GDS ENGINEERING

2026 / TECHNICAL MANUAL

PGR-TR

Instructions for use of diffusion type gas detector

Current output, DIP settings, and calibration guidance



2026.11 Consolidated Revision · 2026.11.03

Before use, please verify the delivered model, detected gas, measurement range, and options.

gdseng.co.kr 031-731-0218

Things to check before use

This document is intended for personnel responsible for installation, operation, and maintenance. Please refer to the physical nameplate, the delivery specification, and the wiring diagram.

01 Pre-work safety measures

Installation, wiring and disassembly must be performed by trained personnel. Disconnect power before work. Inform the relevant personnel before calibration or output testing and manage interlocked equipment according to site procedures.

02 When an alarm is triggered

According to the on-site emergency procedures, identify the source of the leak and protect personnel. Do not disable the alarm or adjust the zero point to hide the actual gas concentration.

03 Post-test recovery

Remove calibration gas and test equipment. Confirm that normal detection, current output, communication and interlocked equipment have been restored. Record changed settings and inspection results.

> Do not open the cover while energized or when an explosive gas atmosphere may be present. Before installation, verify the hazardous-area classification, gas group, temperature class, ambient temperature and product certification conditions.

The menu and display examples in the manual may vary depending on the firmware. If the screen or terminal markings are different, do not arbitrarily match them; instead, verify the product number and PCB version.

Product and specifications

PGR-TR is a diffusion-type transmitter that converts the sensor signal into 4-20mA for a receiver. The installed sensor and supplied specifications determine the target gas and range.

Item	Specifications / Application Conditions
Power	DC 24V / 0.3A
Output	4-20mA standard current / selectable relay
Sensor	Verify the supplied sensor type: catalytic combustion, semiconductor, etc.
Accuracy / Zero Point Deviation	±2% F.S. / ±3% F.S.
Appearance / Weight	98(W) × 195(H) × 85(D)mm / 1.2kg
Installation	Confirm the wall/pipe installation and supplied bracket
Explosion-proof, environment	Verify the actual nameplate and applicable certification conditions
Cable entry	Confirm the supplied drawing and physical screw specifications

> The explosion-proof marking (T5/T6) on the original version, wiring specifications, and normal operating temperature are different. Apply the correct gland and usage environment according to the nameplate, certificate, and supplied drawing of the product to be installed.

Sensor principle and display

Composition	Role
Catalytic combustion	Measuring the change in sensor resistance due to the catalytic oxidation of flammable gases
Semiconductor type	Measuring the change in semiconductor conductivity when in contact with the target gas
Indicator LED	Displaying power, warm-up completion, and fault/alarm status with illumination and flashing
ENT	Confirming calibration, storage, and other operations
DIP switch	Selecting output test and calibration mode

LED



Status display
Confirming illumination/flashing pattern

ENT



Operation confirmation
Performing calibration and storage operations

DIP



Selecting output test and calibration
Example: All OFF

Control functions are illustrated. Refer to the board photographs later in this manual and the actual markings for component positions and the ON direction.

> After confirming the board version and physical ON marking, perform the operation. Do not apply the DIP number from this manual to the switch of another product.

Installation and piping

Installation location

Choose the location according to potential leak points, gas density, wind and ventilation flow, and places where gas may accumulate. Ensure maintenance access. Avoid vibration, impact, high-frequency noise, dust, oil mist, condensation and direct liquid ingress.

Sensor and fixing

Expose the sensor to the sample air without blocking its protective filter. Secure it with bolts and nuts suitable for the site. Follow the supplied outline drawing for detector and sensor orientation.

