0613-SG01

GAS DETECTION TRANSMITTER
OPERATION MANUAL

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MN-0613-SG01-E

V0

Contents

1. Caution: For safety reasons, this equipment must only be operated and maintained by qualified personnel. The user manual must be fully read and understood before operation and maintenance.

2. Calibration should be performed regularly based on usage and the instrument's exposure to hazardous gases or contaminants. Calibration every 180 days (6 months) is recommended.

3. If the combustible gas sensor has been exposed to any catalytic contaminants/poisons (e.g., sulfides, silicon vapors, halogen compounds), it is recommended to test it using a known concentration of calibration gas.

4. Caution: If the detector reading exceeds the measurement range, it indicates the target gas concentration may have reached explosive or critically hazardous levels.

5. A sudden spike followed by a drop in readings, or unstable readings, may indicate a gas concentration exceeding the upper limit of the measurement range, which could be dangerous.

6. In certain environments, severe electromagnetic interference may cause the instrument to malfunction.

1. Product Overview

0613-SG01 Point Gas Detector for industrial and Commercial Use (hereinafter referred to as the detector) is a fixed instrument designed for continuous monitoring of combustible or toxic gas concentrations in operational environments.

The detector employs natural diffusion to measure gas concentrations, offering exceptional sensitivity and outstanding repeatability. Suitable for industrial applications, its LCD or LED digital display provides real-time readings of leaked gas concentrations. Upon exceeding preset alarm thresholds, it immediately activates audible and visual alarms or triggers ventilation systems. The international standard 4-20mA signal can be directly integrated into factory DCS systems, while the RS485 digital signal connects to factory host computers.

2. Features and Technical Specifications

2.1 Primary Functions

★The entire unit adopts a modular design concept:
• Sensing Intelligence Module—Calibration-free, hot-swappable replacement
• Communication Module—RS485 and (4-20)mA interchangeable
• Display Module—LED and LCD interchangeable

★16-bit high-resolution ADC front-end acquisition

★RS485 isolated output, safeguarding both the device itself and upstream equipment

★Standard 4-20mA signal directly compatible with factory DCS systems

★Dual-chip architecture: 16-bit ultra-low-power imported microcontroller handles front-end acquisition and algorithm processing; 32-bit high-speed microcontroller manages back-end transmission control, ensuring more stable and rapid device performance

★Comprehensive algorithm processing: Temperature compensation, anti-interference filtering, and over-range protection algorithms enhance device stability and accuracy

★Ultra-cool flowing light halo, flashing different colors based on device status

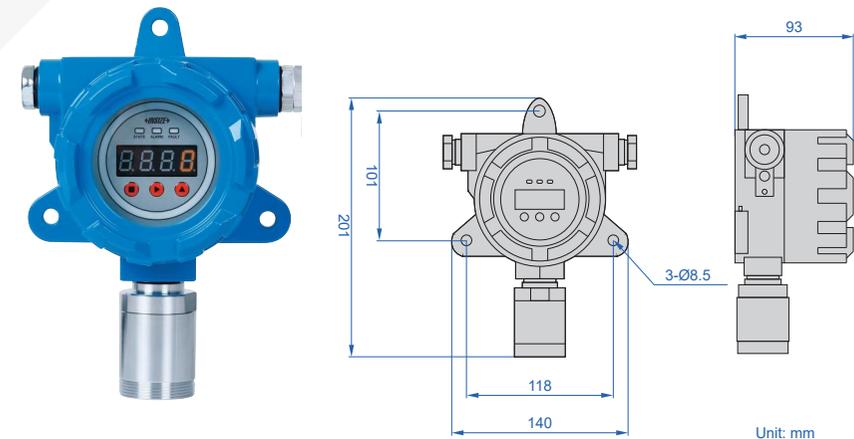## 2.2 Technical Indicators

Standard Gas Detection Range:

Gas	Range	Low alarm	High alarm	Resolution
O_2	0~30%VOL	19.5	23.5	0.1%VOL
CH_4	0~100%LEL	20	50	1%LEL
CO	0~1000ppm	50	150	1ppm
H_2S	0~100ppm	10	20	0.1/1ppm
NH_3	0~100ppm	20	50	0.1/1ppm
H_2	0~1000ppm	200	500	0.1/1ppm
Cl_2	0~20ppm	5	10	0.1/1ppm
HCl	0~20ppm	5	10	0.1/1ppm
SO_2	0~20ppm	5	10	0.1/1ppm
For other gases, please contact our company.				

