

# IN-SITU ZIRCONIA OXYGEN ANALYZER

## DATA SHEET

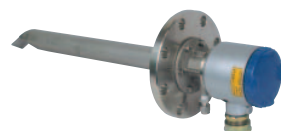
ZFK8, ZKM1/ZKM2, ZTA

This oxygen analyzer can continuously measure oxygen concentration in combustion exhaust gas of industrial boilers or furnaces, and is suited to combustion management and control.

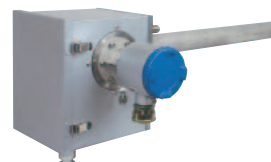
The analyzer system is comprised of the detector and converter coupled together as a complete system. The detector includes the flow guide tube and the sensor. The flow guide tube inserted into the stack draws the process gas into the sensor. The converter has the sensor diagnosis function and the sensor recovery function, which ensure the long-term use and the stability of the sensor.

## FEATURES

- No gas sampling devices required**  
Insertion type sensor delivers quick response.
- Easy maintenance**  
Modular design allows easy replacement of sensor, flow guide tube, and filter.
- Reliability and long-term stability**  
The converter diagnoses the sensor deterioration caused by components in sample gas, and electrically restores the sensor.
- Improved safety**  
The converter cuts off the power supply for the detector when detecting a burnout of thermocouple for heater control. The converter also cuts off the power supply at emergency, in response to an external contact input. These functions along with the key lock function are provided as standard to ensure improved safety.
- Easy operation**  
A user can operate the converter or make various settings on an interactive basis. Display language is available in English, Chinese, or Japanese.



Detector with flow guide tube  
(ZFK8)



Detector with ejector  
(ZFK8, ZTA)



IP66  
Converter (ZKM1)



IP67  
Converter (ZKM2)

## SPECIFICATIONS

### General Specifications

**Measuring object:** Oxygen in noncombustible gas

**Measuring method:**

Insertion type zirconia sensor

**Measuring range:** 0 to 2 ... 50 vol%, two ranges, user configurable  
(in 1 vol% O<sub>2</sub> steps)

**Repeatability:** Within  $\pm 0.5\%$  FS

**Linearity:** Within  $\pm 2\%$  FS

**Response time:** Within 4 to 7 sec, for 90% (from calibration gas inlet)

**Warmup time:**  $\geq 10$  min

**Analog output:** 4 to 20mA DC (allowable load resistance  $\leq 500\Omega$ ) or 0 to 1V DC (output resistance  $\geq 100\Omega$ ), linear, isolated

**Power supply:** Rated voltage;  
100 to 120V AC (operating voltage 90 to 132V AC)  
200 to 240V AC (operating voltage 190 to 264V AC)  
Rated frequency; 50/60Hz

**Power consumption:**  
Startup: 240VA (Detector: approx. 200VA, Converter: approx. 40VA)  
During operation: 70VA (Detector: approx. 50VA, Converter: approx. 20VA)

**Detector (ZFK)**
**Measured gas temperature:**

Flow guide tube system; -10 to +600°C  
(for general-use, corrosive gas)  
Ejector system; -10 to +1500°C (for  
high-temperature gas)  
-10 to +800°C (for general-use)

**Measured gas pressure:**

-3 to +3kPa

**Flow guide tube:**

- General-use, for corrosive gas, with  
blowdown nozzle:  
Flange: JIS 5K 65A FF  
Insertion length: 0.3, 0.5, 0.75, 1 m
- For high particulate:  
\*The flow guide tube for high par-  
ticulate gas comes with blowdown  
nozzle. You can select the one with  
or without the flow guide tube cover.  
Flange: JIS 5K 80A FF  
Insertion length: 0.3, 0.5, 0.75, 1 m

**Ambient temperature:**

Detector: -10 to +60°C  
Detector flange surface: ≤ 125°C during  
the power is supplied  
Ejector: -5 to +100°C  
\*When sample gas temperature is  
lower than 150°C and the outside  
temperature is lower than 0°C, cover  
the flow guide tube flange and the  
detector (the part that contact outside  
air) with thermal insulating material to  
prevent dew condensation.

**Storage temperature:**

Detector: -20 to +70°C  
Ejector: -10 to +100°C

**IP rating:**

Equivalent to IP66 excluding the filter  
The heat-retaining cover (12th code) is  
required for the use in a cold area.

**Filter:**

Alumina(filtering accuracy 50μm) and  
quartz paper

**Main materials of gas-contacting parts:**

Detector; Zirconia, SS316, platinum  
Flow guide tube; SS304 or SS316  
Ejector (general use); SS316, SS304  
Ejector; (for high temperature) SiC,  
SS316, SS304

**Pipe adapter for calibration gas inlet:**

for 6 mm tube or 1/4 inch tube (as  
selected in the 6th code)

**Pipe adapter for reference gas inlet (option):**

for 6 mm tube or 1/4 inch tube (as  
selected in the 13th code)

**Installation:**

Horizontal plane ±45°, ambient air  
should be clean.

**Dimensions:**

(L × max. dia.) 194mm × 125.5mm  
(detector)

**Weight:**

Detector; 1.6kg  
Ejector; 15kg (insertion length 1m)  
Flow guide tube (general-use, 1m); 5kg

**Finish color:**

Silver and SS metallic color

**Calibration gas flow:**

1.5 to 2 L/min

**Blowdown air inlet pressure:**

200 to 300kPa

**Ejector:**

Probe for guiding measured gas to  
detector  
Flange; JIS10K 65A RF  
Insertion length; 0.5, 0.75, 1, 1.5m (ac-  
cording to customer's specification)

**Ejector air inlet flow rate:**

5 to 10 L/min

**Ejector exhaust gas processing:**

Returned to flue or furnace

**Ejector heater temperature drop alarm output:**

SPST-NO contact, 200 V AC, 2A  
Mechanical thermostat  
The contact is closed when the heater  
temperature is 100°C or lower.

**Converter (ZKM)**
**Concentration value indication:**

Digital indication in 4 digits

**Contact output:**

- 6 points, SPST-NO,  
250 V AC, 3A or 30 V DC, 3A  
Functions; • Under maintenance  
• Error\*<sup>1</sup>  
• Alarm\*<sup>2</sup>  
• Zero calibration gas  
• Span calibration gas  
• Blowdown\*<sup>3</sup>

**Notes**

1. The contact is closed upon: open circuit of thermo-  
couple line, open circuit of O<sub>2</sub> sensor line, tempera-  
ture overrange, calibration error, zero/span error,  
output error.
2. The contact is closed upon the alarm you selected  
among: H, L, HL, HH, LL.
3. The contact is closed during blowdown. This func-  
tion is available only on the version with blowdown  
nozzle.

**Contact input:**

- 3 points  
ON; 0V (10mA or less), OFF; 5V  
Functions; • External hold  
• Calculation reset  
• Heater OFF  
• Blow down (option)  
• Inhibition of calibration  
• Calibration start  
• Range change

**Calibration method:**

- (a) Manual calibration with key operation
- (b) Auto. calibration (option)  
Calibration cycle; 00 day 00 hour to  
99 days 23 hours
- (c) Batch calibration

**Calibration gas:**

- Setting range  
Zero gas; 0.010 to 25.00% O<sub>2</sub>  
Span gas; 0.010 to 50.00% O<sub>2</sub>
- Recommended calibration gas concen-  
tration  
Zero gas; 0.25 to 2.0% O<sub>2</sub>  
Span gas; 20.6 to 21.0% O<sub>2</sub>  
(oxygen concentration in the air)

|                                                |                                                                                                                                                                                                                                                                                                                  |
|------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Blowdown:<br/>(option)</b>                  | <p>A function for blowing out dust that has accumulated in the flow guide tube.</p> <p>Blowdown can be performed for a pre-determined time and at predetermined intervals.</p> <p>Blowdown cycle; 00 hour 00 minute to 99 hours 59 minutes</p> <p>Blowdown time; 0 minute 00 second to 0 minutes 999 seconds</p> |
| <b>Output signal hold:</b>                     | <p>The converter holds the output signal during: calibration, blowdown, sensor recovery, sensor diagnosis, PID auto-tuning, and during the maintenance mode is set to "yes". You can cancel the output hold function during warm-up.</p>                                                                         |
| <b>Selector valve and flowmeter (option):</b>  | <p>The selector valve allows you to switch between the zero gas and the span gas when you carry out a calibration. The flowmeter is used for regulating the flow rate of the calibration gas.</p>                                                                                                                |
| <b>Communication (option):</b>                 | RS485 (MODBUS)                                                                                                                                                                                                                                                                                                   |
| <b>Combustion efficiency display (option):</b> | <p>When you select this display, "rich mode display" will be simultaneously displayed. This function calculates and displays combustion efficiency from oxygen concentration and measured gas temperature.</p> <p>Thermocouple (R) is required for temperature measurement.</p>                                  |
| <b>Ambient temperature:</b>                    | -20 to +55°C                                                                                                                                                                                                                                                                                                     |
| <b>Ambient humidity:</b>                       | 95% RH or less, non condensing                                                                                                                                                                                                                                                                                   |
| <b>Storage temperature:</b>                    | -30 to +70°C                                                                                                                                                                                                                                                                                                     |
| <b>Storage humidity:</b>                       | 95% RH or less, non condensing                                                                                                                                                                                                                                                                                   |
| <b>IP rating:</b>                              | Equivalent to IP66 or IP67, excluding the benchtop type                                                                                                                                                                                                                                                          |
| <b>Case material:</b>                          | Aluminum case                                                                                                                                                                                                                                                                                                    |
| <b>Dimensions (H x W x D):</b>                 | <p>170 × 159 × 70mm (IP66)</p> <p>220 × 230 × 95mm (IP67)</p> <p>182 × 163.5 × 70.6mm (Bench type)</p>                                                                                                                                                                                                           |
| <b>Weight:</b>                                 | <p>IP66 and benchtop:<br/>Approx. 2kg (excluding cable and detector)</p> <p>IP67: Approx. 4.5kg (excluding cable and detector)</p>                                                                                                                                                                               |
| <b>Finish color:</b>                           | <p>IP66: Case: Silver<br/>Cover: Pantone Cool Gray 1C-F</p> <p>IP67: Munsell 6PB 3.5/10.5 (blue)<br/>Cover: Silver (case)</p>                                                                                                                                                                                    |
| <b>Installation:</b>                           | panel mounting, pipe mounting, or benchtop                                                                                                                                                                                                                                                                       |

