

Preface

Thank you for purchasing our DSW-200-CO, Indoor CO Sensor.


This manual contains instructions for installation and handling of the DSW-200-CO. To ensure safe and correct use, thoroughly read and understand this manual before using this sensor. To prevent accidents arising from the misuse of this instrument, please ensure the operator receives this manual.

Notes

- This instrument should be used in accordance with the specifications described in the manual. If it is not used according to the specifications, it may malfunction or cause a fire.
- Be sure to follow all of the warnings, cautions and notices. If they are not observed, serious injury or malfunction may occur.
- The contents of this instruction manual are subject to change without notice.
- Care has been taken to ensure that the contents of this instruction manual are correct, but if there are any doubts, mistakes or questions, please inform our sales department.
- Any unauthorized transfer or copying of this document, in part or in whole, is prohibited.
- Shinko Technos Co., Ltd. is not liable for any damage or secondary damage(s) incurred as a result of using this product, including any indirect damage.

Safety Precautions (Be sure to read these precautions before using our products.)

The safety precautions are classified into 2 categories: "Warning" and "Caution".

Depending on the circumstances, procedures indicated by  Caution may result in serious consequences, so be sure to follow the directions for usage.

Warning

Procedures which may lead to dangerous conditions and cause death or serious injury, if not carried out properly.

Caution

Procedures which may lead to dangerous conditions and cause superficial to medium injury or physical damage or may degrade or damage the product, if not carried out properly.

Warning

- To prevent an electrical shock or fire, only Shinko or other qualified service personnel may handle the inner assembly.
- To prevent an electrical shock, fire or damage to the instrument, parts replacement may only be undertaken by Shinko or other qualified service personnel.

SAFETY PRECAUTIONS

- To ensure safe and correct use, thoroughly read and understand this manual before using this instrument.
- This instrument is intended to be used for general equipment. Verify correct usage after purpose-of-use consultation with our agency or main office.
(Never use this instrument for medical purposes with which human lives are involved.)
- External protection devices must be installed, as malfunction of this product could result in serious damage to the system or injury to personnel. Proper periodic maintenance is also required.
- This instrument must be used under the conditions and environment described in this manual.
Shinko Technos Co., Ltd. does not accept liability for any injury, loss of life or damage occurring due to the instrument being used under conditions not otherwise stated in this manual.

Caution with Respect to Export Trade Control Ordinance

To avoid this instrument from being used as a component in, or as being utilized in the manufacture of weapons of mass destruction (i.e. military applications, military equipment, etc.), please investigate the end users and the final use of this instrument.

In the case of resale, ensure that this instrument is not illegally exported.

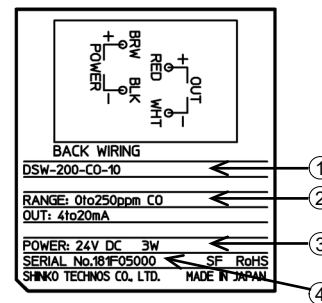
1. Model

1.1 Model

Model	DSW-200	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Measuring object	CO				CO concentration
Measurement range					0 to 250 ppm
Output spec		1			4 to 20 mA DC
		2			0 to 20 mA DC
		3			1 to 5 V DC
		4			0 to 5 V DC
		5			0 to 1 V DC
Moisture-proof coating		0			Not needed
		1			Needed

1.2 How to Read the Model Label

Model label is attached to the inside of the case.



(Fig. 1.2-1)

- ① Model
- ② Measurement range, Output
- ③ Power supply, power consumption
- ④ Serial number

2. Mounting

⚠ Warning

- Under no circumstances should the sensor be disassembled, nor should the sensor can and/or cap be deformed.
- Sensor characteristics may be significantly changed when the sensor is contaminated by alkaline metals, especially salt water spray.
- Sensor characteristics may be irreversibly changed by the exposure to high concentrations of basic gases such as ammonia.
- At temperatures higher than the operating temperature, the sensing membrane may deteriorate, resulting in irreversible change of sensor characteristics.
- Sensor characteristics may be changed due to soaking or splashing the sensor with water.

⚠ Caution

Installation site should be examined, giving careful consideration to the following conditions.

Please note that this product is designed for indoor use only.

[This instrument is intended to be used under the following environmental conditions.]