Accuray	±5%FS
Response time	≤30s (different response times for different gases)
Alarm setting	primary alarm, secondary alarm
Alarm output	passive switching output (max: AC 220V 3A) independent sound and light alarm output
Signal output	RS485, (4~20)mA
Cable	3×1.5mm² or 4×2.5mm² shield cable
Transmission distance	≤1000m
Working environment	-40~70°C, <95%RH (no condensation)
Power supply	DC 24V
Dimension (L×W×H)	201×140×93mm
Weight	1.2kg

3. Detector Structure and Function

3.1 Product Dimensions Diagram

Unit: mm

3.2 Button Functions

|	
⏶	Up-click Increment key when entering numbers
⏵	Right-click When entering numbers, it functions as a shift key.
⏺	In detection mode, press and hold for 3 seconds and enter the password "1111" to access Menu 1. In detection mode, press and hold for 3 seconds and enter the password "2222" to access Menu 2. In detection mode, press and hold for 3 seconds and enter the password "3333" to access Menu 3.

If no operation is performed for 15 seconds in menu mode, the detector will automatically exit to normal detection status.

3.3 Menu Interface Description

Menu 1			
Display Interface	Meaning	Display Interface	Meaning
ESC	Exit	A_dL	Alarm Delay
A_Lo	Low Alarm Setpoint	CALO	Zero Calibration
A_bL	Low Alarm Hysteresis	CAL1	Calibration Gas
A_H1	High Alarm Setpoint	FA_r	Restore Factory Settings
A_bH	High Alarm Hysteresis		
Menu 2			
Display Interface	Meaning	Display Interface	Meaning
ESC	Exit	C_2O	20mA Output
C_O4	4mA Output		
Menu 3			
Display Interface	Meaning	Display Interface	Meaning
ESC	Exit	Addr	Address Settings
bUdE	Baud Rate Settings		

4.1 Power On
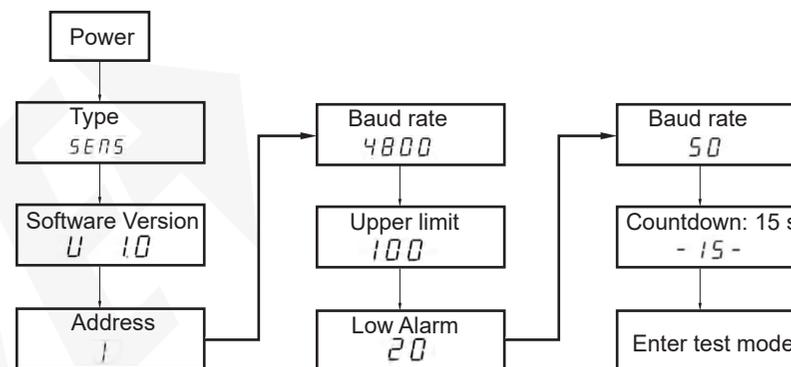
Enter normal detection mode. Once the displayed data stabilizes (stabilization time varies by gas type, typically 5-30 minutes), the main window will show the current gas concentration value. After one hour of power-on stabilization, the detector reaches optimal detection performance.

The detector is factory-set with parameters compliant with standards and has undergone qualified calibration. Unless specific requirements exist, users need not perform any configuration operations. The "Range Calibration" menu is disabled without standard gas to prevent operational inconvenience.

4.2 Power Off

To shut down the detector in normal detection mode, simply disconnect the power supply.

4.3 Menu Item Description

1. In normal detection mode, press the " ■ " key for 1s or the remote control's 'Menu' key. The screen displays " ——".

2. Enter the password "1111" and press the " ■ " key or the remote control's "Confirm" key to enter Menu 1.

3. Enter the password "2222" and press the " ■ " key or the remote control's "Confirm" button to enter Menu 2.

4. Enter the password "3333" and press the " ■ " key or the remote control's "Confirm" button to enter Menu 3.

4.3.1 Low Alarm Setting

Select the " A-Lo " menu item, press the " ■ " key or the remote control confirmation key. The screen displays the low alarm value " 0020 ". Use the keys " ◐◐ " to modify the low alarm threshold, then press the " ■ " key to confirm.

