

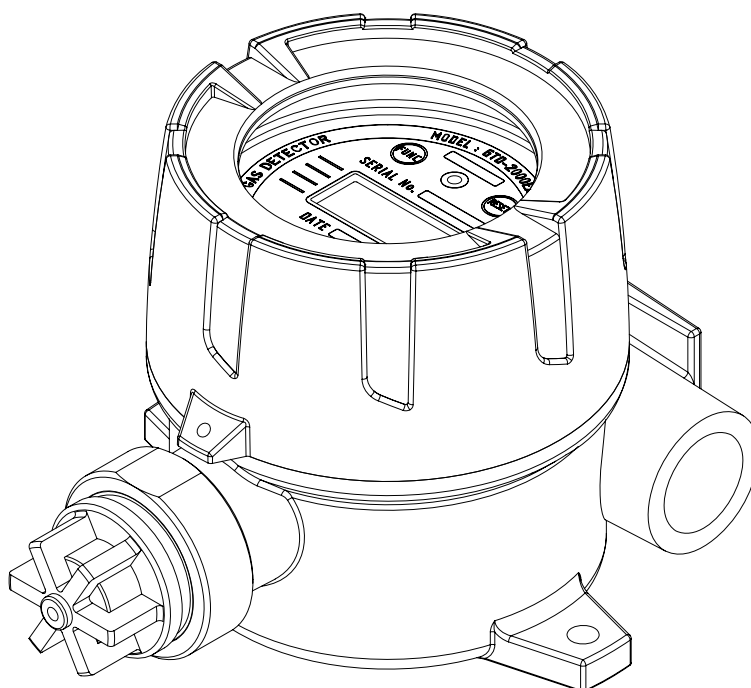
Design, Development, Manufacture, Installation and Servicing for Gas-Leak Alarm



Human Technology & Future

## INSTRUCTION MANUAL

**MODEL : GTD-2000Ex**



### CONTACT INFORMATION

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**For proper use, please read this manual carefully!**

**Thank you very much for purchasing our product.**

Our company, Gastron Co., Ltd specializes in gas detectors and gas-monitoring systems, which earns a reputation for high quality and convenience to use from customers.

We are making constant efforts to satisfy customer's needs and to develop more satisfactory gas detectors.

From now on, we will work out a solution to all your concerns about gas detectors. We promise to give you full satisfaction.

This manual describes how to install, operate, and maintain the GTD-2000Ex series gas detector.

Read carefully this manual and keep it for future reference.

When you have any trouble about this product, contact us:

**75-10, Palgog 2-Dong, Sangnok-Gu, Ansan-City, Kyunggi-Do, Korea**

**Tel: +82-31-4900-800**

**Fax: +82-31-4900-801**

**E-mail: [gastron@gastron.com](mailto:gastron@gastron.com)**

**Website: [www.gastron.com](http://www.gastron.com)**

**CAUTION**

- **For correct operation of a gas detector, checking and calibration must be carried out once three months with a calibration gas.**
- **Without periodic checking and calibration, part change time can be missed to lead to disorder of the system.**
- **Please contact our technical service or e-mial about a check and a calibration of the gas detector.**
- **For safe use, operation and disassembly of a gas detector are prohibited except by permitted person or a person in charge of Gastron**

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## 1. INTRODUCTION

Combustible gas detector GTD-2000Ex was developed to prevent unfortunate accidents caused by gas explosions in hazardous places such as plants, gas storages, and factories.

When installed in hazardous area, combustible gas detector GTD-2000Ex will regularly and continuously detect the gas leakage and display the data with integrated LCD and to supply 4-20mA standard output. Moreover, for DC 4-20mA standard output, output part can be located up to 2,500 m from sensor part. **(When using Cable CVVS or CVVSB 1.5sq above)**

Combustible gas detector GTD-2000Ex should be using below 1000M above the sea level.

## 2. DETECTION PRINCIPLE & STRUCTURE

### 2-1 Detection principle

Principle of detection is catalytic cell principal. When combustible gas contacts with the sensor part, a combustion reaction occurs. This reaction increases the temperature of the sensor part, which increases the electrical resistance. The change of the electrical resistance makes Wheatstone bridge asymmetric so as to detect the gas concentration by the voltage or current change.

### 2-2 Structure

The Body of GTD-2000Ex is made of aluminum alloy, which makes perfect Explosion proof structure (Ex d IIC T6)

The product can be installed in every explosion hazardous area with danger of gas leakage, and integrated LCD displays current gas leakage level on the spot.

The inner structure is composed of LCD panel part that shows measured values, and PCB terminal part for delivering measured value (DC4~20mA) to outside.

Exterior structure is composed of sensing part for detecting gas leakage and cable gland.

Detector can be calibrated from outside of body with magnet bar, which makes maintenance easier.

## 3. SPECIFICATIONS

### 3-1. Approvals

|                          |                            |
|--------------------------|----------------------------|
| Hazardous Area Standards | EN 50014, EN50019, EN50028 |
| Code of protection       | Ex d IIC T6 (-20 to 60°C)  |
| IP Rating                | IP 66/67                   |
| Application              | Combustible gas detector   |

### 3-2. Functional

|                                    |  |
|------------------------------------|--|
| Measuring Range                    | 0~100 %LEL (0~5% volume of methane)  |
| Measuring resolution               | 1 %LEL   |
| Over range indication              | Continuously display gas concentration up to 110 %LEL.<br>Above 110 %LEL, display "OVER" with flickering |
| Calibration level                  | User selectable 20 %LEL ~90 %LEL in 1 %LEL increments  |
| Analogue output during calibration | 3.0mA  |
| Repeatability, Short term          | ±3% LEL over 1 hour  |
| Repeatability, Long term           | ±10% LEL over 3 months   |
| Accuracy                           | ±3% LEL/ Full scale  |
| Response Time                      | 90% of full scale in less than 20 sec  |

