

# INFRARED CO<sub>2</sub> CONTROLLER

**DATA SHEET**
**ZFP9-3**

This is a non-dispersion type infrared CO<sub>2</sub> gas analyzer. It accurately measures the concentration of CO<sub>2</sub> gas in the air, indicates the result and simultaneously outputs an analog signal. Since upper and lower limit alarm functions are standard it can also be used as a controller.

This instrument is suitable for use as a CO<sub>2</sub> meter in green houses, building ventilation systems, CA (Controlled Atmosphere) storage facilities, and so on.

## FEATURES

1. Use of high-performance infrared-ray system
2. Excellent stability and easy maintenance
3. Control with upper/lower limit alarm functions possible
4. Compact and lightweight (Approx. 3kg)
5. Con fromity with EU-ROHS

## SPECIFICATIONS

### Functional specifications

**Measuring system:**

NDIR (non-dispersion infrared ray system)

**Measured gas:**

CO<sub>2</sub> in the air

**Measuring range:**

0 to 0.2%, 0 to 0.3%, 0 to 1%, 0 to 5%, 0 to 10%, 0 to 20% CO<sub>2</sub> (as specified)

**Output signal:**

4 to 20mA DC nonlinear (max. load resistance 350Ω) or 0 to 100mV DC nonlinear (output resistance 100Ω)  
 Note) Linear output is available only for 0 to 0.2% range, 4 to 20mA DC or 0 to 100 mV DC.

**Alarm function:**

Alarm setting range; 0 to 100% FS  
 Setting method; set value display on indicator with internal upper/lower limit setting VR's  
 Output; relay contact (2 × 1c), 250V AC, 3A, or 30V DC, 3A (resistive load)  
 Alarm hysteresis width; ±4% of scale length (at 50% FS)  
 Indication; upper limit indicator lamp (red)  
 — lights up when CO<sub>2</sub> concentration exceeds upper limit.  
 lower limit indicator lamp (red)  
 — lights up when CO<sub>2</sub> concentration is below the lower limit.

**Indicator:**

CO<sub>2</sub> concentration actual scale, moving coil type, JIS 2.5 class

**Power supply:**

100, 115, 200, 220V AC ±10%, 50/60Hz (as specified)

**Power consumption:**

Approx. 18VA

**Ambient temperature:**

0 to 40°C


**Ambient humidity:**

90% RH or less

**Storage temperature:**

-20 to 50°C

**Sample gas temperature:**

0 to 50°C

**Gas sampling:**

Aspirating pump (with power ON-OFF switch), membrane filter built in, sample gas flow rate approx. 0.6 L/min

### Performance specifications

**Repeatability:**

±1% FS

**Zero point drift:**

Within ±10%/6 months

**Response time:**

Within 10 seconds (for 90% response)

**Warmup time:**

Approx. 30 minutes

**Linearity:**

±3% FS (only for 0 to 0.2% range)

### Structure and material

**Enclosure:**

Indoor dust-proof type

**Case material:**

Case cover (ABS resin), base plate (steel plate)

**Surface color:**

Case (Munsell 3.1Y7.0/1.1)

Lid (Munsell 9.2YR4/1)

**Material of parts contacting gas:**

SUS304, corrosion-resistant aluminum

**Mounting:**

Wall mounting

**Outer dimensions (H x W x D):**

257 × 220 × 85mm

**Mass {Weight}:**

Approx. 3kg

**Piping:**

4.8mm dia. hose end (sample gas inlet)

**Wiring:**

M3 screw terminal

**SCOPE OF DELIVERY**

- CO<sub>2</sub> Controller ... 1 unit
- Filter paper ... 5 sheets
- Fvse (250V 2A T) ... 2 pcs
- Ferrite core ... 2 pcs