## CODE SYMBOLS

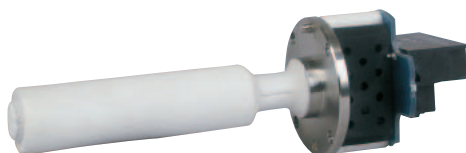
## Detector

ZFK8 5 - 1

| Digit | Description                                                                                                  | Note | Code        |
|-------|--------------------------------------------------------------------------------------------------------------|------|-------------|
| 6     | <b>Pipe adapter for calibration gas inlet</b><br>For ø6mm tube (SS)<br>For ø1/4 inch tube (SS)<br>Ball valve |      | 1<br>2<br>3 |
| 7     | <b>Power supply</b><br>100 to 120 V AC 50/60 Hz<br>200 to 240 V AC 50/60 Hz                                  |      | 1<br>3      |
| 9     | <b>Flow guide tube</b>                                                                                       |      |             |
| 10    | <Flange>      <Application>      <Length>                                                                    |      |             |
| 11    | No tube                                                                                                      |      | 0 Y 0       |
|       | SS304      general use      300mm                                                                            |      | 5 A 3       |
|       | SS304      general use      500mm                                                                            |      | 5 A 5       |
|       | SS304      general use      750mm                                                                            |      | 5 A 7       |
|       | SS304      general use      1000mm                                                                           |      | 5 A 1       |
|       | SS316      for corrosive gas      300mm                                                                      |      | 5 B 3       |
|       | SS316      for corrosive gas      500mm                                                                      |      | 5 B 5       |
|       | SS316      for corrosive gas      750mm                                                                      |      | 5 B 7       |
|       | SS316      for corrosive gas      1000mm                                                                     |      | 5 B 1       |
|       | SS316      with blow-down nozzle      300mm                                                                  |      | 5 C 3       |
|       | SS316      with blow-down nozzle      500mm                                                                  |      | 5 C 5       |
|       | SS316      with blow-down nozzle      750mm                                                                  |      | 5 C 7       |
|       | SS316      with blow-down nozzle      1000mm                                                                 |      | 5 C 1       |
|       | SS316      for high particulate      300mm                                                                   |      | 6 D 3       |
|       | SS316      for high particulate      500mm                                                                   |      | 6 D 5       |
|       | SS316      for high particulate      750mm                                                                   |      | 6 D 7       |
|       | SS316      for high particulate      1000mm                                                                  |      | 6 D 1       |
|       | SS316      for high particulate with cover      300mm                                                        |      | 6 E 3       |
|       | SS316      for high particulate with cover      500mm                                                        |      | 6 E 5       |
|       | SS316      for high particulate with cover      750mm                                                        |      | 6 E 7       |
|       | SS316      for high particulate with cover      1000mm                                                       |      | 6 E 1       |
|       | Others                                                                                                       |      | Z Z Z       |
| 12    | <b>Heat-retaining cover</b><br>Without<br>With                                                               |      | Y<br>A      |
| 13    | <b>Pipe adapter for reference gas inlet</b><br>None<br>For ø6mm tube (SS)<br>For ø1/4 inch tube (SS)         |      | Y<br>A<br>B |
| 14    | <b>Filter</b><br>Standard                                                                                    |      | 1           |
| 15    | <b>Instruction manual</b><br>Japanese<br>English<br>Chinese                                                  |      | J<br>E<br>C |
| 16    | <b>Specification name plate</b><br>100 to 120V AC, 50/60Hz<br>200 to 240V AC, 50/60Hz                        |      | 1<br>2      |

## Replacement detector element

| Power supply   | Code symbols       |
|----------------|--------------------|
| 100 to 120V AC | ZFK8YY15-0Y0YY-0YY |
| 200 to 240V AC | ZFK8YY35-0Y0YY-0YY |



## Converter

ZKM 1 - 1

| Digit | Description                                                                                                                                                                                                                                                                                                        | Note  | Code                                 |
|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|--------------------------------------|
| 4     | <b>Construction</b><br>IP66<br>IP67<br>Benchtop                                                                                                                                                                                                                                                                    |       | 1<br>2<br>3                          |
| 5     | <b>Output signal</b><br>4 to 20mA DC<br>0 to 1V DC<br>Other                                                                                                                                                                                                                                                        |       | B<br>E<br>Z                          |
| 6     | <b>Communication</b><br>None<br>RS-485                                                                                                                                                                                                                                                                             |       | Y<br>2                               |
| 7     | <b>Mounting bracket</b><br>None (for benchtop type)<br>Panel mounting<br>Pipe mounting                                                                                                                                                                                                                             |       | Y<br>1<br>2                          |
| 9     | <b>Optional Functions</b><br>None<br>Combustion efficiency display function<br>Blowdown<br>Auto calibration<br>Combustion efficiency indication + Blowdown<br>Combustion efficiency indication + Auto calibration<br>Blowdown + Auto calibration<br>Combustion efficiency indication + Blowdown + Auto calibration | Note1 | Y<br>1<br>2<br>3<br>4<br>5<br>6<br>7 |
| 10    | <b>Display language</b><br>Japanese<br>English<br>Chinese                                                                                                                                                                                                                                                          |       | J<br>E<br>C                          |
| 11    | <b>Option</b><br>None<br>With valve<br>With valve + flowmeter                                                                                                                                                                                                                                                      | Note2 | Y<br>1<br>2                          |

## Notes

- On the versions with combustion efficiency display, the rich mode indicator is available as well.
- If you select the benchtop type (4th code "3") or the versions with auto calibration (9th code "3", "5", "6", or "7"), select "Y" in the 11th code.

## Dedicated cable

ZRZ K R - 1

| Digit | Description                                                                  | Note                | Code        |
|-------|------------------------------------------------------------------------------|---------------------|-------------|
| 4     | <b>Connectable device</b><br>ZKM                                             |                     | K           |
| 5     | <b>Type</b><br>For type R thermocouple                                       |                     | R           |
| 6     | <b>Conduit length</b>                                                        | <b>Cable length</b> |             |
| 7     | None                                                                         | 6 m                 | YA          |
|       | None                                                                         | 10 m                | YB          |
|       | None                                                                         | 15 m                | YC          |
|       | None                                                                         | 20 m                | YD          |
|       | None                                                                         | 30 m                | YE          |
|       | None                                                                         | 40 m                | YF          |
|       | None                                                                         | 50 m                | YG          |
|       | None                                                                         | 60 m                | YH          |
|       | None                                                                         | 70 m                | YJ          |
|       | None                                                                         | 80 m                | YK          |
|       | None                                                                         | 90 m                | YL          |
|       | None                                                                         | 100 m               | YM          |
|       | 6 m                                                                          | 6 m                 | AA          |
|       | 10 m                                                                         | 10 m                | BB          |
|       | 15 m                                                                         | 15 m                | CC          |
|       | 20 m                                                                         | 20 m                | DD          |
| 9     | <b>Cable end treatment</b><br>None<br>One side (detector side)<br>Both sides |                     | 0<br>1<br>2 |

Note 3) For connection between detector and converter, the conduit to be used should be rainproof flexible type.

## Ejector

4 5 6 7 8  
ZTA 1       1

| Digit | Description                                                                                          | Note | Code             |
|-------|------------------------------------------------------------------------------------------------------|------|------------------|
| 4     | <b>Measured gas temperature</b><br>For high temperatures (+1500°C max.)<br>General-use (+800°C max.) |      | 1<br>2           |
| 6     | <b>Insertion length [mm]</b><br>500<br>750<br>1000<br>1500                                           |      | B<br>C<br>D<br>E |
| 7     | <b>Power supply</b><br>100V/115V AC 50/60Hz<br>200V/220V AC 50/60Hz<br>230VAC 50/60Hz                |      | 1<br>3<br>5      |

## SCOPE OF DELIVERY

- Detector:** Detector × 1, Viton O ring × 1, mounting screw (M5 × 16) × 6, thermal sticker × 1, flow guide tube (as specified) × 1, ceramic filter × 1, heat-retaining cover (as specified) × 1, Instruction manual × 1
- Converter:** Converter × 1, mounting bracket set, (as specified) × 1  
AC250V 500mA T fuse × 2, AC250V 2.5A T fuse × 2  
Instruction manual × 1
- Ejector:** Ejector × 1, insertion tube × 1, M16 nut and washer × 4, packing × 1

### Items to be prepared separately:

#### (1) Standard gas for calibration

- Type ZBM□NSH4-01 (up to 5% O<sub>2</sub> range)  
Type ZBM□NSJ4-01 (over 5% O<sub>2</sub> range)

(2) Pressure regulator for standard gas (type ZBD61003)

(3) Flowmeter

Type; ZBD42203, 0.2 to 2L/min (for calibrating gas)

Type; ZBD42403, 1 to 10L/min (for ejector)

## IMPORTANT INFORMATION

- Combustible gases such as CO and H<sub>2</sub> in the measured gas cause measurement error.
- Corrosive gases, for example, Si vapor, alkaline metal, P, and Pb, may shorten the life of the sensor.
- If the gas temperature reaches 300°C or above, remote the detector flange from the furnace wall so that the surface temperature of the flange will not go higher than 125°C. Mount the flow guide tube in such a direction that less gas flows into the detector.
- When the dust contained in the process gas is high, install the flow guide tube inclined downward, and in such a direction that less gas flows into the detector.
- If you use the analyzer in a waste incinerator, do not use the automatic blowdown because it causes corrosion of the flow guide tube due to drain water. Carry out blowdown manually after the furnace is stopped and the change in readings is decreased.

