

# Carbon Dioxide Transmitter with Relay

## Datasheet

### CD-400(LG)(-T)



**CD-400(G)(-T)**  
Without LCD-Display



**CD-400L(G)(-T)**  
(with LCD Display)

## General

CD-400(LG) series are transmitter type models which measure CO<sub>2</sub> concentration with analogue voltage/current output with relay.

CD-400(LG)(-T) series gives Temperature measurement with relay as well as CO<sub>2</sub>.

## Features

- **CO<sub>2</sub> sensor** : NDIR (Non-Dispersive Infrared) technology
- **Analog Voltage/Current output**  
4-20mA & 2-10V – settable by switch  
0~20mA & 0~10V or 0~5V or 1~5V can be orderable as option.
- **Re-calibration function**  
10 minutes manual re-calibration (MCDL) or weekly auto-calibration(ACDL) are supported
- **CO<sub>2</sub>, Temp Relay range** is changeable with switch
- **Power** of 24V DC, AC.
- **Size** : 123mmx70mmx43mm

## CD-400(LG)(-T) Specification

### General Performance

#### Operating Temperature range

-10 ~ 60°C

#### Operating Humidity range

0 ~ 95% RH (Non-condensing)

'G' option : 0 ~ 99% RH (Non-condensing)

#### Storage Temperature

-30°C ~ 70°C

### CO<sub>2</sub> Measurement

#### Sensing Method

NDIR (Non-dispersive Infrared)

#### Measurement Range

0 to 2,000(3,000/5,000/10,000ppm

-settable by switch)

#### Accuracy

±50 ppm ±3% of Reading

(ACDL operation : ±30ppm ±3% of reading),

#### Response Time(90%)

150 seconds

#### Sampling Interval

3 sec.

### Temperature Sensor (option)

#### Accuracy (\* NTC)

± 0.4 °C (-40°C ~ 100°C)

#### Output Selection

Current 4~20mA or Voltage 2~10VDC  
output with switch.

### Electrical Data

#### Input Power

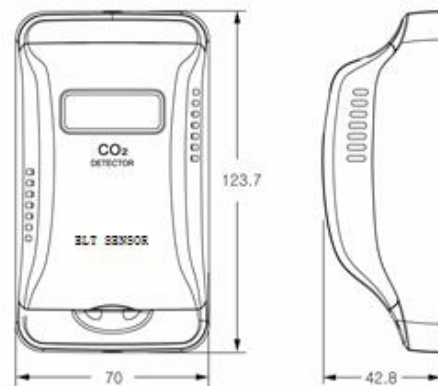
24VAC± 20%, 50/60Hz(4-wired)

Or 24VDC ± 20% (3-wired available)

#### Relay Contact Ratings

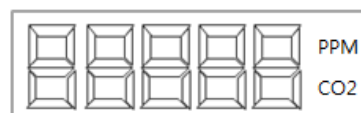
1A 120VAC / 1A 24VDC

### Dimensions (unit : mm)

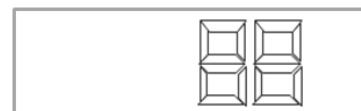


### LCD Display

- CO2 is default



- Temp. (Optional)



### CO<sub>2</sub>/Temp. Relay Range Settings

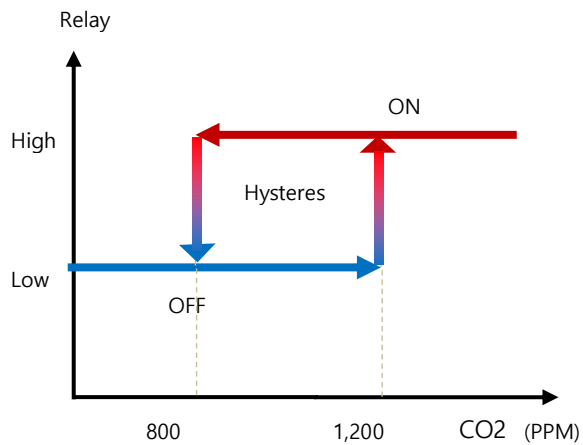
**Contract Rating** : 1A/120VAC

**Configuration** : SPST, Normally Open relay

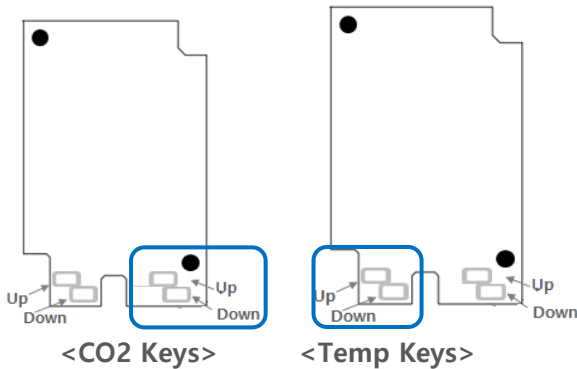
**CO<sub>2</sub> Relay Activated** : On ≥ 1,200ppm,

**CO<sub>2</sub> Relay Deactivated** : Off ≤800ppm

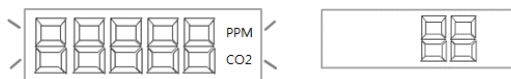
※ Temp Relay Activation/Deactivation values should be designated on issuing order.