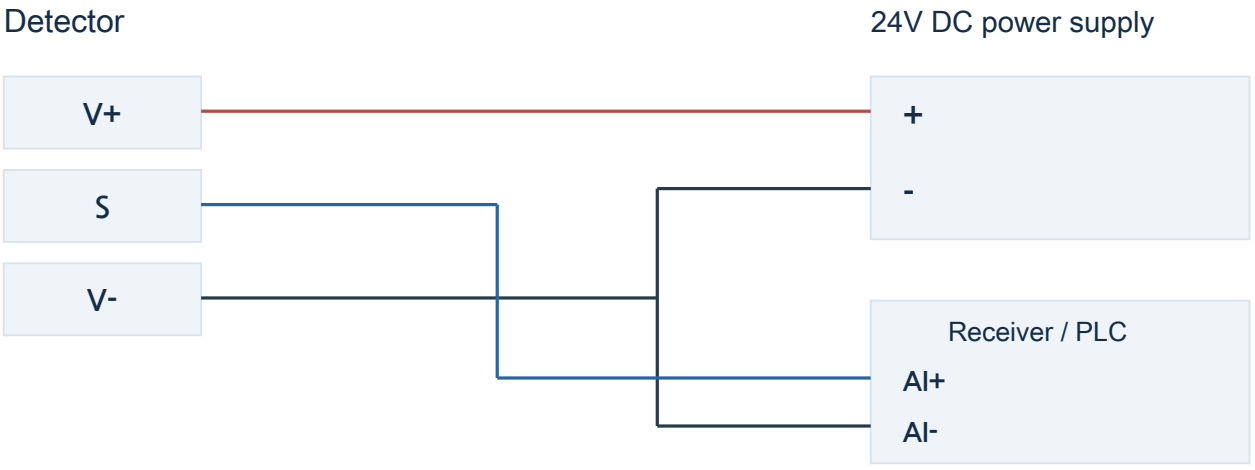
Transportation and assembly

Avoid impact and dropping; store in a dry place. After opening, check for cracks, damage, and missing parts. Remove any foreign matter from the mating surfaces, and check the condition of the screw threads, packing, and O-ring before assembly.

> Use components that match the explosion-proof certification and screw specifications for cable glands, sealing fittings, and unused wiring entries. Do not mix PF, NPT, and metric screws. Do not perform any machining, painting, or repair on explosion-proof mating surfaces.

