40. *See page 04CD/3/11*
AH25-G6 Extended with full guard /Alternate action SG-176	The button has a guard ring to help prevent operating errors. Push-ON/push-OFF type. *See page 04CD/3/10*	**AH25-SE5** Extended square head /Alternate action SG-207	The button surface projects 7mm from the guard. Push-ON/push-OFF type. Operator protection conforms to IP40. *See page 04CD/3/11*

■ Mechanically interlocked pushbutton switches

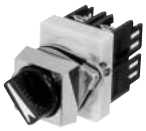
Type	Description
AH25-S1, S2, S3, S4, S5, S6 Pushbotton with selector ring(2-position) SI-55	Turning the ring to the left or right changes over the contact. *See page 04CD/3/13*

Type	Description
AH25-□/□ Mechanically interlocked AF89-610	Two buttons are interlocked by a lever. When on is ON, the other is OFF. *See page 04CD/3/14*

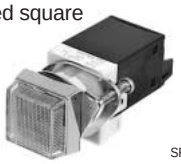
■ Illuminated pushbutton switches

Type	Description	Type	Description
AH25-L Extended round head SG-150	The surface of the illuminated button projects about 15mm from the locking nut. Momentary type. *See page 04CD/3/15*	**AH25-L4** Extend with transparent full guard AF89-605	The illuminated button has a guard ring to help prevent operating errors. Momentary action. *See page 04CD/3/15*
AH25-L5 Extended round head /Alternate action SG-152	The surface of the illuminated button projects about 15mm from the locking nut. *See page 04CD/3/15*	**AH25-VL** Push-lock, turn-reset AF89-413	Locked when the illuminated button is pushed. To reset, turn the button to the right. *See page 04CD/3/16*
AH25-L2 Extended with full guard (With openings) AF90-267	The illuminated button has a guard ring to help prevent operating errors. Momentary type. *See page 04CD/3/15*	**AH25-SL** Extended square head SG-144	The illuminated button projects about 8mm from the guard. Momentary type. Operator protection conforms to IP40. *See page 04CD/3/16*
AH25-L6 Extended with full guard (With openings) /Alternate action AF90-277	The illuminated button has a guard ring to help prevent operating errors. Push-ON/push-OFF type. *See page 04CD/3/15*	**AH25-SL5** Extended square head / Alternate action SG-149	The illuminated button projects about 8mm from the guard. Push-ON/push-OFF type. Operator protection conforms to IP40. *See page 04CD/3/16*
AH25-L3 Extended with full guard AF89-604	The illuminated button has a guard ring to help prevent operating errors. Momentary action. *See page 04CD/3/15*	**AH25-SL1** Flush square head SG-139	The illuminated button has a built-in legend plate. Momentary type. Operator protection conforms to IP40. *See page 04CD/3/16*
AH25-L7 Extended with full guard /Alternate action AF90-265	The illuminated button has a guard ring to help prevent operating errors. Push-ON/push-OFF type. *See page 04CD/3/15*	**AH25-SL6** Flush square head/ Alternate action SG-146	The illuminated button has a built-in legend plate. Push-ON/push-OFF type. Operator protection conforms to IP40. *See page 04CD/3/16*

■ Selector switches

Type	Description	Type	Description
AH25-P Knob SG-188	This switch works when the knob is turned. Operating positions : 2 or 3 Operating : Maintained, spring return, and spring/manual return. *See page 04CD/3/18*	**AH25-SJ** Key with square bezel SG-226	This switch works with a key inserted. Operator protection conforms to IP40. Operating positions : 2 or 3 Operating : Maintained. *See page 04CD/3/18*
AH25-PC Knob operated control type AF89-596	21 types of operation are available using a cam for performing complex controls. *See page 04CD/3/22*	**AH25-PW** Lever SP-1007	The lever extends out 13mm from the knob. Operating positions : 2 or 3 Operating : Maintained, spring return, and spring/manual return. *See page 04CD/3/18*
AH25-J Key SG-233	This switch works when the key is inserted. Operating positions : 2 or 3 Operating : Maintained, spring return, and spring/manual return. *See page 04CD/3/18*	**AH25-PL** Illuminated knob AF89-622	Illuminated switch with a lamp built into the knob. Operating positions : 2 or 3 Operating : Maintained. *See page 04CD/3/23*
AH25-SP Knob with square bezel  SG-196	This switch works when the knob is turned. Operator protection conforms to IP40. Operating positions : 2 or 3 Operating : Maintained. *See page 04CD/3/18*	—	—

■ Pilot lights

Type	Description	Type	Description
AH25-ZM* Dome SF-1095	This pilot light uses a round transparent colored lens. *See page 04CD/3/25*	**AH25-ZN** Flush square with legend plate SF-1092	This pilot light has a built-in square legend plate on which characters and symbols can be marked. Operator protection conforms to IP40. *See page 04CD/3/25*
AH25-ZK* Faceted SF-1094	This pilot light uses a faceted transparent colored lens. *See page 04CD/3/25*	**AH25-ZM□8, □9** Dome (Short-body with transformer) SH-971	This pilot light has a short-body transformer. *See page 04CD/3/25*
AH25-ZS Extended square  SF-1093	This pilot light uses a square lens. Operator protection conforms to IP40. *See page 04CD/3/25*	—	—

Note: * With resistor unit types: Not approved standard

■ Type number nomenclature
Pushbuttons

AH25 - E R 11
① ② ③ ④

① **Product category**
AH25: 25mm-dia. pushbutton

② **Operator**
F: Flush round head
F5: Flush round head(Alternate action)
E: Extended round head
E5: Extended round head(Alternate action)
G: Extended with half guard
G5: Extended with half guard (Alternate action)
G1: Extended with full guard
G6: Extended with full guard (Alternate action)
M: Mushroom head
M5: Mushroom head (Alternate action)
V: Push-lock, turn-reset
U: Wobble stick
SF: Flush square head
SF5: Flush square head (Alternate action)
SE: Extended square head
SE5: Extended square head (Alternate action)
S1-S6:Pushbutton with selector ring (2-position)

③ **Color of button**

G:	Green	D:	Dark green
R:	Red	Y:	Yellow
W:	White	B:	Black*
S:	Sky-blue	O:	Orange

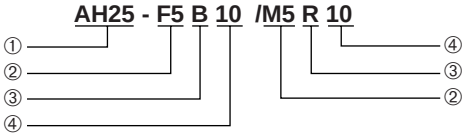
*AH25-U type: ball color Black only.

④ **Contact arrangement**

10:	1NO	30:	3NO
01:	1NC	03:	3NC
11:	1NO+1NC	33:	3NO+3NC
20:	2NO	40:	4NO
02:	2NC	04:	4NC
22:	2NO+2NC	44:	4NO+4NC

Mechanically interlocked pushbutton switches

AH25 - F5 B 10 /M5 R 10



① **Product category**
AH25: 25mm-dia. interlocked pushbutton

② **Combination of operator and operation mode**
• Latched/Latched
F5/F5: Flush (Push-locked)/Flush (Push-locked)
F5/E5: Flush (Push-locked)/Extended (Push-locked)
M5/M5: Mushroom (Push-locked)/Mushroom (Push-locked)
• Latched/Unlatched
F5/F: Flush (Push-locked)/Flush (Momentary)
E5/E: Extended (Push-locked)/Extended (Momentary)
M5/M: Mushroom (Push-locked)/Mushroom (Momentary)

③ **Button color**
G: Green
R: Red
B: Black
D: Dark green
Y: Yellow
W: White
S: Sky-blue
O: Orange

④ **Contact arrangement**
10: 1NO
01: 1NC
11: 1NO+1NC
20: 2NO
02: 2NC

Illuminated pushbuttons

AH25 - L5 G 11 H 3
① ② ③ ④ ⑤ ⑥

① **Product category**
AH25: 25mm-dia. illuminated pushbutton

② **Operator**
L: Extended round head
L5: Extended round head (Alternate action)
L2: Extended with full guard (With openings)
L6: Extended with full guard (With openings alternate action)
L3: Extended with full guard
L7: Extended with full guard (Alternate action)
L4: Extended with transparent full guard
VL: Push-lock, turn-reset
SL: Extended square head
SL5: Extended square head (Alternate action)
SL1: Flush square head
SL6: Flush square head (Alternate action)

③ **Color of lens**

G:	Green	S:	Sky-blue*
R:	Red	Y:	Yellow
W:	White	O:	Orange

* For LED lamp: Not available

④ **Contact arrangement**

10:	1NO	30:	3NO
01:	1NC	03:	3NC
11:	1NO+1NC	33:	3NO+3NC
20:	2NO	40:	4NO
02:	2NC	04:	4NC
22:	2NO+2NC	44:	4NO+4NC

⑤ **Lamp voltage**

• Without transformer:

	Incandescent	LED
Blank	5.5V	-
A	-	6V AC
AD	-	6V DC
B	-	12V AC/DC
C	15V AC/DC	15V AC/DC
D	20V AC/DC	-
E	24V AC/DC	24V AC/DC

• With transformer:

	Incandescent	LED
H	100-110V AC	100-110V AC
L	115-127V AC	115-127V AC
M	200-220V AC	200-220V AC
Q	230-254V AC	230-254V AC
S	350-380V AC	350-380V AC
T	400-440V AC	400-440V AC
V	480V AC	480V AC
W	500-550V AC	500-550V AC

⑥ **Type of lamp**
Blank: Incandescent lamp
3: LED lamp

Note: • The manufacturing varies depending on the model. For details, refer to the contents of this catalog

AH25
Type number nomenclature

Selector and illuminated selector switches

AH25 - PL 3 □ G 22 E 3 □
① ② ③④ ⑤ ⑥ ⑦⑧ ⑨

① **Product category**
AH25: 25mm-dia. selector and illuminated selector switch

② **Operator**
P: Knob
PC: Knob operated control type
J: Key
SP: Knob with square bezel
SJ: Key with square bezel
PW: Lever
PL: Illuminated knob

③ **Operating**
2: 2-position,maintained
0: 2-position,spring return (Right to left)
3: 3-position,maintained
6: 3-position,spring/manual return (Left to center)
7: 3-position,spring/manual return (Right to center)
1: 3-position,center spring return
Blank: 3-position,maintained (Control type only)

④ **Key removable position**
A: Left
B: Left and right
C: Left,center and right
D: Right
E: Center
F: Center and right
G: Center and left

⑤ **Color of knob**
B: Black *1
R: Red
W: White*3
S: Sky-blue*2*3
G: Green
Y: Yellow*3
O: Orange*3

*1 Except for illuminated type
*2 For LED lamp: Not available
*3 Illuminated type only

⑥ **Contact arrangement**

10:	1NO	30:	3NO
01:	1NC	03:	3NC
11:	1NO+1NC	33:	3NO+3NC
20:	2NO	40:	4NO
02:	2NC	04:	4NC
22:	2NO+2NC	44:	4NO+4NC

Note: Control type: *See page 04CD/3/22*

⑦ **Lamp voltage**
• Without transformer:

	Incandescent	LED
Blank	5.5V AC/DC	–
A	–	6V AC
AD	–	6V DC
B	–	12V AC/DC
C	15V AC/DC	15V AC/DC
D	20V AC/DC	–
E	24V AC/DC	24V AC/DC

• With transformer:

	Incandescent	LED
H	100-110V AC	100-110V AC
L	115-127V AC	115-127V AC
M	200-220V AC	200-220V AC
Q	230-254V AC	230-254V AC
S	350-380V AC	350-380V AC
T	400-440V AC	400-440V AC
V	480V AC	480V AC
W	500-550V AC	500-550V AC

⑧ **Type of lamp**
Blank: Incandescent lamp
3: LED lamp

⑨ **Key code No.**
A, B, C, D, E or F

Pilot lights

AH25 - ZM W Q 3
① ② ③ ④ ⑤

① **Product category**
AH25: 25mm-dia. pilot light

② **Lens**
ZM: Dome
ZK: Faceted
ZS: Extended square*
ZN: Flush square with legend plate*

* Incandescent lamp only

③ **Color of lens**

G:	Green	S:	Sky-blue*
R:	Red	Y:	Yellow
W:	White	O:	Orange

* For LED lamp: Not available

④ **Lamp voltage**

• Without transformer:

	Incandescent	LED
Blank	5.5V AC/DC	-
A	-	6V AC
AD	-	6V DC
B	-	12V AC/DC
C	15V AC/DC	15V AC/DC
D	20V AC/DC	-
E	24V AC/DC	24V AC/DC

• With transformer:

	Incandescent	LED
H	-	110V DC*
H	100-110V AC	100-110V AC
L	115-127V AC	115-127V AC
M	200-220V AC	200-220V AC
Q	230-254V AC	230-254V AC
S	350-380V AC	350-380V AC
T	400-440V AC	400-440V AC
V	480V AC	480V AC
W	500-550V AC	500-550V AC

* With resistor unit only

⑤ **Type of lamp**
Blank: Incandescent lamp
8: Incandescent lamp/Short-body with transformer
3: LED lamp
7: LED lamp/With resistor unit
9: LED lamp/Short-body with transformer

Note: • The manufacturing varies depending on the model. For details, refer to the contents of this catalog

■ Standards approved

UL508	File No. E44592
CSA C22.2 No.14	File No. LR20479

■ Specifications (Indoor use)