### 3-3. Mechanical

|                         |   |
|-------------------------|---|
| Dimension               | 136(W) X 166(H) X 110(D) mm             |
| Weight including Sensor | App. 1.5kg                              |
| Cable inlet             | 1/2" or 3/4" PF, NPT (3/4" PF standard) |

### 3-4. Environmental

|                                     |                     |
|-------------------------------------|---------------------|
| Operating temperature range         | -20 ~ 60°C          |
| Storage temperature range           | -20 ~ 60°C          |
| Relative humidity range             | 5% ~ 99%RH          |
| Operating pressure range            | 90Kpa /110Kpa       |
| Operating Altitude (max)            | 1000 m              |
| Non operating Altitude (max)        | 2000 m              |
| EMC (electromagnetic compatibility) | Comply with EN50270 |

### 3-5. Electrical

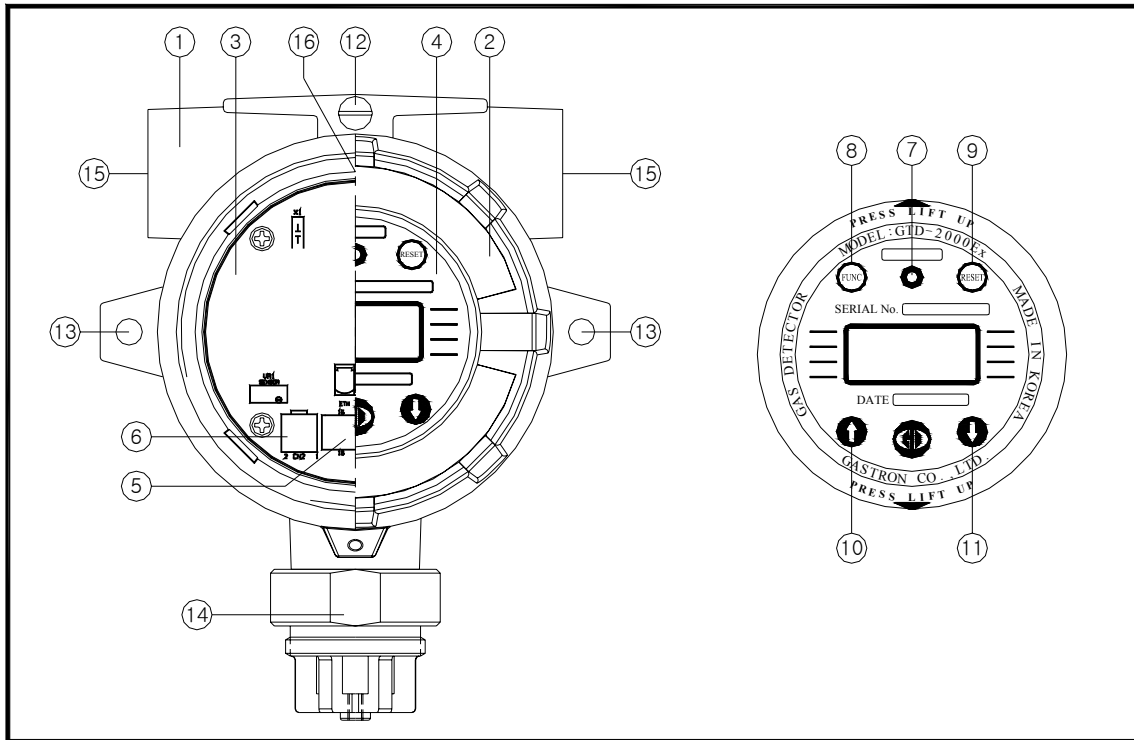
|  |                   |
|--|-------------------|
| Supply voltage   | 18VDC/31VDC       |
| Supply voltage ripple & noise max  | 1Vpp              |
| Current consumption (typical /max)   | 150mA/250mA@24VDC |
| Analog output current range  | 0-22.0 mA         |
| Gas concentration output current range                                     | 4-20 mA           |
| Analog output current ripple & noise max                                   | 20uApp            |
| Analog output termination resistance<br>(including total cable resistance) | < 600Ω            |

### 3-6. Cross sensitivity

| Combustible gases |   | Cross sensitivity (% relative to CH4) |
|-------------------|---|---------------------------------------|
| Methane           | CH <sub>4</sub>   | <b>100</b>                            |
| iso-Butane        | C <sub>4</sub> H <sub>10</sub>                                | <b>80</b>                             |
| Hydrogen          | H <sub>2</sub>  | <b>110</b>                            |
| Acetylene         | C <sub>2</sub> H <sub>2</sub>                                 | <b>100</b>                            |
| Ethylene          | C <sub>2</sub> H <sub>4</sub>                                 | <b>95</b>                             |
| n-Pentan          | C <sub>5</sub> H <sub>12</sub>                                | <b>70</b>                             |
| Propane           | C <sub>3</sub> H <sub>8</sub>                                 | <b>75</b>                             |
| n-Hexane          | C <sub>6</sub> H <sub>14</sub>                                | <b>65</b>                             |
| n-Heptane         | C <sub>7</sub> H <sub>16</sub>                                | <b>55</b>                             |
| IPA               | C <sub>3</sub> H <sub>7</sub> OH                              | <b>60</b>                             |
| Methanol          | CH <sub>3</sub> OH  | <b>90</b>                             |
| Ethanol           | C <sub>2</sub> H <sub>5</sub> OH                              | <b>70</b>                             |
| Acetone           | (CH <sub>3</sub> ) <sub>2</sub> CO                            | <b>70</b>                             |
| MEK               | C <sub>2</sub> H <sub>5</sub> COCH <sub>3</sub>               | <b>70</b>                             |
| n-Octane          | C <sub>8</sub> H <sub>18</sub>                                | <b>70</b>                             |
| Ethyl acetate     | CH <sub>3</sub> CO <sub>2</sub> C <sub>2</sub> H <sub>5</sub> | <b>60</b>                             |
| Buthyl acetate    | C <sub>6</sub> H <sub>12</sub> O <sub>2</sub>                 | <b>5</b>                              |

