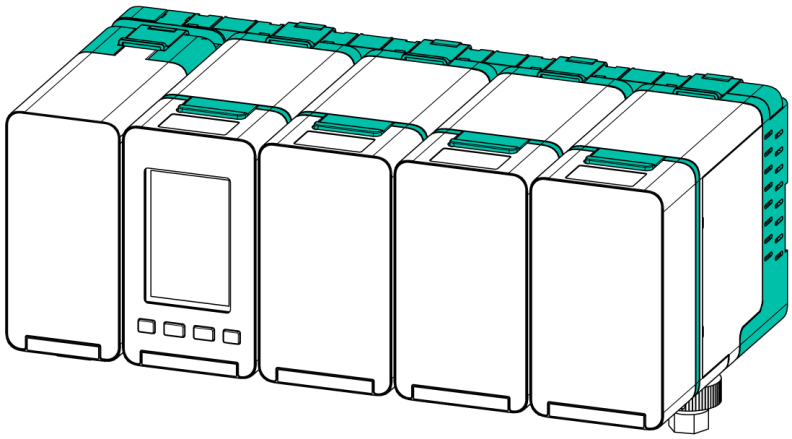
PS-8 Series Gas Detector

for use in semiconductor manufacturing plant

Instruction Manual for Installation



Keep this manual for easy reference.
Read and understand this manual carefully before using this product correctly.
This manual describes the standard model. If your unit has end-user-specific options, this manual will be superseded by your delivery specifications.

CE

Instruction Manual No.
GAE-178-00
December 2024

NEW COSMOS ELECTRIC CO.,LTD.

Related Manuals

The following documents have been prepared to guide your installation and use of this product.

PS-8 Series Instruction Manual for Installation (this document), No. GAE-178

This document is intended for your supervisors and service personnel who are concerned with the installation of this product. It also provides the following information to ensure correct installation of the product:

- Safety precautions
- Unit dimensions and components and precautions for unpacking
- Installation precautions

PS-8 Series Instruction Manual for Operation, No. GAE-179

This document is intended for your supervisors, operators and service personnel who are concerned with the operation and maintenance of this product. It provides the following information to ensure the safe use of the product:

- Unit dimensions and components and power on/off
- Operation modes and on-screen menus
- Setup procedures
- Maintenance procedure, consumable replacement, and troubleshooting

PS-8 Series Instruction Manual for Communication, No. GAE-180

This document is intended to provide the communication specifications and procedure to establish communication with external devices.

Introduction

Thank you for purchasing the New Cosmos PS-8 series extractive type gas detector (“product” or “unit” hereafter).

Prior to use, please read this manual as well as the related manuals and follow the instructions provided for correct use of the product.

Periodic maintenance is essential to maintain the reliability of the product. Periodic maintenance must be performed in the manner described in this document.

Keep this manual in a safe place for easy reference.

This product is a gas detector designed for use in semiconductor manufacturing plants. It monitors semiconductor process gases or flammable gases (e.g., hydrogen) that may be present in a cylinder cabinet, exhaust duct, or workspace within a semiconductor manufacturing plant. The unit displays the measured gas concentrations on its screen and transmits them as an analog signal, contact signal, and/or Ethernet signal to external equipment. If the gas concentration level reaches a preset threshold, the alarm LEDs will start blinking and simultaneously activate the external relay contacts (1st and 2nd gas alarm contacts), providing early detection of a potential gas leak.

The following acts are prohibited without the prior consent of New Cosmos. Please note that the use of this product will be treated as your acceptance of these terms. If you do not agree to these terms, do not use this product, and immediately consult your local sales representative.

- Modification of this product and its related components
- Reverse-engineering of this product and its related components
- Analysis of this product and its related components including disassembly and reverse compilation
- Transfer of this product and its related components to a third party
- Third-party use of this product and its related components for any reason, including lease and licensing

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Precautions

Unauthorized copying and replication of the contents of this manual, in whole or in part, are strictly prohibited.
The contents of this manual are subject to change without notice.
This manual has been prepared with the utmost care. If any incorrect description comes to your notice, please contact us for correction.

