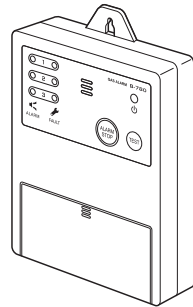


B-780 Gas Alarm

User's Manual

- Thank you for purchasing this B-780 Gas Alarm.
- Be sure to read this user's manual and that you fully understand this information before use.
- Keep this user's manual and the warranty form in a safe place.
- New Cosmos Electric will not be liable for any secondary damages or compensation of any kind due to any devices that were activated by the external output signal of this device.
- As a general guideline, this gas alarm should be replaced 10 years after installation.

Flame-proof detector	KD-5G and KD-5GM
Weather-resistant detector	KD-5T and KD-5M
Standard detector	GD-1B
Gas Alarm	B-780



1. To Users

This user's manual uses safety symbols to ensure that the detector alarm is used safely and correctly, protect you and others from potential hazards, and prevent property damage. The appearance of these safety symbols and their meanings are shown below. Be sure that you fully understand their meanings before reading the information in this manual.

⚠ DANGER This indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠ WARNING This indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION This indicates a hazardous situation which, if not avoided, could result in a minor injury or in property damage only.

Meanings of Safety Symbols	
	Indicates general prohibitions.
	Indicates that disassembly is prohibited.
	Indicates that an open flame is strictly prohibited.

2. Overview

The B-780 is a gas alarm intended for LP gas storage facility up to 3 tons gas and gas pressure regulating facility. This system consists of the B-780 alarm and detectors and enables connection of up to three detector. A flame-proof detector, weather-resistant detector, or standard detector can be selected and connected based on the specific installation location and installation target equipment.

Flame-proof detector	KD-5G (for LP gas)	d2G4
Flame-proof detector	KD-5GM (for methane gas)	d2G4
Weather-resistant detector	KD-5T (for LP gas)	Weather-resistant
Weather-resistant detector	KD-5M (for methane gas)	Weather-resistant
Standard detector	GD-1B (for LP gas)	Drip-proof

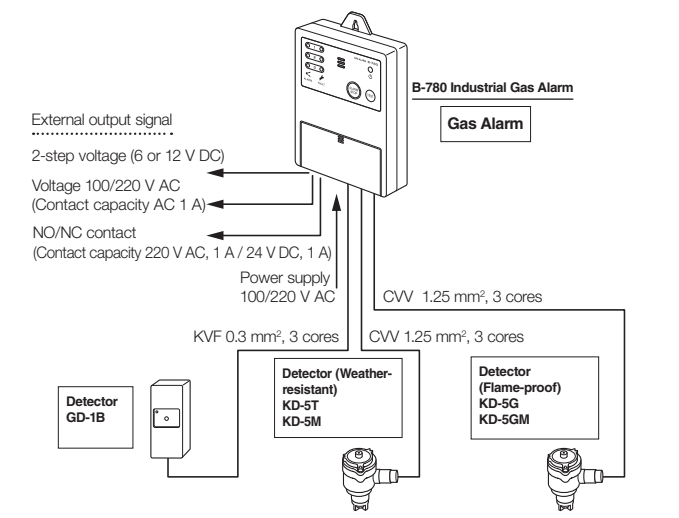
The detector and alarm do not require any sensitivity or other adjustments at installation, and they can be used as soon as the mounting and wiring connection processes are completed.

When a gas leak is detected, the red (Alarm) light of the corresponding detector starts blinking and the B-780 unit starts sounding to notify the user of a gas alarm. When the Alarm Stop button is pressed, the alarm sound is stopped, and the red (Alarm) light changes from blinking to steady lit. When there is no longer gas around the detector, the red (Alarm) light of the alarm turns off.

Also, if a detector fails or a wiring error occurs, the yellow (Fault) light of the alarm starts blinking, and the B-780 unit starts sounding. When the Alarm Stop button is pressed, the alarm sound is stopped, and the yellow (Fault) light changes from blinking to steady lit. After corrective action is taken for the problem cause and operation is recovered, the yellow (Fault) light turns off.