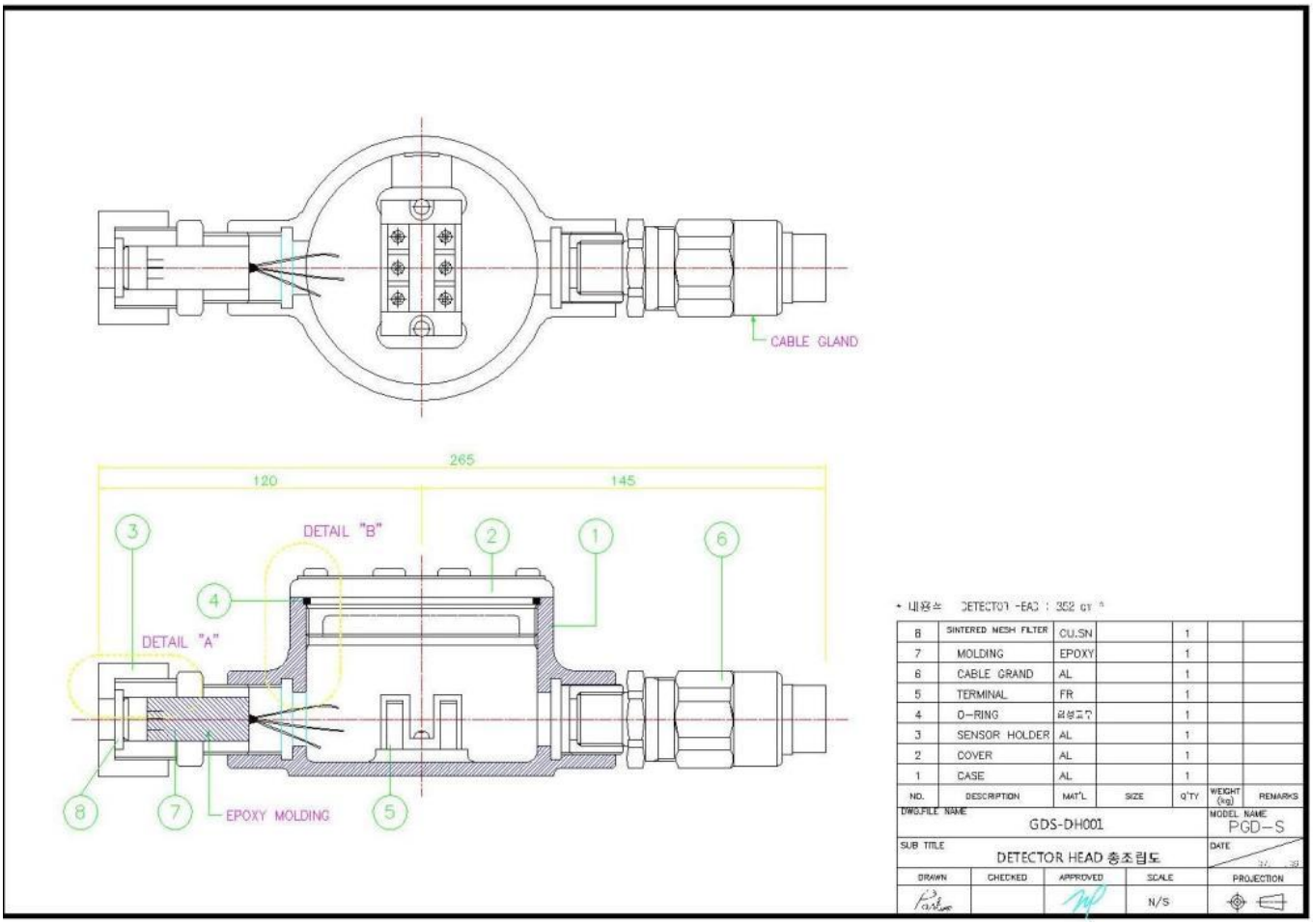
Terminals and wiring

Number	Display	Function
1	V+	DC 24V (+) / Original color BROWN
2	S	4-20mA signal / Original color YELLOW
3	V-	Power (-) / Original color BLUE
4	NC	Relay normally closed contact (optional)
5	C	Relay common contact (optional)
6	NO	Relay normally open contact (optional)



> Colors are for reference only. Please prioritize the actual terminal markings and the supplied wiring diagram. Do not confuse the relay contacts with the power and signal terminals.

Appearance and assembly diagram



Original assembly diagram. Units: mm. Please apply by comparing the drawing format and the delivered product.

Width	Height	Depth
98mm	195mm	85mm

This drawing shows shape and component layout. Refer to the supplied drawing for cable-entry threads, sensor assembly, mounting positions and maintenance clearance.

Operation and Status Check

01 Warm-up

After power supply, warm-up for approximately 180 seconds, and the green LED will turn on. When warm-up is complete, the LED will flash three times and then enter normal detection.

Green LED	Status
Continuous Illumination	Normal detection or warm-up. Confirm operation time and output together.
Flashes 1 time every 2 seconds	Sensor failure
Flashes 4 times every 1 second	Alarm or Overrange Protection
Flashes 3 times after calibration	Indicates that the calibration is complete

Output current	Status / Check items
0mA	Check for detector failure or power/wiring problems
1mA	Sensor failure signal: Supported in the corresponding firmware
2mA	Warm-up or function setting/check status
4-20mA	Normal measurement signal: Proportional to the set measurement range
22mA	Overrange or protection status: Prioritize checking for gas leakage

According to the original specification, detection resumes about 3 minutes after overrange protection. Separately verify that the actual gas hazard has been resolved.

ZERO and SPAN Calibration

ZERO / Zero Point

Confirm a stable value under the specified zero condition, with no target gas, then use the zero procedure for the actual board. The original describes operating ENT twice and for at least 2 seconds; verify the required press sequence and hold time for that board. Success is indicated by three green LED flashes.

> Never conceal a real leak or sensor fault by zeroing. For oxygen configurations, follow the sensor's specified zero gas and procedure.

SPAN / Standard Gas

01 Calibration Mode

Change DIP 7 to ON. Confirm that the green LED flashes three times and then turns on. Then set 4 and 6 to ON.

02 Standard Gas Injection and Storage

Inject the specified standard gas at 500mL/min according to the original standard. After confirming a minimum of 60 seconds and stability of the display and output, press ENT once to save and confirm the three flashes of the LED.

03 Return to Normal Status

Remove the standard gas and return DIP 4, 6, and 7 to OFF. Confirm normal output, alarm and linkage, and the normal position of all switches.

DIP switches · Output test

Check the board version and the ON marking next to the switches. Turn ON only the switches listed for the required function; leave the others OFF.

Diagrams show ON at the top. For operation, follow the ON marking on the actual board.

Normal operation

Switches ON: None



Fixed output 2 mA

Switches ON: 8



Fixed output 4 mA

Switches ON: 3



Fixed output 10 mA

Switches ON: 4



Fixed output 20 mA

Switches ON: 5



> The DIP 4 test output is 10 mA in the final company guide of December 2024. Compare older boards with their delivery documents and verify the measured current. Output testing does not replace a gas response test.