Symbols Used in this Instruction Manual

Symbols for Danger Levels

Operators’ safety has been put first in designing this product. However, there exist some unavoidable risks due to the system characteristics. In this manual, safety symbols are divided into three categories,

Danger, Warning and Caution, depending on the severity and magnitude of the risks. Carefully read the contents related to the precautions before operation and maintenance work.
This manual uses Danger, Warning, Caution and Notice symbols to draw attention to procedures, materials, methods, and processes that require particular attention.

DANGER
Indicates an imminently hazardous situation that can result in death or serious injury.

WARNING
Indicates a potentially hazardous situation that may result in death or serious injury.

CAUTION
Indicates a hazardous situation that may result in minor injury or property damage.

NOTICE
Indicates a hazardous situation that will not result in injury but may cause a product, facility, or related equipment damage or failure.

Other Signs

This manual uses the following notations in addition to the aforementioned hazard level classifications.

NOTE Provides supplemental or useful information on product handling.

Ref. References with related content and common procedures.

Symbol Marks

This manual uses the following symbol marks to outline the contents of the description.

	Don’ts Indicates a prohibited action.
	Mandatory Indicates an action that must be done.
	Electrical hazard Warns of risk of electric shock under a certain condition.
	Explosive hazard Warns of risk of explosion while handling explosive items.
	Corrosive hazard May cause burn or loss of sight if skin or eye comes into contact.

Model Variations

This product is divided into the following models according to the sensor unit and functions that meet the customer's specifications.

Main Unit

Model	Power Supply		Output Signal		Collective Contact Output (AL1, AL2 and Fault)
	PoE	24 VDC	Ethernet	Analog Signal	
PS-8M	✔	✔	✔	✔	✔
PS-8N		✔		✔	✔

Subunit

Model	Power Supply	Output Signal	Contact Output
PS-8S	None*1	None*2	None*3

*1: Power is supplied from the main unit.

*2: If analog signal output is required, an expansion unit with an AO module (sold separately) needs to be added.

*3: If at least one of the sensor channels generates a gas alarm or fault alarm, a collective gas or fault alarm contact output is generated by the main unit. If a dedicated gas or fault alarm contact output is required for each sensor channel, an expansion unit with a DO module (sold separately, up to two channels per DO module) is required. The collective alarm contacts (AL1, AL2, and Fault) are located in the main unit, not in the subunits.

Expansion Unit

Model	Module Type	Function	Remarks
PS-8EU*	PS-8EUM-AO	Analog output	Up to four channels can be supported by each AO module.
	PS-8EUM-DO	Contact output dedicated to each individual sensor channel (AL1, AL2, and Fault)	Up to two channels can be supported by each DO module.
	PS-8EUM-AI	Analog input	Up to two channels can be supported by each AI module.

*4: A maximum of two modules can be installed in one expansion unit.

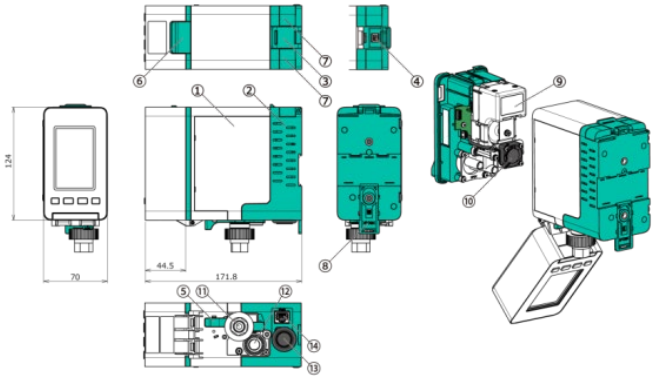
Sensor Unit

Model	Sensor Type	Detection Principle
CDS-7	Toxic gas sensor	Electrochemical sensor
CHS-7	Flammable gas sensor	Hot wire semiconductor sensor
COS-7	Oxygen sensor	Galvanic cell sensor

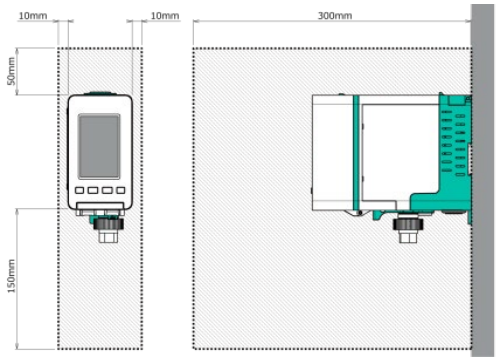
Quick Index

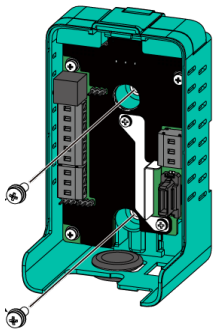
This page lists parts that may be often referenced.
Prior to use, please read the precautions in 1 "General Precautions".