Description	Pushbutton switch Illuminated pushbutton switch Mechanically interlacked pushbutton switch Selector switch Illuminated selector switch	Pilot light
Rated insulation voltage	600V AC/DC *1	
Mechanical durability	*See the table below*	–
Electrical durability	500,000 operations at 220V AC 6A 1 million operations at 220V AC 3A	–
Operating frequency	1800 operations/hour (On-load factor: 40%)	–
Dielectric strength	2500V AC, 1 minute *2	
Insulation resistance	100MΩ or more (500V DC megger)	
Pollution degree	3	
Vibration	Resonance: 10 to 55Hz, double amplitude 0.1mm Constant: 16.7Hz, double amplitude 3mm	
Shock	Malfunction durability: 100m/s^2 Mechanical durability: 500m/s^2	Mechanical durability: 500m/s^2
Ambient temperature (No condensation or no icing)	-20 to +70°C (Illuminated type: -20 to +50°C)	-20 to +50°C
Storage temperature	-40 to +80°C	
Humidity	45 to 85% RH (within -5 to +40°C)	
Degree of protection	IP65*3	

Notes: *1 Illuminated type without transformer: 250V AC/DC
*2 Illuminated type without transformer: 1500V AC, 1 minute
*3 Square type : IP40

● Mechanical durability

Description		Operations
Pushbutton switch Illuminated pushbutton switch	Momentary action Alternate action With selector ring Push-lock, turn-reset	5 million 1 million 200,000 100,000
Mechanically interlocked pushbutton switch	Latched/Latched, Latched/Unlatched	100,000
Selector switch	Maintained, spring return, spring/manual return Control type	1 million 200,000
Illuminated selector switch	Maintained, spring return, spring/manual return	1 million

Note: Key insertion/removal durability for selector switch key types
• Key type 10,000

■ Contact ratings

• UL/CSA standards

Voltage [V]	Application		Continuous current	AC(COSϕ =0.35 or less)	
	UL	CSA	[A]	Make [A]	Break [A]
110-120	●		10	60	6.0
120		●			
220-240	●			30	3.0
240		●			
440-480	●			15	1.5
480		●			
550-600	●			12	1.2
600		●			

Voltage [V]	Application		DC
	UL	CSA	Make and break currents [A]
115-125	●		1.1
115		●	
230-250	●		0.55

Note: AH25-J3, -J5, -P3, -P1, -S1, -S3, -S4, -S5 types cannot be used in DC circuit.

• NECA standards

Description	Rated thermal current (A)	AC		DC		
		Voltage (V)	Operational current (A) AC15(Ind.)	Voltage (V)	Operational current (A)	
					DC13(Ind.)	DC12(Res.)
Pushbutton switch Illuminated pushbutton switch Selector switch (2-position)	10	24 110 220 440 550	6 6 6 2.5 2	24 110 220 – –	6 1.3 0.45 – –	6 2.5 1 – –
Selector switch (3-position) Pushbutton switch with selector ring Pushbutton switch with selector lever	10	24 110 220 440 550	3 3 3 1.3 1	24 110 220 – –	3 0.65 0.23 – –	3 1.3 0.5 – –

■ Contact reliability

The AH25 command switches can be used in low level circuit of 5V AC/DC, 5mA.The operating environment and the types of load, however, may affect the operating range.

■ Lamp ratings

• Illuminated pushbuttons, illuminated selectors, pilot lights

Transformer	Lamp voltage	LED (lamp base: BA9S/13)				Incandescent (lamp base: BA9S/13)		
		Type		Rated voltage	Consumption	Type	Rated voltage	Consumption
Without transformer	5.5V AC/DC	–	–	–	–	AHX135	6.3V AC/DC	0.9W
	6V AC	APX508-6□	APX510-6□	6V AC	Green, red, orange, amber: 7mA AC Yellow: 50mA AC	–	–	–
	6V DC	APX508-D6□	APX510-D6□	6V DC	Green, red, orange, amber: 11mA DC Yellow: 33mA DC	–	–	–
	12V AC/DC	APX508-12□	APX510-12□	12V AC/DC	Green, red, orange, amber: 14mA AC, 11mA DC Yellow: 28mA AC, 22mA DC	–	–	–
	15V AC/DC	APX508-15□	APX510-15□	15V AC/DC	Green, red, orange, amber: 13mA AC, 11mA DC Yellow: 26mA AC, 22mA DC	AHX279	18V AC/DC	0.8W
	20V AC/DC	–	–	–	–	AHX144	24V AC/DC	0.9W
	24V AC/DC	APX508-24□	APX510-24□	24V AC/DC	12mA AC, 11mA DC	AHX129	30V AC/DC	0.8W
With transformer	110V AC	APX508-6□	APX510-6□	6V AC	1.5VA	AHX135	6.3V AC/DC	2VA
	127V AC							2VA
	220V AC							2VA
	254V AC	APX508-6□	APX510-6□	6V AC	2.5VA	AHX135	6.3V AC/DC	2.5VA
	380V AC							2.5VA
	440V AC							2.5VA
	480V AC							2.5VA
	550V AC							2.5VA
With resistor unit	110V DC	APX508-24□	APX510-24□	24V AC/DC	1.2W	–	–	–

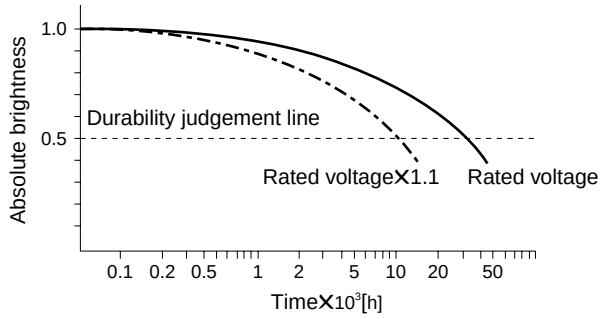
Note: Replace the □ mark by the lamp luminous color code.

■ Lamp durability

Lamp	Durability (reference)	Judgement criterion
LED	Approx. 30000h	When brightness is less than 50% of initial value
Incandescent	Approx. 5000h (AC)	When the bulb burns out

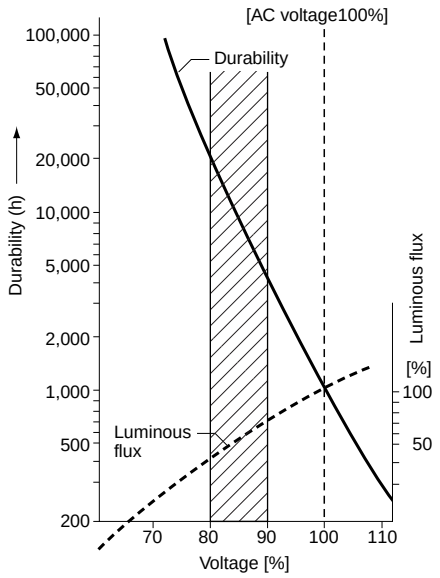
Note: • The operating voltage for incandescent lamps is set at 80 to 90% of the lamp's rated voltage.
• The durability of LED lamp is a mean value in all colors.

Estimated durability for LED lamps



Notes: • Durability at Ta=25˚C
• Durability is affected by temperature, humidity, and voltage fluctuation.

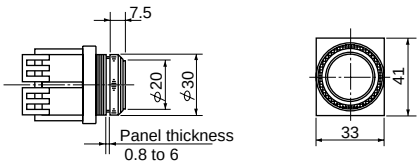
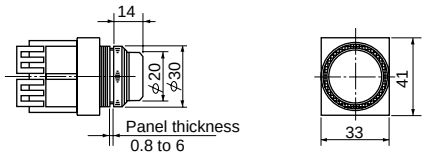
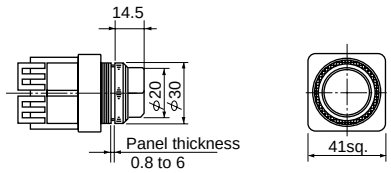
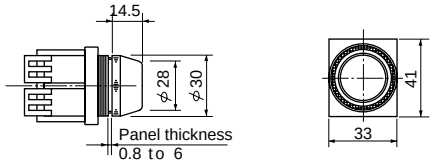
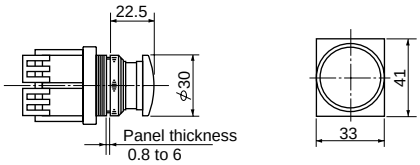
Incandescent lamp voltage characteristics



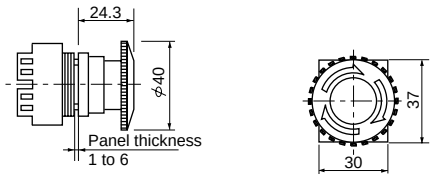
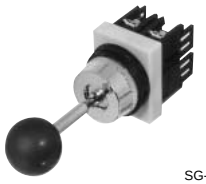
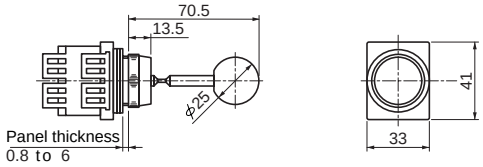
■ Combination of lens color and LED luminous color

Lens color (lens or color plate)		LED lamp (high-brightness)		
Color	Code	Luminous color	Type	Type *1
Green	G	Green	APX510-■G	APX508-■G
Red	R	Red	APX510-■R	APX508-■R
White	W	Orange	APX510-■O	APX510-■O
Yellow	Y	Yellow	APX510-■Y	APX508-■Y
Orange	A	Amber	APX510-■A	APX508-■A

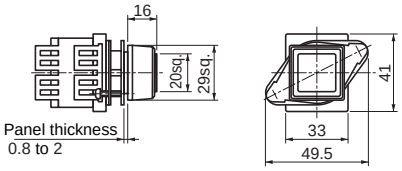
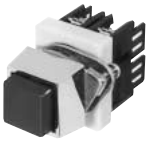
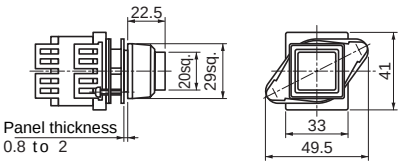
Notes: *1 For pilot lights
• Replace the ■ mark by the lamp voltage code

Operator	Contact	Momentary action Type	Alternate action Type	Operator dimensions,mm
Flush round head AF87-312	1NO 1NC 1NO+1NC 2NO 2NC 2NO+2NC	**AH25-F□10** **AH25-F□01** **AH25-F□11** **AH25-F□20** **AH25-F□02** **AH25-F□22**	**AH25-F5□10** **AH25-F5□01** **AH25-F5□11** **AH25-F5□20** **AH25-F5□02** **AH25-F5□22**	
Extended round head AF87-314	1NO 1NC 1NO+1NC 2NO 2NC 2NO+2NC	**AH25-E□10** **AH25-E□01** **AH25-E□11** **AH25-E□20** **AH25-E□02** **AH25-E□22**	**AH25-E5□10** **AH25-E5□01** **AH25-E5□11** **AH25-E5□20** **AH25-E5□02** **AH25-E5□22**	
Extended with half guard SG-171	1NO 1NC 1NO+1NC 2NO 2NC 2NO+2NC	**AH25-G□10** **AH25-G□01** **AH25-G□11** **AH25-G□20** **AH25-G□02** **AH25-G□22**	**AH25-G5□10** **AH25-G5□01** **AH25-G5□11** **AH25-G5□20** **AH25-G5□02** **AH25-G5□22**	
Extended with full guard SG-179	1NO 1NC 1NO+1NC 2NO 2NC 2NO+2NC	**AH25-G1□10** **AH25-G1□01** **AH25-G1□11** **AH25-G1□20** **AH25-G1□02** **AH25-G1□22**	**AH25-G6□10** **AH25-G6□01** **AH25-G6□11** **AH25-G6□20** **AH25-G6□02** **AH25-G6□22**	
Mushroom head SG-185	1NO 1NC 1NO+1NC 2NO 2NC 2NO+2NC	**AH25-M□10** **AH25-M□01** **AH25-M□11** **AH25-M□20** **AH25-M□02** **AH25-M□22**	**AH25-M5□10** **AH25-M5□01** **AH25-M5□11** **AH25-M5□20** **AH25-M5□02** **AH25-M5□22**	

Notes: • □ *See page 04CD/3/11*
• Contact block dimensions: *See page 04CD/3/12*

Operator	Contact	Momentary action Type	Operator dimensions,mm
Push-lock, turn-reset *1 AF89-414	1NO 1NC 1NO+1NC 2NO 2NC 2NO+2NC	**AH25-V □10** **AH25-V □01** **AH25-V □11** **AH25-V □20** **AH25-V □02** **AH25-V □22**	
Wobble stick  SG-202	1NO 1NC 1NO+1NC 2NO 2NC 2NO+2NC	**AH25-UB10** **AH25-UB01** **AH25-UB11** **AH25-UB20** **AH25-UB02** **AH25-UB22**	

Notes: • AH25-U type: ball color Black only.
*1 Alternate action type.

