

## SMART Gas Detector/Transmitter(4~20mA)

### Model DA-100



*Best Detectors, Best Service*



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## [Introduction]

DA-100 detects combustible or toxic gas leakage and transmits standard electric current output signal 4 ~ 20mA to be connected with various controllers such as gas leakage warning device (GMS-1000/1500/2000), PLC, DDC, or MMR for individual or integrated gas monitoring system.

## [Features]

- Digital Process: built-in micro-processor offers various artificial intelligence functions for more convenient operation and maintenance.
- Auto-Calibration: digital process enables one person auto calibration by one-touch (zero calibration and span calibration).
- 4-20mA Transmitter: standard electric current output signal (4-20mA) enables a stable transmission even in long distance up to 2.5km.

## [Specification]

Detection principle	Catalytic, electro-chemical, NDIR, or PID
Gas sampling	Diffusion
Measurement range	0 ~ 100%LEL, 0 ~ 10,000ppm, 0 ~ 100%VOL
Target gas	Combustible or toxic - see the table of target gases
Response time	Within 20 seconds, 90%/full scale
Accuracy	≤±2%/full scale
Calibration	One-touch auto calibration
Sensor displacement	Zero calibration: ≤±1%LEL/6 month span calibration: ≤±1%LEL/6 month
Self diagnosis	Display sensor failure on built-in FND(S.Er), 2mA output
Input power	DC 20 ~ 30V
Output signal	4 ~ 20mA/full scale – up to 2.5km transmission
Operating temp. & humidity	-20℃ ~ 50℃, 5 ~ 95% RH (Non-Condensing)
Signal cable	CVVS & CVVSB 1.25sq x 3 Wire - Shield Type
Conduit tube	1/2" or 3/4" PF, NPT
Installation type	Wall or Pipe Mounting
Casing material	Cast aluminum alloy
Explosion-proof approval	Ex d IIC T5



M4 무두볼트

- Sensor cap

### -Calibration Nipple Insert

**[Parameters]**

Parameter	Description
H.SC	Scale value for 20mA output signal
CA1	Zero calibration
CA2	Span calibration
S.dt	Initial stabilization time from power on

**[Set parameters]**

Step	Parameter	Select	Increase or decrease the value	Save
1	Please push [MODE] key to set parameters.			
2	H.SC	[ENT] key	[UP] key & [Down] key	[ENT] key
3	CA1	[ENT] key	Zero calibration	[ENT] key
4	CA2	[ENT] key	[UP] key & [Down] key	[ENT] key
5	S.dt	[ENT] key	[UP] key & [Down] key	[ENT] key
6	Exit	When complete above procedure, it automatically returns to measuring mode.		
※ Please push [MODE] key to move to next step without setting parameters.				
※ When you save the parameter in any step, it automatically returns to measuring mode.				
※ Ex) H.SC setting: Please push [MODE] key. → When H.SC menu displays, please push [ENT] key. → Parameter value displays while left digit is flickering. → Please push [Down] & [UP] key to change the parameter value. → Please push [ENT] key to save the value. → It returns to measuring mode automatically				

## [Calibration]

**Please carry out calibration periodically in order to keep optimum sensor condition at least once a year.**

### 1. Zero Calibration

Please follow below procedure:

- ① Please open the detector cover by rotating it to counter clockwise.
  - ② Please push [Mode] key and select CA1.
  - ③ When CA1 shows on FND, please push [ENT] key. (At this time, it displays 000 while left digit is flickering.)
  - ④ Please infuse standard gas such as clean air or nitrogen gas until the density value gets stable.
  - ⑤ Please push [ENT] key to complete zero calibration.
- ▲ **Caution:** Zero calibration should be processed with clean air or 99% nitrogen gas. (For O<sub>2</sub> gas, you must use nitrogen gas 99.8% or more.)

### 2. Span Calibration

Please follow below procedure:

- ① Please open the detector cover by rotating it to counter clockwise.
  - ② Please fix the calibration nipple on the sensor cap.
  - ③ Please push [Mode] key and select CA1.
  - ④ Please push [ENT] key to retrieve the saved value. (At this time, the left digit is flickering.)
  - ⑤ Please push [UP] key & [DOWN] key to set the density of standard gas.
  - ⑥ Please push [ENT] key.
  - ⑦ Please infuse standard gas.
  - ⑧ The value on FND is increasing.
  - ⑨ Please press [ENT] key when the value on FND gets stable.
  - ⑩ Please stop injection of the standard gas and detach the calibration nipple.
  - ⑪ FND displays 'HOL'.
  - ⑫ When the gas density gets lower than 10%LEL, it automatically returns to measuring mode.
- ▲ **Caution:** The standard gas should be within the designated density range. If you use it out of the designated density range, the calibration is not possible and the sensor may be damaged or lifetime may be reduced extremely.
- ▲ **Caution:** Please start calibration after 4 minutes from power on after sensor replacement.