Unit Dimensions and Components
Pages 7 to 16



Installation
Pages 20 to 34





Wiring Connection
Pages 35 to 42

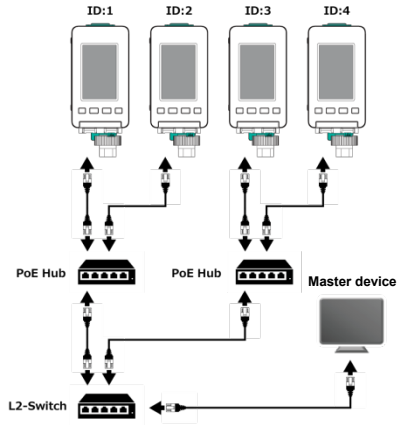


Table of Contents

1 General Precautions

1.1 Before Work

In order to ensure safe use, please carefully read the precautions in this manual before turning on the product to prevent unexpected accidents. New Cosmos is not liable for any cost incurred or any damage resulting from any usage other than that outlined in this document.

Do not use the product in a manner other than that described in this document. Doing so may impair the electrical/mechanical protection functions of the product.

This chapter “General Precautions” provides a general description of methods of safely using this product as well as safety information and cautions related to this product.

1.2 Safety Precautions

Please carefully read the following precautions for correct use.
Use this product in accordance with the applicable laws and regulations.
Wiring and installation must only be performed by a qualified electrician with sufficient knowledge of wiring/installation procedures in accordance with the applicable technical standards.

DANGER	
	• Do not put your face close to the exhaust port of this unit. Doing so may cause the inhalation of oxygen-free air or toxic gases that are harmful to human health.

DANGER	
	• Operation check using actual gas is extremely dangerous and requires a special attention, because flammable gas may have a risk of explosion and toxic gas may be harmful to human health. It must be performed by qualified personnel or a New Cosmos authorized technician. • If the liquid leaks from the sensor due to vibration or shock and gets on your hands or clothes, wash them with water immediately. Moreover, if the liquid gets into your eyes or ears, wash them with plenty of water as first aid and seek immediate medical advice. • This product is not explosion-proof and must not be installed in a hazardous area.

WARNING	
	• Ground the product to prevent electric shocks. • In the event of a gas leak alarm, follow safety procedures in accordance with your company's regulations. • This product is heavyweight. Handle it with care not to drop it. Failure to do so may cause injury or property damage such as damaged floor.

⚠ CAUTION

- Do not use radio wave-emitting devices (e.g., walkie-talkies, cell phones, wireless devices) in the vicinity of the product.
- Do not disassemble, modify, or alter the structure of the product or its electrical circuits. Doing so may compromise product performance.

⚠ CAUTION

- Wiring and installation must only be performed by a qualified electrician with sufficient knowledge of wiring/installation procedures, in accordance with the applicable technical standards.
- New Cosmos is not liable for any cost incurred or any damage resulting from controlling external equipment (e.g., interlock) by using the product's outputs (e.g., analog output, alarm contact output).
- Only use this product in accordance with the applicable laws and regulations.
- This product is not drip-proof and should be kept away from water or rain.

NOTICE

- Do not use organic solvents for cleaning the product. Organic solvents may negatively affect the product's exterior as well as internal components.

NOTICE

- New Cosmos is not liable for any cost incurred or any damage resulting from a measurement data or information breach.

1.3 Labels Affixed to Product

Danger, Warning and Caution labels are affixed to the areas or surrounding parts that are potentially dangerous and require a special attention. Prior to use, please read the instructions in these labels.