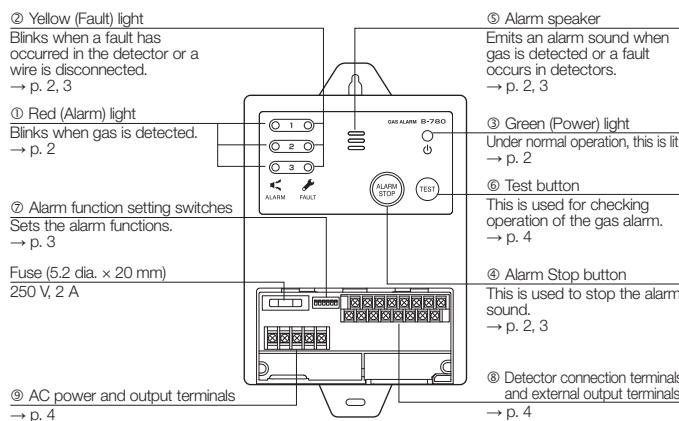
The B-780 gas alarm is provided with output terminals for 2-step voltage output (6 to 12 V DC), voltage output (100/220 V AC), and NO/NC contact output for enabling connection to various external devices such as external buzzers, rotating lights, and communication devices.

3. System Configuration



- The B-780 includes a power plug cable, and so no special qualifications are required for the electrical work.
- The combination of detectors above is simply an example.

4. Names of Parts



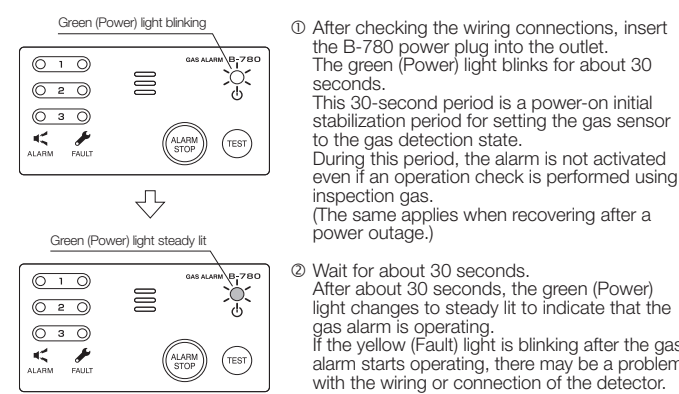
5. Safety Information

⚠ DANGER
Do not cut the power cord while power is being supplied. Doing so could result in an electric shock or start a fire.

⚠ WARNING
Do not disassemble or modify this device. Doing so could result in a device breakdown.

⚠ CAUTION
Check that the green (Power) light is lit on a daily basis.
If no backup power supply is being used, this device will not operate in the event of a power outage.
Also, no alarm is activated for about 30 seconds after power is first supplied.
Install the gas alarm (B-780) indoors.
If installed outdoors, the gas alarm should be housed in a box with protection from rain and high temperatures.

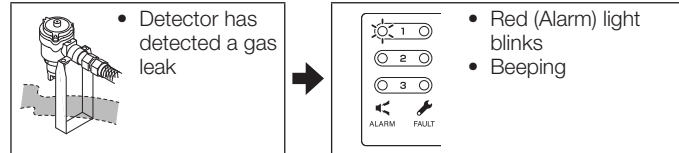
6. Usage Procedure



7. Basic Operation

Gas Leak Alarm

When the gas concentration in the area around the detector reaches the alarm level, the red (Alarm) light of the detector number corresponding to the alarm starts blinking, and an alarm is activated with a beeping sound.



To set to auto reset: Set alarm function setting switch 3 to ON
To stop the alarm sound, press the Alarm Stop button. The alarm sound is stopped, and the red (Alarm) light changes from blinking to steady lit. When there is no longer any gas in the area around the detector, the red (Alarm) light which is steady lit will turn off.