- Free air flow
- No exposure to direct sunlight, an ambient temperature of -10 to 50°C (14 to 122°F) that does not change rapidly, and no icing
- An ambient non-condensing humidity of 10 to 95 %RH
- Avoid exposure of sensor where silicone adhesives, hair grooming materials, or silicone rubber/putty may be present. Silicone vapors may cause clogging of the gas diffusion route.
- If severe dew condensation occurs for a long period inside of the sensor or on the sensor surface, it may cause clogging of gas diffusion route or deterioration of the sensing membrane. Mild dew condensation which occurs in normal indoor air would not cause any significant damage.
- If the sensor is exposed to hydrogen sulfide or sulfuric acid gas, sensor components such as the gas diffusion film, can, and cap may be corroded, resulting in the sensor damage.
- Vibration and shock may cause an open or short circuit inside the sensor.
- Extremely high concentrations of dust or oil mist may cause clogging of the sensor's internal structure.
- If the sensor is exposed to organic vapors such as alcohols, acetone, or volatile oils, these gases may adsorb on the sensor surface, resulting in temporary sensor drift.

⚠ Maintenance

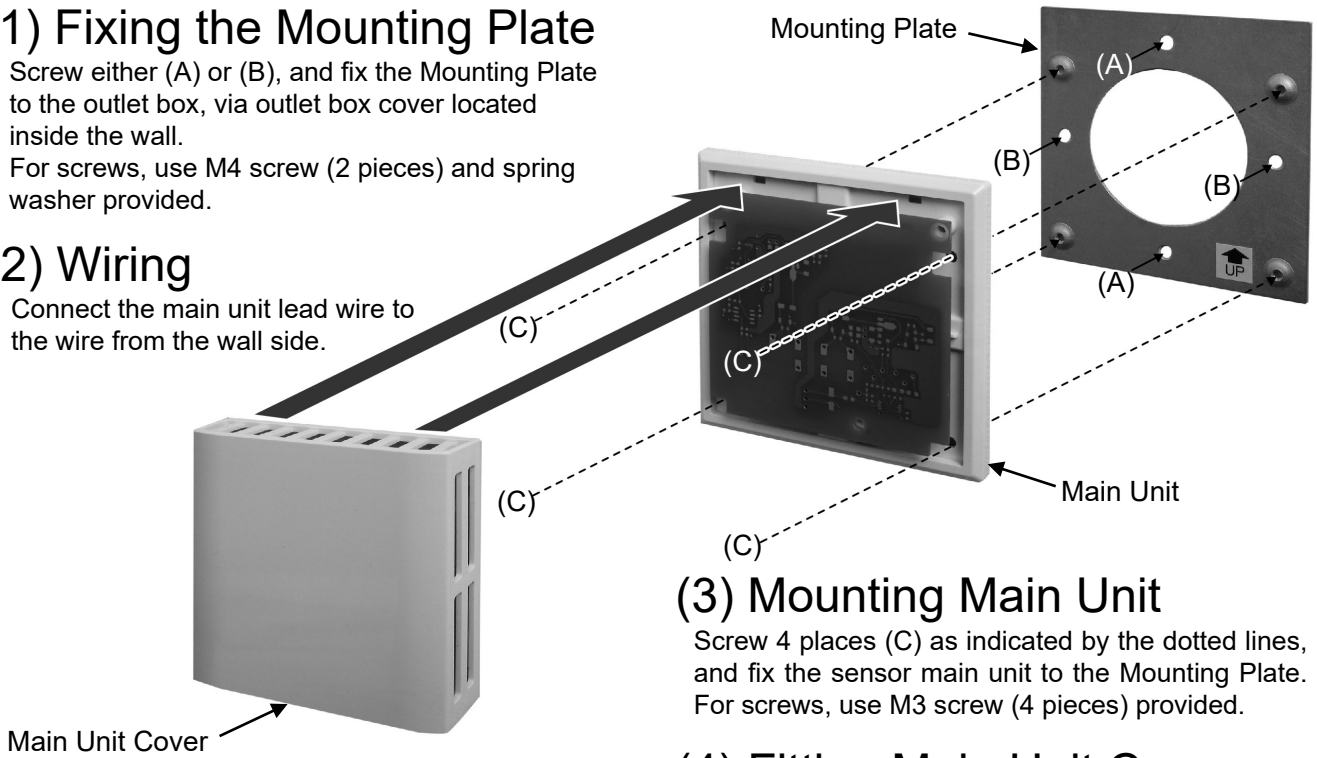
- Be sure to conduct periodic inspection once a year (once every six months in a highly CO concentrated place).
- Change the sensor if the measured value does not drop below 30 ppm in air (fresh air). Also change the sensor when no output occurs.