4.3.2 Low Alarm Hysteresis Setting

Select the " A-bL " menu item, press the " ■ " key or the remote control confirmation key. The screen displays the low-report value " 0003 ". Use the key " ◐◐ " to modify the low alarm hysteresis, then press the " ■ " key to confirm.

4.3.3 High Alarm Setting

Select the " A-H I " menu item, press the " ■ " key or the remote control confirmation key. The screen displays the high alarm value " 0050 ". Use the keys " ◐◐ " to modify the high alarm threshold, then press the " ■ " key to confirm.

4.3.4 High Alarm Hysteresis Setting

Select the " A-bH " menu item, press the " ■ " key or the remote control confirmation key. The screen displays the high- report value " 0003 ". Use the key " ◐◐ " to modify the high alarm hysteresis, then press the " ■ " key to confirm.

4.3.5 Alarm Delay

Select the " A-dL " menu item, press the " ■ " key or the remote control confirmation key. The screen displays the alarm delay time " 0003 ". Use the keys " ◐◐ " to modify the alarm delay, then press the " ■ " key to confirm.

4.3.6 Zero Calibration

Select the " CALo " menu item, press the " ■ " key or the remote control confirmation key. The screen displays a 10-second countdown. Upon completion, zero calibration is successful and the device returns to detection mode.
Warning: Zero calibration must be performed in clean air or while nitrogen is flowing.

4.3.7 Calibration with Calibration Gas
(Using combustible gas as an example)

Connect the calibration cap to the sensor device and use the standard gas, adjusting the flow rate to between 400~500 ml/min. Enter Menu 1 and select the " CAL I " menu item, press the " ■ " key or the remote control confirmation key to enter the menu item as follows: Press the " ◐◐ " key, then press the " ■ " key to display the input calibration value on the screen ("0040"). Use the " ◐◐ " key to modify the

calibration value to the standard gas reading, press the " 🔲 " key to start a 15-second countdown. Upon countdown completion, the range calibration is successful, and the device returns to detection mode.

Note: This step may be repeated until the value stabilizes.

4.3.8 Restore factory settings

Select the " FA_r" option to access the factory reset menu, press the " 🔲 " button or the confirmation button on the remote control. After successfully restoring factory settings, the device will return to its previous state.

4.3.9 4mA Calibration

Select the " C_04 " menu item, press " 🔲 " to enter the menu item, press the " ◕◔ " key to calibrate the 4mA output, and press the " 🔲 " key to confirm.

4.3.10 20mA Calibration

Select the " C_20 " menu item, press " 🔲 " to enter the menu item, press the " ◕◔ " key to calibrate the 20mA output, and press the " 🔲 " key to confirm.

4.3.11 Baud Rate Settings

Select the " bUdE " menu item, press " 🔲 " to display the baud rate value (e.g., 9600), press the " ◕◔ " key to modify the baud rate. Press the " 🔲 " key to confirm.

4.3.12 Communication Address Settings

Select the " bUdE " menu item, press the " 🔲 " key to display the address (e.g., 0001) , press the " ◕◔ " key to modify the communication address, then press the " 🔲 " key to confirm.

5. Detector Installation and Wiring

5.1 Installation Location

5.1.1 Detector locations should be selected within a 1m radius of valves, pipe joints, exhaust ports, or potential leak points, without interfering with other equipment operations. Avoid high-temperature and high-humidity environments whenever possible.

5.1.2 Detector Installation Height: When detecting gases with a specific gravity less than air, install at a height of 2m to 3.5m. When detecting gases with a specific gravity greater than air, install approximately 0.3m to 0.6m above the ground.

5.1.3 When installing the detector, the sensor must be secured facing downward. Both the cable lock nut and plug must be fully tightened, and the detector cover must be completely secured to meet explosion-proof requirements.

5.1.4 When deploying detectors for large-area gas detection, one detector should be placed per 30m² to 50m² to achieve effective detection and alarm performance.

5.2 Detector Wiring

After securely fastening the detector, unscrew the front cover. Thread the transmission cable through the cable entry hole, then feed it through the rubber seal into the housing.

Connect the wires to the corresponding terminals inside the housing according to their color codes (as shown in the diagram.

diagram). After verifying the wiring is correct, pull out any excess cable from the housing. Tighten the locking nut to compress the rubber seal and secure the cable (as required by explosion-proof design). When using explosion-proof flexible conduit, it can also be directly connected to this detector. Ensure the threading of the conduit matches that of the detector.