⚠ WARNING

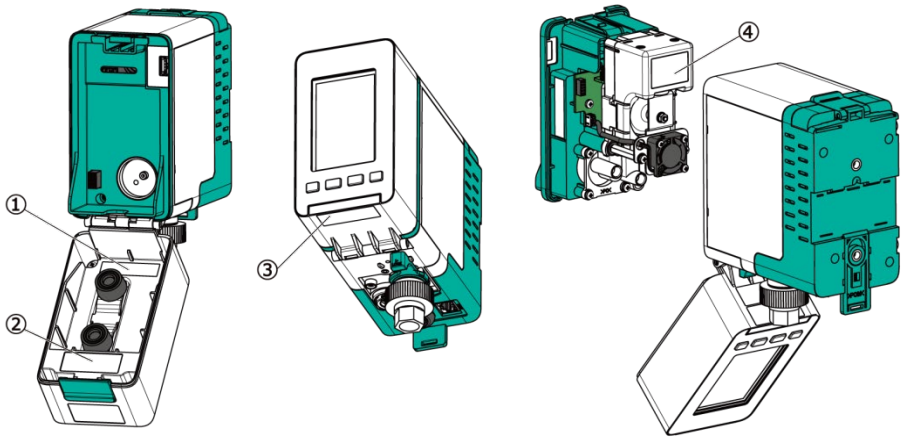
- Do not relocate the labels affixed to the product.

⚠ WARNING

- If Danger, Warning and Caution labels are missing, damaged or illegible, please contact New Cosmos or its authorized representative for replacement. It is extremely dangerous to leave the labels dirty or obscured.

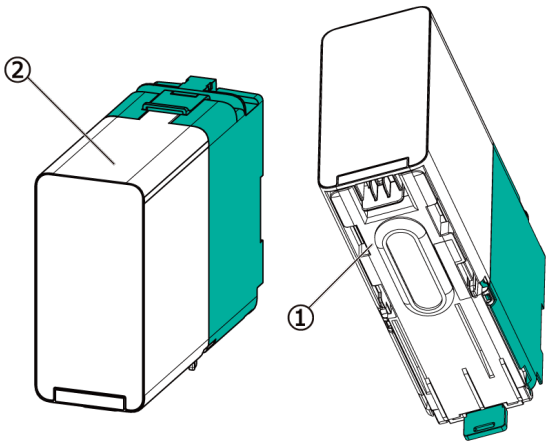
Prior to use, please read these labels. Labels that are not specified below are for control by New Cosmos. Operation and maintenance work of the appliance is not affected.

Labels for Main Unit and Subunit



Item	Description
①	**Serial number label** Indicates the serial number of the product.
②	**Power rating label** Indicates the model and the power supply specifications.
③	**Environmental label** Indicates the applicable certification markings.
④	**Pump serial number label** Indicates the serial number of the pump.

Labels for Expansion Unit



Item	Description
①	**Serial number label** Indicates the serial number of the product and applicable certification markings.
②	**Caution label** Indicates the precautions to be adopted while removing the front case.

CE Marking

This product complies with the CE marking requirements.
Refer to the EU Declaration of Conformity before use.
Note: CE marking applies only when the maximum load for the gas alarm/fault alarm contacts of 30 VDC 1.0 A (resistive load) is used.

1.4 Disposal

Used product, components, sensor units, and/or batteries must be disposed of as hazardous waste in accordance with the applicable laws and regulations.

1.5 Service Life

The service life of this product is 10 years. The unit can operate for up to 10 years with standard installation and operation in accordance with the PS-8 series instruction manuals for installation and operation. When the service life has expired, replacement is essential for continued reliable performance and other purposes. “10 years” is only an estimate, and no guarantee is provided.

Ref. Refer to 12 “Maintenance” of the PS-8 Series Instruction Manual for Operation for the replacement parts, which may require replacement before this product’s service life (10 years) expires.

1.6 Definition of Supervisor/Operator/Service Personnel

This manual is intended for personnel concerned with the use/installation/maintenance of this product. Concerned personnel are divided into three categories according to safety level, skills, and experience. This manual specifies the name of the applicable category and shows that the information or instruction given below applies to that category only.

Supervisor	Manages the product operation. • Fully understands the product operation method, entire gas alarm facility, and gas/fault alarm clearance method. • Should carefully read this manual and be familiar with the system characteristics and relevant work activities.
Operator	Operates the product. • Understands the product operation method, the way to address gas/fault alarms, and daily work activities for the product under the supervisor’s instruction.
Service Personnel	Carries out installation, failure cause investigation, maintenance and repair work for the product. • Requires special knowledge and skills for installation, maintenance, and repair. Acts as New Cosmos authorized technician in principle.