\* Please inquire to Gastron for other gases

## 4. PART'S NAME AND MAJOR FUNCTIONS



|                           |                                 |
|---------------------------|---------------------------------|
| 1. DETECTOR HOUSING BODY  | 9. RESET SWITCH                 |
| 2. DETECTOR HOUSING COVER | 10. ↑ SWITCH                    |
| 3. AMP(MAIN) PCB          | 11. ↓ SWITCH                    |
| 4. DISPLAY PARTS          | 12. EXTERNAL GROUND(2sq↑ CABLE) |
| 5. POWER/ma TERMINAL      | 13. MOUNT HOLES(ø7)             |
| 6. SENSOR TERMINAL        | 14. SENSOR                      |
| 7. POWER LED              | 15. CONDUIT CONNECTION          |
| 8. FUNCTION SWITCH        | 16. INTERNAL GROUND(2sq↑ CABLE) |

### 4-1. Detector Housing Body

To protect sensor and PCB board from environmental variation and shocks.

### 4-2. Detector Housing Cover

Forming explosion-proof structure with Detector Housing Body after assembled and LCD display can be shown through glass top cover.

### **4-3. AMP PCB**

Amplifies the tiny signal of sensor to transmit DC 4-20mA signal, It also sends signal data to LCD display.

### **4-4. Display Parts**

Converts analogue signal from AMP/Terminal (Transmitter) PCB to digital signal and feed the converted signal to LCD. It also lights power lamp to indicate current power status.

### **4-5. Power/mA Terminal**

CN1 is composed of connection terminal for DC 21-27V power (+, -, ET) and for 4-20mA signal. (mA, -) .

### **4-6. Sensor Terminal**

CN2 is connection terminal for sensor. (Red, White, Green and Blue)

### **4-7. Power LED**

When the power is supplied, the lamp will turns on.

### **4-8. Function switch**

- When setting parameter, the detector goes into program mode by touching this switch with magnet bar for over 2 seconds. (Program mode, Calibration mode, Maintenance mode, Test mode)
- Also, This switch is used for data input.

### **4-9. Reset switch**

In order to go back to previous mode or cancel current action during setting parameters, touch this switch with magnet bar once. (Every touch will make the detector go back to previous mode)



**4-10. (↑) switch**

When changing the mode or number, touch this switch with magnet bar once and the detector will go to next stage or the number will be increased.

**4-11. (↓) switch**

When changing the mode or number, touch the switch with magnet bar once and the mode will go to previous stage or the number will be decreased.

**4-12. External Ground**

This grounding terminal protects detector from external noises or high electric field

**4-13. Mount Hole ( $\Phi 7 \times 3ea$ )**

These holes are used to fix the detector to wall and other places.

**4-14. Sensor**

Sensor detects actual gas leakage and sends electric signal to AMP PCB.

**4-15. Cable inlet**

There are two types of cable inlets, PF3/4" and PF or NPT 1/2". (Standard item is PF3/4")

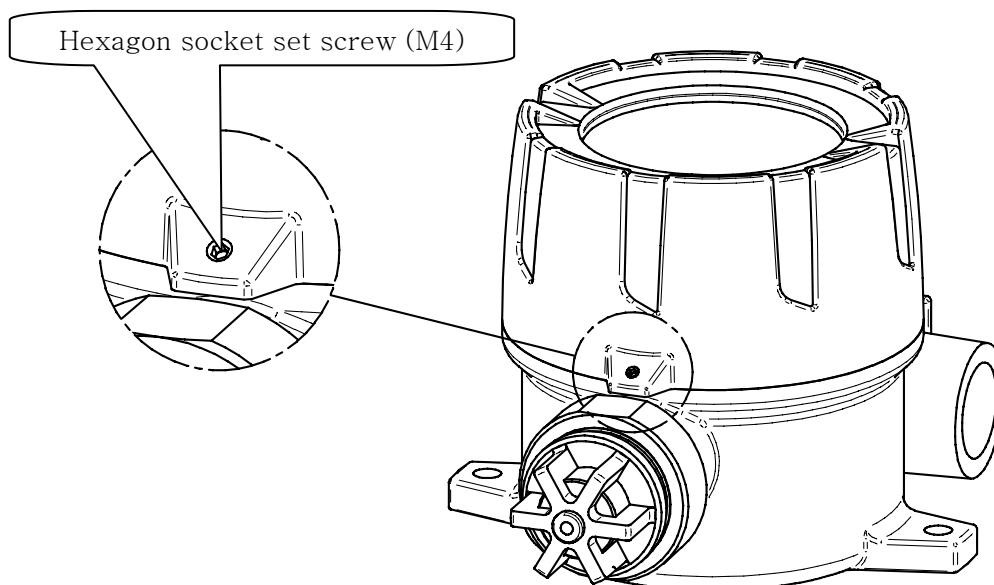
**4-16. Internal Ground**

Grounding terminal of the inside which protects the detector from external noises or high electric field

## 5. WIRING DIAGRAMS

### 5-1. Separating Detector Body and Cover

Turn hexagonal socket set screw (M4 \* 1 ea) from the cover of detector with hexagonal wrench (M2) for 3 or 4 turns, and turn the cover counter-clock-wise to remove. LCD will appear after removal of cover.