Operator	Contact	Momentary action Type	Alternate action Type	Operator dimensions,mm
Flush square head SG-208	1NO 1NC 1NO+1NC 2NO 2NC 2NO+2NC	**AH25-SF□10** **AH25-SF□01** **AH25-SF□11** **AH25-SF□20** **AH25-SF□02** **AH25-SF□22**	**AH25-SF5□10** **AH25-SF5□01** **AH25-SF5□11** **AH25-SF5□20** **AH25-SF5□02** **AH25-SF5□22**	
Extended square head  SG-206	1NO 1NC 1NO+1NC 2NO 2NC 2NO+2NC	**AH25-SE□10** **AH25-SE□01** **AH25-SE□11** **AH25-SE□20** **AH25-SE□02** **AH25-SE□22**	**AH25-SE5□10** **AH25-SE5□01** **AH25-SE5□11** **AH25-SE5□20** **AH25-SE5□02** **AH25-SE5□22**	

• Button color

Replace the □ mark by the following button color code

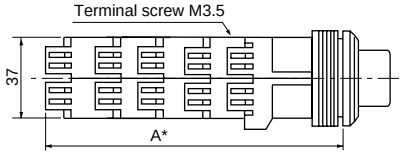
Button color	Green	Red	Black	Yellow	White
Code	G	R	B	Y	W

Button color	Dark green	Sky-blue	Orange
Code	D	S	O

Note: AH25-V type: Red, yellow, black only.

• Up to 8-contact block of the contact arrangement can be made. For alternate action type, up to 4-contact block of the contact arrangement can be made. (Except for AH25-V type)
• AH25-V type: Up to 4-contacts can be made.
• Contact block dimensions: *See page 04CD/3/12*

• Contact block dimensions, mm



• Up to 8-contact block of the contact arrangement can be made. For alternate action type, up to 4-contact block of the contact arrangement can be made.

AH25

	Contact block / Operator	1NO, 1NC, 2NO, 2NC, 1NO+1NC	3NO, 3NC, 4NO, 4NC, 2NO+2NC	3NO+3NC	4NO+4NC
A*	F,E,M,G,G1	45	67	89	111
	F5,E5,M5,G5,G6	67	89	–	–
	V	48.5	70.5	–	–
	U	43.5	65.5	87.5	109.5
	SF,SE	46.5	68.5	90.5	112.5
	SF5,SE5	68.5	90.5	–	–

* When attaching the terminal cover, the dimension of externals increase 1.5mm.

Operator	Type	Contact operation					
		Contact block		Left		Right	
		Mounting position	Type	Free	Depressed	Free	Depressed
Pushbutton with selector ring 2-position 2NO+2NC	**AH25-S1□22**	(1)	NC	—	—	●	—
		(2)	NC	—	—	●	—
		(3)	NO	—	●	—	●
		(4)	NO	—	●	—	●
	AH25-S2□22	(1)	NC	●	—	▬	▬
		(2)	NC	▬	▬	●	—
		(3)	NO	—	●	—	—
		(4)	NO	—	—	—	●
	AH25-S3□22	(1)	NC	—	—	▬	▬
		(2)	NC	▬	▬	—	—
		(3)	NO	—	●	—	—
		(4)	NO	—	—	—	●
	AH25-S4□22	(1)	NC	—	—	▬	▬
		(2)	NC	—	—	●	—
		(3)	NO	—	●	—	—
		(4)	NO	—	●	—	●
	AH25-S5□22	(1)	NC	●	—	—	—
		(2)	NC	●	—	—	—
		(3)	NO	—	●	—	●
		(4)	NO	—	●	—	●
	AH25-S6□22	(1)	NC	●	—	—	Locked
		(2)	NC	●	—	—	
		(3)	NO	—	●	●	
		(4)	NO	—	●	●	

SI-55

Note: (1) to (4) contact block mounting position

● Contact closed
— Contact open

• Button color

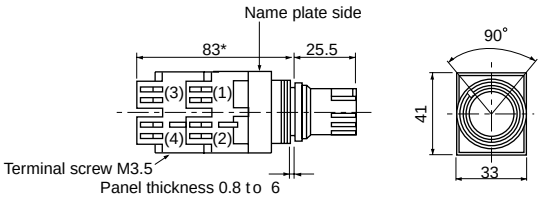
Replace the □ mark by the following button color code

Button color	Green	Red	Black	Yellow	White
Code	G	R	B	Y	W

Button color	Dark green	Sky-blue	Orange
Code	D	S	O

- The contact arrangement is 2NO+2NC only.
- The terminals are on the upper and lower positions.
- To turn selector ring of the S3 type right/left,the contacts in the upper and lower contact blocks overlap.

• Dimensions, mm



* When attaching the terminal cover, the dimension of externals increase 1.5mm.

■ Mechanically interlocked pushbutton switches

Exterior view	Operator	Contact block	Cat. No.
Latched/Latched AF89-610	Flush/Flush	1NO/1NO	**AH25-F5 □10/F5 □10**
		1NO+1NC/1NO+1NC	**AH25-F5 □11/F5 □11**
	Flush/Extended	1NO/1NO	**AH25-F5 □10/E5 □10**
		1NO+1NC/1NO+1NC	**AH25-F5 □11/E5 □11**
	Flush/Mushroom	1NO/1NO	**AH25-F5 □10/M5□ 10**
		1NO+1NC/1NO+1NC	**AH25-F5 □11/M5□ 11**
Latched/Unlatched AF89-615	Flush/Flush	1NO/1NO	**AH25-F5 □10/F □10**
		1NO+1NC/1NO+1NC	**AH25-F5 □11/F □11**
	Flush/Extended	1NO/1NO	**AH25-F5 □10/E □10**
		1NO+1NC/1NO+1NC	**AH25-F5 □11/E □11**
	Flush/Mushroom	1NO/1NO	**AH25-F5 □10/M□ 10**
		1NO+1NC/1NO+1NC	**AH25-F5 □11/M□ 11**

• Button color

Replace the □ mark by the following button color code

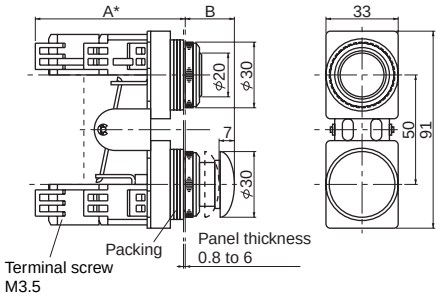
Button color	Green	Red	Black	Yellow	White
Code	G	R	B	Y	W

Button color	Dark green	Sky-blue	Orange
Code	D	S	O

• Up to 2-contacts can be made.

• Dimensions, mm

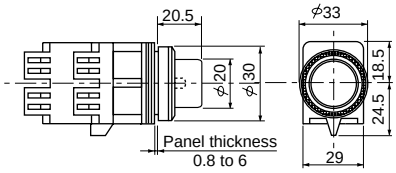
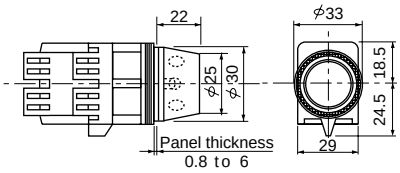
AH25-□/□



Contact arrangement	1NO, 1NC	1NO+1NC 2NO, 2NC
A*	46.5	68.5

* When attaching the terminal cover, the deimension of externals increase 1.5mm.

Button	F, F5	E, E5	M, M5
B	7.5	14	22.5

Operator	Contact	Momentary action Type	Alternate action Type	Operator dimensions, mm
Extended round head SG-150	1NO	**AH25-L□10■**	**AH25-L5□10**	
	1NC	**AH25-L□01■**	**AH25-L5□01**	
	1NO+1NC	**AH25-L□11■**	**AH25-L5□11**	
	2NO	**AH25-L□20■**	**AH25-L5□20**	
	2NC	**AH25-L□02■**	**AH25-L5□02**	
	2NO+2NC	**AH25-L□22■**	**AH25-L5□22**	
Extended with full guard (With openings) 0-267	1NO	**AH25-L2□10■**	**AH25-L6□10**	
	1NC	**AH25-L2□01■**	**AH25-L6□01**	
	1NO+1NC	**AH25-L2□11■**	**AH25-L6□11**	
	2NO	**AH25-L2□20■**	**AH25-L6□20**	
	2NC	**AH25-L2□02■**	**AH25-L6□02**	
	2NO+2NC	**AH25-L2□22■**	**AH25-L6□22**	
Extended with full guard AF89-604	1NO	**AH25-L3□10■**	**AH25-L7□10**	
	1NC	**AH25-L3□01■**	**AH25-L7□01**	
	1NO+1NC	**AH25-L3□11■**	**AH25-L7□11**	
	2NO	**AH25-L3□20■**	**AH25-L7□20**	
	2NC	**AH25-L3□02■**	**AH25-L7□02**	
	2NO+2NC	**AH25-L3□22■**	**AH25-L7□22**	
Extended with transparent full guard -605	1NO	**AH25-L4□10■**	–	
	1NC	**AH25-L4□01■**	–	
	1NO+1NC	**AH25-L4□11■**	–	
	2NO	**AH25-L4□20■**	–	
	2NC	**AH25-L4□02■**	–	
	2NO+2NC	**AH25-L4□22■**	–	

• Lens color

Replace the □ mark by the following lens color code

Button color	Green	Red	Yellow	White	Sky-blue	Orange
Code	G	R	Y	W	S	O

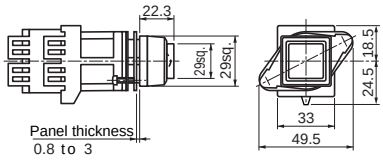
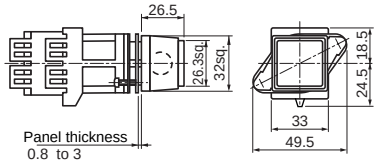
For illuminated pushbutton with LED lamp,sky-blue is not available.
Lens are transparent colored plastic.

- Contact block dimensions: *See page 04/19*.
- Up to 8-contact block of contact arrangement can be made.
  For switches with transformers or alternate action switches,up to 4-contact block can be made.

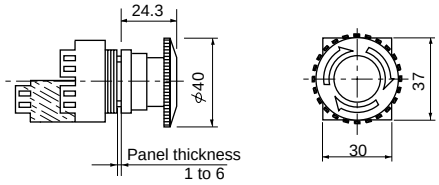
• Voltage

Replace the ■ mark by the lamp voltage code

Transformer		Code LED	Incandescent
Without transformer	6V DC	AD3	—
	6V AC	A3	—
	5.5V AC/DC	—	Blank
	12V AC/DC	B3	—
	15V AC/DC	C3	C
	20V AC/DC	—	D
	24V AC/DC	E3	E
With transformer	100-110V AC	H3	H
	115-127V AC	L3	L
	200-220V AC	M3	M
	230-254V AC	Q3	Q
	350-380V AC	S3	S
	400-440V AC	T3	T
	480V AC	V3	V
	500-550V AC	W3	W

Operator	Contact	Momentary action Type	Alternate action Type	Operator dimensions, mm
Extended square head SG-144	1NO	**AH25-SL□10■**	**AH25-SL5□10■**	
	1NC	**AH25-SL□01■**	**AH25-SL5□01■**	
	1NO+1NC	**AH25-SL□11■**	**AH25-SL5□11■**	
	2NO	**AH25-SL□20■**	**AH25-SL5□20■**	
	2NC	**AH25-SL□02■**	**AH25-SL5□02■**	
	2NO+2NC	**AH25-SL□22■**	**AH25-SL5□22■**	
Flush square head SG-139	1NO	**AH25-SL1□10■**	**AH25-SL6□10■**	
	1NC	**AH25-SL1□01■**	**AH25-SL6□01■**	
	1NO+1NC	**AH25-SL1□11■**	**AH25-SL6□11■**	
	2NO	**AH25-SL1□20■**	**AH25-SL6□20■**	
	2NC	**AH25-SL1□02■**	**AH25-SL6□02■**	
	2NO+2NC	**AH25-SL1□22■**	**AH25-SL6□22■**	

Notes: For SL,SL1,SL5 and SL6,switches with incandescent lamp only.

Operator	Contact	Type	Operator dimensions,mm
Push-lock, turn-reset AF89-413	1NO	**AH25-VL□10■**	
	1NC	**AH25-VL□01■**	
	1NO+1NC	**AH25-VL□11■**	
	2NO	**AH25-VL□20■**	
	2NC	**AH25-VL□02■**	
	2NO+2NC	**AH25-VL□22■**	

• Lens color

Replace the □ mark by the following lens color code

Button color	Green	Red	Yellow	White	Sky-blue	Orange
Code	G	R	Y	W	S	O

AH25-VL type : Red, yellow only
For illuminated pushbutton with LED lamp,sky-blue is not available.
Lens are transparent colored plastic.