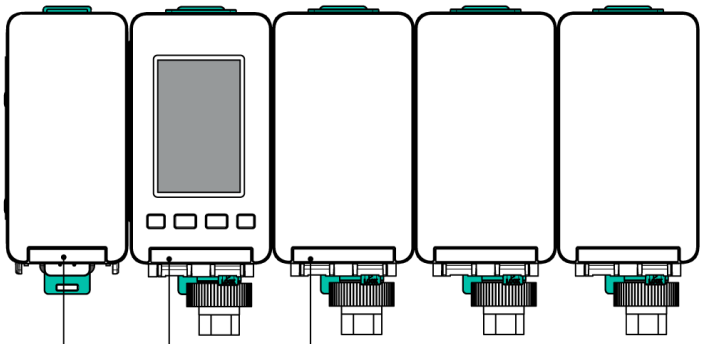
2 System Configuration

This section explains the PS-8 system configuration.

Up to three subunits and up to four expansion units (up to eight modules, two modules per expansion unit) can be connected to a single main unit to form a gas detection system (a maximum of 4 channels or 4 gases).

Up to eight external gas detectors can be connected to the system via AI modules (two external gas detectors per AI module).

A main unit can be used as a stand-alone detector as well.



Expansion Unit
- Status LEDs
- Up to two modules can be installed in each expansion unit.
- Module variations
  - (1) AO module
    -> Dedicated analog output
  - (2) DO module
    -> Dedicated gas/fault alarm contact output
  - (3) AI module
    -> Analog input

Main Unit (gas detector)
- Status LEDs
- LCD
- Operation keys
- External outputs
  - (1) Collective gas/fault alarm contact outputs (AL1, AL2 and Fault)
  - (2) Analog output
  - (3) Modbus TCP (Ethernet) communication*

*As per the delivery specifications

Subunit (gas detector)
- Status LEDs

3 Package Contents

A standard package consists of the following items. If any items are missing or damaged, please contact New Cosmos or its authorized representative for replacement.

Main Unit and Accessories

Item	Qty.	Description
Main unit	1	–
Half union	2	R1/4-ϕ6 mm or R1/4-ϕ1/4 inch[*1] Polypropylene (PP) One inner and one sleeve included
Filter element (FE-1)[*2]	1	12 pcs, for MF-50 filter unit
Mounting screw	2	M4×12, for wall-mounting
Outlet spacer	1	Use when installing a metal tube fitting
Activated carbon filter outer sleeve (KF-6S-□)	1[*3]	–
Flat-bladed screwdriver	1[*4]	Use to open/close the terminal block's slots
PS-8 series instruction manual set	1[*4]	Instruction Manuals for Installation, Operation, and Communication

*Sensor unit is not included and sold separately. It will be separately delivered when ordered.

Subunit and Accessories

Item	Qty.	Description
Subunit	1	–
Half union	2	R1/4-ϕ6 mm or R1/4-ϕ1/4 inch[*1] Polypropylene (PP) One inner and one sleeve included
Filter element (FE-1)[*2]	1	12 pcs, for MF-50 filter unit
Mounting screw	2	M4×12, for wall-mounting
Outlet spacer	1	Used when installing a metal tube fitting
Joint	1	Used for connecting two adjacent units
Activated carbon filter outer sleeve (KF-6S-□)	1[*3]	–

*Sensor unit is not included and sold separately. It will be separately delivered when ordered.

Expansion Unit and Accessories

Item	Qty.	Description
Expansion unit	1	–
Module	1 or 2[*5]	A combination of AO/DO/AI modules
PCB address label	1	–
Joint	1	Used for connecting two adjacent units
Mounting screw	2	M4×12, for wall-mounting

Optional Items (Sold Separately)