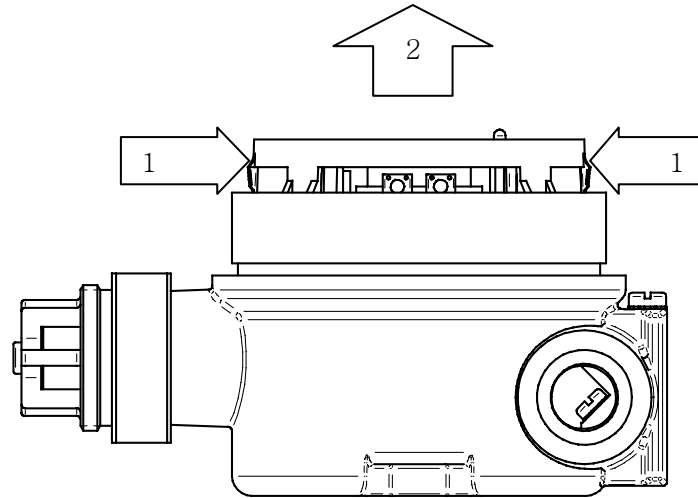
#### **\* Caution \***

**Opening cover or operation of GTD-2000Ex Detector is prohibited except permitted person or a person in charge for repair in our company. Otherwise, it is possible to suffer for loss of lives and calamity caused by the fire or explosion accident.**

**Also, please do work after shut off the power certainly and check whether combustible gas and inflammables is remaining around**

## 5-2. Separating Display Parts

Press fixing hooks (upper and lower on display parts) at the same time and pull the display parts up to separate from gas detector body.



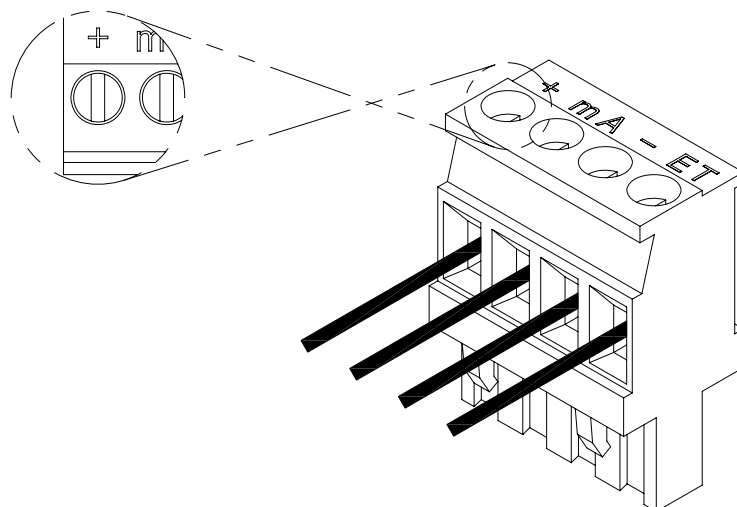
## 5-3. Connecting power supply and signal cable

After disassembling Display Parts, Terminal block on Amp/Terminal PCB will be shown.

Disconnect this terminal from AMP PC.

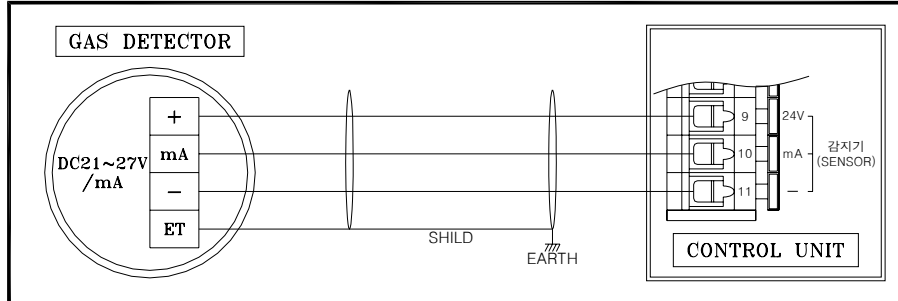
Connect DC 24V power supply to +, - of CN1 (+, mA, -, ET) terminal block and signal cable to mA terminal. And insert this terminal block to AMP PCB.

Caution) Please use shield cable (CVVS or CVVSB 1.5sq ↑) only.

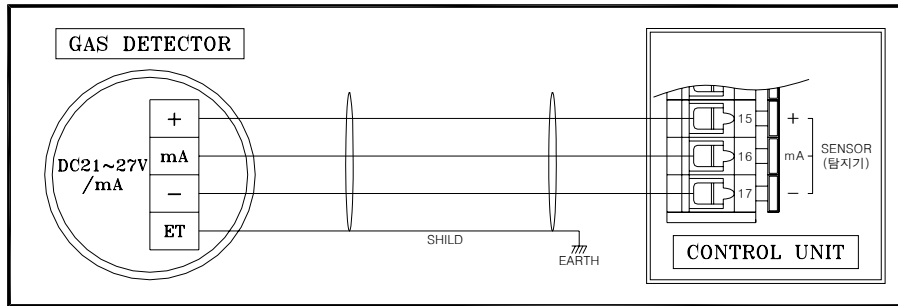


### 5-3-1. Connecting to GTC-100A, GTC-200A Control Unit

Connect CN1 (+, mA, -, ET) connection terminal of GTD-200Ex Gas Detector with 9<sup>th</sup> (+), 10<sup>th</sup> (mA), and 11<sup>th</sup> (-) terminal of GTC-100A Channel Card or 15<sup>th</sup> (+), 16<sup>th</sup> (mA), and 17<sup>th</sup> (-) terminal of GTC-200A channel card.



