# CO Transmitter with Relay

# Datasheet

## COD-400(LG)(-T)


**COD-400(G)(-T)**
**without LCD-Display**


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

## General

COD-400(LG) series are electro chemical type transmitters which measure CO(Carbon monoxide) concentration with analogue voltage/current output with relay.

COD-400(LG)(-T) series gives Temperature measurement with relay as well as CO.

## Features

- CO sensor : Electro chemical type
- Analog Voltage/Current output
  4-20mA (default), 2-10V is settable by switch.
  0~20mA & 0~10V or 0~5V or 1~5V can be orderable as option.
- Re-calibration function
  1 minute manual Zero-calibration weekly auto-calibration(ACDL) are supported
- CO , Temp Relay range is changeable with switch
- Power of 24V DC, AC.
- Size : 123mmx70mmx43mm

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

## General Performance

**Operating Temperature range :** -20 ~ 50℃

**Operating Humidity range** : 0 ~ 95% RH (Non-condensing)

'G' option : to protect from rust

**Recommended Storage Temperature :** 0℃ ~ 20℃

## CO Measurement

**Sensing Method :** Electro chemical type

**Measurement Range :** 0 to 250ppm (0~1k is selectable on ordering)

**Accuracy :** ±3% of F.S.,

**Response Time :** T90 < 30 secs, T60 < 9 secs

**Sampling Interval :** 1 sec.

**Warming up** : 60 seconds

## Temperature Sensor (option)

**Accuracy** (* NTC) : ± 0.4 ℃ (-40℃ ~ 100℃)

**Output Selection :** Current 4~20mA or Voltage 2~10VDC output with switch.

## Electrical Data

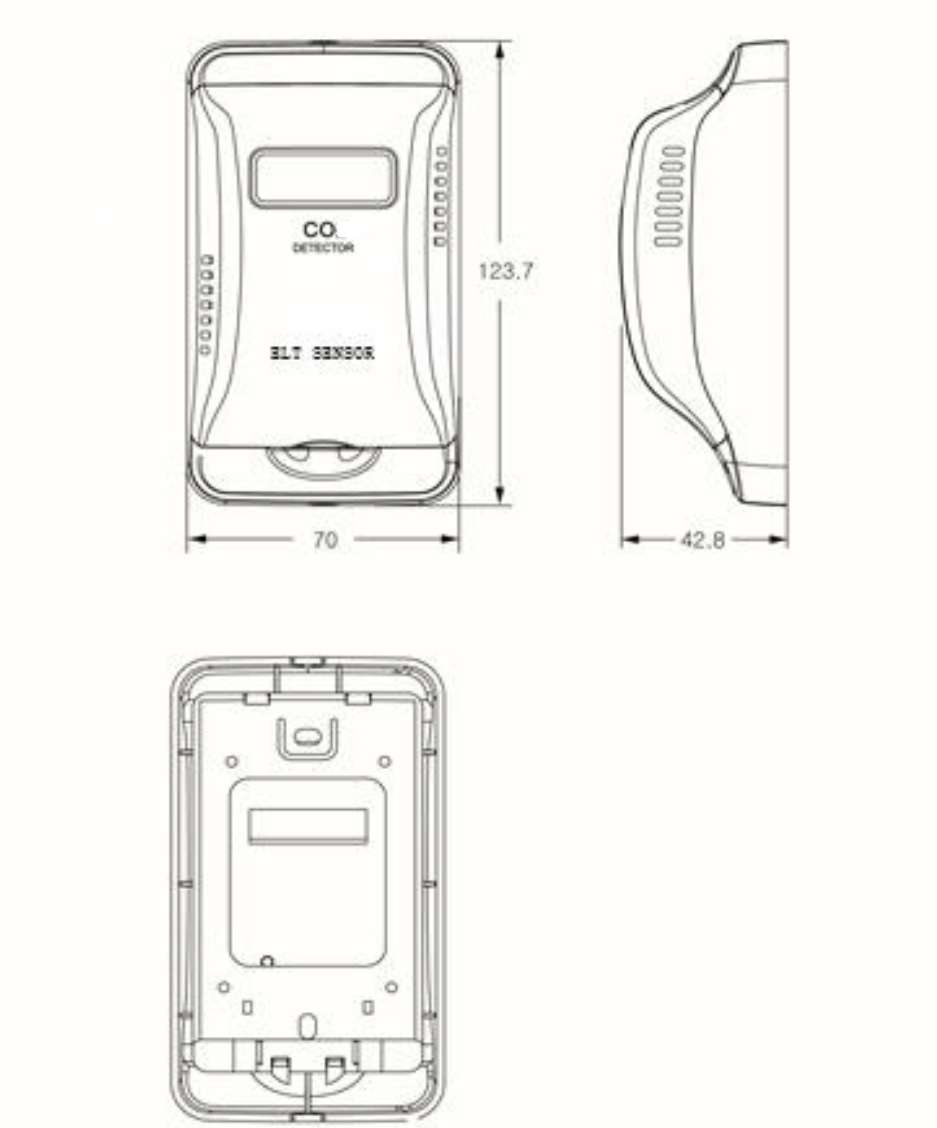
**Input Power** : 24VAC± 20%, 50/60Hz(4-wired)