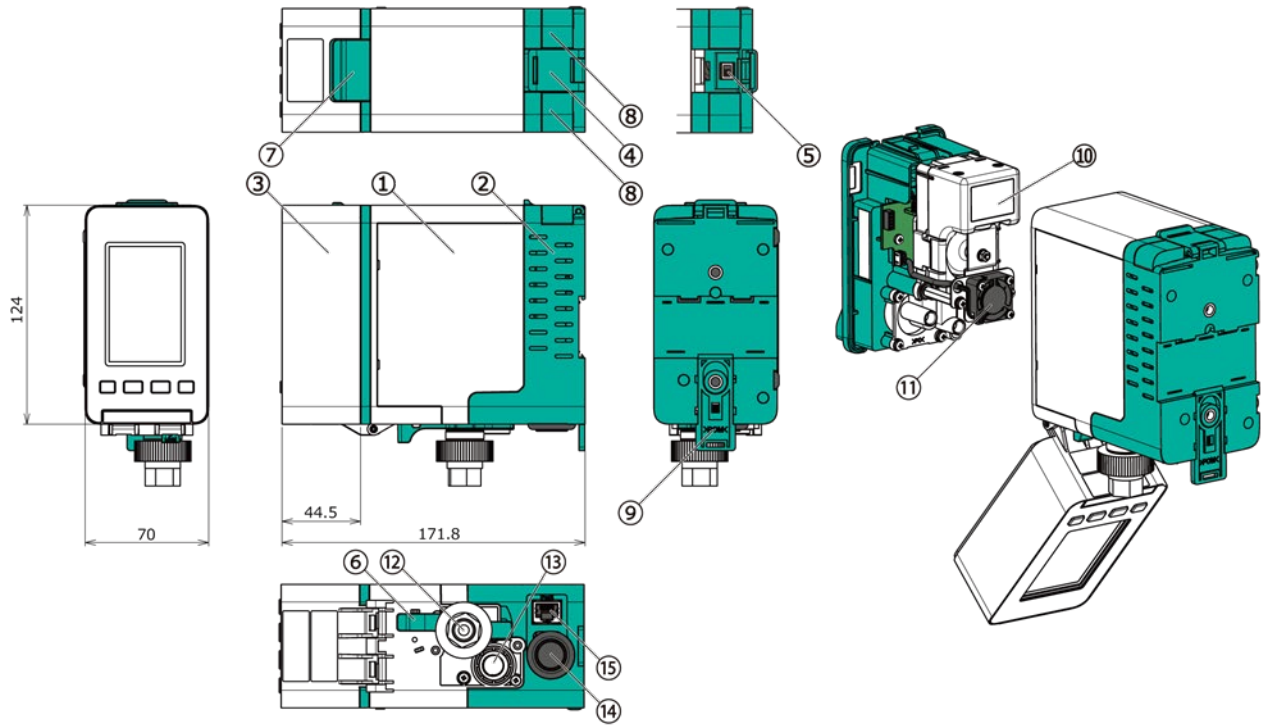
Item	Qty.
Filter unit (MF-51)[*6]	As ordered
Gas collector (PF-D1)	As ordered

*1: φ1/4 inch half union should be specified at the time of ordering.
*2: For detection of highly adsorptive gases (e.g., HF, F_2), a filter element (FE-1) should not be used. Remove the filter element (FE-1) from the filter unit (MF-50).
*3: Provided when a sensor unit with a built-in pyrolyzer (sold separately) was ordered. One activated carbon filter inner sleeve (KF-6S-Y1) comes with the sensor unit. The activated carbon filter inner sleeve needs to be installed in the activated carbon filter outer sleeve.
*4: One screwdriver/manual set is provided per system, not per unit.
*5: Quantity is as ordered.
*6: Recommended for detection of highly adsorptive gas (e.g., HCl, Cl_2, NH_3) other than HF and F_2.

4 Unit Dimensions and Components

4.1 Main Unit (M)

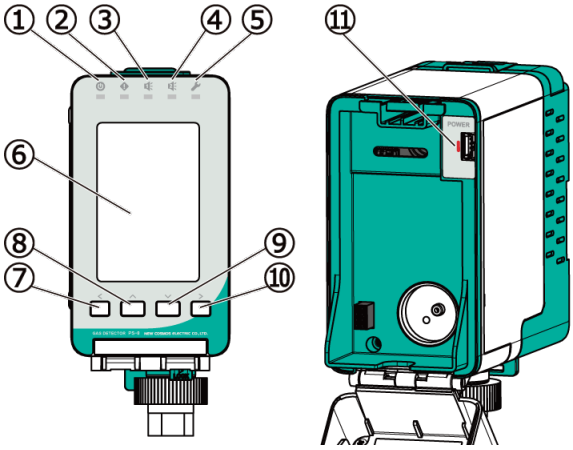
4.1.1 Exterior Appearance



(Dimension unit : mm)