(GTC-100A Control unit)

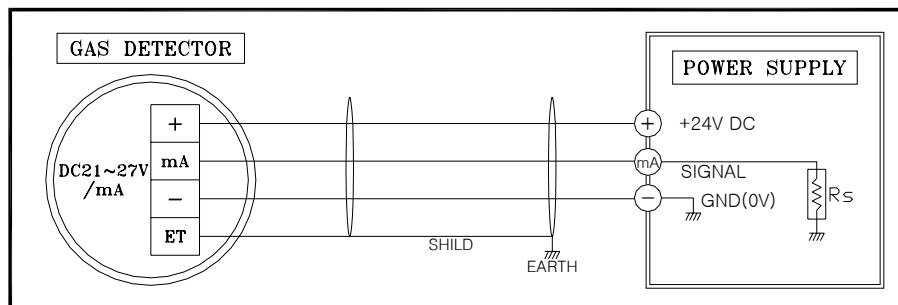


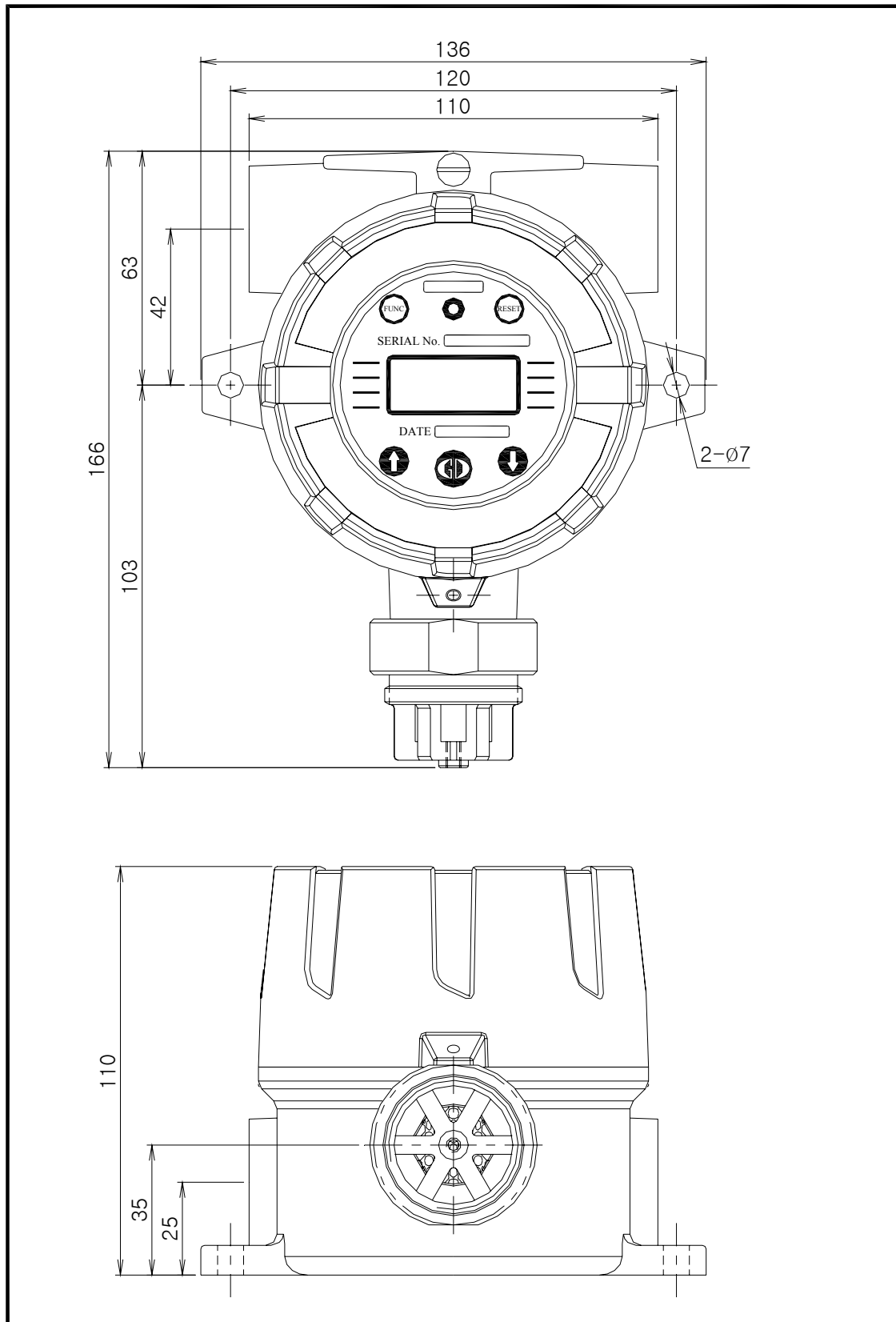
(GTC-200A Control unit)

### 5-3-2. Connecting to other external power source

Connect 21-27 V DC source to CN1 (+, mA, -, ET) connection terminal of GTD-2000Ex Gas Detector.

Connect signal-detecting application to mA, GND connection terminal for 4-20mA signal output.



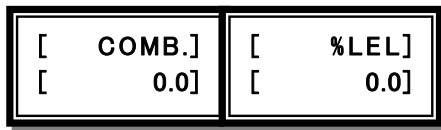
**6. APPEARANCE AND DIMENSIONS**

## 7. PARAMETER PROGRAM

**Table 1) Display menu**

| Menu Display  |                     |                |
|---------------|---------------------|----------------|
| Level1        | Level2              | Level3         |
| PROGRAM MODE  | GAS SEL.            |                |
|               | UNIT SEL            |                |
|               | D-POINT             |                |
|               | HIGH SCL            |                |
|               | V1.00 (S/W Version) |                |
| CALIBRA. MODE | CALIBRA. ZERO       | ZERO CAL [YES] |
|               |                     | ZERO GAS       |
|               |                     | CAL.DATA       |
|               | CALIBRA. SPAN       | SPAN CAL [YES] |
|               |                     | SPAN SET       |
|               |                     | SPAN GAS       |
|               |                     | CAL.DATA       |
|               | CALIBRA. SEN-OT     |                |

## 7-1. WHEN DISPLAY MEASURING CONDITION



- The first line alternately displays measured gas name and gas unit.
- The second line displays current measured values.
- Each switch will operate only when touching by magnet-bar.