## DETECTOR SELECTION GUIDE

The device combination varies according to the conditions of the gas to be measured. Select the appropriate devices to be combined with reference to the following table.

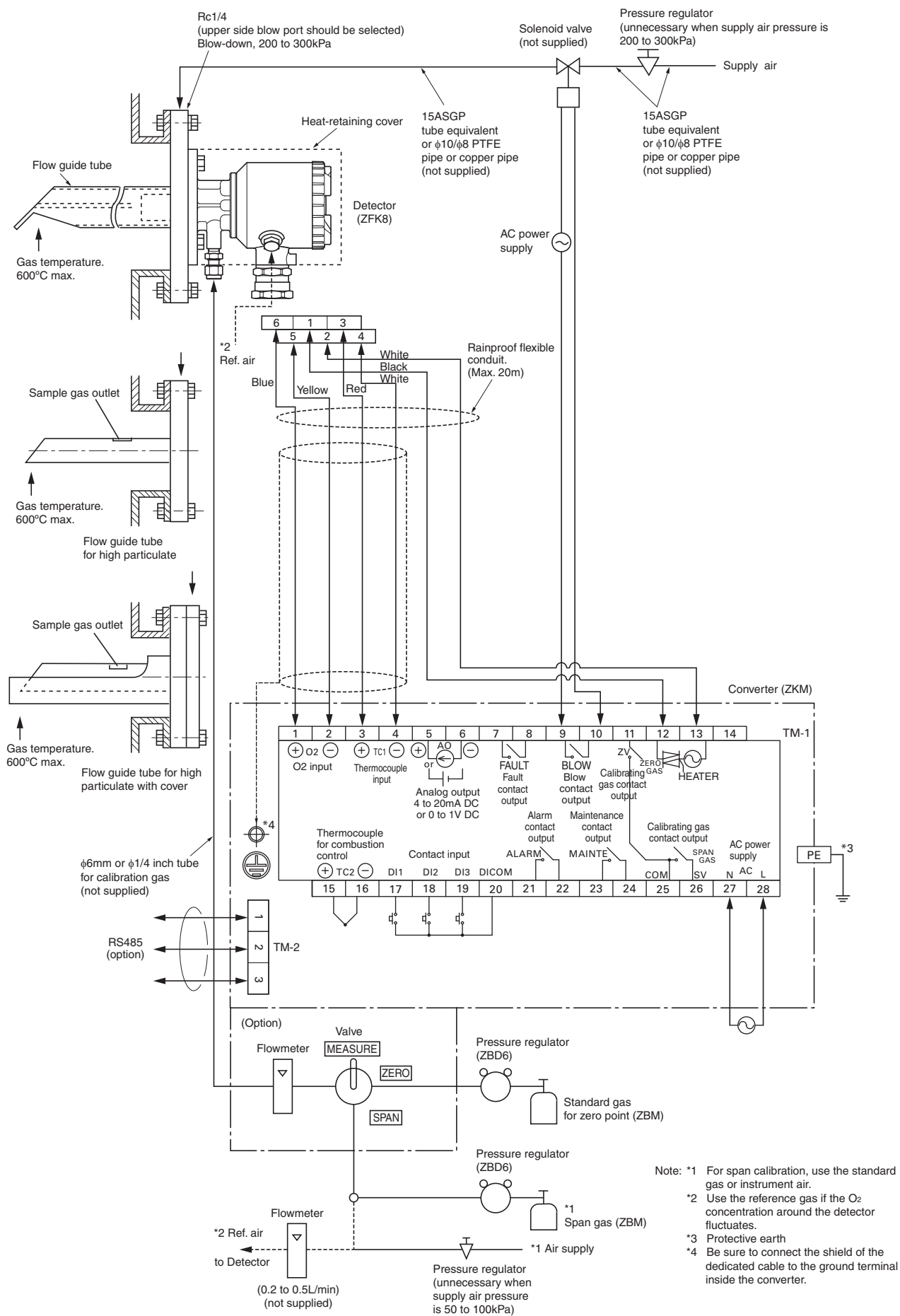
| Application         |          | Gas conditions |           |                         |          | Detector        |                                  |               | Converter          | Ejector |
|---------------------|----------|----------------|-----------|-------------------------|----------|-----------------|----------------------------------|---------------|--------------------|---------|
|                     |          | Temp.          | Flow rate | Dust                    | Moisture | Flange material | Flow guide tube                  | 9th–11th code |                    |         |
| Boilers             | Gas, oil | ≤ 600 °C       | 5–20 m/s  | < 0.2 g/Nm <sup>3</sup> | Low      | SS 304          | Standard                         | 5A□           | ZKM1<br>or<br>ZKM2 | —       |
|                     | Coal     |                |           | < 10 g/Nm <sup>3</sup>  | Low      |                 | With blowdown nozzle             | 5C□           |                    |         |
| Refuse incinerators |          | ≤ 600 °C       | 5–20 m/s  | < 1 g/Nm <sup>3</sup>   | Low      |                 | For corrosive gas                | 5B□           |                    |         |
|                     |          |                |           | < 10 g/Nm <sup>3</sup>  | Low      |                 | With blowdown nozzle             | 5C□           |                    |         |
|                     |          |                |           | < 25 g/Nm <sup>3</sup>  | Low      |                 | For high particulate             | 6D□           |                    |         |
|                     |          |                |           | < 25 g/Nm <sup>3</sup>  | High     |                 | For high particulate, with cover | 6E□           |                    |         |
| Heating furnaces    |          | ≤ 800 °C       | ≤ 1 m/s   | < 1 g/Nm <sup>3</sup>   | Low      | —               | No flow guide tube               | 0Y0           |                    | ZTA2    |
|                     |          | ≤ 1500 °C      | ≤ 1 m/s   | < 1 g/Nm <sup>3</sup>   | Low      | —               | No flow guide tube               | 0Y0           |                    | ZTA1    |

### Notes

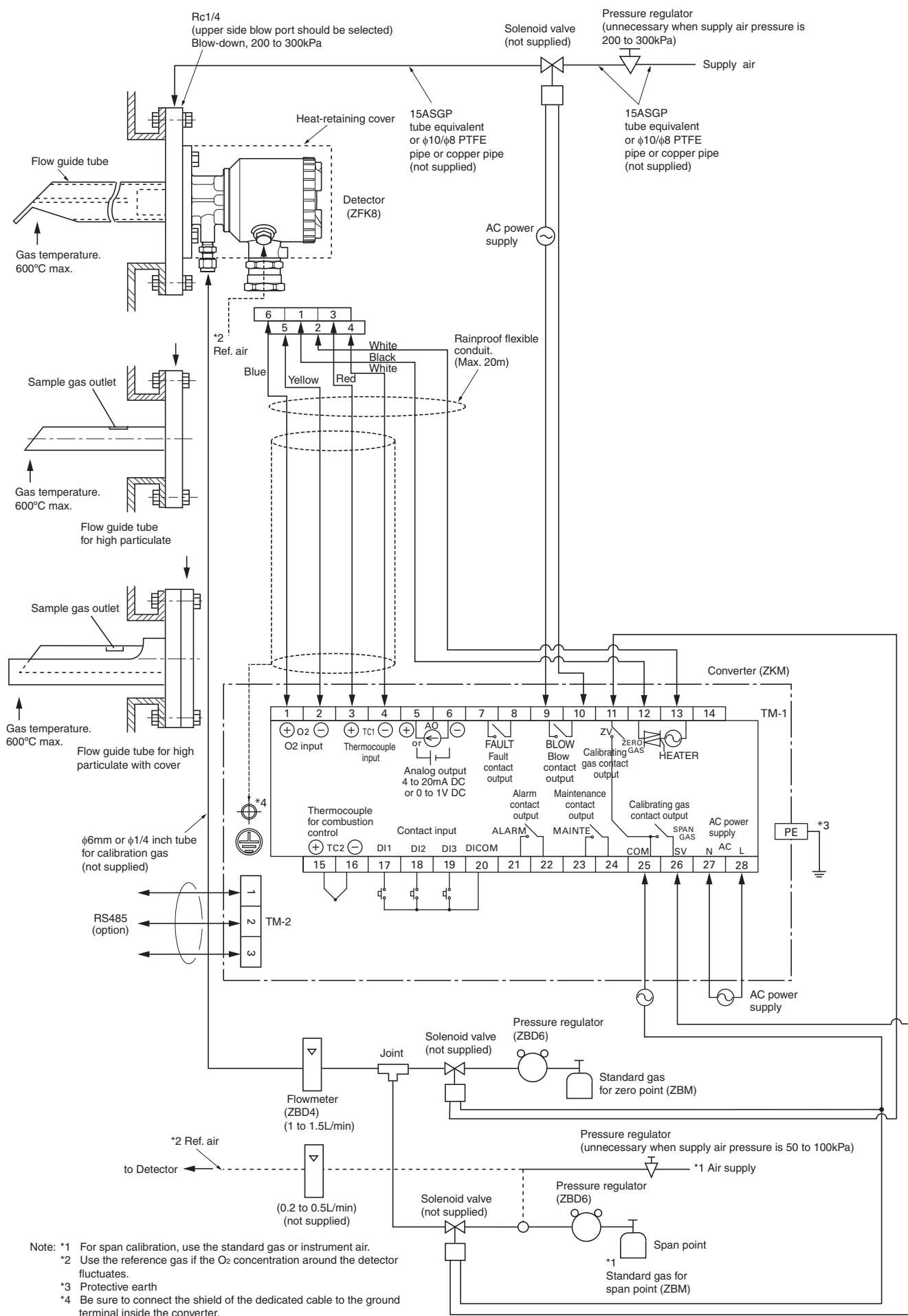
- Dust volumes listed above are approximate value.
- If the oxygen concentration of ambient air fluctuates, select a detector with a pipe adapter for reference gas inlet (13th code A or B).
- Consult us for specifications not listed above.