Connect the controller and detector using shielded cable with a wire diameter of no less than 1.5 mm² (≤1000 m).

After verifying all connections are correct, securely tighten the front cover. Depending on the user's site conditions, cables may also be connected first before securing the detector.

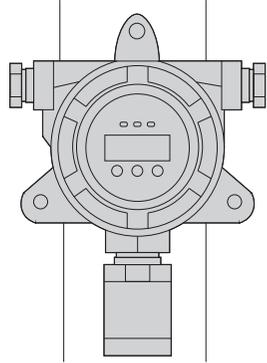The internal wiring of the detector is shown in the diagram below:
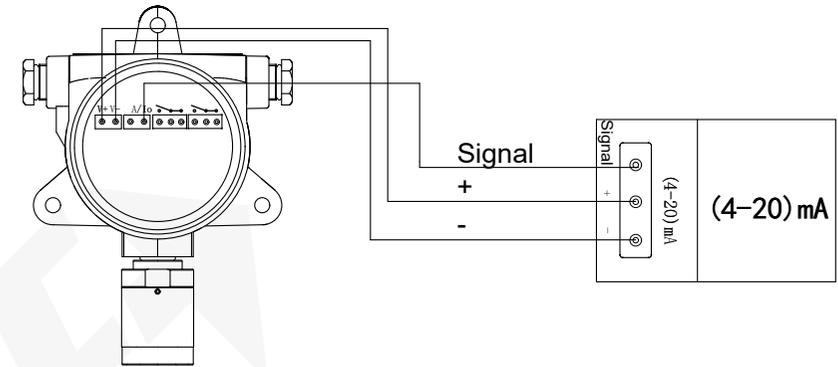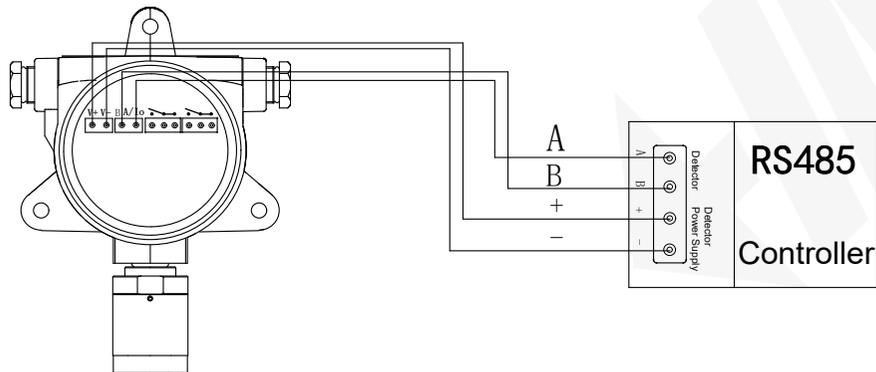
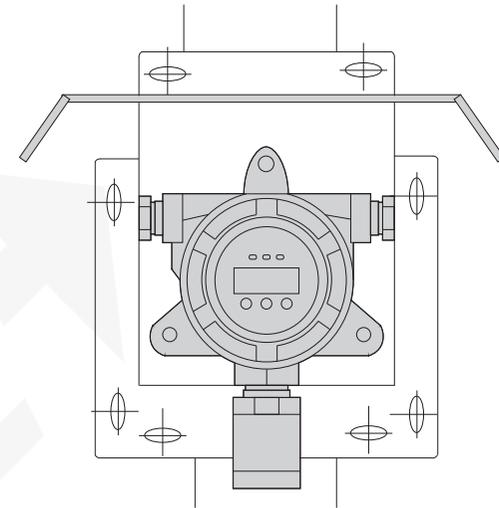

