Simultaneous Measurement of 5 Components in Flue Gas

**NOx, SO2, CO, CO2 and O2 ANALYZER**

(for N2O, CH4 also optionally)  
**Type ZSU-5**

*Simultaneously and continuously measures concentrations of 5 different gases of NOx, SO2, CO, CO2, O2 (and, optionally, N2O and CH4).*

*Adopts a double beam infrared analyzer, a Zirconia type oxygen meter or magnetic oxygen meter with high sensitivity and excellent long-term stability.*

*The maintenance type on the front saves space.*

*The correction resorting to a twin detector ensures the measurement is free from the majority of interference caused by other gases.*

*The back-lit LCD indicates changes in 5 components simultaneously in real time.*
Continuously measures and monitors concentrations of flue gases generated from boilers or garbage incinerators

CO and O2 measurement complies with the Japanese regulation on dioxin emission, while N2O and CH4 can also be optionally measured.

**Easy-to-see back-lit LCD indication**

Represents change of concentrations of 5 components simultaneously in real time.

**Menu screen**

**Setting screen**

**Houses six 3.4 L standard gas cylinders**

Can accommodate up to 6 zero and span standard gas cylinders.

**Space-saving design**

**Analog output of readings for 5 components**

- Instantaneous values: NOx, SO2, CO, CO2, O2
- O2 corrected instantaneous values: NOx, SO2, CO
- O2 corrected average values: NOx, SO2, CO
- O2 average values: O2

**Zirconia oxygen meter that continuously measures the oxygen concentrations (0 to 25%) in sample gases**

Detects the EMF (electromotive force) of an oxygen concentration cell generated on electrodes on the front and rear of the Zirconia element.

**High-response magnetic oxygen meter dispensing with auxiliary gas and unaffected by combustible gases**

When sample gas enters the measurement cell, the oxygen molecule is attracted to a field where there is considerable magnetic field strength, so that a force corresponding to the oxygen concentration is applied to the double sphere, where it is then converted into an electrical signal.
Gas analyzer realized by the concentration of long-term accumulated know-how

Applicable to garbage and industrial refuse incinerators, gas boilers, sludge burning and oil/coal boilers, iron and steel heating furnaces, etc.

**Measures NOx, SO2, CO and CO2 concentrations via an infrared method**

- **Motor**
- **Distribution cell**
- **also serving as an interference filter**
- **Trimmer**
- **Rotary sector**
- **Infrared source (single beam)**
- **Sample cell**
- **Sample gas**
- **Sample gas outlet**
- **Interference-compensation detector**

**Principle**

The infrared dose absorbed by a sample cell is detected by the mass flow sensor.

**Heat ray temperature**

- No air flow status
- Detecting sensitivity (AP) when there is an air flow from the left
- Detecting sensitivity (AP) when there is an air flow from the right

**A paper-less recorder can be housed (option)**

- Number of recording points: 9 or 18
- Indicator: Color LCD
- Recording medium: Compact flash memory (2 GB max.)
- Input signal: 4 to 20 mA DC, 1 to 5 V DC, thermocouple, resistance bulb, etc.
- **Type: PHR**

**Gas extractor with easily replaceable filter**

<table>
<thead>
<tr>
<th>Sampling point temperature</th>
<th>Sampling tube material</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. 800°C</td>
<td>SUS316</td>
</tr>
<tr>
<td>Max. 1000°C</td>
<td>Titanium</td>
</tr>
<tr>
<td>Max. 1300°C</td>
<td>SiC</td>
</tr>
</tbody>
</table>

SUS316 wire mesh filter provided.

Power supply 100 V AC, 100 VA.