Item	Component	Description
①	Front case	A combination of a front case and a front cover is called “front module”.
②	Rear case	
③	Front cover	
④	Case fixing latch	Secures the rear case to the front case.
⑤	Power switch	Turns the unit on/off.
⑥	Case fixing lever	Secures the rear case to the front case.
⑦	Front cover open/close latch	Press to open the front cover for sensor unit/sampling module replacement.
⑧	Connector cover (2 places)	Cover for the connector. Remove the cover when connecting with other unit.
⑨	DIN rail release lever	Pull down this lever to remove the unit from the DIN rail.
⑩	Sampling module	Pumps the gas in and out.
⑪	Fan	Fan for cooling. Provided with a sampling module.
⑫	Gas inlet	Gas intake port. A filter unit (MF-50) is attached to the gas inlet.
⑬	Gas outlet	Gas exhaust port
⑭	Grommet	Cable entry
⑮	Communication connector (RJ-45)	Connects a LAN cable for Ethernet communication. *Provided on PS-8M only. For PS-8N, this connector is closed with a sealing plate to prevent cable connection.

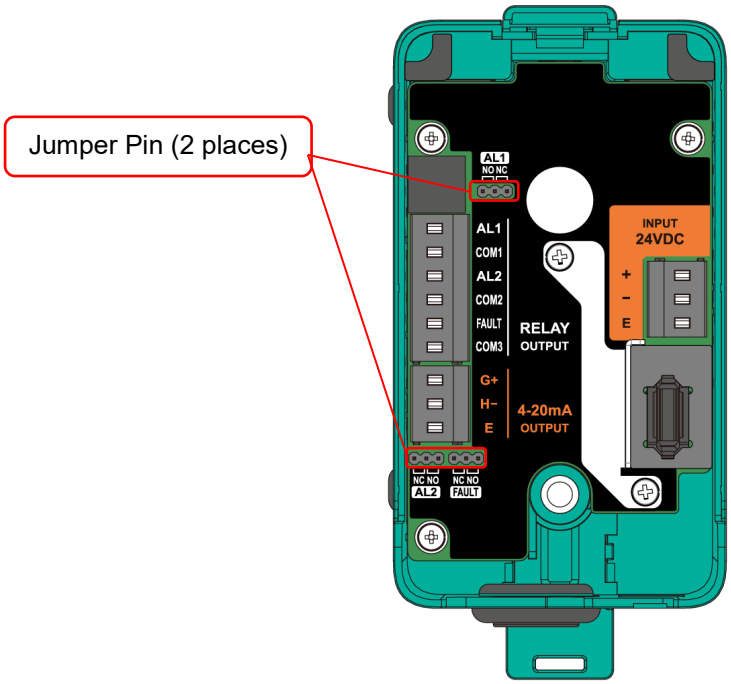
4.1.2 LED and Keys



Item	Component		Description
①		Power LED (Green)	Indicates the operational status of either one of the connected channels. The LED status will take precedence in Blinking rapidly > Blinking > Lit. Not lit: when the unit is off. Blinking: when the warm-up is in progress. Blinking rapidly: when the sensor is off. Lit: when the unit operates normally.
②		Fault LED (Yellow)	Indicates a fault condition of either one of the connected channels. Not lit: when the unit operates normally. Blinking: when a fault is detected.
③		AL1 LED (Red)	Indicates the 1st stage gas alarm status of either one of the connected channels. Not lit: when the warm-up is in progress or unit operates normally. Blinking: when a 1st stage gas alarm is activated.
④		AL2 LED (Red)	Indicates the 2nd stage gas alarm status of either one of the connected channels. Not lit: when the warm-up is in progress or unit operates normally. Blinking: when a 2nd stage gas alarm is activated.
⑤		Maintenance LED (Blue)	Indicates the maintenance mode status of either one of the connected channels. The LED status will take precedence in Lit > Blinking rapidly > Blinking. Not lit: when the unit is in normal operation and not in maintenance mode. Blinking: when the unit is in maintenance mode 1. Blinking rapidly: when the unit is in maintenance mode 2. Lit: when the unit is in aging mode.
⑥	LCD		Displays gas concentration values, alarm statuses, etc. Refer to 4.1.4 “LCD” of the PS-8 Series Instruction Manual for Operation for details.
⑦	<	Left key	Used to select an item or cancel the current operation.
⑧	^	Up key	Used to select an item or increase the parameter value.
⑨	v	Down key	Used to select an item or decrease the parameter value.
⑩	>	Right key	Used to select an item or confirm the selection or setting.
⑪	Sensor power LED (Red)		Indicates the sensor operational status. Not lit: when the sensor is off. Blinking: when the sensor is on.