5.3 Installation Method

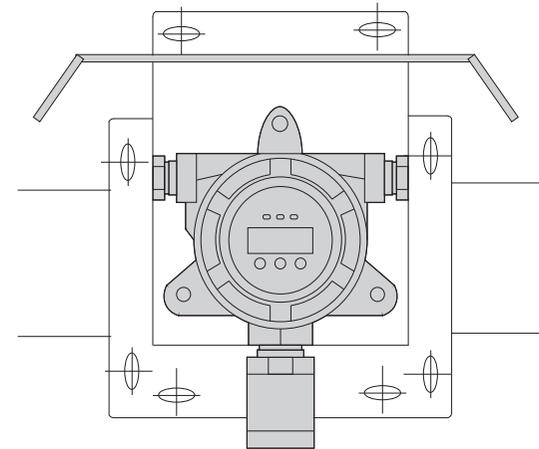5.3.1Wall-mounted installation
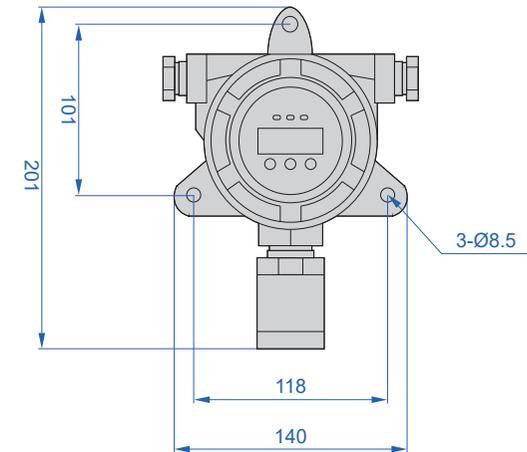
Unit: mm

5.3.2 Longitudinal tube installation

5.3.2 Wall-mounted rain cover installation

5.3.2 Rain cover tube installation
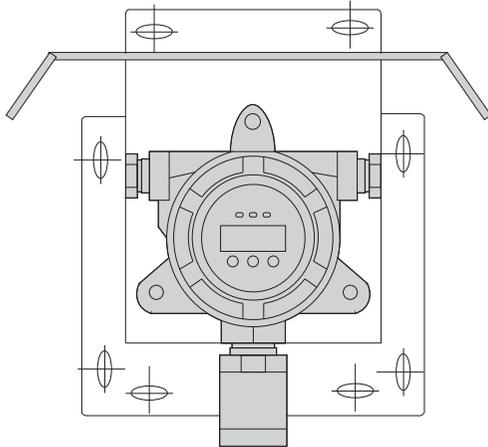
6. Sensor use and replacement

The instrument utilizes modular sensors. Please note their service life when in use (combustible gas sensors: 3–5 years; oxygen sensors: 1–2 years; electrochemical sensors: 2–3 years). Replace sensors promptly upon expiration. Calibrate sensors every 6 months to ensure instrument accuracy.

7. Common Problems and Solutions

※The concentration value of the instrument in clean air is unstable, high or low, and only a small number is displayed.
Cause:Some electrochemical gas sensors are susceptible to interference by other gases, and the interfering gases may be colorless and odorless.
Solution:If the instrument is placed in a clean place without interference gas, the value of the instrument will drop to a normal value. If the value cannot be lowered in a certain clean place, zero calibration can be performed once.
※When the instrument enters the gas test, the value does not haveany response, or the response is weak.
Cause: The oxygen content of the gas being passed is too low: <5%VOL; or the gas pressure is too high, and the air pump is overloaded and cannot operate, or the service life of the sensor is exhausted, or the detector fails.
Solution: If it is an electrochemical, catalytic combustion, or semiconductor gas sensor,oxygen is required to work properly. Ensure that the oxygen content of the incoming gas is> 5% VOL, andthe gas pressure is between -30kPa ~100kPa.

If you have a standard gas, you can pass a gas test and perform a target point calibration. If the oxygen and pressure meet normal conditions, the sensor may befaulty and needs to be returned to the factory for repair.
※The value of the instrument does not stabilize for a long time after the gas is passed in, or the value is high or low.
Cause:usually caused by the oxygen content of the gas being passed is too low; It is also possible that the gas concentration itself changes.
Solution: increase the oxygen content of the gas and stabilize the flowrate; or replace the standard gas test with a high oxygen content.
※4-20mA output is abnormal. <4mA or> 20mA appears
Cause: There may be quality problems with the multimeter and ammeter used for testing, or the related chip of the tester may be defective.
Solution: After confirming that the testing equipment and testing methods are correct, if there are still problems, return it to the factory for repair.
※Instrument cannot be turned on
Cause: usually caused by reverse connection of the power line or low voltage, it may also be caused by poor contact of the power line
Solution: Use a multimeter to test the terminal V + and V- of the tester, and ensure that there is a 24V DC power input. If there is no power supply, please check whether the circuit or power adapter is normal and the terminal is in good contact. If the machine still cannot beturned on, please return it to the factory for repair.