Or 24VDC ± 20% (3-wired available)

**Relay Contact Ratings**

1A 120VAC / 1A 24VDC

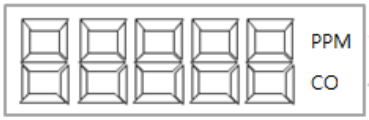
## Dimensions (unit : mm)



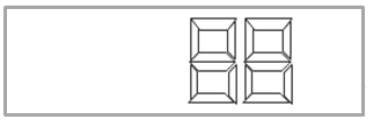

## LCD Display

·

· CO is default




· Temp. (Optional)



## CO /Temp. Relay Range Settings

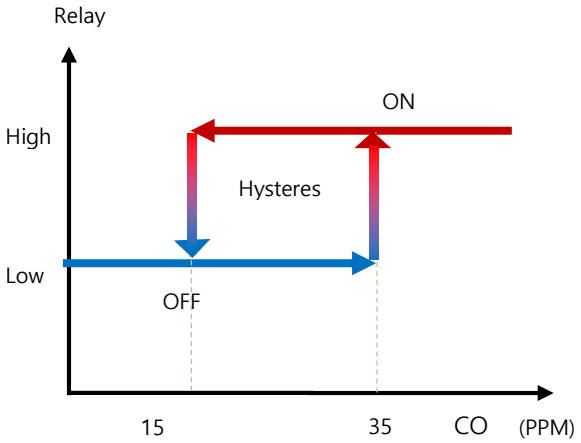
**Contract Rating :** 1A/120VAC

**Configuration :** SPST, Normally Open relay

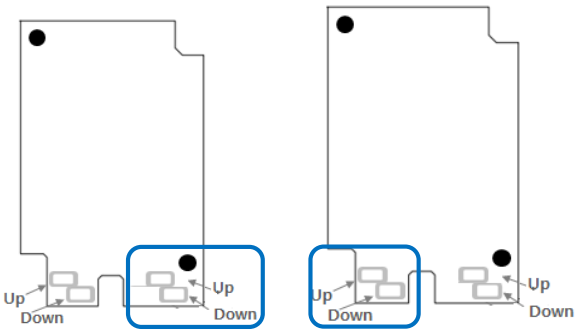
**CO Relay Activated :** On ≥ 35 ppm,

**CO Relay Deactivated :** Off ≤ 15 ppm

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

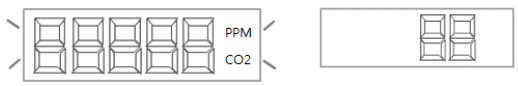



**※ Relay On/Off values of CO and Temp. can be changed as needed using CO /Temp Keys..**




**<CO Keys>** **<Temp Keys>**

**■ CO , Temp. Relay range change process.**



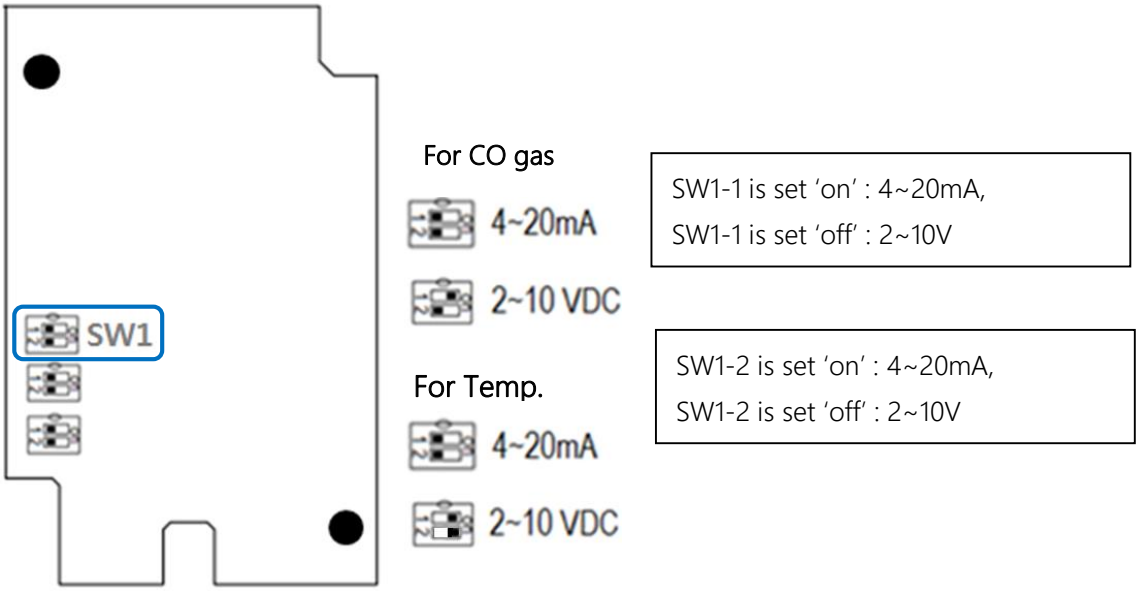

**[Procedure]**

1. Press CO or Temp. Up/Down Key for 2 sec.

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

## Output Signals

■ SW1 : 4 ~ 20mA is default (2~10VDC is selectable in user site with jumper set change,
0~20mA & 0~10VDC or 0~5V or 1~5Vcan be chosen on ordering.)

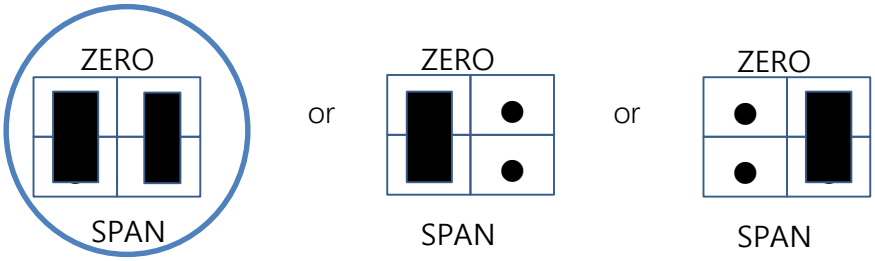



c.f. ) SW2 or SW3 shouldn't be touched because the jumper set of sensor modules is used instead.

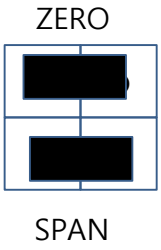
## Operation Mode selection

i. 'Factory Status mode' is for users who use sensors where a certain level of CO gas always exists such as basement parking lots, construction sites and carriable CO measuring instrumentsdevice installation.