## CONFIGURATION

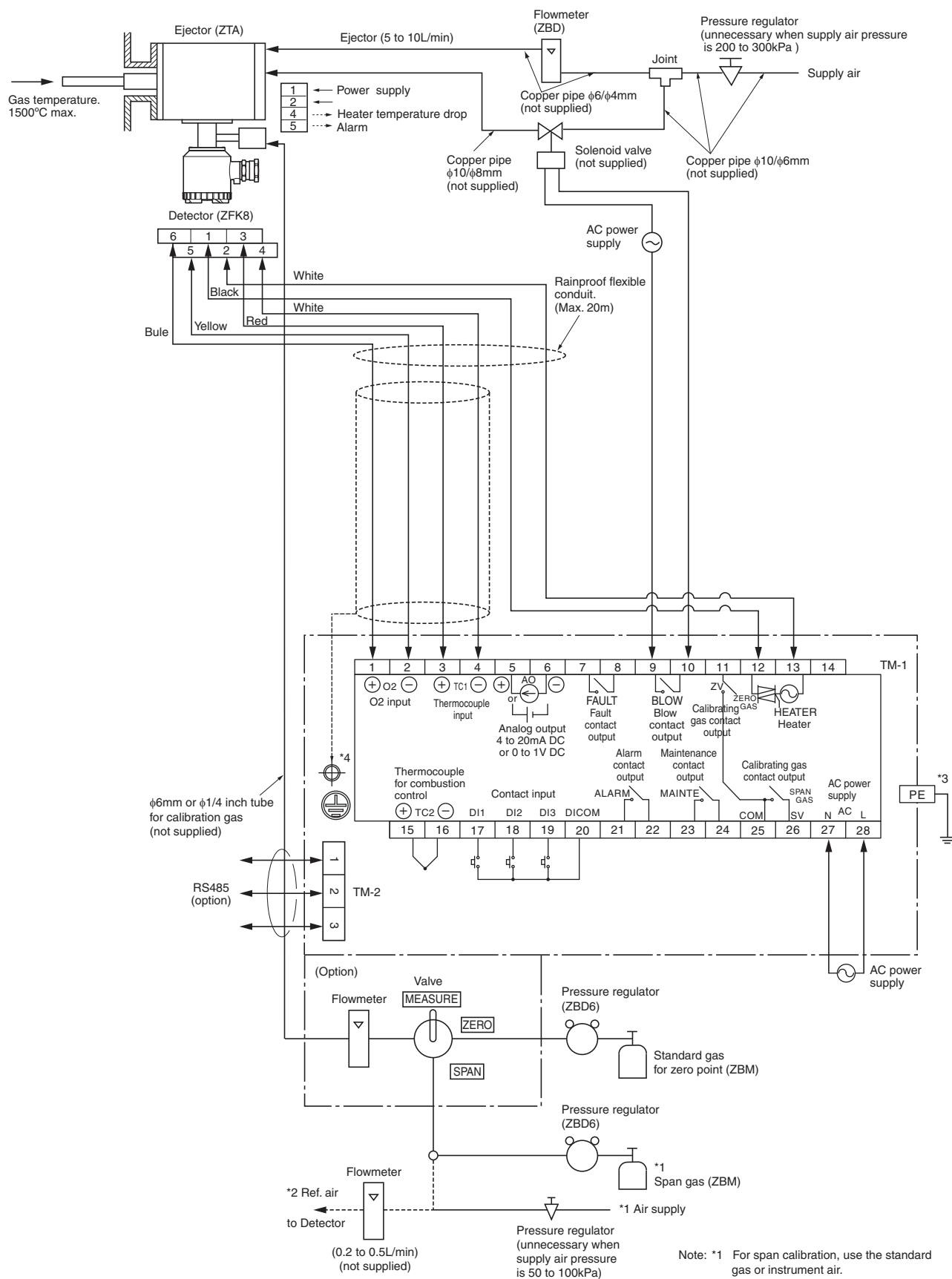
## Flow guide tube system (with valve)



## Flow guide tube system

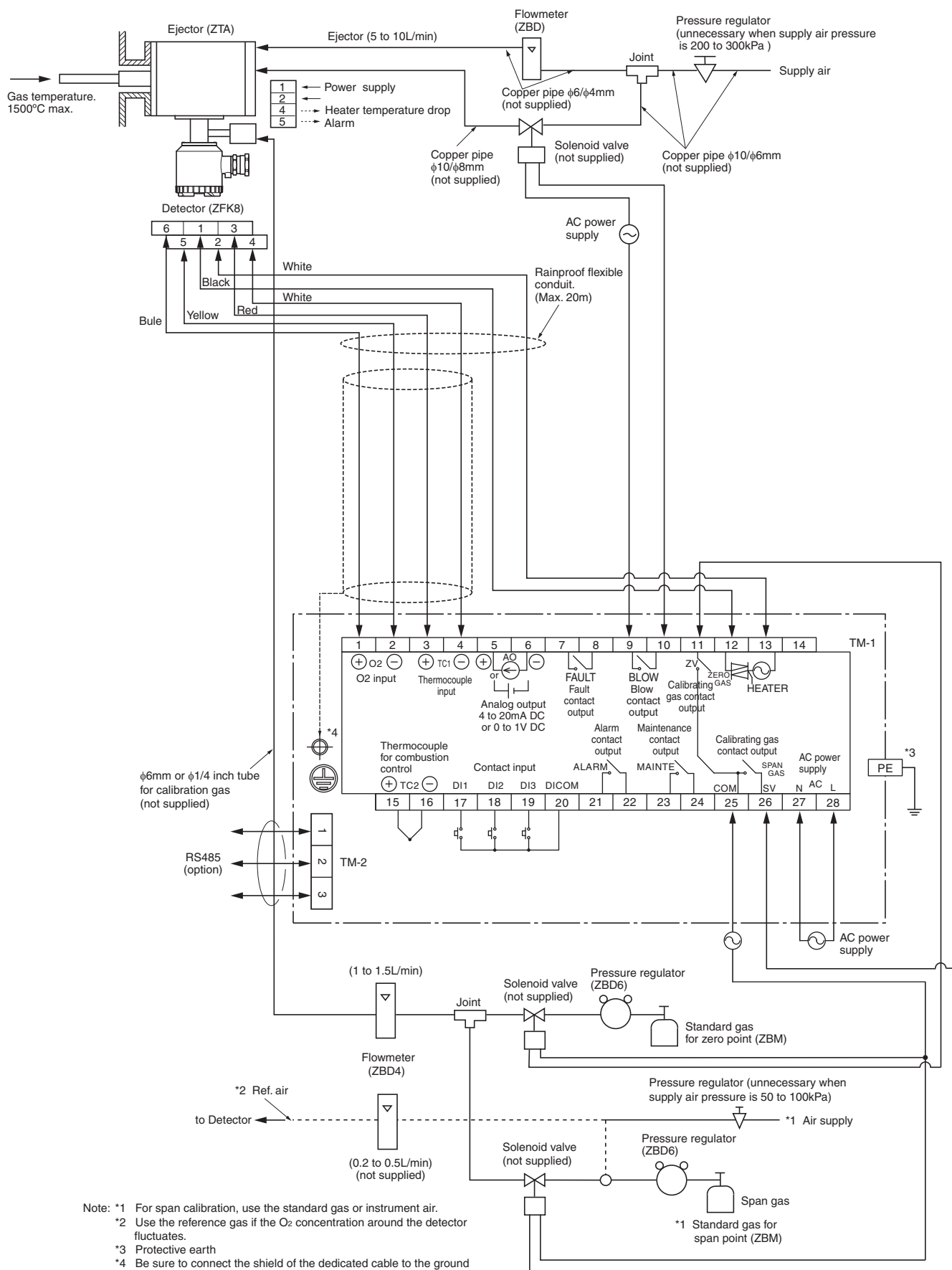


# Ejector system (with valve)



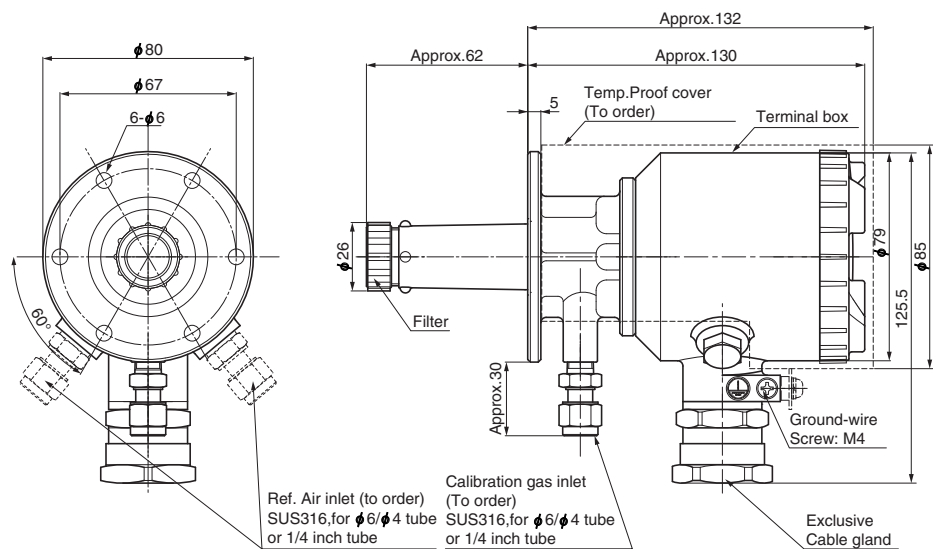
- Note: \*1 For span calibration, use the standard gas or instrument air.  
 \*2 Use the reference gas if the O<sub>2</sub> concentration around the detector fluctuates.  
 \*3 Protective earth  
 \*4 Be sure to connect the shield of the dedicated cable to the ground terminal inside the converter.