## **[Sensor replacement]**

Please follow below procedure:

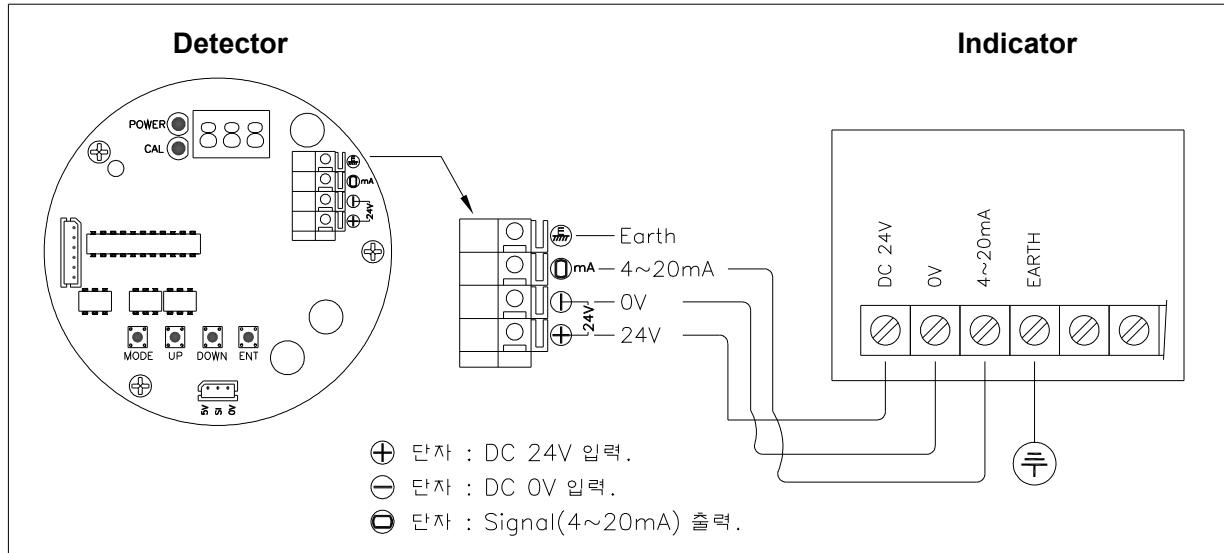
- ① Please turn off the power.
- ② Please open the front cover of DA-100.
- ③ Please disassemble the connector between sensor and transmitter main board.
- ④ Please rotate the headless bolt to disassemble the sensor cap from sensor housing.
- ⑤ Please assemble new sensor cap into sensor housing.
- ⑥ Please assemble connector between sensor and transmitter main board.
- ⑦ Please carry out calibration.
- ⑧ Please assemble the front cover.

### **▲ Caution:**

- Please make sure whether the direction of connector's socket is correct.
- Please fully tighten the sensor cap and front cover to secure water proof.

## [Wiring]

### 1. Terminals



### 2. Cable specification

1] Cable Type: Shield Cable

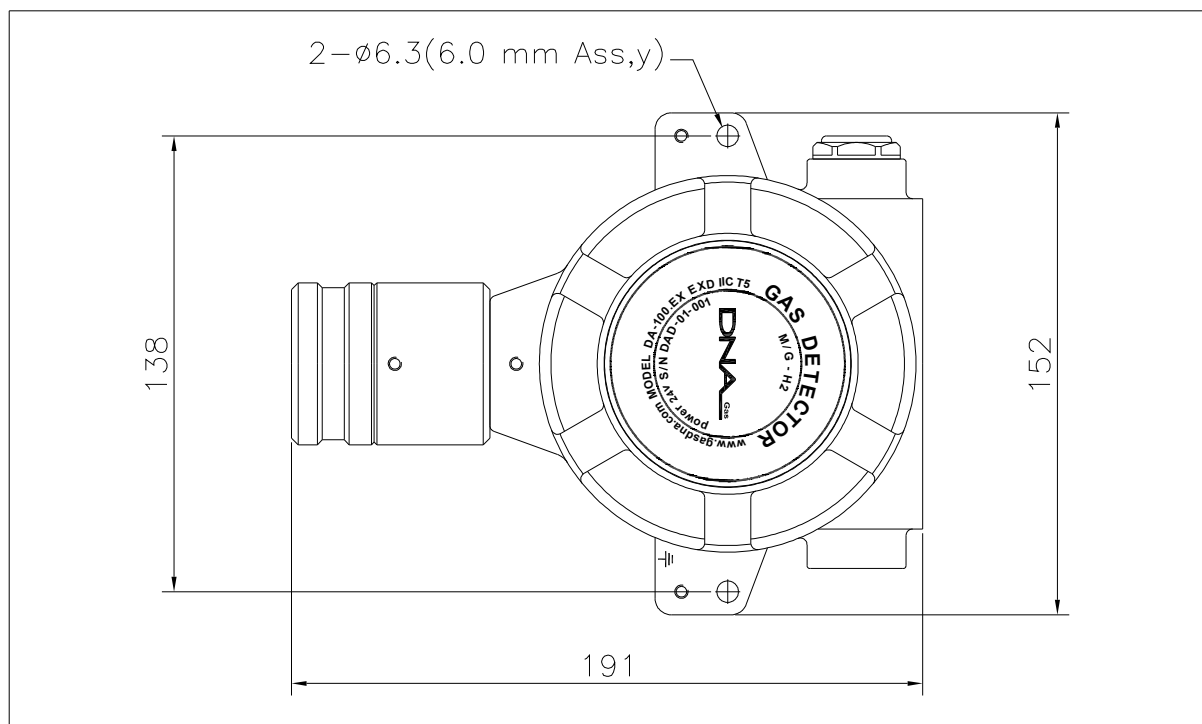
2] Transmission distance and required cable specification