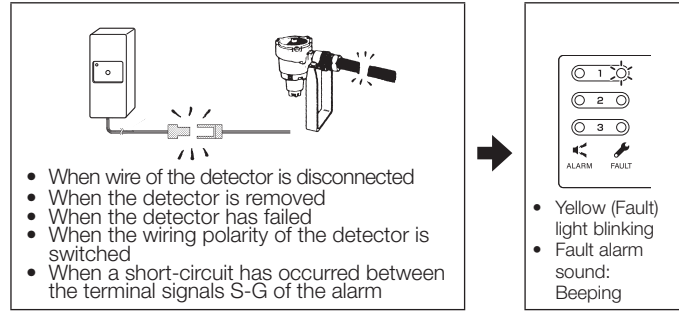
Even if the Alarm Stop button is not pressed, if there is no longer any gas in the area around the detector, the alarm sound will stop, and the red (Alarm) light will change from blinking to off.
Successive alarm sounding system
While a gas leak alarm is being received, after the alarm sound was stopped by pressing the Alarm Stop button, if a gas leak alarm is input from another detector, the alarm sound will be activated again.

To set to manual reset: Set alarm function setting switch 3 to OFF
To stop the alarm sound, press the Alarm Stop button. The alarm sound is stopped, and the red (Alarm) light changes from blinking to steady lit. When there is no longer any gas in the area around the detector, the red (Alarm) light which is steady lit will turn off.

If there is no longer any gas in the area around the detector before you press the Alarm Stop button, the red (Alarm) light will change from blinking to steady lit, and the alarm sound will continue to be emitted. To stop the alarm sound, press the Alarm Stop button. The alarm sound is stopped, and the red (Alarm) light changes from steady lit to off.

Successive alarm sounding system
While a gas leak alarm is being received, after the alarm sound was stopped by pressing the Alarm Stop button, if a gas leak alarm is input from another detector, the alarm sound will be activated again.

Trouble Alarm
If a fault occurs in the detector or the wiring to the detector, the yellow (Fault) light for the detector number corresponding to the alarm starts blinking, and a beeping trouble alarm sound is emitted.



To set to auto reset: Set alarm function setting switch 3 to ON

To stop the alarm sound, press the Alarm Stop button. The alarm sound is stopped, and the yellow (Fault) light changes from blinking to steady lit. After corrective action is taken for the detector or the cause of the wiring problem and operation is recovered, the yellow (Fault) light (steady lit) also turns off to indicate that the device is in the normal monitoring state.

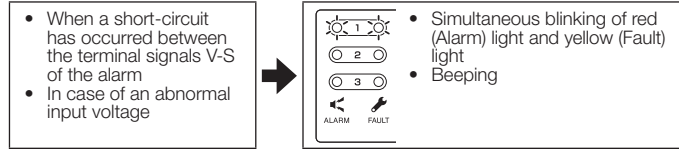
To set to manual reset: Set alarm function setting switch 3 to OFF
To stop the alarm sound, press the Alarm Stop button. The alarm sound is stopped, and the yellow (Fault) light changes from blinking to steady lit. After corrective action is taken for the detector or the cause of the wiring problem and operation is recovered, the yellow (Fault) light (steady lit) also turns off to indicate that the device is in the normal monitoring state.

If corrective action is taken for the detector or the cause of the wiring problem and operation is recovered before pressing the Alarm Stop button, the yellow (Fault) light will change from blinking to steady lit, and the alarm sound will continue to be emitted. To stop the alarm sound, press the Alarm Stop button. The alarm sound is stopped, and the yellow (Fault) light changes from steady lit to off.

⚠ CAUTION
If a gas leak alarm and trouble alarm occur at the same time, the alarm sound and the external output signal give priority to the gas leak alarm.

Input Voltage Error Alarm

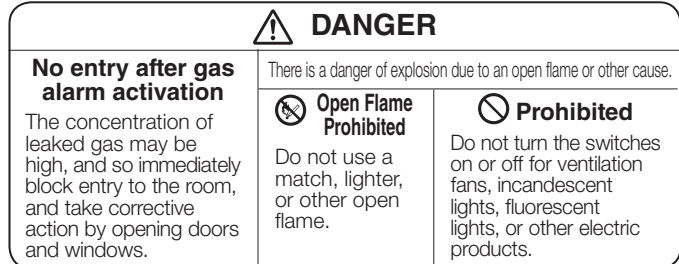
If an abnormal voltage is applied from the detector, the corresponding red (Alarm) light and the yellow (Fault) light start blinking simultaneously, and an alarm is activated with a beeping sound and a synthesized voice message that says, "Possible gas leak". An external output signal is emitted.