## Ejector system

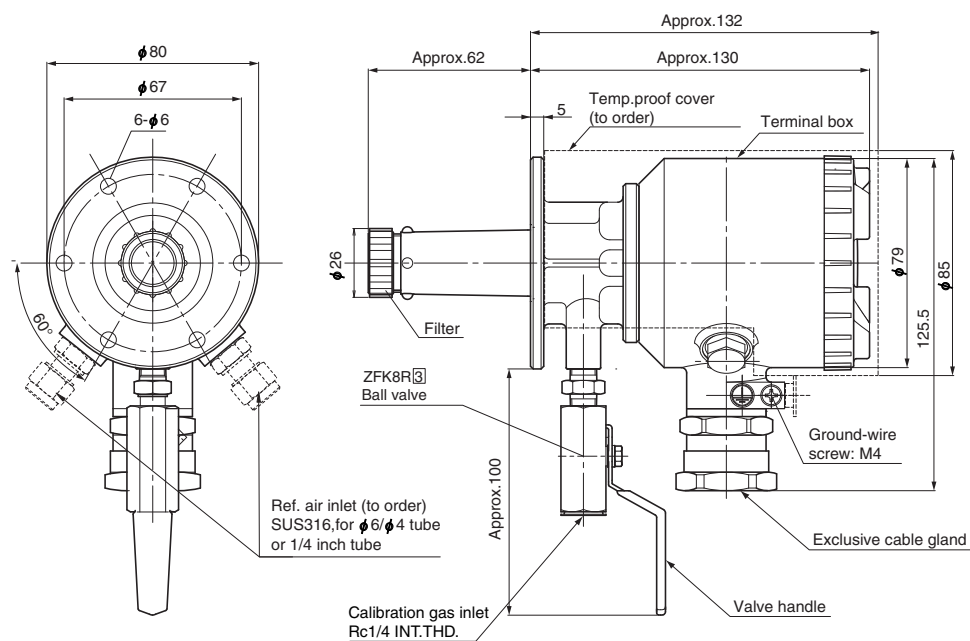
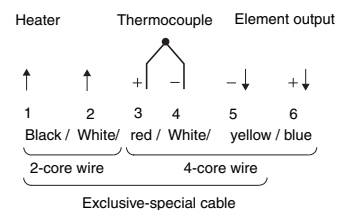


# OUTLINE DIAGRAM (Unit:mm)

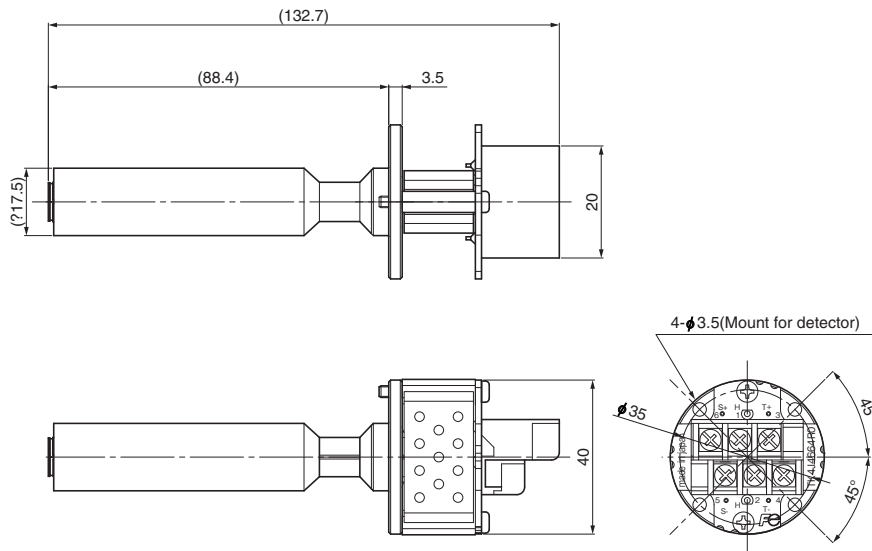
## Detector (ZFK8)



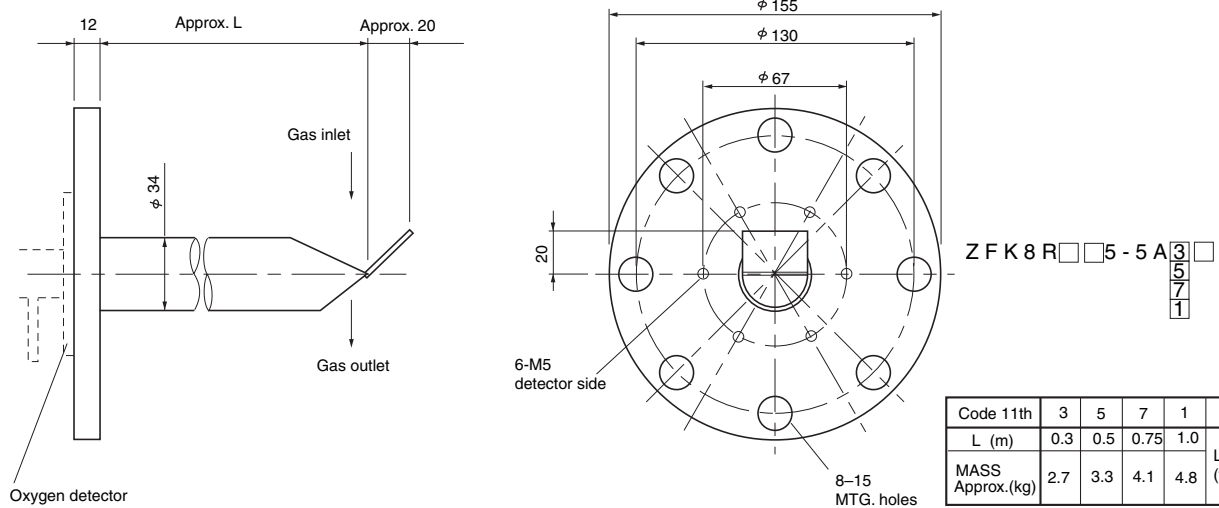
## EXTERNAL CONNECTION DIAGRAM



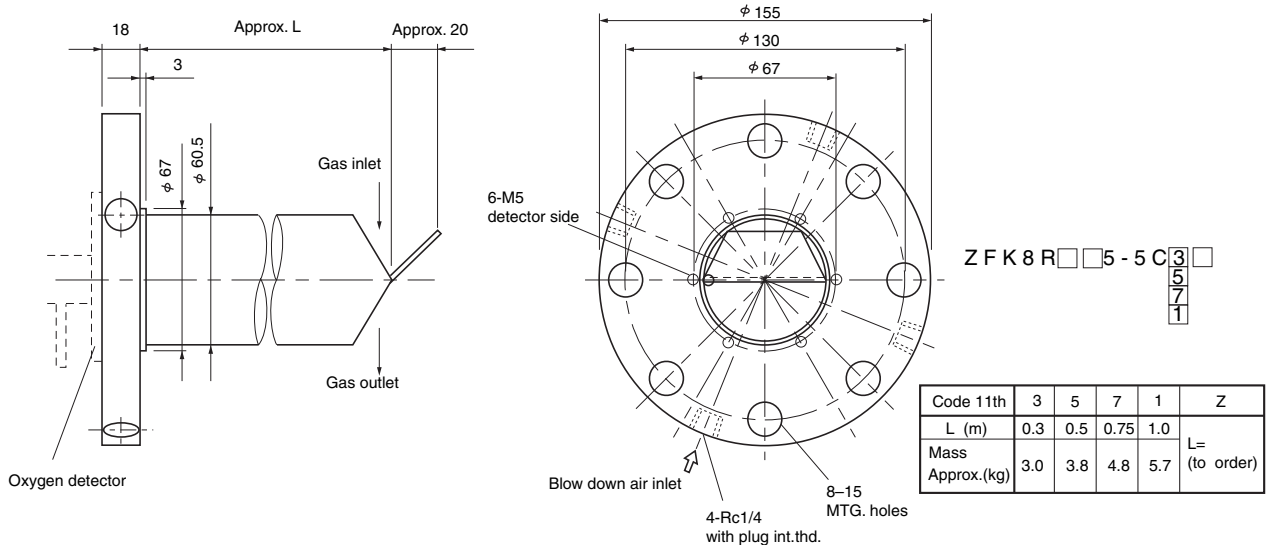
### Sensor unit (ZFK8YY)