※ Relay On/Off values of CO2 and Temp. can be changed as needed using CO2/Temp Keys..



■ CO2, Temp. Relay range change process.

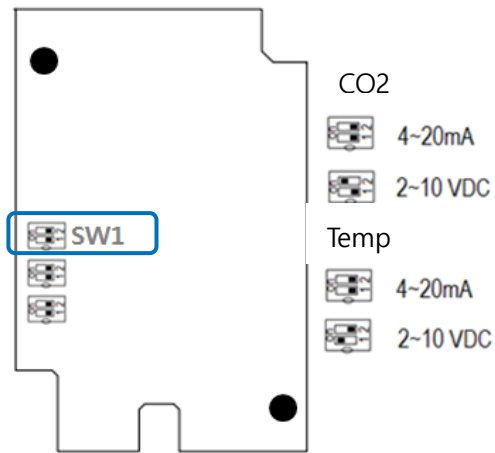


[Procedure]

1. Press CO2 or Temp. Up/Down Key for 2 sec.
2. LCD lights flash
3. Set-up CO2 or Temp. value by using "Up, Down Key"
4. Press CO2 or Temp. "Up, Down Key" both at the same time for 0.5 sec.

Output Signals

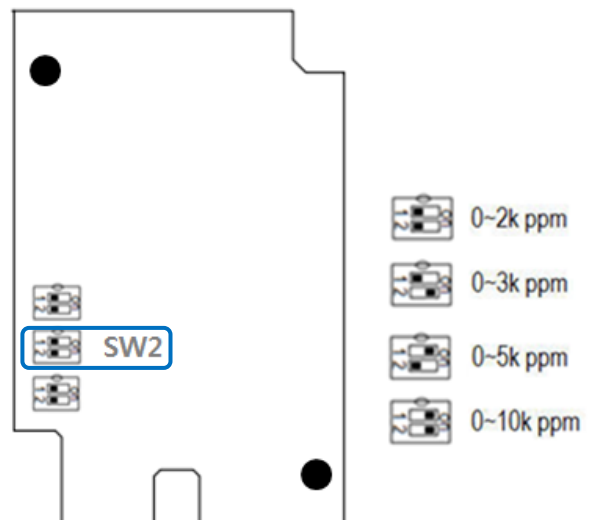
■ SW1 : 4 ~ 20mA & 2 ~ 10VDC for CO2 and Temp. (0~20mA & 0~10VDC or 0~5V or 1~5V is can be chosen or ordering.



PPM Measurement Range

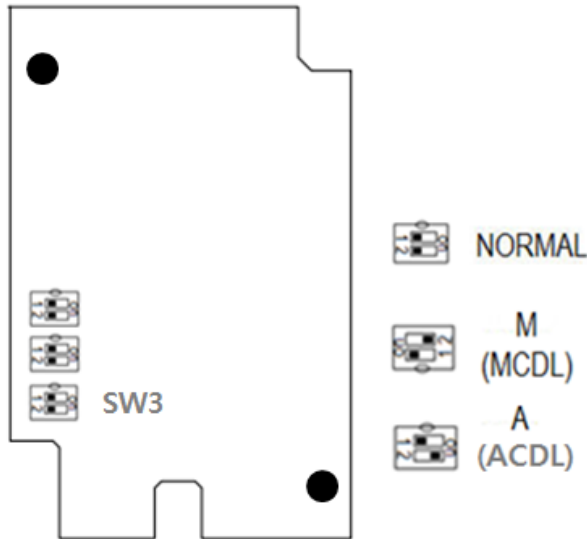
■ SW2 : CO2 Measurement range selection.

- 2K ppm : 0 ~ 2,000ppm CO2
- 3K ppm : 0 ~ 3,000ppm CO2
- 5K ppm : 0 ~ 5,000ppm CO2
- 10K ppm : 0 ~ 10,000ppm CO2



## Operation Mode Selection with MCDL and ACDL

### ■ SW3 : Calibration selection



#### ● M : MCDL

Users can do 10 minutes manual calibration (MCDL) when sensor needs calibration in short time.