To set to auto reset: Set alarm function setting switch 3 to ON
To stop the alarm sound, press the Alarm Stop button. The alarm sound is stopped, and the red (Alarm) light and yellow (Fault) light change from blinking to steady lit. After corrective action is taken for the problem and operation is recovered, both the red (Alarm) light and yellow (Fault) light turn off to indicate that the device is in the normal monitoring state.

To set to manual reset: Set alarm function setting switch 3 to OFF
To stop the alarm sound, press the Alarm Stop button. The alarm sound is stopped, and the red (Alarm) light and yellow (Fault) light change from blinking to steady lit. After corrective action is taken for the problem and operation is recovered before pressing the Alarm Stop button, the red (Alarm) light and yellow (Fault) light will change from blinking to steady lit, and the alarm sound will continue to be emitted. To stop the alarm sound, press the Alarm Stop button. The alarm sound is stopped, and the red (Alarm) light and yellow (Fault) light change from steady lit to off.

8. Corrective Action When Gas Leak Alarm Occurs

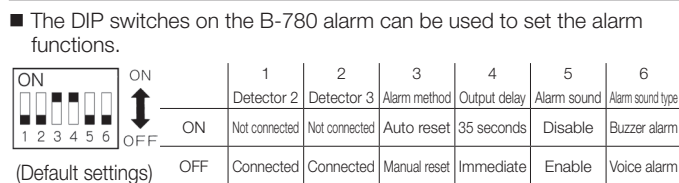


Take the following corrective action.

- Provide ventilation to the area, such as by gently opening doors and windows.
- Check for any gas leak locations and their possible causes, and immediately take the proper corrective action, such as by remedying the leak or reporting it.

⚠ CAUTION
Stopping the alarm sound: The alarm sound is stopped by the Alarm Stop button, but stop it only when necessary.

9. Alarm Function Settings



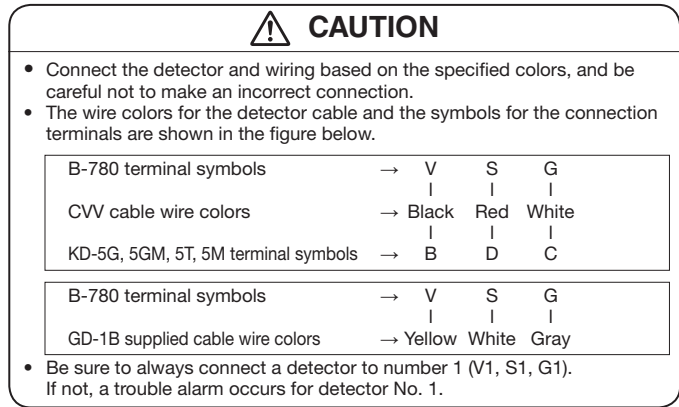
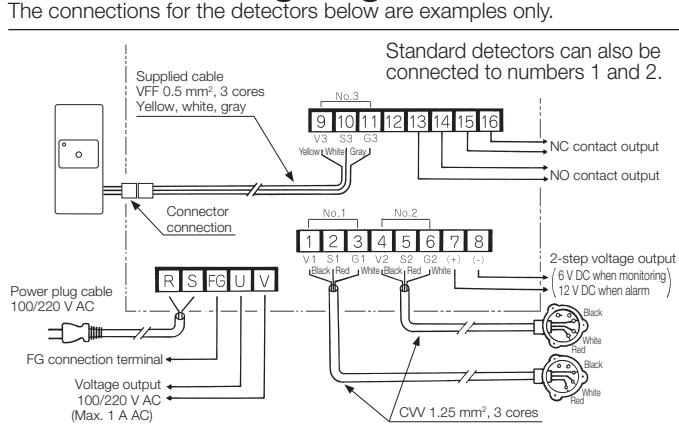
- 1) Connection of detectors (switches 1 and 2)**
When three detectors are connected: Switches 1 and 2 are set to OFF
When two detectors are connected and terminal 3 (V3, S3, G3) is an open terminal: Switch 1 is set to OFF, and switch 2 is set to ON
When one detector only is connected and terminal 2 (V2, S2, G2) and terminal 3 (V3, S3, G3) are open terminals: Switches 1 and 2 are set to ON
- 2) Switching between auto reset and manual reset (Switch 3)**
To set the alarm method to auto reset, set switch 3 to ON.
To set to manual reset, set the switch to OFF.
- 3) Switching the output delay time (Switch 4)**
The NO/NC contact output and the 100/220 V AC voltage output can be set to an output delay time of 35 seconds or immediate output. To set to a delay time of 35 seconds, set switch 4 to ON. To set to immediate output, set to OFF.