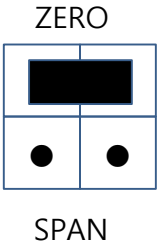

The default setting below is the leftmost one and other [illegible]s make no difference on function.



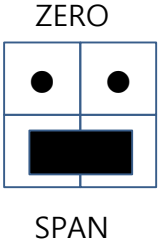

ii. '**Auto-Zero-calibration mode'** is for users who use sensors at CO-gas-free area unelss CO gas is leakaged such as boiler room or kitchen of mensions, offices, multiple-use-facility building like subway station or so.




iii. '**Manual-ZERO-calibration mode**' can be done when sensor get less accurate and need to calibration. Locate Sensor at fresh air where no CO gas exists. Move the sensor's jumpercap parallel like below and wait few minutes. The sensor is programmed to calibrate every minutes. continuing span-calbration is recommended to get better accuracy through full reading range,

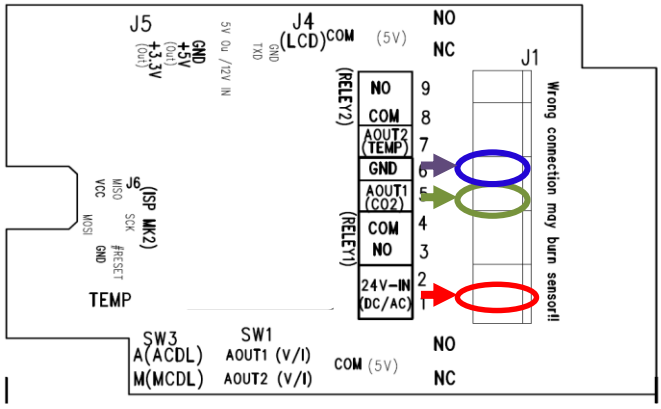



iv. '**Manual-SPAN-calibration mode'** is recommended to do after Manual-ZERO-Calibration. Span calibration should be done with 50ppm 'Air Balanced Standard gas' to avoid wrong calibraiton.
Please make sure to wait over 1 minute since powered on. 3 minutes waiting is recommendble lest lack of 50 ppm balancing result in unstable calibratrion over 1 minute. Please make sure to return jumper-setting to original (i.-mode or ii.-mode) status after zero and span calibration finished.