## 7-2 WHEN PROGRAMMING



- Touching "FUNC" switch with magnet bar for over 2 seconds will set the detector to PASSWORD MODE.
- Set password to "5" with "▲" or "▼" switch and touch "FUNC" switch to go into PROGRAM MODE



- This mode changes systematically when every touching "↑", "↓" switch.
- Touch "FUNC" switch when program mode is display will set the detector to PROGRAM MODE
- Touch "RESET" switch to go back to the detecting mode.



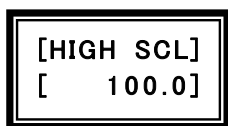
- This is the mode that sets gas name, it'll change when every touching "↑" or "↓" switch.
- Touch "FUNC" switch when desired name is displayed, gas name will be set up and the detector enter into the next program mode.
- Touch "RESET" switch to go back to "PROGRAM MODE".



- This is the mode that sets measuring unit up, it'll change when every touching "↑" or "↓" switch.
- Touch "FUNC" switch when desired measuring unit is displayed, the unit will be set up and the detector enter into the next program mode.
- Touch "RESET" switch to go back to "PROGRAM MODE".



- This is the mode that sets decimal point up, it'll change when touching "↑" or "↓" switch.
- Touch "FUNC" switch when desired decimal point is displayed, the point will be set up and the detector enter into the next program mode.
- Touch "RESET" switch to go back to "PROGRAM MODE".



- This is the mode that sets up the value of high scale to be displayed when LCD is full scale of detection range, it'll increase or decrease when every touching "↑" or "↓" switch.
- Touch "FUNC" switch when desired value of high scale is displayed, the scale will be set up and go back to "PROGRAM MODE".

## 8. CALIBRATIONS AND MAINTENANCE

### 8-1. Supplying Electrical Power

After connecting DC 21-27V power source to CN1 terminal (+), (-) on Amp PCB, power LED will light and LCD will operate as showing "SELF TEST".

※ Stabilization time of 30 minutes is needed after turning on the device. After stabilization time, the detector will operate normally.

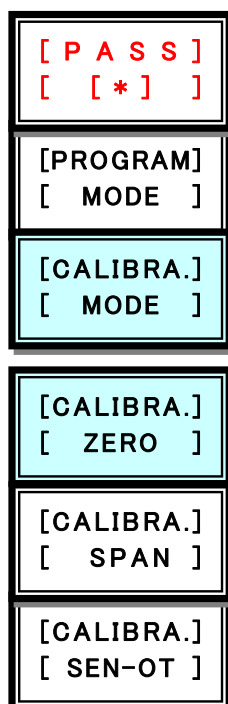
### 8-2. Confirming Output of Detector

Connect multimeter (DC ampere meter) to CN1 4-20mA signal terminal (mA), (V-). After stabilization time, check LCD display and signal output. At this time, the multimeter should show 4mA when LCD is zero, and the multimeter should read 20mA when LCD is full scale of set range.

### 8-3. Calibration

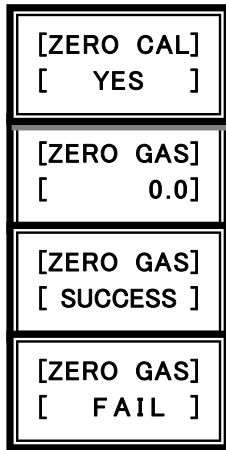
Combustible gas detector requires 30minutes of stabilization time after power on due to properties of the sensor. However, standards for management may vary due to field condition.

#### 8-3-1. Zero Calibration



- Touch "FUNC" switch with magnet bar for over 2 seconds and detector will go into PASSWORD MODE.
- Set password to "5" with "▲" or "▼" switch and touch "FUNC" switch to go into PROGRAM MODE
- By touching "↑" or "↓" switch, select "CALIBRA. MODE".
- Touch "FUNC" switch when calibration mode is displayed and detector will go into "calibration item mode".
- Touch "RESET" switch to go back to the detecting mode.
- This is the mode that sets calibration item, it'll change between three items -"ZERO", "SPAN", "SEN-OT" -when every touching "↑" or "↓" switch.
- Touch "FUNC" switch when "CALIBRA.ZERO" is displayed to select and the detector go into "Zero Calibration Mode"
- Touch "RESET" switch to go back to the "CALIBRA. MODE".



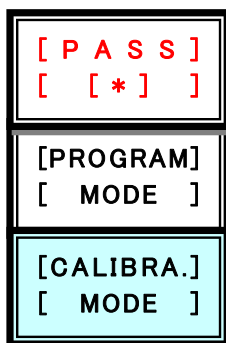


- This is the mode that performs “zero calibration”, it’ll display measuring value to be “zero calibrated” at the second line
- Insert clean air or 100% nitrogen for 1 minute at the rate of 500mL/min with calibrating tool.
- Touch "FUNC" switch again when the reading is stabilized and display will show "ZERO GAS SUCCESS" for over 2 seconds on the LCD and the detector will go to "CAL DATA MODE". If the Zero Calibration is failed, display will show "ZERO GAS FAIL" for over 2 seconds on the LCD and the detector will go to "CALIBRA MODE".
- Touch “RESET” switch to go back to calibration mode.

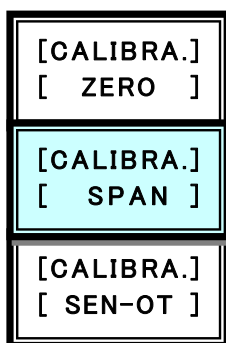


- This is the mode that displays measured value after calibration and confirms if calibration is correct or not after automatic calibration.
- Touch “RESET” switch to go back to “CALIBRA MODE”.