4) Voice alarm enable/disable (Switch 5)
When switch 5 is set to ON, the voice alarm is disabled, and the light indicator only is used.

5) Switching the voice/buzzer (Switch 6)
When the switch is set to OFF, the gas leak alarm emits beeping and the synthesized voice message "Possible gas leak".
When the switch is set to ON, the gas leak alarm emits beeping only.

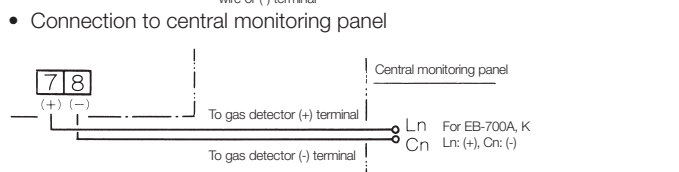
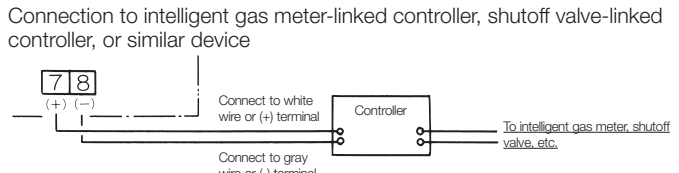
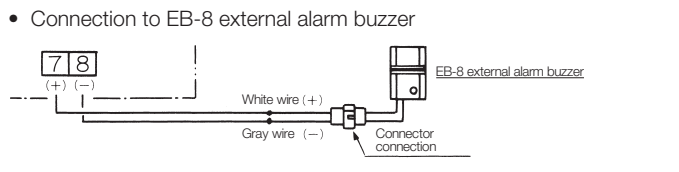
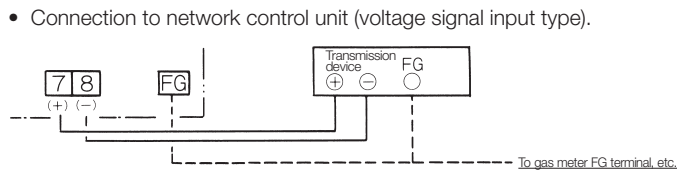
⚠ CAUTION
Turn off the alarm sound only in cases when emitting of the alarm sound is undesirable. Normally, use with the voice alarm enabled (OFF side).

10. Overall Wiring Diagram



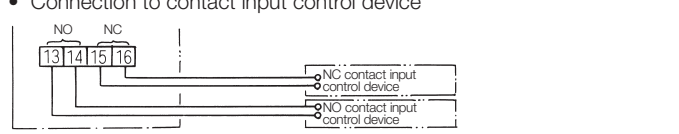
11. Connecting External Outputs and External Devices

2-step voltage output (6 or 12 V DC) Terminal number 7 (+), 8 (-)
The alarm supplies 6 V DC during normal monitoring, and 12 V DC when a gas alarm occurs. It is connected to the one with impedance 1.2 kΩ to 50 kΩ, and is linked to a gas leak alarm sound. Pressing the Alarm Stop button recovers operation to 6 V DC. (This can be set to immediate output only, and it cannot be switched to output delay.)

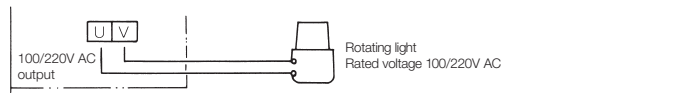


* Note that connection is not possible to devices having an impedance less than 1.2 kΩ.

NO/NC contact output Terminal numbers 13, 14, 15, 16
Linked with gas leak alarm sound. Pressing the Alarm Stop button recovers operation. (Immediate output or delay time of 35 seconds can be selected using the DIP switch.)