- Contact block dimensions: *See page 04CD/3/19*.
- Up to 8-contact block of contact arrangement can be made.
  For switches with transformers or alternate action switches,up to 4-contact block can be made. (Except AH25-VL type)
- AH25-VL type without transformer: Up to 4-contacts
  AH25-VL type with transformer: Up to 2-contacts

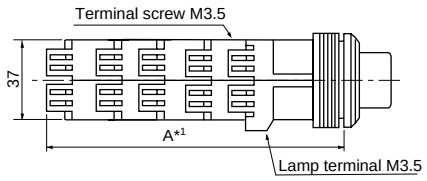
• Voltage

Replace the ■ mark by the lamp voltage code

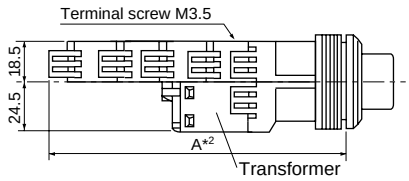
Transformer		Code LED	Incandescent
Without transformer	6V DC	AD3	—
	6V AC	A3	—
	5.5V AC/DC	—	Blank
	12V AC/DC	B3	—
	15V AC/DC	C3	C
	20V AC/DC	—	D
	24V AC/DC	E3	E
With transformer	100-110V AC	H3	H
	115-127V AC	L3	L
	200-220V AC	M3	M
	230-254V AC	Q3	Q
	350-380V AC	S3	S
	400-440V AC	T3	T
	480V AC	V3	V
	500-550V AC	W3	W

• Contact block dimensions, mm

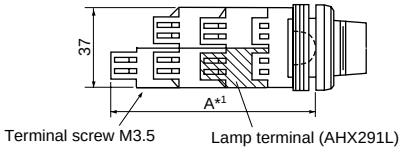
Without transformer (Except VL type)



With transformer



Without transformer (For VL type)



Without transformer

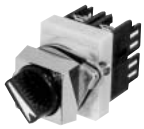
	Contact block / Operator	1NO, 1NC	2NO, 2NC, 1NO+1NC	3NO, 3NC	4NO, 4NC, 2NO+2NC	3NO+3NC	4NO+4NC
A	L	64.5		86.5		108.5	130.5
*1	L5	86.5		108.5		–	–
	L2,L3,L4	63.5		85.5		107.5	129.5
	L6,L7	85.5		107.5		–	–
	VL	48.5	70.5	70.5	92.5	–	–
	SL,SL1	66		88		110	132
	SL5,SL6	88		110		–	–

With transformer

	Contact block / Operator	1NO, 1NC	2NO, 2NC 1NO+1NC	3NO, 3NC	4NO, 4NC 2NO+2NC
A	L	81	86.5	108.5	130.5
*2	L5	103	108.5	130.5	152.5
	L2,L3,L4	80	85.5	107.5	129.5
	L6,L7	102	107.5	129.5	151.5
	VL	62	70.5	–	–
	SL,SL1	83	88	110	132
	SL5,SL6	105	110	132	154

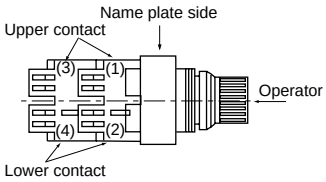
Notes: • Up to 8-contact block of contact arrangement can be made.
For switches with transformers or alternate action switches, up to 4-contact block of contact arrangement can be made. (Except AH25-VL)
• Type AH25-VL without transformer: 4 contact Max.
with transformer: 2 contact Max.
*1 When attaching the terminal cover, the dimension of externals increase 1.5mm.
*2 When attaching the terminal cover, the dimension of externals increase 1.5mm. (Except for 1NO and 1NC)

• 2-position

Operator	Operation	Contact	Type
Knob SG-188	Maintained each 90°	1NO	**AH25-P2□10**
		1NC	**AH25-P2□01**
		1NO+1NC	**AH25-P2□11**
		2NO	**AH25-P2□20**
		2NO+2NC	**AH25-P2□22**
	Spring return 90°	1NO	**AH25-P0□10**
		1NC	**AH25-P0□01**
		1NO+1NC	**AH25-P0□11**
		2NO	**AH25-P0□20**
		2NO+2NC	**AH25-P0□22**
Lever SP-1007	Maintained each 90°	1NO	**AH25-PW2□10**
		1NC	**AH25-PW2□01**
		1NO+1NC	**AH25-PW2□11**
		2NO	**AH25-PW2□20**
		2NO+2NC	**AH25-PW2□22**
	Spring return 90°	1NO	**AH25-PW0□10**
		1NC	**AH25-PW0□01**
		1NO+1NC	**AH25-PW0□11**
		2NO	**AH25-PW0□20**
		2NO+2NC	**AH25-PW0□22**
Knob with square bezel  SG-196	Maintained each 90°	1NO	**AH25-SP2□10**
		1NC	**AH25-SP2□01**
		1NO+1NC	**AH25-SP2□11**
		2NO	**AH25-SP2□20**
		2NO+2NC	**AH25-SP2□22**
Key SG-233	Maintained each 90°	1NO	**AH25-J2■10( )**
		1NC	**AH25-J2■01( )**
		1NO+1NC	**AH25-J2■11( )**
		2NO	**AH25-J2■20( )**
		2NO+2NC	**AH25-J2■22( )**
	Spring return 90°	1NO	**AH25-J0■10( )**
		1NC	**AH25-J0■01( )**
		1NO+1NC	**AH25-J0■11( )**
		2NO	**AH25-J0■20( )**
		2NO+2NC	**AH25-J0■22( )**
Key with square bezel SG-226	Maintained each 90°	1NO	**AH25-SJ2■10( )**
		1NC	**AH25-SJ2■01( )**
		1NO+1NC	**AH25-SJ2■11( )**
		2NO	**AH25-SJ2■20( )**
		2NO+2NC	**AH25-SJ2■22( )**

Contact operation (Example)

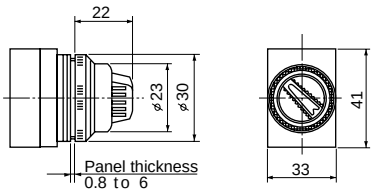
Contact arrangement	Operator position (Left ⦸ / Right ⦸)
1NO (1)	Upper contact ③ ④
1NC (1)	Upper contact ① ②
1NO+1NC (1)	Upper contact ③ ④
(2)	Lower contact ① ②
2NO+2NC (1)	Upper contact ③ ④
(3)	③ ④
(2)	Lower contact ① ②
(4)	① ②



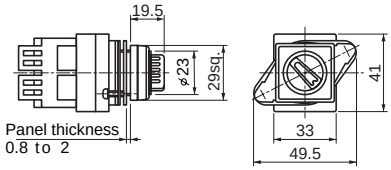
Notes: • (1) to (4): Contact block mounting position
•①–②,③–④: Contact block terminal No.
• □, ■, ( ) and contact arrangements: See page 04CD/3/19

• Operator dimensions, mm

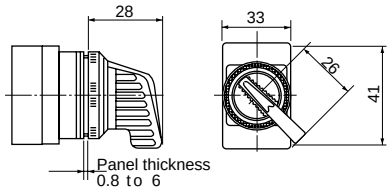
AH25-P



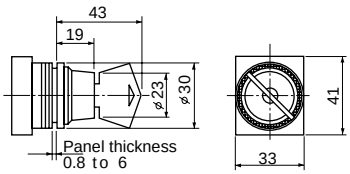
AH25-SP



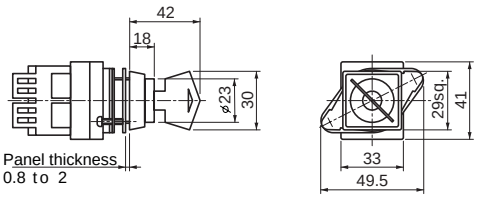
AH25-PW



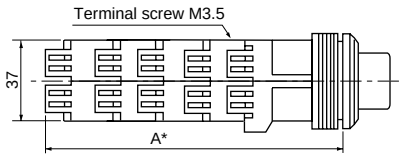
AH25-J



AH25-SJ



• Contact block dimensions, mm



		Contact block / Operator	1NO, 1NC, 2NO, 2NC, 1NO+1NC	3NO, 3NC, 4NO, 4NC, 2NO+2NC	3NO+3NC	4NO+4NC
A*	AH25	P0, P2, PW0, PW2	53.5	75.5	97.5	119.5
		SP2	55.5	77.5	99.5	121.5
		SJ2	52.5	74.5	96.5	118.5
		J0, J2	51.5	73.5	95.5	117.5

Notes: * When attaching the terminal cover, the dimension of externals increase 1.5mm.
• Up to 8-contact block of the contact arrangement can be made.

• Knob color

Replace the □ mark by the following knob color code

Knob color	Green	Red	Black
Code	G	R	B

The standard knob color is black.

• Key code No.

Replace the ■ with the key code No. A, B, C, D, E or F.
Standard key code is A.

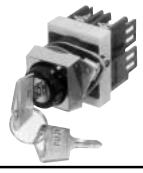
• Key removable positions

Replace the ( ) mark by the following code No.

Code	A	D	B
Removable position			
J2	●	●	●
J0	●	–	–
SJ2	●	●	●

● : Available –: Not available

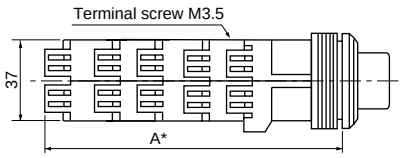
• 3-position

Operator	Operation	Contact	AH25 Type
Knob SG-193	Maintained each 45°	1NO+1NC 2NO+2NC	**AH25-P3□11** **AH25-P3□22**
	Spring/manual return each 45°	1NO+1NC 2NO+2NC	**AH25-P5□11** **AH25-P5□22**
	Spring/manual return each 45°	1NO+1NC 2NO+2NC	**AH25-P6□11** **AH25-P6□22**
	Spring return each 60°	2NO+2NC	**AH25-P1□22**
Lever operated AF89-602	Maintained each 45°	1NO+1NC 2NO+2NC	**AH25-PW3□11** **AH25-PW3□22**
	Spring/manual return each 45°	1NO+1NC 2NO+2NC	**AH25-PW5□11** **AH25-PW5□22**
	Spring/manual return each 45°	1NO+1NC 2NO+2NC	**AH25-PW6□11** **AH25-PW6□22**
	Spring return each 60°	2NO+2NC	**AH25-PW1□22**
Knob with square bezel AF88-599	Maintained each 45°	1NO+1NC 2NO+2NC	**AH25-SP3□11** **AH25-SP3□22**
Key SG-364	Maintained each 45°	1NO+1NC 2NO+2NC	**AH25-J3■11( )** **AH25-J3■22( )**
	Spring/manual return each 45°	1NO+1NC 2NO+2NC	**AH25-J5■11( )** **AH25-J5■ 22( )**
	Spring/manual return each 45°	1NO+1NC 2NO+2NC	**AH25-J6■11( )** **AH25-J6■22( )**
Key with square bezel  AF89-609	Maintained each 45°	1NO+1NC 2NC+2NC	**AH25-SJ3■11( )** **AH25-SJ3■22( )**

Notes: • □, ■, ( ) and contact arrangements: *See page 04CD/3/21*
• Operator dimensions: *See page 04CD/3/19*

• Contact block dimensions, mm

		Contact block / Operator	1NO, 1NC 2NO, 2NC 1NO+1NC	3NO, 3NC 4NO, 4NC 2NO+2NC	3NO+3NC	4NO+4NC
A*	AH25	P3, P5, P6, PW3, PW5, PW6	53.5	75.5	97.5	119.5
		SP3	55.5	77.5	99.5	121.5
		SJ3	52.5	74.5	96.5	118.5
		J3, J5, J6	51.5	73.5	95.5	117.5
		P1, PW1	–	75.5	–	–
		J1	–	73.5	–	–



Notes : * When attaching the terminal cover, the dimension of externals increase 1.5mm.
• Up to 8-contact block of the contact arrangement can be made.
For spring return switches, up to 4-contact block can be made.

• Key removable positions

Replace the ( ) mark by the following code No.

Code	A	B	C	D	E	F	G
Removable position	45° 45°	45° 45°	45° 45°	45° 45°	45° 45°	45° 45°	45° 45°
J3, SJ3	●	●	●	●	●	●	●
J5	–	–	–	●	●	●	–
J6	●	–	–	–	●	–	●

●: Available –: Not available

• Contact operation (Example)

3-position

Type	Contact arrange-ment	Operator position L C R	Operator position L C R
P3, PW3, SP3, J3, SJ3, P5, PW5, J5	1NO+1NC (1) (2)	Upper contact ③ ④	Lower contact ① ②
P6, PW6, J6	1NO+1NC (1) (2)	Upper contact ③ ④	Lower contact ① ②
P1, PW1	2NO+2NC (1) (2) (3) (4)	Upper contact ① ② ③ ④	Lower contact ① ② ③ ④

● Contact closed

Note: ①-②,③-④ : Contact block terminal No.
• Up to 8-contact block of the contact arrangement can be made.
For P1, PW1 types, up to 4-contact block can be made.

• Key code No.

Replace the ■ with the key code No. A, B, C, D, E or F.
Standard key code is A.

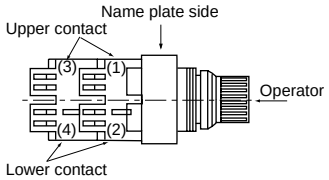
• Knob color

Replace the □ mark by the following knob color code

Knob color	Green	Red	Black
Code	G	R	B

The standard knob color is black.