DIP switches · Calibration

Only trained maintenance personnel may calibrate the output, using the specified procedure and an accurate reference meter.

Increase 4 mA reference

Switches ON: 1, 2, 3



Decrease 4 mA reference

Switches ON: 2, 3



Increase 20 mA reference

Switches ON: 1, 5



Decrease 20 mA reference

Switches ON: 2, 5



SPAN calibration

Switches ON: 4, 6, 7





Save button / ENT

Functional drawing based on the original save button. Confirm its actual position and save procedure on the applicable board.

> For 20 mA UP, switches 1 and 5 are ON; switch 2 is OFF. Checked against the diagrams in the final company guide of December 2024.

Procedure and return to normal

01 Prepare

Record the model, board, firmware and current switch settings. Confirm alarm and interlock effects of current tests and calibration with the relevant personnel. Open explosion-proof equipment only after isolating power and confirming a safe atmosphere.

02 Select and check

Turn ON only the DIP switches required for the intended function. Verify test current using a meter. Use approved maintenance procedures and an accurate reference meter to adjust the 4 mA and 20 mA references.

03 SPAN calibration

Turn ON switch 7, then switches 4 and 6. Supply the specified calibration gas at 500 mL/min for at least 60 seconds and until stable, then press ENT once. Confirm that the LED flashes three times.

First: 7 ON



Then: 4 and 6 ON



04 Save and restore

Follow the save-button procedure for the specific board when changing an output reference. Remove the calibration gas and return all DIP switches to OFF. Verify normal output, alarms, communications and interlocks, and record the work.

All OFF after the task

This is a quick reference for DIP operation. For installation, wiring, zero adjustment and troubleshooting, also consult the PGR-TR user manual.

Source: final company DIP guide, 2024.12 · Diagram revision: 2026.11.03

Troubleshooting and maintenance

Symptoms	Verification sequence
Screen and LED not lit	Rated power, polarity, wiring, voltage drop, and display connection status
Err or F Flashing	Sensor, connecting cable, input signal, and power supply. Record fault code.
Calibration failure	Standard gas type, concentration, expiration date, remaining quantity, flow rate, leakage, sensor lifespan.
Mismatch of received value	Range and unit of detector and receiver, current loop, common line, maximum load.
Alarm continues	Actual gas concentration, alarm setpoints, sensor status and interlock operation

Regular inspection

Check normal display, alarm, current-output and communication operation. Inspect mounting, power terminals, grounding, cables and glands for loosening, corrosion or damage. Set a calibration schedule suited to the sensor, gas and site conditions, and record the results.

The original guidance specifies 6-month inspection and calibration, with quarterly inspection depending on the gas. Apply the stricter of the manufacturer's interval specified at delivery and the site requirements. Perform additional checks after abnormal exposure or sensor replacement.

> If you find cracks in the case, damage to explosion-proof joints and screw threads, or hardening of O-rings and packing, please contact the manufacturer. Use approved identical parts and do not repair any parts that affect explosion-proof performance.

Operation record and technical support

Record items	Site record
Installation location / product number	
Detected gas / range / unit	
Power / communication / PCB, firmware	
A1 / A2 / Relay setting	
Zero point / standard gas concentration, expiration date	
Current, communication, and alarm test results	
Calibration Date / Next Inspection Date / Responsible Person	

Technical Support

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Refer to the delivery contract for warranty and paid-repair conditions. The original guidance states a 1-year warranty. Damage caused by operating conditions such as sustained high gas concentrations, corrosive gases or excessive moisture is assessed separately.

Basis for Revision: GDSENG_PGR-TR Manual, pgr-tr materials and PGR-TR DIP setting guide
Revision Date: 2026.11.02.

Reference for physical circuit board

This is the original photo to verify the actual location of the sensor connection, ENT, DIP switch, and power/signal terminals. Compare the board model and version with the printed markings and operate accordingly.



The aspect ratio of the original photo is maintained. The ON direction of the switch is based on the actual printed markings.

Verification Area	Items to Verify
DIP switch	Numbers 1-8 and ON direction / Normal OFF return after operation
ENT	Calibration and save buttons for the corresponding board
Terminals and Connectors	Differentiate between sensor connection and power/signal terminals