Voltage output 100/220 V AC Terminal numbers U, V
Output of 100/220V ACs when gas leak alarm occurs. Current capacity 1 A. Linked with gas leak alarm sound. Pressing the Alarm Stop button recovers operation. (Immediate output or delay time of 35 seconds can be selected using the DIP switch.)



* Immediate output or delay output cannot be selected separately for the NO/NC contact output and voltage output 100/220 V AC.

12. Maintenance and Inspection

Because the detector alarm is a safety device, daily maintenance and inspection are extremely important.

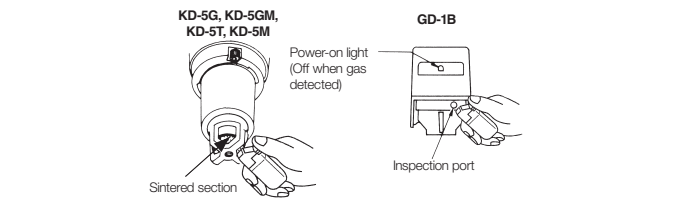
Daily Inspection

- Visual inspection
The green (Power) light of the B-780 gas alarm is steady lit. Check for any clogging in the sintered metal of the KD-5 detector or any corrosion on the case. Check that the power-on light of the GD-1B detector is steady lit and that the case is not damaged.

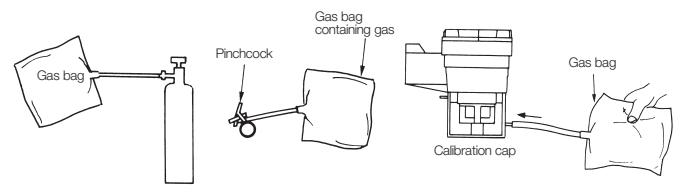
- Operation verification of alarm using Test button
Gas leak alarm operation can be verified using the Test button of the B-780 gas alarm.
- While the Test button is pressed down, all red (Alarm) light of the gas leak alarm blink, and the alarm emits beeping. An external output signal is also output, and so caution is necessary when connected to external equipment.

Detector check using simple inspection gas (EG-3: sold separately) (at least once a month)
KD-5G, KD-5GM, KD-5T, KD-5M: Remove the rainproof cap from the detector, bring the tip of the inspection gas (EG-3: Lighter type) into contact with the sintered section from directly under the sensor unit, and hold down the lever to spray out gas. (Note that, if the tip of the inspection gas does not fit into the sintered section, the gas will be diluted, and it will be difficult for the alarm to activate.)
GD-1B: Bring the tip of the inspection gas (EG-3: Lighter type) near the inspection port of the detector, and hold down the lever to spray out gas. When gas is detected, the power-on light of the detector turns off.

Check that the red (Alarm) light of the B-780 corresponding to the detector starts blinking and the alarm sound is emitted.



Inspection of KD-5G, KD-5GM, KD-5T, and KD-5M detectors using the calibration tool set (sold separately)
Remove the rainproof cover and rainproof cap of the detector.
Capture gas from a standard gas canister to a gas bag connected to a PVC tube, and close it with a pinchcock.
Put the calibration cap onto the sensor unit of the detector, and allow gas to flow to the calibration cap.
Check that the red (Alarm) light of the B-780 corresponding to the detector starts blinking and the alarm sound is emitted.



13. Identifying Faults and Errors and Troubleshooting Procedures

If the device is operating abnormally or if a problem occurs, do not continue to use in this state, immediately stop usage, and conduct a complete inspection.