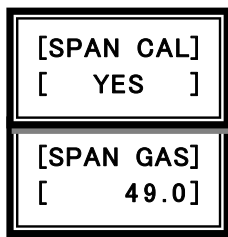
### 8-3-2. Span Calibration



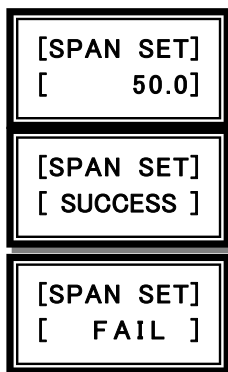
- Touch "FUNC" switch with magnet bar for over 2 seconds and detector will go into PASSWORD MODE.
- Set password to “5” with “▲” or “▼” switch and touch “FUNC” switch to go into PROGRAM MODE
- By touching “↑” or “↓” switch, select “CALIBRA MODE”.
- Touching "FUNC" switch when calibration mode is displayed and detector will go into “calibration item mode”.
- Touch “RESET” switch to go back to the detecting mode.



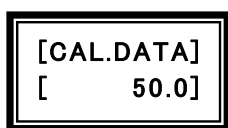
- This is the mode that sets calibration item, it’ll change between three items -“ZERO”, “SPAN”, “SEN-OT” -when every touching “↑” or “↓” switch.
- Touching "FUNC" switch when “CALIBRA.SPAN” is displayed and detector will go into Span Calibration Mode
- Touch “RESET” switch to go back to “CALIBRA MODE”.



- This is the mode that injects standard gas into the detector and measured value will be displayed at holding on maximum value.
- Insert Calibration gas for 1 minute at the rate of 500mL/min with calibrating tool.
- Touch "FUNC" switch again when the reading is stabilized and the detector will go to span value setting mode.
- Touch "↑" or "↓" switch to reset holding value and the current measured value is displayed and held.  
(from the moment of touch, the maximum measured value is held)
- Touch "RESET" switch to go back to "CALIBRA MODE".

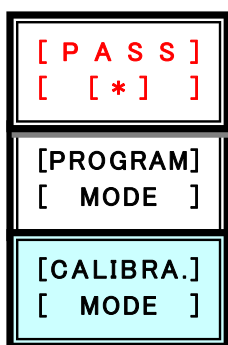


- This is the mode that sets the value of the standard gas, the value can be set by "↑" or "↓" switch.
- Touch "FUNC" switch again after the setting of standard gas value, and span calibration is automatically performed to show "SPAN SET SUCCESS" for over 2 seconds on LCD display, and the detector will go back to "CAL DATA" mode.
- If the Span Calibration is failed, display will show "SPAN SET FAIL" for 2 seconds and return to the "CAL DATA MODE".
- Touch "RESET" switch to go back to the "CALIBRA. MODE".

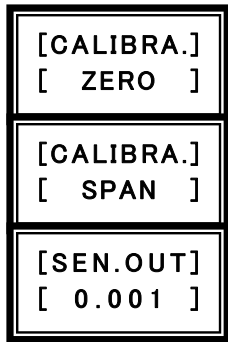


- This is the mode that displays the measured value after calibration to confirm if calibration is correct or not after automatic calibration.
- Touch "RESET" switch to go back to "CALIBRA. MODE"

### 8-3-3. CONFIRMING OUTPUT OF SENSOR (VOLTAGE SIGNAL)



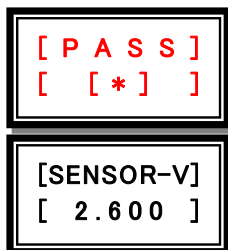
- Touch "FUNC" switch with magnet bar for over 2 seconds and detector will go into PASSWORD MODE.
- Set password to "5" with "▲" or "▼" switch and touch "FUNC" switch to go into PROGRAM MODE
- By touching "↑" or "↓" switch, select CALIBRA. MODE.
- Touch "FUNC" switch when calibration mode is displayed and detector will enter into "calibration item mode"
- Touch "RESET" switch to go back to the detecting mode.



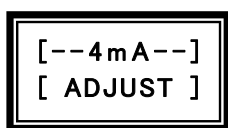
- This mode sets calibration item and it will change between three items - "ZERO", "SPAN", "SEN-OT"- when every touching "↑" or "↓" switch.
  - Touch "FUNC" switch when "CALIBRA.SET-OT" is displayed and the detector go into the voltage checking mode of sensor signal output.
- Touch "RESET" switch to go back to "CALIBRA. MODE".
- This mode displays sensor output signal as DC voltage to check sensitivity of sensor without multi-meter.
  - (If there is no gas leakage, about 0.000V is displayed and about 0.500V is displayed when full scale of gas is detected on sensor. The value can vary due to calibration (Span & Zero) by program when sensitivity is changed due to aging of sensor)
- Touch "RESET" switch to go back to "CALIBRA. MODE".

## 8-4. MAINTENANCE

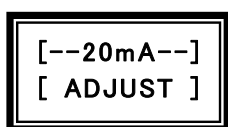
**Most of maintenance functions were set up at factory, so be careful not to operate this function at normal condition. And in case of unavoidable situation, please manipulate this function with technical assistance from Gastron Co., ltd**



- Touch "↑" and "↓" switch at the same time for over 2 seconds to enter PASSWORD MODE.
- Set password to "5" with "▲" or "▼" switch and touch "FUNC" switch to go into this mode.
- This mode detects voltage of sensor without multi-meter. Touch "FUNC" switch to enter the next maintenance mode.
- The applied voltage to sensor is set around 2.6V
- Touch "RESET" switch to go back to the detecting mode.



- This mode is to control 4mA output current when LCD display is zero. Output current is changed when every touching "↑" or "↓" switch.
- Detector enter into the next maintenance mode when touch "FUNC" switch (Be careful when changing)
- Touch "RESET" switch to go back to the detecting mode.