• Position of contact block

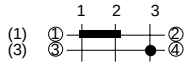
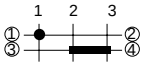
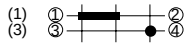
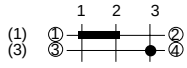
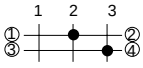
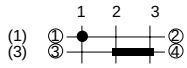
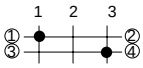
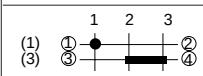
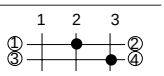
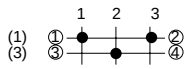
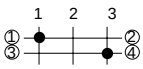
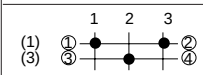
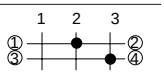
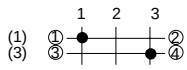
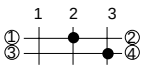
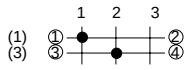
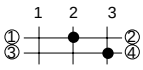
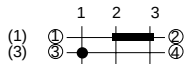
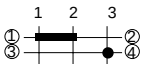
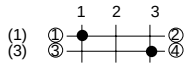
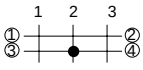


■ Selector switches (control type)

3-position

Operator	Operation	Knob color or key removable position	Contact arrangement (2NO+2NC only)	Type
Knob AF89-596	Maintained each 60˚	Color code: B: Black (Standard) Color other than above are available (G: Green R: Red)	Replace the ■ mark by type arrangement code (shown on under table).	**AH25-PCB■**
				AH25-PCR■
				AH25-PCG■

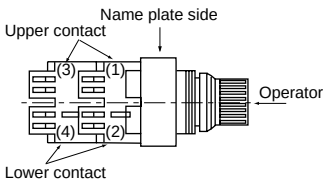
Contact operation (2NO+2NC)

Code	Operation	Contact operation: Upper contact	Contact operation: Lower contact
012	Maintained each 60˚		
032			
052			
072			
092			
112			
132			
152			
172			
192			
212			

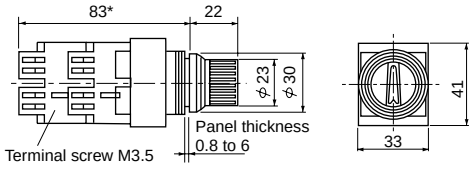
Notes : • (1) to (4) : Contact block mounting position
•①-②,③-④ : Contact block terminal No.

Code	Operation	Contact operation: Upper contact	Contact operation: Lower contact
022	Maintained each 60˚		
042			
062			
082			
102			
122			
142			
162			
182			
202			

● Contact closed



• Dimensions, mm

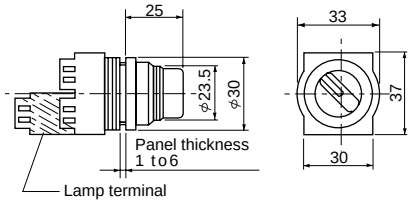


* When attaching the terminal cover, the dimmension of externals increase1.5mm.

• 2-position

Operator	Operation	Contact	Type
Knob AF89-622	Maintained each 90°	1NO+1NC	**AH25-PL2 □11■**
		2NO+2NC	**AH25-PL2 □22■**
	Spring return 90°	1NO+1NC	**AH25-PL0 □11■**
		2NO+2NC	**AH25-PL0 □22■**

• Operator dimensions, mm



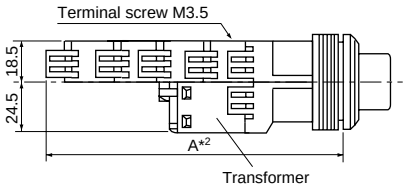
• 3-position

Operator	Operation	Contact	Type
Knob AF89-415	Maintained each 45°	1NO+1NC	**AH25-PL3 □11■**
		2NO+2NC	**AH25-PL3 □22■**
	Manual/ spring return each 45°	1NO+1NC	**AH25-PL6 □11■**
		2NO+2NC	**AH25-PL6 □22■**
	Manual/ spring return each 45°	1NO+1NC	**AH25-PL7 □11■**
		2NO+2NC	**AH25-PL7 □22■**

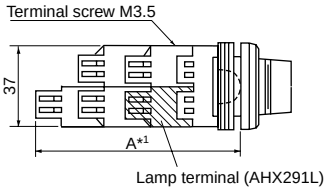
Notes: • □, ■ and contact arrangements: *See page 04CD/3/24*
• 3-position, spring return type is not available.

• Contact block dimensions, mm

Switch: with transformer



Switch: without transformer



	Operator \ Contact block		1NO, 1NC	1NO+1NC 2NO, 2NC	3NO, 3NC	2NO+2NC 4NO, 4NC	3NO+3NC
A *1 *2	AH25 -PL	Without transformer	48.5	70.5	70.5	92.5	114.5
		With transformer	62	70.5	92.5	114.5	–

Notes: • *1 When attaching the terminal cover, the dimension of external increase 1.5mm.
*2 When attaching the terminal cover, the dimension of external increase 1.5mm. (Except for 1NO and 1NC)

• Replace the □ mark by the following lamp voltage code

Transformer	Voltage	Code LED	Incandescent
Without	5.5V AC/DC	–	Blank
	6V DC	AD3	–
	6V AC	A3	–
	12V AC/DC	B3	–
	15V AC/DC	C3	C
	20V AC/DC	–	D
	24V AC/DC	E3	E
With	100-110V AC	H3	H
	115-127V AC	L3	L
	200-220V AC	M3	M
	230-254V AC	Q3	Q
	350-380V AC	S3	S
	400-440V AC	T3	T
	480V AC	V3	V
	500-550V AC	W3	W

• Replace the □ mark by the following knob color code

Color	Green	Red	White	Sky-blue	Yellow	Orange
Code	G	R	W	S	Y	O

For illuminated selector switch with LED lamp, sky-blue is not available.

• Up to 4-contact of contact arrangement can be made.
Available numbers of contacts are as follow.

No. of position	Operation	Without transformer	With transformer
2-position	Maintained	6-contact	4-contact
	Spring return	4-contact	4-contact
3-position	Maintained	6-contact	4-contact
	Spring/manual return	6-contact	4-contact

● Contact arrangement and operator position

2-position

Transformer	Contact arrangement	Contact block		Operator position	
		Mounting position	Type	Left	Right
With/without	1NO	(1)	NO	–	●
With/without	1NC	(1)	NC	●	–
Without	1NO+1NC	(1)	NO	–	●
		(2)	NC	●	–
With	1NO+1NC	(1)	NC	●	–
		(2)	NO	–	●
With/without	2NO	(1)	NO	–	●
		(2)	NO	–	●
Without	2NO+2NC	(1)	NO	–	●
	*1	(2)	NC	●	–
		(3)	NO	–	●
		(4)	NC	●	–
With	2NO+2NC	(1)	NC	●	–
	*1	(2)	NC	●	–
		(3)	NO	–	●
		(4)	NO	–	●

Notes: *1 : AH25-PL2
● : Contact closed, – : Contact open

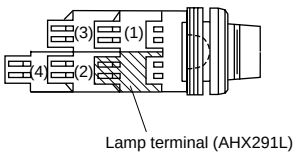
3-position

Transformer	Contact arrangement	Contact block		Operator position		
		Mounting position	Type	Left	Center	Right
Without	1NO+1NC	(1)	NO	●	–	–
	*1	(2)	NC	–	–	●
	1NO+1NC	(1)	NO	–	–	●
	*2	(2)	NC	●	–	–
	2NO+2NC	(1)	NO	●	–	–
	*3	(2)	NC	–	–	●
		(3)	NO	●	–	–
		(4)	NC	–	–	●
With	1NO+1NC	(1)	NC	–	–	●
	*1	(2)	NO	●	–	–
	1NO+1NC	(1)	NC	●	–	–
	*2	(2)	NO	–	–	●
	2NO+2NC	(1)	NC	–	–	●
	*3	(2)	NC	–	–	●
		(3)	NO	●	–	–
		(4)	NO	●	–	–

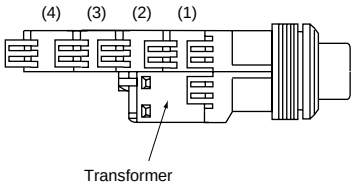
Notes: *1 : AH25-PL3, PL6 *3 : AH25-PL3
*2 : AH25-PL7
● : Contact closed, – : Contact open

● Position of contact block

Without transformer



With transformer



● Incandescent lamp

Lens	Lamp voltage		Type
Dome SF-1095	Without transformer	15V DC	**AH25-ZM□**
		24V DC	**AH25-ZM□E**
	With transformer	110V AC	**AH25-ZM□H**
		220V AC	**AH25-ZM□M**
Faceted SF-1094	Without transformer	15V DC	**AH25-ZK□**
		24V DC	**AH25-ZK□E**
	With transformer	110V AC	**AH25-ZK□H**
		220V AC	**AH25-ZK□M**
Extended square SF-1093	Without transformer	15V DC	**AH25-ZS□**
		24V DC	**AH25-ZS□E**
	With transformer	110V AC	**AH25-ZS□H**
		220V AC	**AH25-ZS□M**
Flush square, with legend plate SF-1092	Without transformer	15V DC	**AH25-ZN□**
		24V DC	**AH25-ZN□E**
	With transformer	110V AC	**AH25-ZN□H**
		220V AC	**AH25-ZN□M**
Dome/short-body with transformer SH-971		110V AC	**AH25-ZM□H8**
		220V AC	**AH25-ZM□M8**

● LED lamp

Lens	Lamp voltage		Type
Dome SF-1095	Without transformer	12V DC	**AH25-ZM□B3**
		24V DC	**AH25-ZM□E3**
	With transformer	110V AC	**AH25-ZM□H3**
		220V AC	**AH25-ZM□M3**
Faceted SF-1094	Without transformer	12V DC	**AH25-ZK□B3**
		24V DC	**AH25-ZK□E3**
	With transformer	110V AC	**AH25-ZK□H3**
		220V AC	**AH25-ZK□M3**
Dome/ short-body with transformer SH-971		110V AC	**AH25-ZM□H9**
		220V AC	**AH25-ZM□M9**

● Lens color

Replace the □ mark by the following lens color code

Button color	Green	Red	Yellow	White	Sky-blue	Orange
Code	G	R	Y	W	S	O

Pilot light with LED lamp, sky-blue is not available.

● Voltage

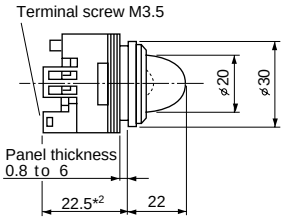
Available lamp voltage are as follow.

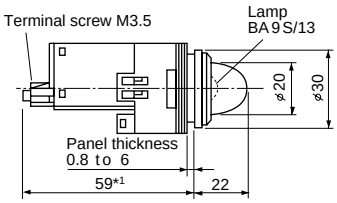
Description	Voltage	Code Standard type LED	Incandescent
Without transformer	5.5V AC/DC	–	Blank
	6V AC	A3	–
	6V DC	AD3	–
	12V AC/DC	B3	–
	15V AC/DC	C3	C
	20V AC/DC	–	D
	24V AC/DC	E3	E
With transformer	100-110V AC	H3	H
	115-127V AC	L3	L
	200-220V AC	M3	M
	230-254V AC	Q3	Q
	350-380V AC	S3	S
	400-440V AC	T3	T
	480V AC	V3	V
	500-550V AC	W3	W
With resistor unit	110V DC	H7	–

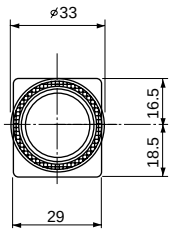
■ Dimensions, mm

Type	Without transformer	With transformer

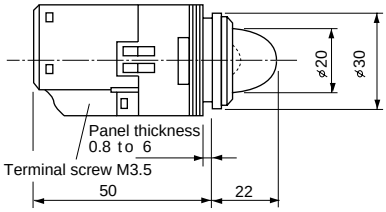
AH25-ZM

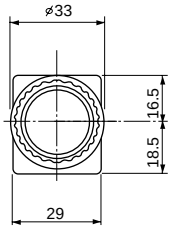




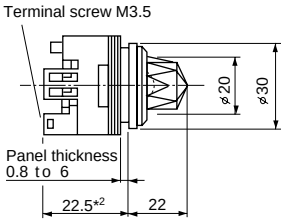


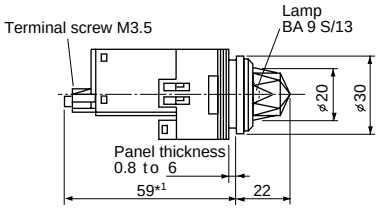
AH25-ZM□8

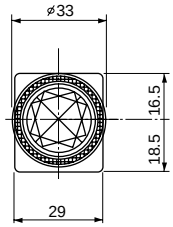




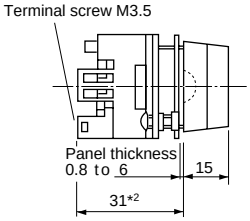
AH25-ZK

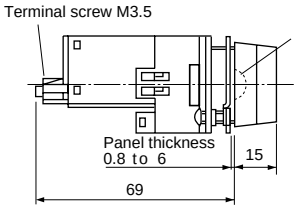


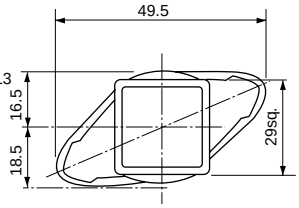




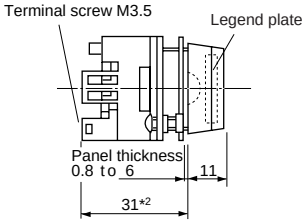
AH25-ZS

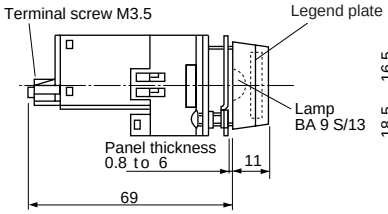


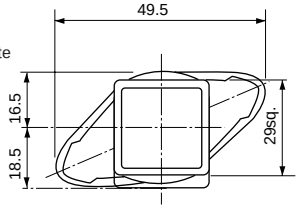




AH25-ZN





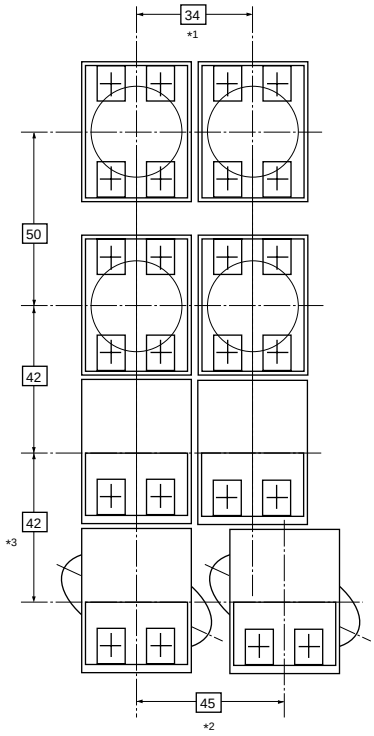


Note: *1 Same as the resistor unit type.
*2 When attaching the terminal cover, the dimension of externals increase 1.0mm.