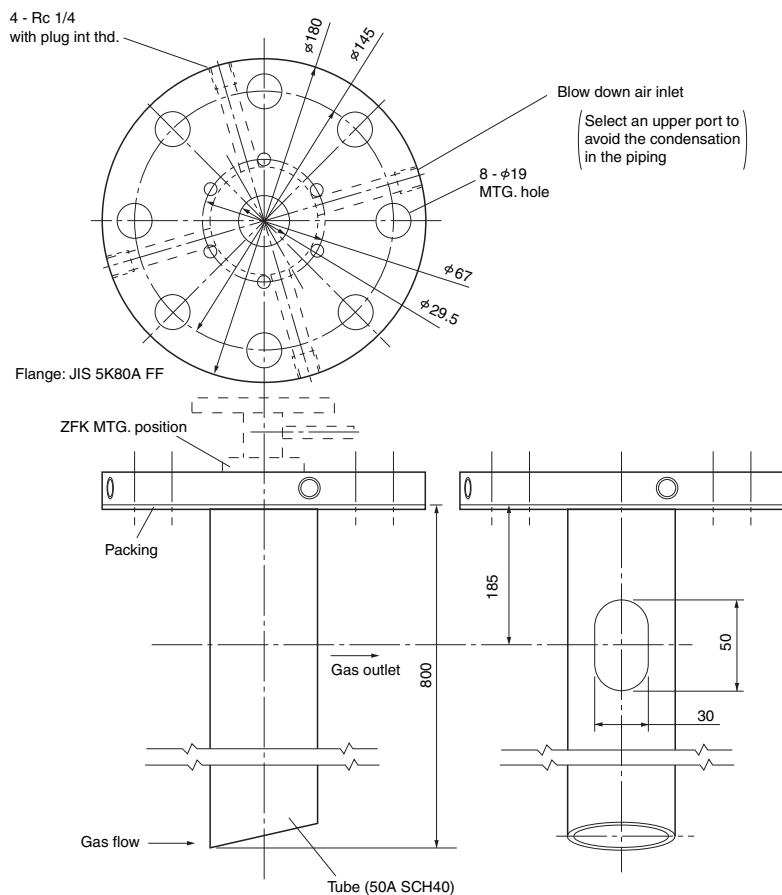
### Flow guide tube



### Flow guide tube (with blow-down nozzle)



Flow guide tube (for high particulate)

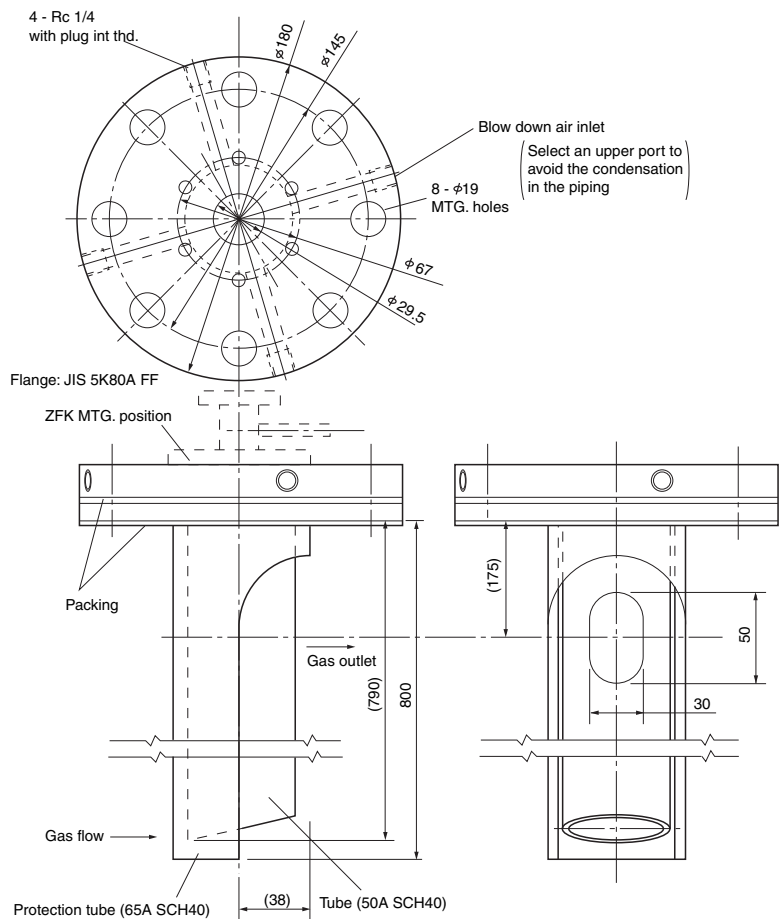


ZFK 8 R   5 - 6 D 

|   |
|---|
| 3 |
| 5 |
| 7 |
| 1 |

|                     |     |     |      |     |                  |
|---------------------|-----|-----|------|-----|------------------|
| Code 11th           | 3   | 5   | 7    | 1   | Z                |
| L (m)               | 0.3 | 0.5 | 0.75 | 1.0 | L=<br>(to order) |
| Mass<br>Approx.(kg) | 4.5 | 5.6 | 7.0  | 8.3 |                  |

Flow guide tube (for high particulate with cover)

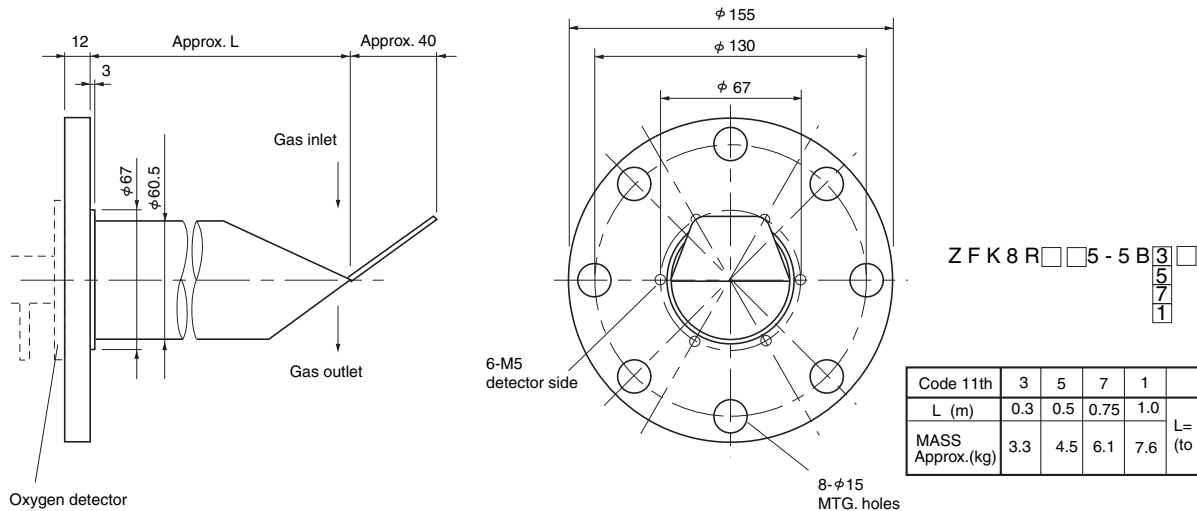


ZFK8R□□5-6E

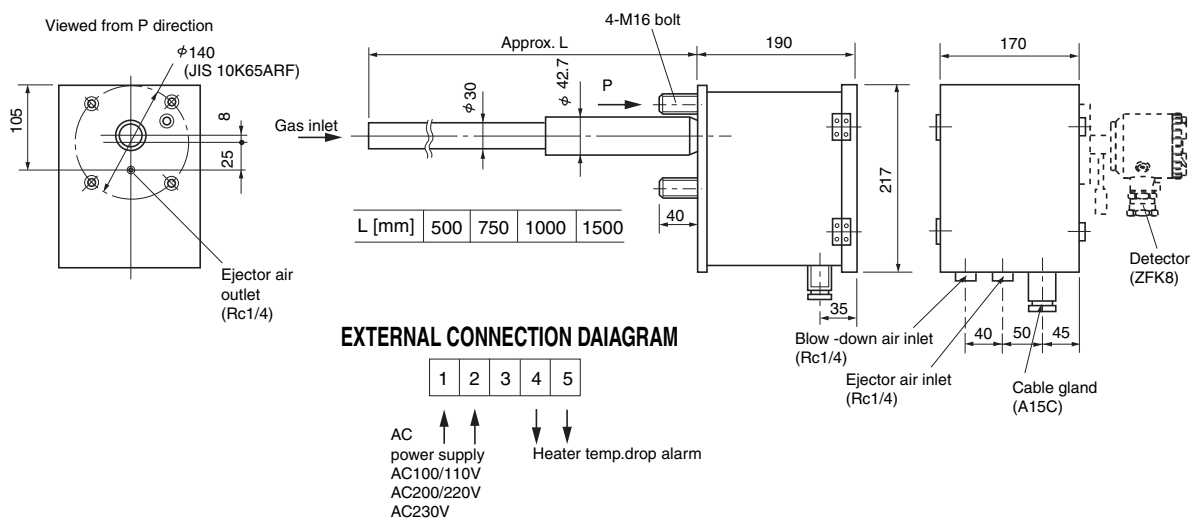
|   |
|---|
| 3 |
| 5 |
| 7 |
| 1 |

|                     |     |     |      |      |                  |
|---------------------|-----|-----|------|------|------------------|
| Code 11th           | 3   | 5   | 7    | 1    | Z                |
| L (m)               | 0.3 | 0.5 | 0.75 | 1.0  | L=<br>(to order) |
| Mass<br>Approx.(kg) | 7.1 | 9.0 | 11.4 | 13.6 |                  |