(1) Fixing the Mounting Plate

Screw either (A) or (B), and fix the Mounting Plate to the outlet box, via outlet box cover located inside the wall.
For screws, use M4 screw (2 pieces) and spring washer provided.

(2) Wiring

Connect the main unit lead wire to the wire from the wall side.



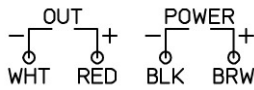
(3) Mounting Main Unit

Screw 4 places (C) as indicated by the dotted lines, and fix the sensor main unit to the Mounting Plate.
For screws, use M3 screw (4 pieces) provided.

(4) Fitting Main Unit Cover

Insert the main unit cover protrusion (2 places) into the cover mounting holes (2 places) located on the upper part of the sensor main unit, then fit the cover to the sensor main unit.

3. Wiring



(Fig. 3-1)

Lead Wire Color	Lead Wire Type	
BRW: Brown	+	Power supply
BLK: Black	-	
RED: Red	+	Output
WHT: White	-	

4. Operation Check

Check the CO concentration after wiring and power-on. Wait 10 minutes for the sensor to stabilize, then check that the CO concentration readings are not largely deviated from the reference values shown on the right.

CO Concentration Reference Value

Environment	CO Concentration
Outdoor space	0 to 3 ppm
Outdoor space near street	5 to 10 ppm
Ventilated office	0 to 5 ppm
Unventilated office	5 to 10 ppm
Ventilated car park	3 to 15 ppm
Unventilated car park	15 to 30 ppm

5. Specifications

Measurement Range	0 to 250 ppm	
Output	4 to 20 mA DC, 0 to 20 mA DC, 1 to 5 V DC, 0 to 5 V DC, 0 to 1 V DC (must be specified.)	
Power Supply Voltage	24 V DC \pm 10%	
Measurement Method	Electrochemical type	
Mounting	To the outlet box (inside wall), via outlet box cover: Mounting dimension: 66.7 mm (JIS C8340: 1999) (JIS: Japan Industrial Standards)	
Material	Flame-resistant PC resin, Color: White	
Wiring	Lead wire: 300 mm Cross-section area: 0.5 mm ² See "3. Wiring" for details.	
Performance	Accuracy	Within \pm 4%FS \pm 10 ppm (when calibrated using the standard gas) (within operating environment)

	Warm-up period	60 sec (During warm-up, the output low limit is output.)	
	Initial stabilization time	10 minutes	
	Response characteristics	Within 120 seconds	
	Output	Output signal	Linear relationship between CO concentration and sensor output. When sensor is out of order: 'Output high limit $\pm 10\%$ FS' is output.
		Resolution	0.05%FS max.
	Allowable load resistance	Output Range	Allowable Load Resistance
		4 to 20 mA	550 Ω max.
		0 to 20 mA	550 Ω max.
		1 to 5 V	5 k Ω minimum
		0 to 5 V	5 k Ω minimum
		0 to 1 V	1 k Ω minimum
External Dimensions	W90 x H90 x D32 mm (excluding lead wire)		
Power Consumption	Approx. 2 W		
Operating Environment	Temperature: -10 to 50°C Humidity: 10 to 95 %RH (Non-condensing)		
Storage Environment	Temperature: -10 to 50°C Humidity: 10 to 95 %RH (Non-condensing)		
Weight	Approx. 100 g		
Insulation Resistance	Between Case - Output: 500 M Ω minimum, at 500 V DC		
Dielectric Strength	Between Case - Output: 1.5 kV for 1 minute, 3 mA max.		
Moisture-proof coating	Printed-circuit board inside the main unit (excluding gas sensor)		
Accessories	Mounting Plate, Mounting Plate screw: M4 x 8 (2 pieces), Spring washer (2 pieces) Sensor main unit mounting screw: M3 x 4 (4 pieces), Instruction manual: 1 copy		
Environmental Spec	RoHS directive compliant		

Inquiries

For any inquiries about this instrument, please contact our agency or the vendor where you purchased the unit after checking the model and serial number. Please let us know the details of the malfunction, or discrepancy, and the operating conditions.

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