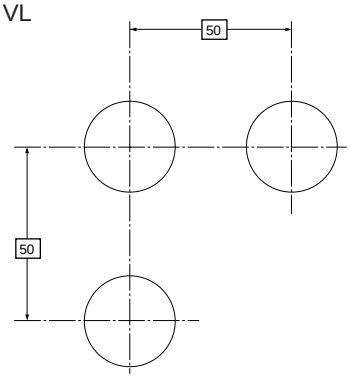
Notes on use

■ Mounting space, mm

• Switch
F, F5, E, E5, G, G5, G1, G6, M, M5, U, S1~S6, SF, SF5, SE, SE5, L, L5, L3, L2, L4, SL, SL5, SL1, SL6, P, PW, SP, J, SJ, PC, PL



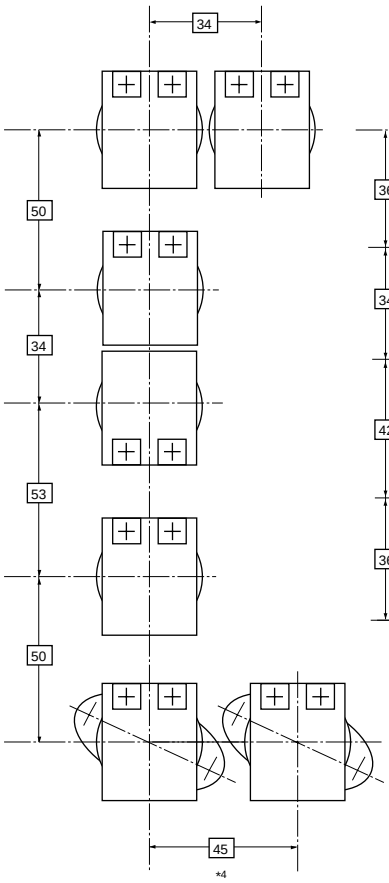
• Push-lock type
V, VL



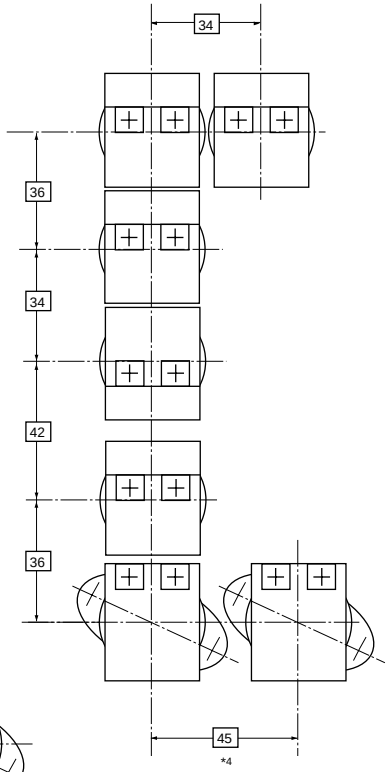
*1 G, G5 type: 42
*2 This dimension applies SF, SF5, SE, SE5, SL, SL5, SL1, SL6, SP, SJ types.
*3 L, SL type: 44 (not meet with the live section.)

• Pilot light
ZM, ZK,
ZS, ZN

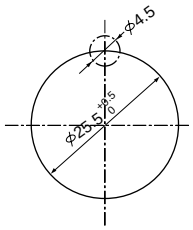
Without transformer



With transformer



■ Panel cutout hole



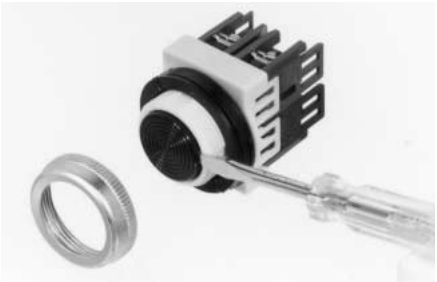
Note: If key-washer or legend plate are not used, 4.5mm dia. location holes sown and the same pilot light type ZS, ZN need not cutout.

*4 ZS, ZN type: In case of horizontal mounting

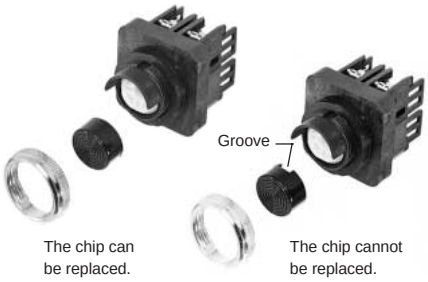
Notes on use

■ Replace buttons

(1) To replace AH25 type F, E and G buttons with a different color, insert a flat-blade screwdriver into the gloove on the button. To install them, align the button projection and the recess on the inner button and press them together firmly.

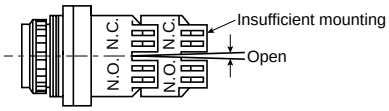


(2) To replace the color tip of AH25 type G (with half guard), do not make the trip gloove face the guard.



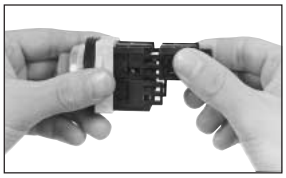
(3) For AH25-M, V, VL, remove the button and mount the switch to the panel.
a) Tighten the button completely. The button stroke is adjusted only when it is completely tightened. If tightening is insufficient, stroke increases and destroys the contact.

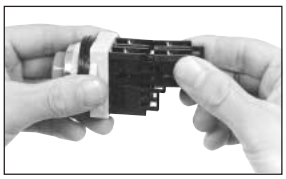
b) Determine the panel thickness and number of adjustment packings with the table.
Do not adjust the button stroke with a liner under the button.

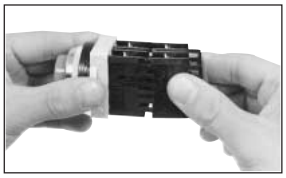


■ Replace the contact block

(1) AH25 contacts can be increased with snap-fitting contact block. To add a contact block, push the additional contact block straight in until it clicks. When adding more than two contact blocks, join the slots on both sides and make sure that the contact blocks facing each other are not open. After addition or replacement, operate the switches a few times to check that they work correctly.
(2) To remove a contact block, use a screwdriver to slightly open the mounting leg, and remove the contact block from the side of the opening leg. When two contact blocks are mounted release one a little, and then the other, and remove both at the same time. The same thing goes for transformers joined to contact blocks. Be careful not to force the mounting leg. Using a special tool (AHX321), the units can be removed more easily.







■ Exchange of transformer

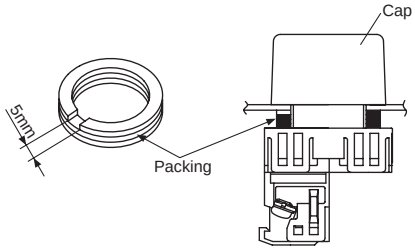
(1) A transformer can be easily snap-fitted to an AH25 pilot light. When a transformer is added to a pilot light without a transformer, attach a cover to the terminal of the pilot light to avoid wiring errors.
(2) The capacity of the transformer is set for the lamp. No other load can be applied.

■ Water-proof and dust-proof cap

Applicable type:

Water-proof cap	AHX106, 155
Dust-proof cap	AHX025, 026, 027
	AHX046, 047, 048
	AHX105, 112, 114

When attached to the panel in combination with a water-proof or dust-proof cap, the water-proof cap or dust-proof cap may sink downward and prevent the depressed button from returning to its original position.
As shown in the following figure, cut an approximately 5-mm air outlet in the portion of the ring packing touching the panel surface. Also, reduce the number of packing rings by one below the standard number. The clamp ring tightening torque is 1.5 to 2.5 N•m.



Degree of protection
The water-proof cap or dust-proof cap seals the panel surface to provide IP65 protection.

■ Adjustment packing

Four 1.6mm packings (molded as one) are included. Based on the thickness of the mounting panel, adjust the number as shown in the table. To mount to a panels thinner than 1.6mm, one 1.6mm packing is needed (Purchased separately).

Mounting panel thickness and number of packings (reference)

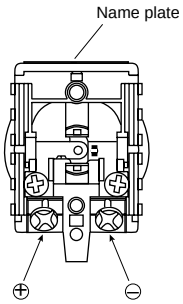
Mounting panel thickness (mm)	Number of packings
0.8 to 2.0	5
2.0 to 3.2	4
3.2 to 4.5	3
4.5 to 6.0	2

Notes:
1. When using a key washer or legend plate, decrement one from the numbers in the above table.
2. When more than four packings are needed, these are bought separately.

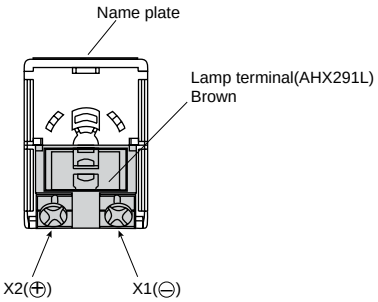
■ Terminal layout

Notes: * The positive and negative terminals are used for 6V DC applications.

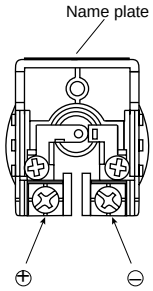
Illuminated pushbutton switch
(Without transformer)*



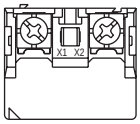
Illuminated selector switch (PL)
Illuminated push-lock switch (VL)
(Without transformer)*



Pilot light
(Without transformer)*

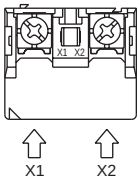


Transformer(AHX511-□)



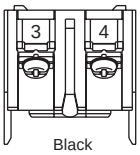
Terminal No.X1,X2

Resister unit (AHX519)
Voltage stabilizing unit (AHX518)
Flicker unit (AHX516)

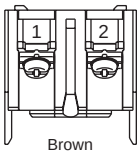


Terminal No.X1 (-),X2 (+)

1NO(AHX290,2901 to 2902)

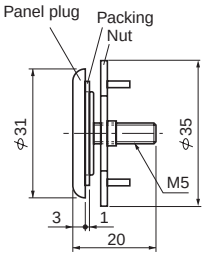


1NC(AHX291,2911 to 2914)

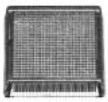


Other items are the same as for the AR22 and DR22 series,
see page 04/53 to 04/57.

■ Accessories

Description	Type
Wrench T-1995	**AHX001**
Panel plug T-1993	**AHX003** Color: Silver (metal) Dimensions, mm 
Dust-tight cap (indoor use) SC993 SC992	F type Red **AHX046** Green **AHX047** Black **AHX048** Dimensions, mm φ34×17.3 E type Red **AHX025** Green **AHX026** Black **AHX027** Dimensions, mm φ34×17.3 M type Red **AHX105-R** Green **AHX105-G** Black **AHX105-B** Yellow **AHX105-Y** White **AHX105-W** Dimensions, mm φ45×25
Dust-tight cap (outdoor use) SC-993	F type Red **AHX112-R** Green **AHX112-G** Black **AHX112-B** Dimensions, mm φ34×17.3 E type Red **AHX114-R** Green **AHX114-G** Black **AHX114-B** Dimensions, mm φ34×17.3
Water-tight cap Y-1559	E type **AHX106** Dimensions, mm φ31×18 L type **AHX155** Dimensions, mm φ31×25.5 Note: The only color available is transparent.
Lamp changer AHX029 Y-1990 AHX790 AF95-22	**AHX029** For Incandescen lamp **AHX790** For LED lamp

Description	Type
Button Y-1541 Y-1542	Standard F, F5, S1-S6 type **AHX061-□** E, E5, G, G5, G1, G6 type **AHX062-□** Engraving F, F5, S1-S6 type **AHX063-□** E, E5, G, G5, G1, G6 type **AHX064-□** Replace the □ mark by the following color code. Button color: Green, Red, Black Code: G, R, B Button color: Dark green, Yellow, White Code: D, Y, W Button color: Sky-blue, Orange Code: S, O
Mushroom head pushbutton SC-1094	M, M5 type **AHX065-□** Replace the □ mark by the following color code. Button color: Green, Red, Black Code: G, R, B Button color: Dark green, Yellow, White Code: D, Y, W Button color: Sky-blue, Orange Code: S, O
Symbol mark button SC-1012	Type / Used with **AHX066-□** F, F5 type **AHX067-□** E, E5 type Note: Replace the □ mark by the following color code. Symbol mark: ○ / Symbol mark color: Red / Button: White, Black / Code: E, F Symbol mark:	/ Symbol mark color: Green / Button: White, Black / Code: H, J Symbol mark: Ⓣ / Symbol mark color: Green / Button: White, Black / Code: T, U
Push-lock, turn-reset pushbutton AF87-522	V type **AHX769-□** VL type **AHX755-□** Replace the □ mark by the following color code. Button color: Red, Black*, Yellow Code: R, B, Y * Except VL type.