**Japanese pattern approval**

- No. SAS992-1 (SO2 meter)
- No. SAC992-1 (CO meter)
- No. SAN991-1 (NOx meter)
- No. SE981

(Zirconia O2 meter)

- No. SF011

(Magnetic O2 meter)

**Gas sampling system**

- **Gas extractor**
- **Air inlet**
- **Sample inlet**
- **Atmospheric air / Gas conditioner**
- **15Pa core**
- **#1**
- **3-way solenoid valve**
- **Gas aspirator**
- **2-way solenoid valve**
- **Electronic gas cooler**
- **Flow checker**
- **Sampling module**
- **Membrane filter**
- **NOx-NO converter**
- **Infrared analyzer NOx, CO2**
- **Zirconia type O2 analyzer**
- **Standard gas**
- **Instrumentation air inlet**
- **Exhaust**

**Note 1**

- Measure Act Examination
- Oil/coal boiler
- Garbage/industrial refuse

**Note 2**

- Code 3 for the Measure Act and/or CO2

- Infrared source (single beam) in the infrared method.
- An interference filter.
- Distribution cell.
- Trimmer.
- Gas aspirator.
- Gas conditioner.
- Drain.
- Solenoid valve.
- Needle.
- Membrane filter.
- Flow checker.
- Pressure.
- NOx, SO2, CO, O2./N2.
- Pressure./N2.
- SO2.
- CO.
- CO2.
- O2.

- • No. SAS992-1 (SO2 meter)
  • No. SAC992-1 (CO meter)

Note 1: The output is non-isolated only when "Without" is selected. ISO 80000-2:2001.
Note 2: Specify code 3 for the Measure Act and/or CO meter. Specify for standard gas (Type Z5Y).
Note 3: Specify the external moisture separator and drain point when the downward inclination of the sample inlet tube from the gas extraction point to the analyzer gas inlet is less than 15° or when the moisture content of the sample gas exceeds 30%.
Note 4: The delivered recorder (Type PHR) is wired so that its recording contents will be as follows. For figures other than those specified in the table below, specify expressly.

- Recording contents (Remote outputs
<table>
<thead>
<tr>
<th>Code 1</th>
<th>Code 2</th>
<th>Code 3</th>
<th>Code 4</th>
<th>Code 5</th>
<th>Code 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gas</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Instantaneous value</td>
<td>Average value</td>
<td>Coincorrection value</td>
<td>Instrumentation air</td>
<td>Atmospheric air</td>
<td>Standard gas provided (Separately specify type Z5Y)</td>
</tr>
<tr>
<td>Without</td>
<td>Without</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>With</td>
<td>With</td>
<td>SUS16 300°C 80°C below</td>
<td>SUS16 400°C 80°C below</td>
<td>SUS16 600°C 80°C below</td>
<td>SUS16 800°C 80°C below</td>
</tr>
<tr>
<td>Without</td>
<td>Without</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>With</td>
<td>With</td>
<td>SUS16 300°C 100°C below</td>
<td>SUS16 400°C 100°C below</td>
<td>SUS16 600°C 100°C below</td>
<td>SUS16 800°C 100°C below</td>
</tr>
</tbody>
</table>
- NO2 correction value average isolated output (Note 1)

<table>
<thead>
<tr>
<th>Digit</th>
<th>Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Without</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>With</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>With</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>With</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>With</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>With</td>
<td>5</td>
</tr>
</tbody>
</table>

- NO2 correction value isolated output (Note 1)

<table>
<thead>
<tr>
<th>Digit</th>
<th>Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Without</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>With</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>With</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>With</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>With</td>
<td>4</td>
</tr>
</tbody>
</table>

- NO2 correction value average isolated output (Note 1)

<table>
<thead>
<tr>
<th>Digit</th>
<th>Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Without</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>With</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>With</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>With</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>With</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>With</td>
<td>5</td>
</tr>
</tbody>
</table>

- NO2 correction value isolated output (Note 1)

<table>
<thead>
<tr>
<th>Digit</th>
<th>Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Without</td>
<td>0</td>
</tr>
<tr>
<td>1</td>
<td>With</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>With</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>With</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>With</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>With</td>
<td>5</td>
</tr>
</tbody>
</table>
### Main specifications