Transmission distance	0 ~ 500m	501 ~ 1,500m	Over 1,500m
Required cable specification	0.75sq	1.25sq	2.0sq

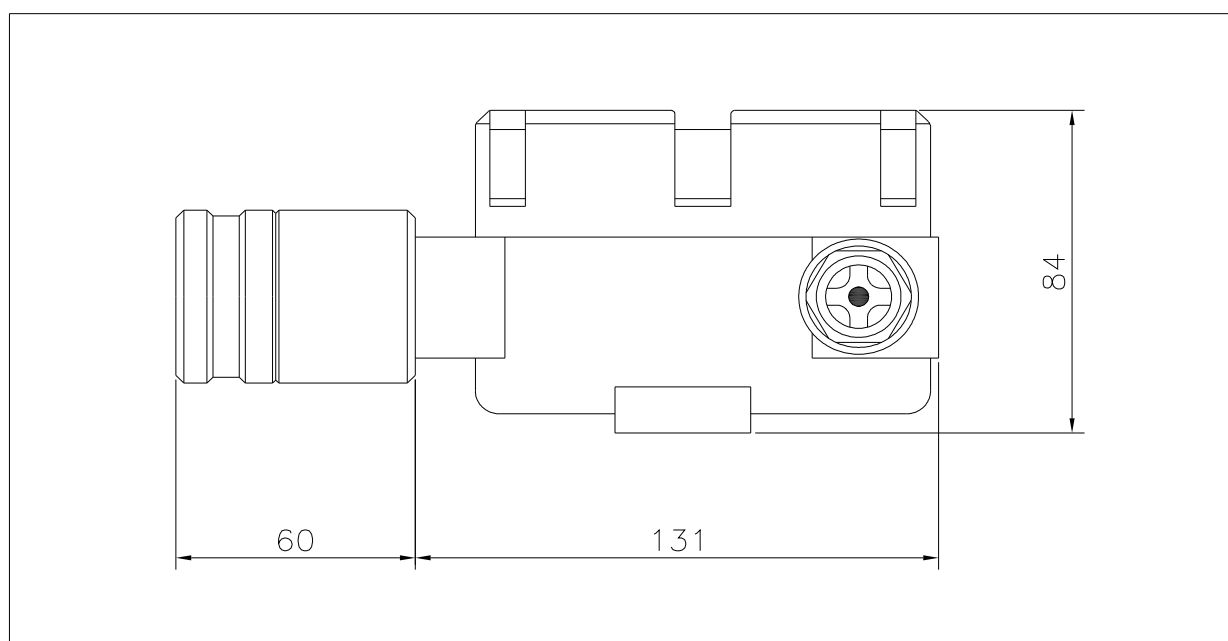


## [Installation]

### 1. Front view



### 2. Side view



### 3. Cable conduit and installation position

- Cable Conduit: 1/2", 3/4" PF/NPT.
- In open area, please install DA-100 as close as possible to the potential gas leakage place such as gas valve and pipe connection.
- In closed area,
  - ▷ Light gas (specific gravity < 1): Please install DA-100 20 ~ 30cm from ceiling.
  - ▷ Heavy gas (specific gravity > 1): Please install DA-100 20 ~ 30cm from the floor.

### 4. Cautions

- Please avoid any potential electrical troubles such as rain drops.
- Please avoid any vibration or physical impact which can affect the output signal value.
- Please avoid high temperature or humidity.
- Please avoid any electrical noise such as motor, pump, or high voltage power line.
- Please choose the place where you can do repair & maintenance job easily. If it is not available, we recommend suction type detectors.