Description	Type		
Illuminated pushbutton AF88-613	L, L5, L2, L6, L3, L7, L4 type	Green	**AHX068-G, LG***
		Red	**AHX068-R, LR***
		Clear	**AHX068-C**
		Orange	**AHX068-O**
		Yellow	**AHX068-Y**
		Sky-blue	**AHX068-S**
		White	**AHX068-W, LW***
	*For LED lamp only		
Pilot light round lens SC-1001	ZM type	Green	**AHX123-G, LG***
		Red	**AHX123-R, LR***
		Clear	**AHX123-C**
		Orange	**AHX123-O**
		Yellow	**AHX123-Y**
		Sky-blue	**AHX123-S**
		White	**AHX123-W, LW***
	*For LED lamp only		
Pilot light faceted lens SC-1002	ZK type	Green	**AHX124-G, LG***
		Red	**AHX124-R, LR***
		Clear	**AHX124-C**
		Orange	**AHX124-O**
		Yellow	**AHX124-Y**
		Sky-blue	**AHX124-S**
		White	**AHX124-W, LW***
	*For LED lamp only		
Pilot light square lens  SC-1009	ZS type	Green	**AHX125-G**
		Red	**AHX125-R**
		Clear	**AHX125-C**
		Orange	**AHX125-O**
		Yellow	**AHX125-Y**
		Sky-blue	**AHX125-S**
		White	**AHX125-W**
Pilot light and illuminated pushbutton square lens SC-1011	ZN, SL1, SL6 type **AHX126-□** Replace the □ mark by the following color code.		
Legend plate SF-1114	ZN, SL1, SL6 type **AHX241-W** Dimensions, mm 21.7sq.×2		

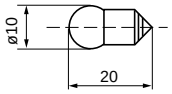
Lens color	Green	Red	Clear	Sky-blue
Code	G	R	C	S

Lens color	Orange	Yellow	White
Code	O	Y	W

Description	Type
Incandescent lamp KKD06-307	

Type	Lamp voltage	Rated voltage, consumption
AHX135	5.5V AC/DC	6.3V AC/DC, 1W
AHX279	15V AC/DC	18V AC/DC, 1W
AHX144	20V AC/DC	24V AC/DC, 1W
AHX129	24V AC/DC	30V AC/DC, 1W

Dimensions, mm:



Lamp base: BA9s/13

LED lamp

KKD06-208

Type	Lamp voltage	Used with
APX508-6□	6V AC	Pilot Lights*
APX508-D6□	6V DC	
APX508-12□	12V AC/DC	
APX508-15□	15V AC/DC	
APX508-24□	24V AC/DC	
APX510-6□	6V AC	Illuminated pushbuttons, Illuminated sellectors
APX510-D6□	6V DC	
APX510-12□	12V AC/DC	
APX510-15□	15V AC/DC	
APX510-24□	24V AC/DC	

* When the pilot lights code is "W" (white), use an LED lamp (APX510-■O)

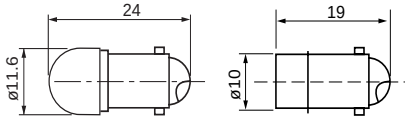
Replace the □ mark by the luminous color code

Luminous color	Yellow	Red	Green
Code	Y	R	G
Lens color	Y	R	G

Luminous color	Amber	Orange	Blue
Code	A	O	S
Lens color	O	W	S

Dimensions, mm:

APX508 APX510

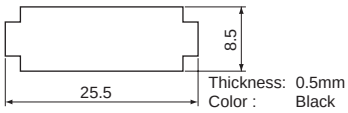
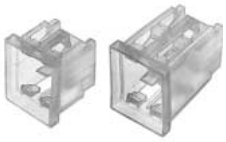


Lamp base: BA9s/13

Description	Type	
Contact block SG-370	1NO	**AHX290**
	1NC	**AHX291**

Note: Some models use dedicated contact blocks, so this may not be used. Contact FUJI.

Description	Type		
Lamp terminal unit SG-370	Type	Used with	
	AHX291L	VL, PL	
	Lamp terminal: for without transformer		
Transformer SI-8	100 to 110V AC	**AHX511-H**	
	115 to 127V AC	**AHX511-L**	
	200 to 220V AC	**AHX511-M**	
	230 to 254V AC	**AHX511-Q**	
	350 to 380V AC	**AHX511-S**	
	400 to 440V AC	**AHX511-T**	
	480V AC	**AHX511-V**	
	500 to 550V AC	**AHX511-W**	
Short-body transformer for ZM□8 and ZM□9 type SH-183	100 to 110V AC	**AHX513-H**	
	115 to 127V AC	**AHX513-L**	
	200 to 220V AC	**AHX513-M**	
	230 to 254V AC	**AHX513-Q**	
	350 to 380V AC	**AHX513-S**	
	400 to 440V AC	**AHX513-T**	
	480V AC	**AHX513-V**	
	500 to 550V AC	**AHX513-W**	
Base unit for transformer separate mounting AF89-824	**AHX326** Combining the base unit with a standard transformer makes a separate mounting type transformer. It can be mounted to the panel with screw or rails. * Not aproved Secondary side terminal cover need to order.		
Terminal cover AHX305 SG-842 AHX426 AF92-339 AHX376 SG-5	Type	Used with	Dimensions, mm
	AHX305	Contact block, lamp terminal unit	23.5×27.5×16
	AHX426	Pilot lights (without transformer)	27.5×31×8
	AHX376	Transformer	13×29×6.5
		Short-body transformer	
		Resistor unit	
	The terminal cover is provided as standard with the applicable types listed above.		

Description	Type		
Terminal cover SG-842	Type	Used with	
	AHX306	Illuminated type	
	For pilot lights and AH326 (base unit) Dimensions, mm 		
Key washer SC-1016	**AHX083**		
Packing SF-1113	Rubber	**AHX151**	
	Resin (Standard)	**AHX283**	
	Use rubber packing for mounting on plastic panels or panels painted with natural dry paint.		
Nut (Resin) SC-1148	For F, E, L, L5 type	Red	**AHX094**
		Black	**AHX095**
		White	**AHX096**
		Dark green	**AHX097**
		* Chrome-plate	**AHX098**
	For ZM, ZK type	Chrome-plate	**AHX098-1**
	For P, J, M, S1-S6, G, G5	Red	**AHX099**
		Black	**AHX100**
		White	**AHX101**
		Dark green	**AHX102**
		* Chrome-plate	**AHX103**
	Note: Chrome-plated products marked with asterisk (*) are made of metal.		
Nut (aluminum) SC-1000	For F, E	**AHX050**	
	For M, P	**AHX051**	
	Note:The locking nut is made of aluminum		
Full guard ring SC-998	For G1, G6 type	**AHX055**	
	For L2, L6 type	**AHX058**	
	For L3, L7 type	**AHX059**	
	For L4 type	**AHX060**	
Dust-tight cap for knob operated selector s witch SH-154	**AHX323** In combination with this cap, the knob operated selector switch can be used as a dust-proof type.		
Dust-tight case  SG-1050 SG-1051	Used with		**AHX315**
	AH25		(1NO+1NC)
	F, E, G1, M, U S1-S6, SF, SE, P, PW, J, PC SJ, SP		**AHX316** (2NO+2NC)

Description	Type
Locking attachment for E type AF89-613	**AHX053** Locks the button as it is pressed, easily attached and removed with the nut.
Special tool SG-873	**AHX321** This is a special tool for removing contact blocks and transformers. It can also remove round color lens.
Legend plate (Standard) Y-1545	**AHX351( )** Pushbutton switch: ON, OFF, START, STOP Selector switch: OFF-ON Note: Put in the ( ) ordering word as shown in the upper table Example: In case of STOP AHX351(STOP)
Legend plate (Unprinted) AF-87-49	Unprinted aluminume **AHX351-A** Unprinted aluminume, short size **AHX351-AS** Black **AHX351-B** Black, short size **AHX351-BS**

■ **Mass, gram**
AH25 series

Type		1NO (1NC)	2NO (2NC) (1NO+1NC)	2NC + 2NO	3NC + 3NO	4NC + 4NO
AH25-	**F**	42	56	80	104	128
	E	44	58	82	106	130
	M	48	62	86	110	134
	G	51	65	89	113	137
	G1	53	67	91	115	139
	SF	80	94	118	142	166
	SE	82	96	120	144	168
	U	80	94	118	142	166
	S1–S6	–	–	133	–	–
	V	55	69	93	–	–
AH25-	**F5**	59	73	97	–	–
	E5	61	75	99	–	–
	M5	65	79	103	–	–
	G5	68	82	106	–	–
	G6	70	84	108	–	–
	SF5	97	111	135	–	–
	SE5	99	113	137	–	–
AH25-	**L**	61	75	99	123	147
	L • T	131	143	167	–	–
	L2	74	88	112	136	160
	L2 • T	144	156	180	–	–
	L3	78	92	116	140	164
	L3 • T	148	160	184	–	–
	L4	57	71	95	119	143
	L4 • T	127	139	163	–	–
	SL	99	113	137	161	185
	SL • T	169	181	205	–	–
	SL1	80	94	118	142	166
	SL1 • T	150	162	186	–	–
	VL	72	84	108	–	–
	VL • T	129	141	–	–	–
AH25-	**L5**	81	95	119	–	–
	L5 • T	151	163	187	–	–
	L6	94	108	132	–	–
	L6 • T	164	176	200	–	–
	L7	98	112	136	–	–
	L7 • T	168	180	204	–	–
	SL5	116	130	154	–	–
	SL5 • T	186	198	222	–	–
	SL6	97	111	135	–	–
	SL6 • T	167	179	203	–	–

Type		1NO(1NC)/1NO(1NC)	2NO(2NC)/2NO(2NC) 1NO+1NC/1NO+1NC
AH25-	**F5/F5**	151	175
	F5/E5	153	177
	F5/M5	157	181

Type		1NO (1NC)	2NO (2NC) (1NO+1NC)	2NC + 2NO	3NC + 3NO	4NC + 4NO
AH25-	**P2, P0**	62	76	100	124	148
	P3, P5, P6	–	76	100	124	148
	P1	–	128	152	–	–
	PW2, PW0	67	81	105	129	153
	PW3, PW5, PW6	–	81	105	129	153
	PW1	–	133	157	–	–
	SP2	89	103	127	151	175
	SP3	–	103	127	151	175
	PC	–	–	108	–	–
	J2, J0	88	102	126	150	174
	J3, J5, J6	–	102	126	150	174
	SJ2	115	129	153	177	201
	SJ3	–	129	153	177	201
AH25-	**PL2, PL0**	71	83	107	131	–
	PL2, PL0 • T	128	140	164	–	–
	PL3, PL6, PL7	–	83	107	131	–
	PL3, PL6, PL7 • T	–	140	164	–	–

AH25-	**ZM**	29
	ZM • T	99
	ZM□8, □9	101
	ZK	29
	ZK • T	99
	ZS	62
	ZS • T	132
	ZN	62
	ZN • T	132

Note • T: With transformer

■ Description

- Enclosed type
  Enclosed type steel boxes finished respectively with one to five holes.Rounded, smooth design.
  Selectable from the 22mm, 25mm, and 30mm dia. series command switches according to the application.
- Dust protected type, protected against water jets
  Made of lightweight, strong aluminum die-casting. Rounded, smooth design.
  Series of models finished respectively with one to four holes. (Note: Only 22 dia. series models incorporate four holes.)

AF92-388 AF92-277

■ Type number nomenclature

AHX 9 0 1 A
① ② ③ ④

① **Product category**
AHX: Type

② **Size of mounting hole**
2: 22mm dia. series
1: 25mm dia. series
0: 30mm dia. series
9: without hole

③**Number of mounting hole**
•Enclosed type
1: 1 hole*1
2: 2 holes
3: 3 holes
4: 4 holes
5: 5 holes

•Dust protected type, protected against water jets
1: 1 hole*2
2: 2 holes
3: 3 holes
4: 4 hole*3
9: 1 hole*1

Notes: *1 Dedicated box with one hole
*2 Same as the box for two holes in external dimension
*3 Only 22mm dia. series can be manufactured

④ **Degree of protection**
A: Enclosed type
W: Dust protected type, protected against water jets

Dgree of Protection		Type
Enclosed-type		**AHX9□1A**
		AHX9□2A
		AHX9□3A
		AHX9□4A
		AHX9□5A
Dust protected type, protected against water jets	Dedicated box with one hole.	**AHX929W**
		AHX919W
		AHX909W
		AHX9□1W
		AHX9□2W
		AHX9□3W
		AHX924W

Replace the □ mark the Size of mounting hole code

■Specifications

Description	Enclosed type	Dust protected type, protected against water jets
Degree of Protection	IP40(IEC 60529)	IP65(IEC 60529)
Material	Steel	Aluminum die cast
Ambient temperature (No condensation or no icing)	-25 to +50°C	
Humidity	45 to 85% RH(with in -5 to +40°C)	
Applicable type *1	22, 25, 30mm dia.Command switch series AK22, RC310-F Cam type selector switch 30mm dia. short-body type meter	See the description in the bellow: Mountable switches and degree of protection
Depth	73mm	84mm
Laed hole	Knockout hole (22mm dia. top side , 27mm dia. bottom side)	
Options	Mounting bracket: A mounting bracket is available, with which the command box can be mounted vertical or at an angle of 15 (see page 04CD/4/4)	
	Command boxes incorporating switches are available	

Note: *1 Check the effective depth of the box when selecting mountable switches.