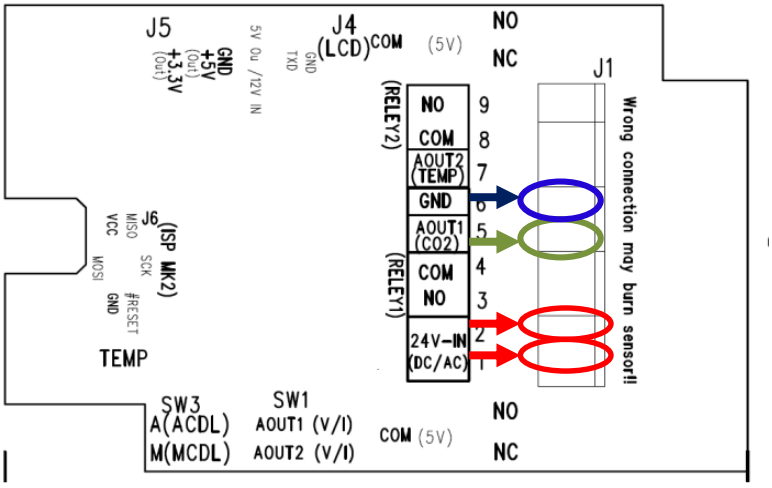
## ● [J1] Wiring Method

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 | CO **A-OUT** |
| 4 | CO Relay 1 –**COM**(Common) |
| 3 | CO Relay 1 – **NO**(Normal Open) |
| 2 | (24VDC+ can be wired here instead pin-1) |
| 1 | **24V**DC |

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 | CO **A-OUT** |
| 4 | CO Relay 1 –**COM**(Common) |
| 3 | CO Relay 1 – **NO**(Normal Open) |
| 2 | **24V**AC- (or 24VAC+) |
| 1 | **24V**AC+ (or 24VAC-) |

## Cautions on Installation

I. Chemical sensors should be kept 0~20℃ and better to installed within 6 months from purchase not to shorten their lifecycle.

II. Installation near to nose height of 1.2~1.8m is desirable because CO gas is lighter than air.

III. Sensors are designed to keep lifecycle when installed normal living condition unless effected physically, mechanically or chemically. Sensor-detection part or PCB part should be kept from dirties, water or oil spraying which cause damage. and keep Sensors away from the solvent or high concentration organic gas existence or continuous vibration, or impulse from.

IV. Power should be selected within tolerance and wired into right position, Sensor get damaged when 24V power is inserted into output.

V. Chemical sensor modules replacement should be done careful not to pluck way sensor modules; Please grip the upside and downside of PCB , between 4-pins and 10pins connectors on unplugging sensor-module from main-board little by little, left and right in turn. Vice versa on plugging the sensor-module into main-board.

VI. Please install or keep sensors away from the places where electro-static or induced electro-magnetic field not exists.

VII. Please make sure to use air-based standard gas on Test Sensor performance.

VIII. Please don't touch electrolyte leaked from sensor when it is damaged or broken. Wash out skins with running water when wet by leaked electrolyte.

IX. Do Manual-Zero-Calibration if sensor still gives 10ppm or higher values even when located CO-gas-free-zone.

## Ordering Table

| COD-400(LG)- | Base | 'L' option (LCD) | 'G' option (~ 99% Humidity) | CO Output | Temp. Output | Remark |
|---|---|---|---|---|---|---|
| 1 | COD-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) |

Option L : with LCD Display, G : PCB Coating to protect rust.

Ex1 : COD-400LG-1 (=COD-400LG-4_20) has LCD-display, with 'G' option could protect sensor from rust, giving CO output of 4~20mA which could be changed to 2~10V with switch-1 setting.

Ex2 : COD-400-4 (=COD400-0_10) has no LCD-display, with 'G' option could protect sensor from rust, giving CO output of 0~10V. (c.f. 0~20mA could be chosen when SW1 setting changed.

Ex3 : COD-400G-11(=COD-400G-0_5&0~5) has no LCD-display, with 'G option could protect sensor from rust, giving outputs 0~5V for CO and Temperature each.

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