Symptom	Cause	Troubleshooting Procedure
Yellow (Fault) light is blinking (steady lit)	Problem in detector connection cable (broken wire, short-circuit, loose terminal connection part, wrong polarity connection)	Resolve the cable problem, tighten the terminal connection part, check the polarity, etc.
Yellow (Fault) light No. 1 is blinking (steady lit)	The detector is not connected to the terminal of detector number 1	If the number of connected detectors is two or less, be sure to always connect starting from terminal number 1, and set the function setting switch of the unconnected terminal to the ON position. Check the ON and OFF settings for the function setting switch, such as after the connection numbers of the detectors were changed. (Connected to No. 2 - Switch 1 = OFF, Not connected = ON) (Connected to No. 3 - Switch 2 = OFF, Not connected = ON)
Yellow (Fault) light No. 2 or No. 3 is blinking (steady lit)	Forgetting to set the function setting switch	(Connected to No. 2 - Switch 1 = OFF, Not connected = ON) (Connected to No. 3 - Switch 2 = OFF, Not connected = ON)
If the yellow (Fault) light does not turn off even after checking the above points	Failure of detector itself (due to impact, ingress of water, lightning, etc.)	If you checked the other items and the Trouble light still does not turn off, contact your dealer or New Cosmos Electric sales office.
The alarm sound does not stop after an alarm even though operation was recovered	The function setting switch is set to manual reset (Switch 3 is set to OFF)	After there is no longer any gas, and the detector has recovered operation, press the Alarm Stop button to recover alarm operation.
The alarm sound is not emitted during a gas leak alarm or when trouble is indicated	The function setting switch is set to alarm sound disable (Switch 5 is set to ON)	Set function setting switch 5 to OFF.
The power-on light of the GD-1B standard detector does not turn on	The yellow (Fault) light of the problem location turns on: Connection problem in detector cable (broken wire, short-circuit, loose terminal connection part, wrong polarity connection, missing connector) Gas leak alarm has occurred	Remove the problem cable, check the polarity, tighten the terminal connection part, and check the connector. The power-on light is off during a gas leak alarm.
The external alarm device is not activated	The alarm delay time is applied (about 35 seconds) The 100/220 V AC output does not work (rotating light or similar device does not turn on)	After the alarm delay time has elapsed, the alarm signal is output. (If the delay time is not needed, set function setting switch 4 to OFF to set to immediate output.) The fuse may have blown, and so contact your dealer or New Cosmos Electric sales office.

If the problem persists or you remain unsure about the problem even after checking the above points, contact your dealer or New Cosmos Electric sales office.

14. Requesting After-sales Service

Requesting Service

- Check the points in "Identifying Faults and Errors and Troubleshooting Procedures" again.
- If the problem persists even after checking the above points, or you are uncertain about the problem, do not attempt to repair the alarm yourself. Instead, contact your dealer or New Cosmos Electric sales office. When you contact to request service, please provide the following information.

(1) Product name	Gas alarm
(2) Model	B-780 Connected detectors or KD-5G, KD-5GM, KD-5T, KD-5M GD-1B, etc.
(3) Problem symptoms	Describe in as much detail as possible (lights turned on, blinking state, etc.)

15. Specifications

B-780 Gas Alarm Specifications

Target gas	LPG	Methane
Number of Connected Detectors	1 to 3	
Detectors to be Connected	KD-5G, KD-5T, GD-1B	KD-5GM, KD-5M
Gas Alarm	- Red ALARM light blinks - Beeping 80 cB/m or higher - Selectable to auto resetting or manual resetting	
Fault Alarm	- Amber FAULT light blinks	
Power supply	100/220 VAC±10%, 50/60Hz	
Power consumption	Approx. 5 W during gas monitoring (max.) Approx. 10 W when gas alarm is active (max.)	
External Outputs	(1) 6VDC, 10mA during normal gas monitoring, 12VDC, 10mA when a gas alarm is active, and 0 VDC when fault is detected. (2) 100/220 VAC, 1 A max. when alarm is active (output delay time is approx. 35 sec., which can be changed to zero (no delay) by DIP switch setting). Replaceable fuse (3) NO/NC contact, 24 VDC, 1 A max. (output delay time is approx. 35 sec., which can be changed to zero (no delay) by DIP switch setting)	
Operating Temperature	-10°C to +40°C (No condensation)	
Dimensions and Mass	W138×H180×D33 mm (Excluding protrusions), Approx. 420 g	
Accessories	Screws x 2, Crimp terminals x 10	