■ Mountable switches and degree of protection (Dust protected type, protected against water jets)

The degree of protection of the command box is IP65, which, however, changes according to the device to which the command box is mounted. Check the depth of the command box when selecting the device. Consult your Fuji Electric FA representative when using the command box outdoors (e.g., plating factory yards, seashores, and places exposed to special cutting oil).

Conforms to IEC standard IP65 (Dust protected type, protected against water jets)

- 25mm dia. 30mm dia. series pushbuttons.*
  Note: *Except for conform to IEC standard IP40 (Enclosed type)
  Pushbutton switches, illuminated pushbutton switches, selector switches, pilot lights, and joy stick selector switches.
- 22mm dia. series pushbuttons.
  Pushbutton switches, illuminated pushbutton switches, selector switches, pilot lights, and joy stick selector switches.
- Cam switch
  AK22 series (22mm dia.), RC310F series (30mm dia.).

Conforms to IEC standard IP40 (Enclosed type)

- 25mm dia. series pushbuttons.
  Sqare head pushbutton switch, illuminated sqare head pushbutton switch, sqare head selector switches, sqare head pilot lights, sqare head pilot lights with legend plate.
- 30mm dia. series pushbuttons.
  Illuminated pushbutton switches(push-pull type), pilot lights with dome with dimmer control.

Note on use

■ Precautions for panel (wall) mounting (Dust protected type, protected against water jets)

- Do not insert M4 screws into the waterproof bushings that are press-fit into the four mounting holes of the casing and hit the screws with a hammer, or otherwise the screws will break through the waterproof bushings (see fig. 1).

- Insert the screws into the panel mounting holes and secure the screws with nuts (see fig. 2). The waterproof performance of the casing remains unchanged when the screws are inserted into the bushings.

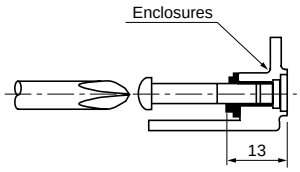


Fig.1

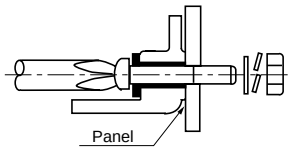
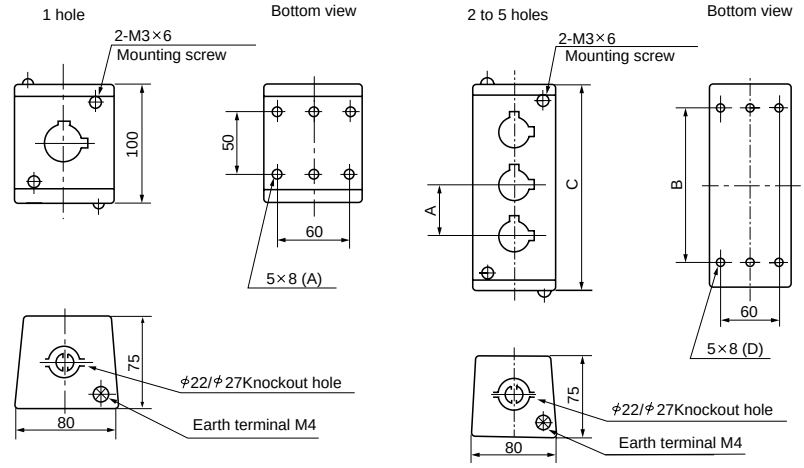


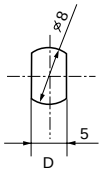
Fig.2

■ Dimensions, mm:

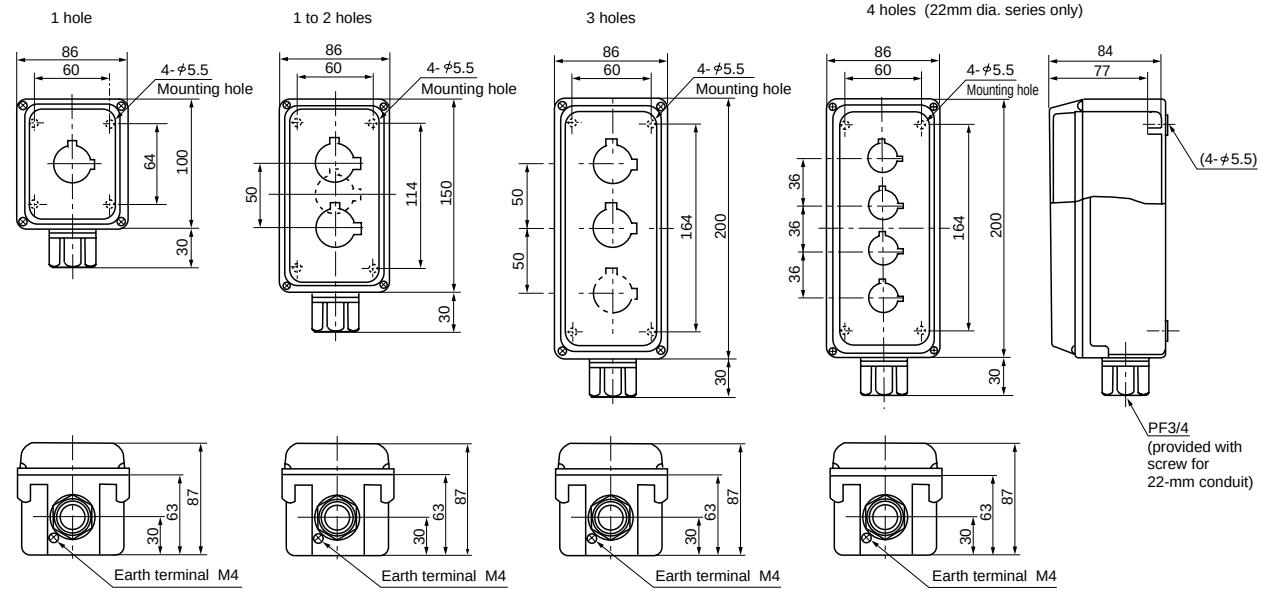
•Enclosed type



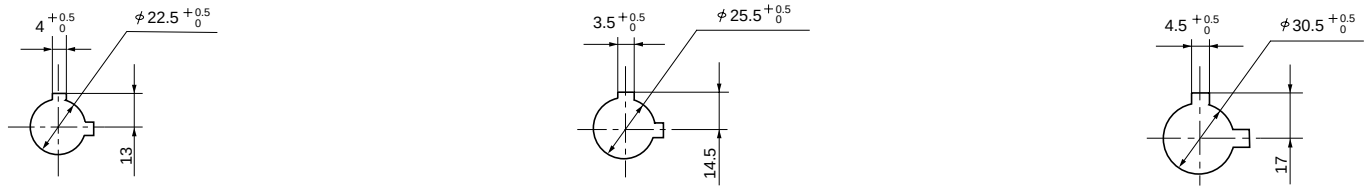
Number of holes	Dimension : mm		
	A	B	C
2	50	100	150
3	50	150	200
4	50	200	250
5	50	250	300



•Dust protected type, protected against water jets



•Panel drilling (Enclosed type, Dust protected type, protected against water jets)



22mm dia. series

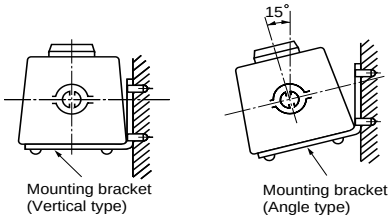
25mm dia. series

30mm dia. series

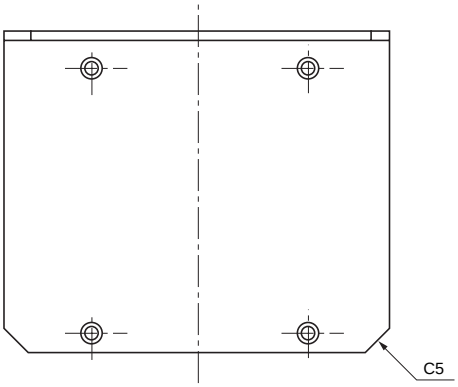
■ Accessories (for Enclosed type)

• Mounting bracket

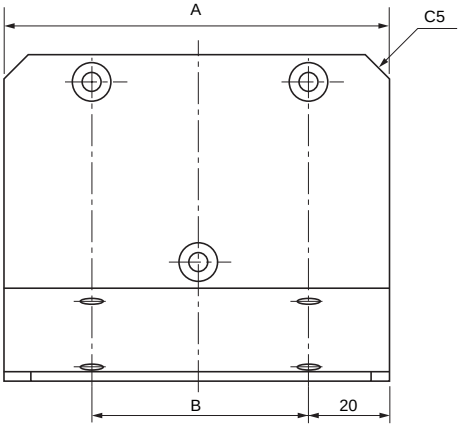
Number of holes	Mounting method	Type
1	Vertical type	**AJ91S**
	Angle type	**AJ91K**
2	Vertical type	**AJ92S**
	Angle type	**AJ92K**
3	Vertical type	**AJ93S**
	Angle type	**AJ93K**
4	Vertical type	**AJ94S**
	Angle type	**AJ94K**
5	Vertical type	**AJ95S**
	Angle type	**AJ95K**

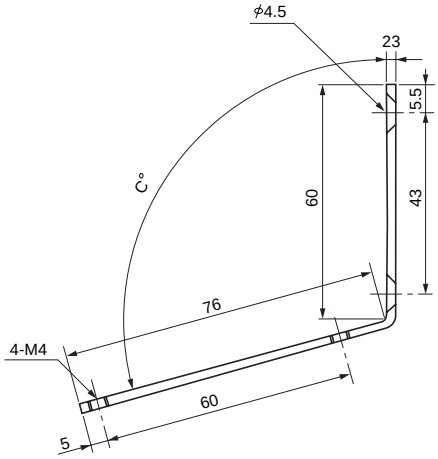


Dimensions, mm:



Type	Dimension:mm		
	A	B	C°
AJ91S	90	50	90
AJ91K	90	50	105
AJ92S	140	100	90
AJ92K	140	100	105
AJ93S	190	150	90
AJ93K	190	150	105
AJ94S	240	200	90
AJ94K	240	200	105
AJ95S	290	250	90
AJ95K	290	250	105





■ **Mass, gram**

Type	Mass	Type	Mass	Type	Mass
AHX901A	300	AHX923A	520	AHX924W	610
AHX902A	410	AHX924A	660	AHX992W	490
AHX903A	500	AHX925A	780	AHX993W	620
AHX904A	650	AHX901W	480	AHX909W	390
AHX905A	770	AHX902W	480	AHX919W	390
AHX911A	300	AHX903W	600	AHX929W	390
AHX912A	410	AHX911W	490	AHX999W	400
AHX913A	510	AHX912W	490	AHX991A	310
AHX914A	660	AHX913W	590	AHX992A	420
AHX915A	770	AHX921W	490	AHX993A	520
AHX921A	300	AHX922W	490	AHX994A	670
AHX922A	410	AHX923W	610	AHX995A	790

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⚠ Caution "Safety precautions"

- Operate (keep) in the environment specified in the operating instructions and manual. High temperature, high humidity, condensation, dust, corrosive gases, oil, organic solvents, excessive vibration or shock might cause electric shock, fire, erratic operation or failure.
- Follow the regulations of industrial wastes when the product is to be discarded.
- The products covered in this catalogs have not been designed or manufactured for use in equipment or systems which, in the event of failure, can lead to loss of human life.
- If you intend to use the products covered in this catalog for special applications, such as for nuclear energy control, aerospace, medical, or transportation, please consult our Fuji Electric FA agent.
- Be sure to provide protective measures when using the product covered in these catalogs in equipment which, in the event of failure, may lead to loss of human life or other grave results.
- Follow the directions of the operating instructions when mounting the product.

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Individual catalog No.	LOW VOLTAGE PRODUCTS Up to 600 Volts
01	Magnetic Contactors and Starters Thermal Overload Relays, Solid-state Contactors
02	Manual Motor Starters and Contactors Combination Starters
03	Industrial Relays, Industrial Control Relays Annunciator Relay Unit, Time Delay Relays
04	Pushbuttons, Selector Switches, Pilot Lights Rotary Switches, Cam Type Selector Switches Panel Switches, Terminal Blocks, Testing Terminals
05	Limit Switches, Proximity Switches Photoelectric Switches
06	Molded Case Circuit Breakers Air Circuit Breakers
07	Earth Leakage Circuit Breakers Earth Leakage Protective Relays
08	Circuit Protectors Low Voltage Current-Limiting Fuses
09	Measuring Instruments, Arresters, Transducers Power Factor Controllers Power Monitoring Equipment (F-MPC)
10	AC Power Regulators Noise Suppression Filters Control Power Transformers
	HIGH VOLTAGE PRODUCTS Up to 36kV
11	Disconnecting Switches, Power Fuses Air Load Break Switches Instrument Transformers — VT, CT
12	Vacuum Circuit Breakers, Vacuum Magnetic Contactors Protective Relays

INDIVIDUAL CATALOG 04

from D&C CATALOG 20th Edition

Fuji Electric FA Components & Systems Co., Ltd.

5-7, Nihonbashi Odemma-cho, Chuo-ku, Tokyo, 103-0011, Japan

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