- This mode is to control 20mA output current when LCD display is full scale of setting range. Output current is changed when every touching "↑" or "↓" switch.
- Detector enter into the next maintenance mode when touch "FUNC" switch (Be careful when changing)
- Touch "RESET" switch and go back to the detecting mode.

## 8-5. Trouble Shooting Message

| No | Message  | Priority | Mode         | Cause   | Remedy   |
|----|----------|----------|--------------|---|--|
| 1  | Fault    | 1        | Latching     | Sensor failure or no sensor connected                               | Sensor Check.  |
| 2  | Under    | 2        | Non-latching | Zero sensitivity of Sensor falls under 15% compared with Full Scale | Zero Calibration/Sensor Check.                                       |
| 3  | Over     | 3        | latching     | Gas concentration rises over 10 % above full scale                  | Manual reset and return  |
| 4  | RNG FAIL | 4        | latching     | Calibration Range Failure   | Check of Calibration gas concentration and Calibration setting value |
| 5  | FAIL     | 5        | Non-latching | Calibration Failure   | Check of Calibration gas concentration and Calibration setting value |

## 9. Sensor replacement & maintenance

### 9-1. Zero setting by program – Calibration mode

[ZERO GAS]  
[ 0.0]

- Insert clean air or 100% nitrogen for 1 minute at the rate of 500mL/min with calibrating tool.
- Touch “FUNC” switch to perform Zero calibration

### 9-2. Span setting by program – Calibration mode

[SPAN GAS]  
[ 49.0]

- This mode is to inject standard gas into the detector and measured value is displayed at holding on a maximum value.
- Insert standard gas to sensor for 1 minute at the rate of 500mL/min with calibrating tool. Touch "FUNC" switch again when the reading is stabilized and the detector will go to span value setting mode.
- Touch “↑” or “↓” switch to reset holding value and the current measured value is displayed and held.

[SPAN SET]  
[ 50.0]

- This mode is to set the value of the standard gas and the value can be set with “↑” or “↓” switch.

[SPAN SET]  
[ SUCCESS ]

- Touch "FUNC" switch again after the standard gas value is setting up, and span calibration is automatically performed to show "SPAN SET SUCCESS" for over 2 seconds on LCD display, and the detector will go back to "CAL DATA" mode.

[SPAN SET]  
[ FAIL ]

- If the Span Calibration is failed, display will show "SPAN SET FAIL" for 2 seconds and return to the “CAL DATA” mode.
- Touch RESET switch to go back to the calibration mode.

**10. Optional part list**

|   |   |
|---|---|
| 10.1 Rain cover (part no. GD2000-ST-RC001)  |   |
|    | The rain cover is used for protecting gas detector located outdoor from rain or other climate changes. The rain cover comprises of cover plate and base plate for wall mounting |
| 10.2 Splash guard (part no. GD2000-ST-SG001)  |   |
|    | The splash guard is attached to sensor head body and protects sensor from water spray or dust   |
| 10.3 Collecting cone (part no. GD2000-ST-CC001)                                     |   |
|  | The collecting cone is attached to sensor head body and makes gas contact to sensor easier in case of gas leakage so as to advance response time.                               |

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## 11. BEFORE INSTALLING

### 11-1. Deciding installation site

(Data from Industrial Safety and sanitation law in Korea)

Installation site of gas leakage detector should follow the categories below.

- 1) Place where gas leakage is suspected such as compressor used for combustible and/or toxic gases installed inside and outside of a building, valve, reactor, piping connections and chemical and corrosive installments.
- 2) Place where gas may dwell and near source of heat such as a heater in factory.
- 3) Connection of chargers for combustible and/or toxic material.
- 4) Transformer rooms, distribution rooms, and control rooms in hazardous area.
- 5) Other places where gas can congregate easily.

### 11-2. Deciding installation site

(Data from Laws regarding safety management of highly pressurized gas in Korea)

Gas leakage detector should be installed near the places where leakage is suspected. However, if the place has hazard of gas dwelling but does not have direct leakage, the detectors should be installed in following places.

- 1) Gas leakage detectors, which are installed outside a building, should be installed in places where gas may dwell considering direction of wind, speed of wind, and weight of the gas.
- 2) Gas leakage detectors, which are installed inside a building, should be installed near the base of the building if the gas is heavier than air and should be installed near vent or top of the building if the gas is lighter than air. Gas leakage detectors should be installed in working places.

### 11-3. Sensor poisons

Catalytic combustion type sensor may be affected by exposure to air containing certain chemicals and its sensitivity will be reduced in that case.

Such poisons are;

Halides; compounds containing fluorine, chlorine, iodine and bromine

Glycols, Silicones, Sulphur compounds

If these kinds of chemicals leaks, Gas detector should be recalibrated after such exposures.

### 11-4. Cautions when installing

Sensors of gas leakage detectors are not waterproof, so the installation should be avoid where water (rain) may access and please install detector where periodic maintenance can be easily performed. Also, please avoid installation where vibrations or shocks may happen. Vibrations or shocks may cause wrong reading.

⊙ This gas detector has flame proof structure and can be used in group II, zone 0, zone 1 and zone 2 area

⊙ Permissible temperature is below 85°C

⊙ Operating temperature is between -20°C ~ 60°C

⊙ Installation: Below 1000M above sea level

Relative humidity: 10% to 95%

Installation site: In/Out door

Explosion/ignition proof approval : Ex d IIC T6

⊙ Cable should be shielded type to prevent external noise and cable duct, conduct pipe, and flexible should be used to protect cable.

⊙ In case of using metal conduit or explosion proof cable gland to cable inlet when doing wiring work, please seal the conduit (within 45 cm) not to spread flame or gas through the



conduit.

- ⦿ When connecting this detector with conduit, the screw thread should be more than 5 times.

**(Every material for cable inlet "CABLE GLAND and SEALING FITTING.etc" should be passed for an authorization certainly!)**