KD-5 series Detector Specifications

Model	KD-5G	KD-5GM	KD-5T	KD-5M
Detection Principle	Catalytic combustion			Hot-wire semiconductor
Target gas	LPG	Methane	LPG	Methane
Alarm Set Value	1/100 to 1/4 %LEL		30 sec. or less	1 min or less
Response Time	30 sec. or less	1 min or less	30 sec. or less	1 min or less
Power supply	24 V DC ±20%			
Current Consumption	30 mA or less at 24 V			
Structure	Flame-proof (d2G4)		Weather-resistant	
Output signal	6 VDC during normal gas monitoring, 12 VDC when a gas alarm is active, and 0 VDC when a fault is detected			
Cable length	Up to 250m (0.5mm ² , 3-core cable)			
Operating Temperature	-10°C to +60°C		-10°C to +50°C	
Dimensions and Mass	W94×H141×D123 mm (Excluding protrusions), Approx. 1,500 g			
Mounting Method	By screws			
Accessories	Stand, rainproof cap, rainproof cover, screws, screw expansion plugs, crimp terminals			

GD-1B Detector Specifications

Model	GD-1B
Detection Principle	Catalytic combustion
Target Gas	LPG
Alarm Set Value	1/100 to 1/4 %LEL
Response Time	30 seconds or less
Power Supply	24 V DC ±20%
Current Consumption	30 mA or less at 24 V
Structure	Standard
Output signal	6 VDC during normal gas monitoring, 12 VDC when a gas alarm is active, and 0 VDC when a fault is detected
Cable length	Up to 250m (0.5mm ² , 3-core cable)
Operating Temperature	-10°C to +40°C
Dimensions and Mass	W52×H116×D37mm, Approx. 220 g
Mounting Method	By installation plate or band
Accessories	Installation plate, wood screws, band, connectors, screw expansion plugs, crimp terminals

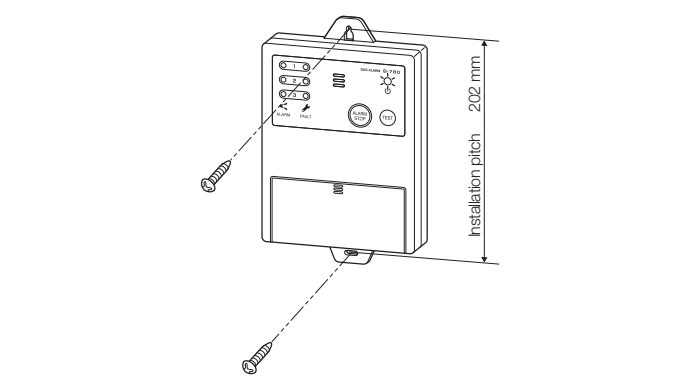
16. Installing the B-780 Gas Alarm

Installation Location of B-780 Gas Alarm

- ⚠ CAUTION**
Install in a location where the alarm can easily be verified if a gas leak alarm occurs.
- Select a location where the green (Power) light is clearly visible and the gas alarm is easily accessible for maintenance.
- Install in a location that is at least 8 meters away from hazardous area or in a non-hazardous area.
- The gas alarm requires a 100/220 V AC power supply.

Installation Procedure for B-780 Alarm

Insert wood screws into the hooks at the top and bottom of the alarm to secure it in place.



17. Warranty

The warranty period is one (1) year from the date of purchase. You are entitled to the limited warranty, if the product malfunctions due to a manufacturing defect during normal use in accordance with the instruction manual, specifications and labels.

1. Warranty Scope

If the product fails or is found to be damaged due to a manufacturing defect during the warranty period, and used in accordance with the instruction manual and specifications, we will provide a free replacement. This warranty covers the New Cosmos product/parts only and not third party product/parts.

2. Warranty Exclusions

The product replacement will be at the cost of customer even during the warranty period under the following conditions.

- Failures and damages incurred by incorrect use, deliberate acts or negligence of the user.
- Failures and damages caused by disaster, earthquake, storm and flood, lightning, extreme climate, abnormal power supply voltage, excessive electromagnetic interferences, or other acts of God.
- Failures and damages resulting from repair and/or modification by non-New Cosmos certified technicians.
- Consumables and failures and damages resulting from improper consumable replacement.
- Other failures and damages not attributable to the manufacturer.

Manufacturer:
NEW COSMOS ELECTRIC CO., LTD.
2-5-4 Mitsuya-naka, Yodogawa-ku Osaka 532-0036, Japan
URL: <http://www.newcosmos-global.com>