### Flow guide tube (for corrosive gas)

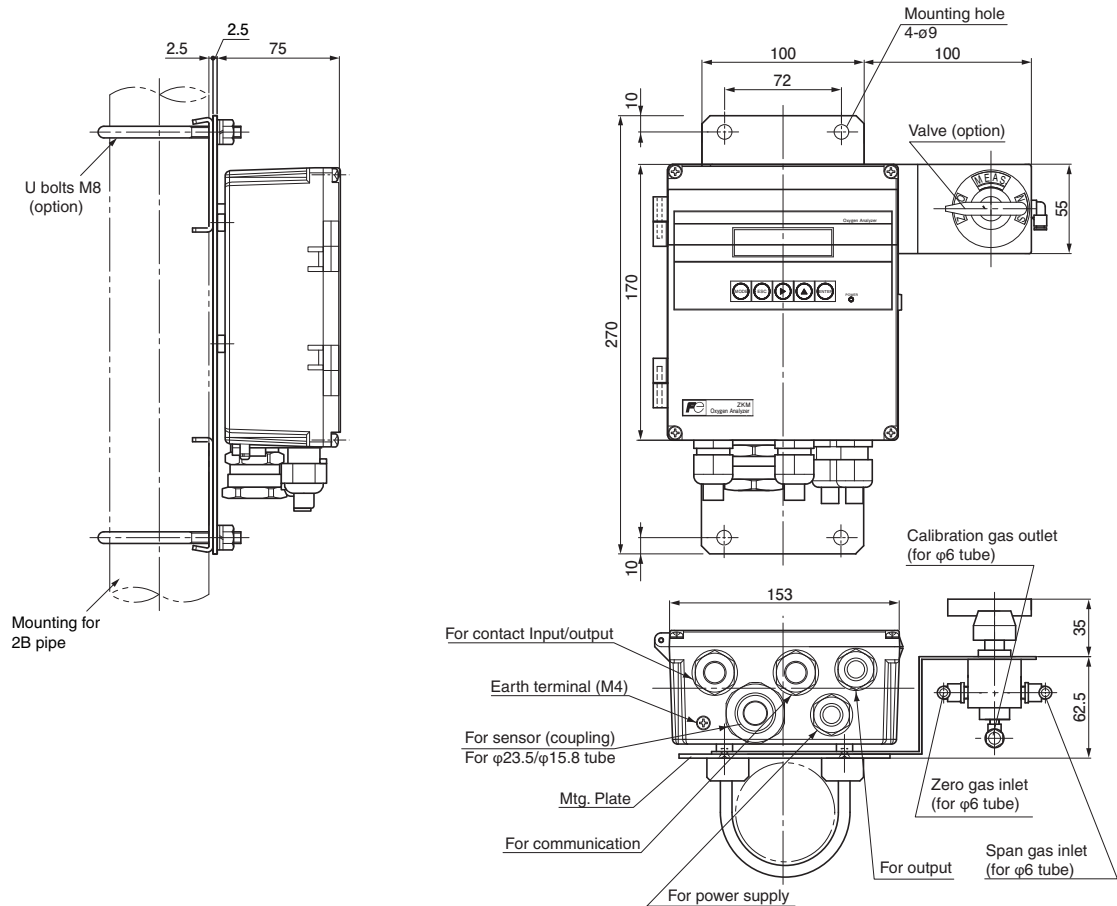


### Ejector (ZTA)



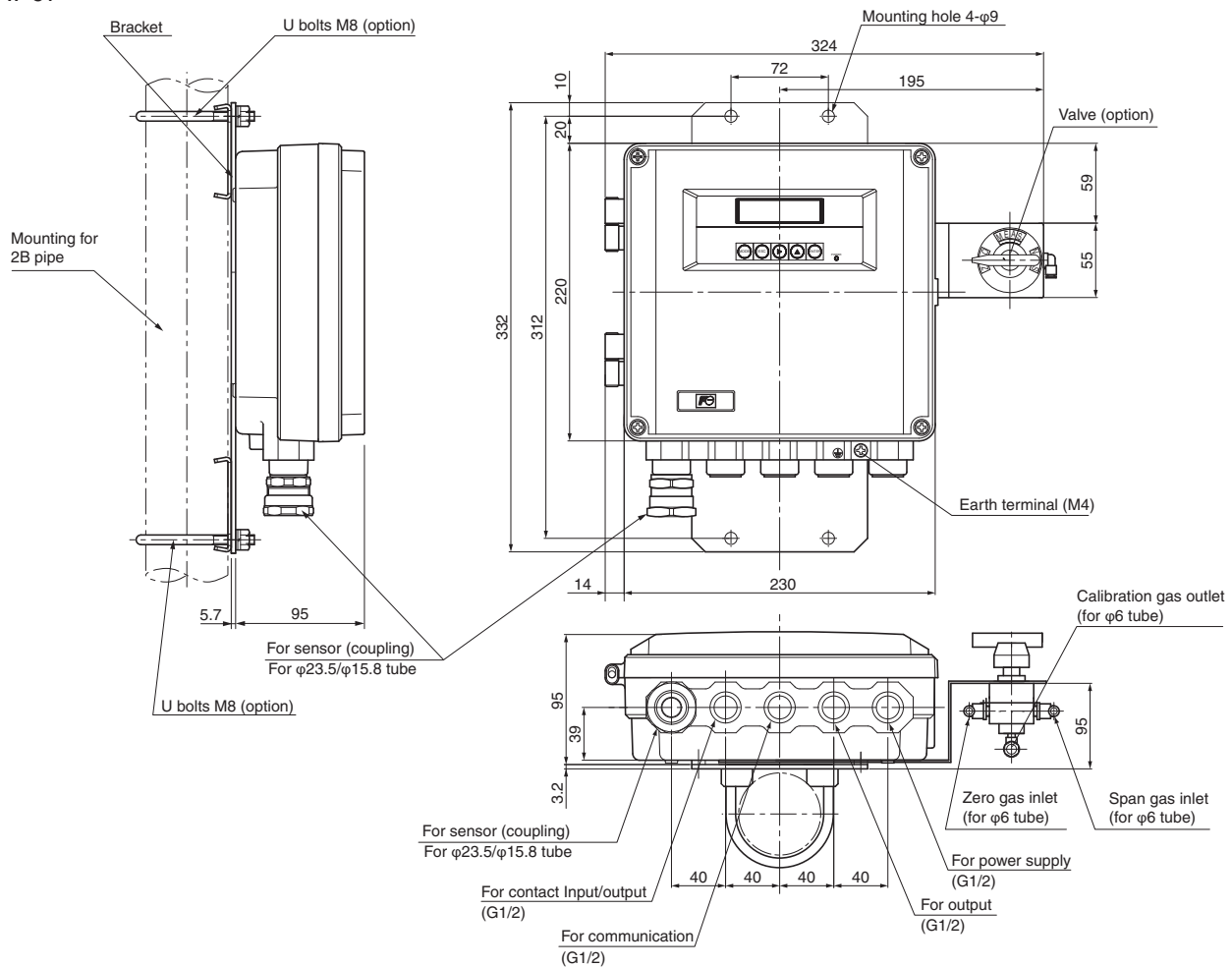
## Converter (ZKM1)

<IP66>



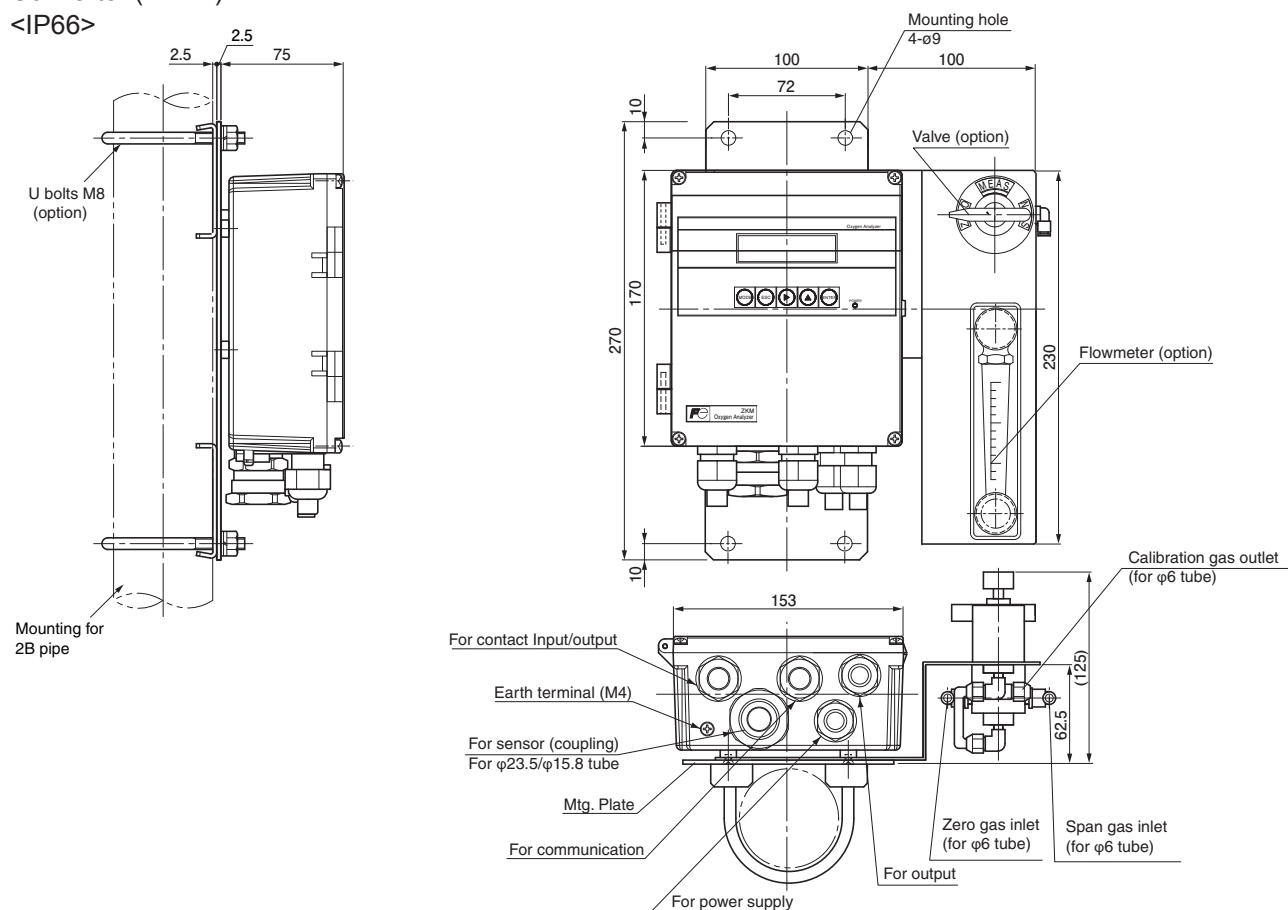
## Converter (ZKM2)