**Procedure** : Move switch to 'M' position and wait over 11 minutes at ambient air-flowing status near 400ppm, and move switch back to 'NORMAL' position before 18 minutes.

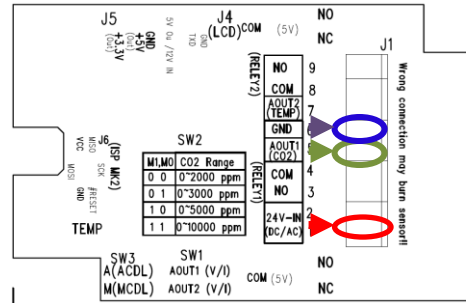
#### ● A : ACDL

When users are using the CD-400 in indoor ventilation applications like as HVAC, building, houses etc., the ACDL could calibrate sensor By itself, saving user's management effort.

**Procedure** : Move switch to 'A' position. Auto-calibration act first in 2 days, second in 5 days, and every 7 days after then since power on.

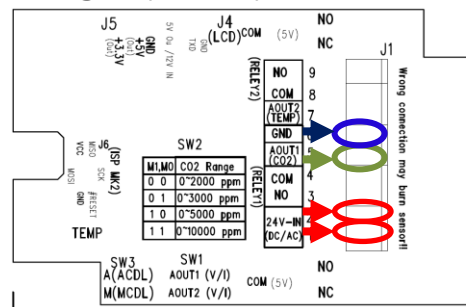
#### ● [J1] Wiring Method for 24VDC, 24VAC

For 3 wired method, 24VDC should be wired into either pin-1 or pin2, GND (Ground) into pin-6, Analog-output into pin-5.



9	Temp. Relay 2 – NO(Normal open)
8	Temp. Relay 2 –COM(Common)
7	Temperature A-OUT
6	GND
5	CO2 A-OUT
4	CO2 Relay 1 –COM(Common)
3	CO2 Relay 1 – NO(Normal Open)
2	(24VDC+ can be wired here instead pin-1)
1	24VDC

For 4 wired method, 24VAC+ ( or 24VAC- ) and 24VAC- ( or 24VAC+ ) should be wired into both pin-1 and pin2, GND (Ground) into pin-6, Analog-output into pin-5.



9	Temp. Relay 2 – NO(Normal open)
8	Temp. Relay 2 –COM(Common)
7	Temperature A-OUT
6	GND
5	CO2 A-OUT
4	CO2 Relay 1 –COM(Common)
3	CO2 Relay 1 – NO(Normal Open)
2	24VAC- ( or 24VAC+ )
1	24VAC+ ( or 24VAC- )

Ordering Table

CD-400(LG)-	Base	'L' option (LCD)	'G' option (~ 99% Humidity)	CO2 Output	Temp. Output	Remark
1	CD-400-	L	G	4_20		4~20mA (c.f. 2~10V can be chosen with Switching (SW1))
2				2_10		2~10V (c.f. 4~20mA can be chosen with SW1)
3				0_20		0~10mA (c.f. 0~10V can be chosen with SW1)
4				0_10V		0~10V (c.f. 0~20mA can be chosen with SW1)
5				0_5V		0~5V (c.f. no other output can be chosen)
6				1_5V		1~5V (c.f. no other output can be chosen)
7				4_20	&4_20	4~20mA (c.f. 2~10V can be chosen with Switching (SW1))
8				2_10	&2_10	2~10V (c.f. 4~20mA can be chosen with SW1)
9				0_20	&0_20	0~10mA (c.f. 0~10V can be chosen with SW1)
10				0_10V	&0_10V	0~10V (c.f. 0~20mA can be chosen with SW1)
11				0_5V	&0_5V	0~5V (c.f. no other output can be chosen)
12				1_5V	&1_5V	1~5V (c.f. no other output can be chosen)

Ex1 : CD-400LG-1 (=CD-400LG-4\_20) has LCD-display, with 'G' option i.e. could operate up to 99% humidity environment, giving CO2 output of 4~20mA which could be changed to 2~10V with switch-1 setting.

Ex2 : CD-400-4 (=CD400-0\_10) has no LCD-display, with 'G' option i.e. could operate up to 90% humidity environment, giving CO2 output of 0~10V. (c.f. 0~20mA could be chosen when SW1 setting changed.

Ex3 : CD-400G-11(=CD-400G-0\_5&0~5) has no LCD-display, with 'G' option i.e., could operate up to 99%, giving outputs 0~5V for CO2 and Temperature each.