#### Measuring principle
- NOx: SO2: CO: CO2: Non-dispersion infrared (NDIR)
- O2: Zirconia or magnetic force

#### Measuring component measurement range
- NOx: 0~50ppm...5000ppm
- SO2: 0~50ppm...5000ppm
- CO: 0~50ppm...5000ppm
- CO2: 0~10% / 0~25%

#### Repeatability
- ±0.5% FS

#### Linearity
- ±1.0% FS max.

#### Zero drift
- ±1.0% FS max./week (±2.0% FS/week max. if range is less than 200ppm)

#### Span drift
- ±2.0% FS max./week

#### Measurement gas extractor
- About 2L/min

#### Response speed
- 120 seconds max. for 90% response from the analyzer inlet (240 seconds max./month for the SO2 meter)

#### Output signal
- 4 to 20mA DC

#### External contact input
- No-voltage contact

#### Contact output
- Each component range identification, analyzing section error, calibration error, auto calibration status, maintenance status, O2 peak count alarm, each component instantaneous concentration alarm, analyzing section power OFF

### Dimensions (Unit: mm)

- **Instrumentation air inlet**
  - Instrumentation air inlet: 700
  - Sample inlet: 38

- **<Instrumetation air inlet>**
  - Air suction inlet: 1/4
  - 4 wiring ports. φ 3.4 grommet

- **<Indoor type>**
  - Instrumentation air inlet: 605
  - Sample inlet: 38

- **Air suction inlet**
  - 1/4

- **Standard gas panel outside installation**
  - 5:RC 1/4

- **<Standard gas panel outside installation>**
  - 4:RC 1/4

### Electric heating gas extractor

- **Cover**
- **Terminal box**
- **Filter replacement handle**
- **Heating tube support (provided for heating tube)**
- **Gas inlet**
- **SUS316 sampling tube 26A**
- **wiring ports G 1/2**
Main specifications (Type ZSQ)

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measurement component</td>
<td>CO, O₂</td>
</tr>
<tr>
<td>Measuring method</td>
<td>Non-dispersion infrared</td>
</tr>
<tr>
<td>Measurement range</td>
<td>CO: 0<del>200/500, 0</del>200/1000, 0<del>500/2000 ppm. O₂: 0</del>25vol%</td>
</tr>
<tr>
<td>Repeatability</td>
<td>±0.5%FS</td>
</tr>
<tr>
<td>Zero drift</td>
<td>±2%FS/month</td>
</tr>
<tr>
<td>Span drift</td>
<td>±2%FS/week</td>
</tr>
<tr>
<td>Linearity</td>
<td>±1%FS</td>
</tr>
<tr>
<td>Response speed</td>
<td>Within 50 seconds (90% response, from analyzer inlet)</td>
</tr>
<tr>
<td>Output signal</td>
<td>4 to 20mA DC (linear). CO correction calculating equation (moving average 1 and 4 hours)</td>
</tr>
<tr>
<td>Functions</td>
<td>Auto calibration</td>
</tr>
<tr>
<td>Amb-Volt</td>
<td>100V AC, 50 or 60Hz</td>
</tr>
<tr>
<td>Dimensions</td>
<td>600(W)×1500(H)×650(D) mm for indoor use</td>
</tr>
<tr>
<td>Standard measurement gas conditions</td>
<td>Temperature: 30°C max. Dust: 100mg/Nm³ max. Pressure: -1~+5, -3~+3, -5~+1Pa Components: CH₄ 500 ppm max. NOX 1000 ppm max. CO 15% max.</td>
</tr>
</tbody>
</table>

Caution on Safety
* Before using products in this catalog, be sure to read their instruction manuals in advance.

Fuji Electric Co., Ltd.
International Sales Div.
Sales Group
Gate City Ohsaki, East Tower, 11-2, Osaka 1-chome,
Shinagawa-ku, Tokyo 141-0032, Japan
http://www.fuji-electric.com
Phone: 81-3-5435-7280, 7281 Fax: 81-3-5435-7425
http://www.fuji-electric.com/products/instruments/

Information in this catalog is subject to change without notice.