<IP67>



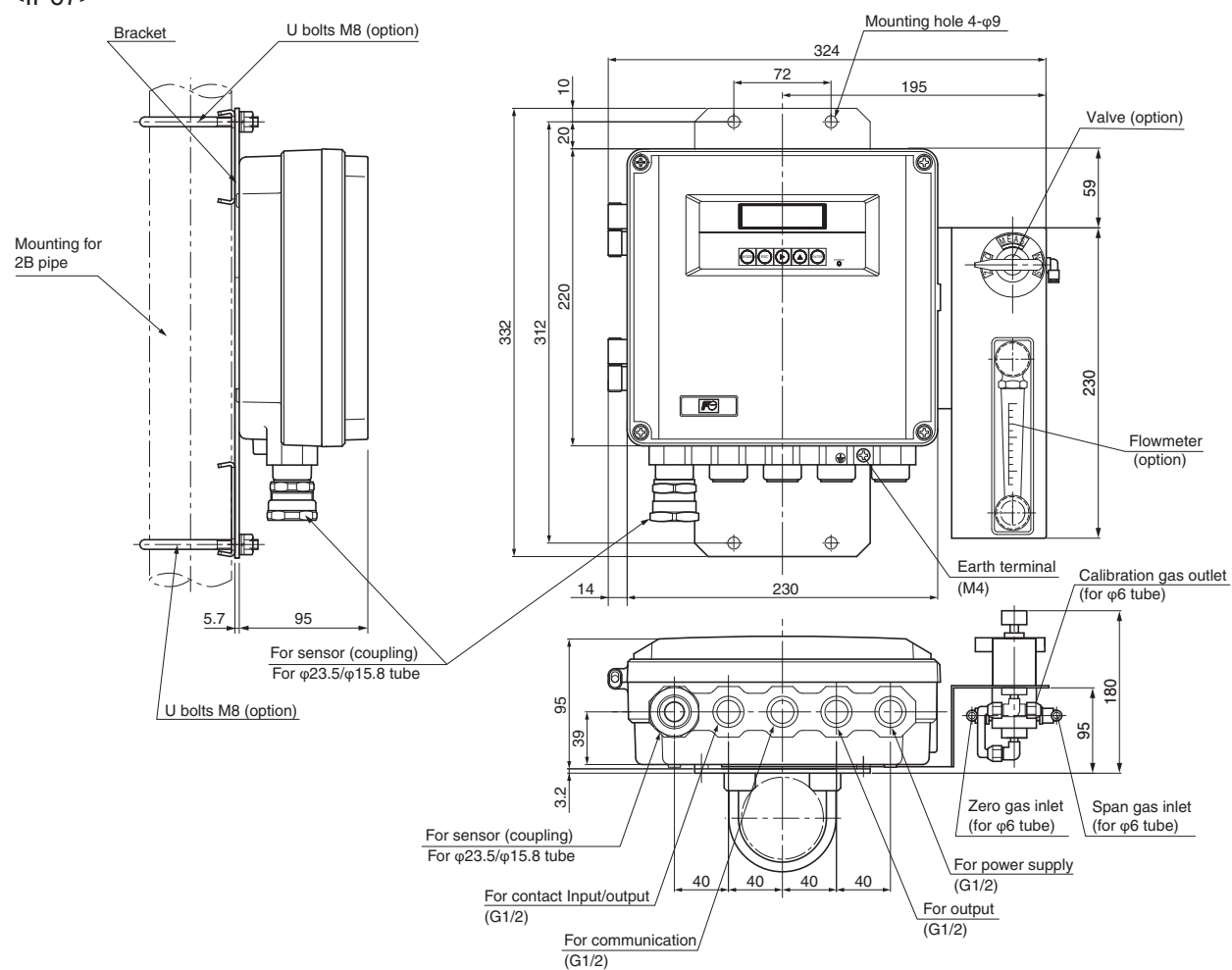
## Converter (ZKM1)

<IP66>

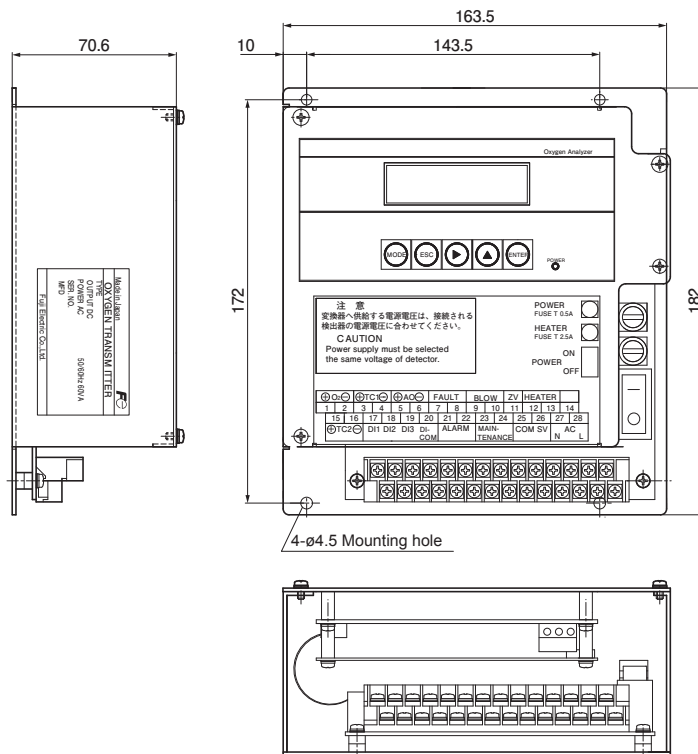


## Converter (ZKM2)

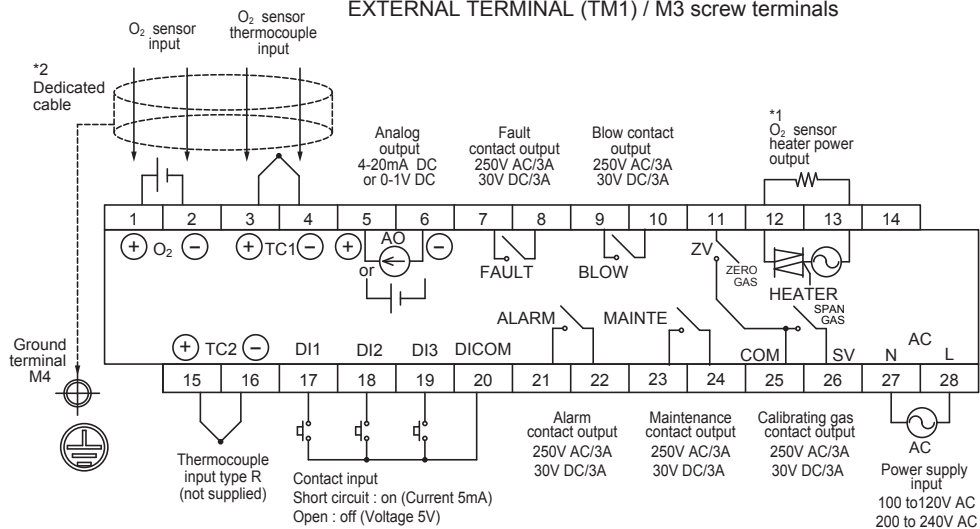
<IP67>



## Converter (ZKM3) <Bench type>



### EXTERNAL TERMINAL (TM1) / M3 screw terminals



### RS-485 communication terminal (TM2, option) / Euro-style terminals

|     |      |      |
|-----|------|------|
| 1   | 2    | 3    |
| GND | TRX- | TRX+ |

#### Notes:

- \*1. The heater uses the same power source as the converter.
- \*2. Connect the shield of the dedicated cable to the ground terminal inside the converter.

#### ⚠ Caution on Safety

\*Before using this product, be sure to read its instruction manual.

**F** Fuji Electric Co., Ltd.

Instrumentation & Sensors Planning Dept.  
1, Fuji-machi, Hino-city, Tokyo 191-8502, Japan  
<http://www.fujielectric.com>  
Phone: +81-42-514-8930 Fax: +81-42-583-8275  
<http://www.fujielectric.com/products/instruments/>