**ITEMS TO BE ORDERED SEPARATELY**

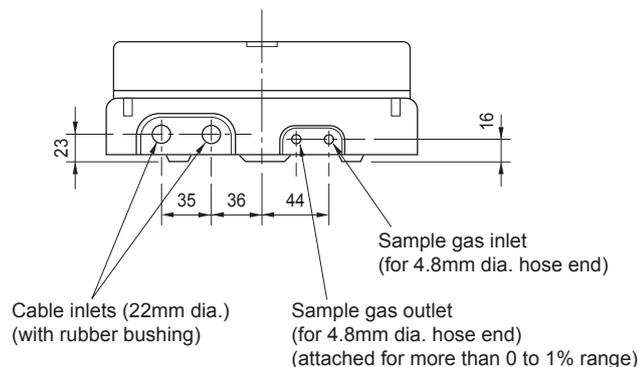
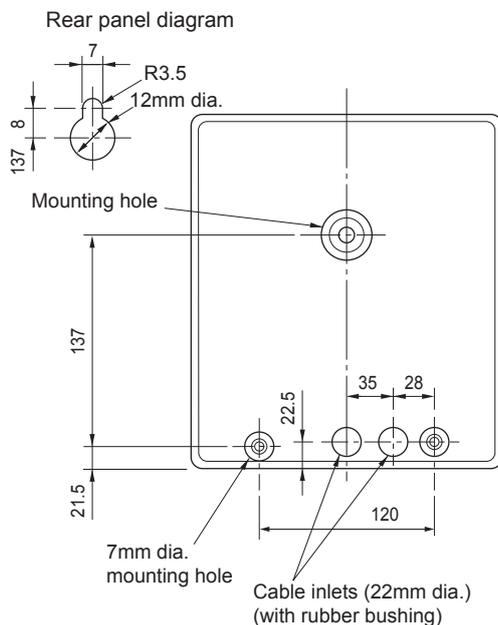
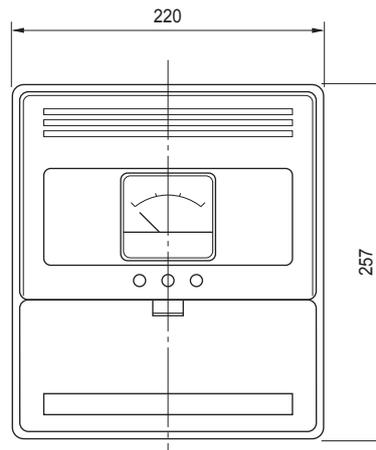
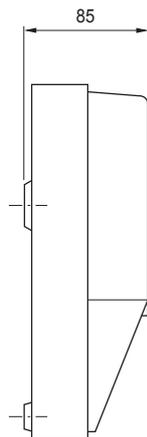
- Standard gas for zero/span calibration (type ZBM)
- Pressure regulator for standard gas (type ZBD610)
- Flowmeter for zero/span calibration (type ZBD472)

**CODE SYMBOLS**

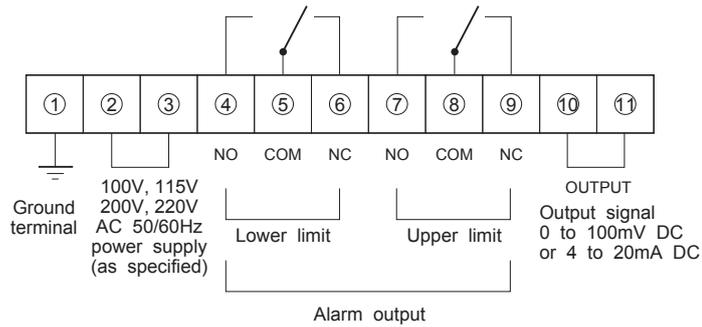
1	2	3	4	5	6	7	8	Description
Z	F	P	9				3	
A								Measuring range 0 to 0.3%
B								0 to 1%
C								0 to 5%
D								0 to 10%
E								0 to 20%
G								0 to 0.2%
A								Output signal DC 0 to 100mV nonlinear
B								DC 4 to 20mA nonlinear
C								DC 0 to 100mV linear*
D								DC 4 to 20mA linear*
1								Power supply 100V AC 50/60Hz
2								115V AC 50/60Hz
4								220V AC 50/60Hz
5								200V AC 50/60Hz

\* Linear output is available only for 0 to 0.2% range.  
(5th code : G)

**OUTLINE DIAGRAM (Unit: mm)**



## CONNECTION DIAGRAM



Lower limit alarm: 4 – 5 become conductive when CO<sub>2</sub> concentration in sample gas drops below set value, while 5 – 6 become conductive when concentration exceeds set value.  
 Upper limit alarm: 8 – 9 become conductive when CO<sub>2</sub> concentration in sample gas drops below set value, while 7 – 8 become conductive when concentration exceeds set value.

## CAUTIONS ON WIRING

Use vinyl insulated cable with a cross-sectional area of 1.25mm<sup>2</sup> or more for the power supply and alarm contact output.

Use two-core shielded cable for the output signal cable in order to avoid the influence of inductive noise.

Be sure to connect shielded wires to the ground terminal.

Keep the output signal cable away from the power line and alarm contact output line.

Add the provided ferrite core to each of output signal line, and alarm output line.

## EC DIRECTIVE COMPLIANCE

The product conforms to the requirements of the Low Voltage Directive 2014/35/EU and the EMC Directive 2014/30/EU.

It conforms to use the following harmonized standard

LVD: EN61010-1 : 2010

“Safety requirements for electrical equipment for measurement, control and laboratory use”

Installation Category II,

Pollution Degree 2

Altitude up to 2000m

EMC: EN61326-1 : 2013, EN61326-2-3 : 2013

“Electrical equipment for measurement, control and laboratory use - EMC requirement”

EN61000-3-2 : 2014, EN61000-3-3 : 2013 “Electromagnetic compatibility (EMC)”

⚠ Caution on Safety

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

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