4.1.3 External Wiring Terminals

CAUTION	
	Do not touch the jumper pins inside. They are for device setting.

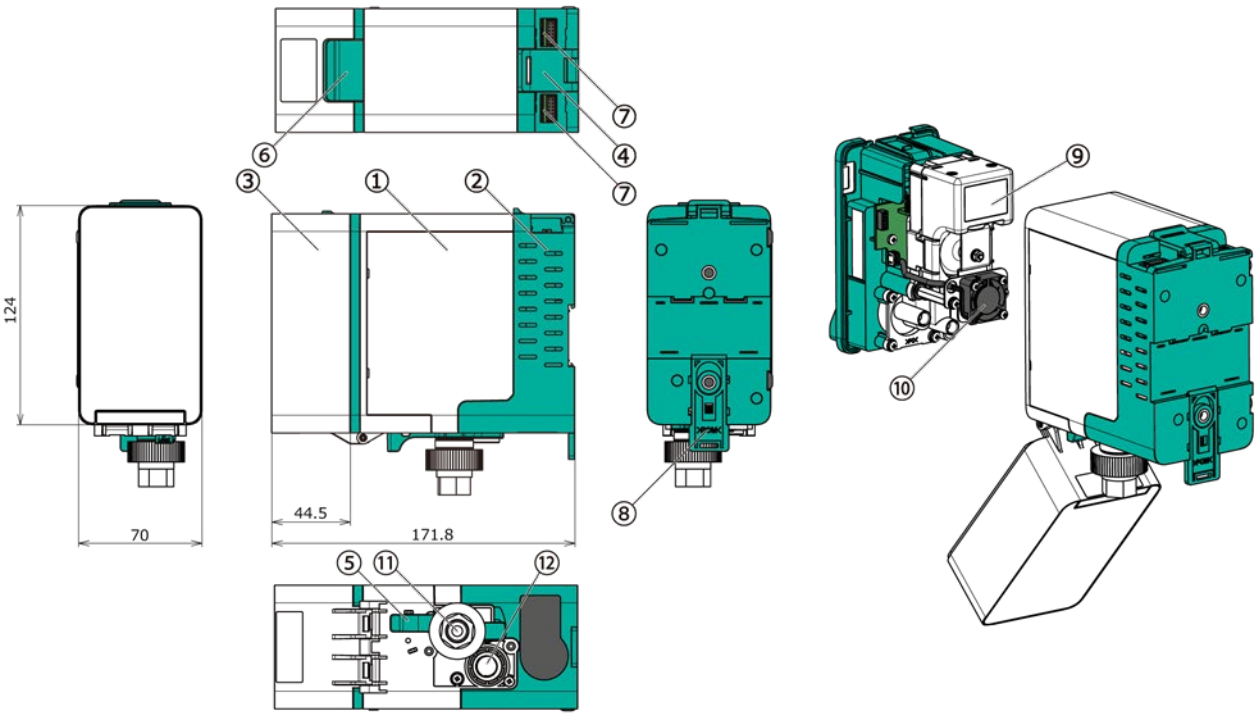


Identifier		Terminal	Description
INPUT 24VDC	+	Power input	24 VDC (+)
	–		24 VDC (–)
	E		Earth
RELAY OUTPUT	AL1	Collective gas alarm output (1st stage)	1st stage gas alarm contact output that is collectively generated if at least one of the sensor channels generates a 1st stage gas alarm
	COM1		Common with AL1
	AL2	Collective gas alarm output (2nd stage)	2nd stage gas alarm contact output that is collectively generated if at least one of the sensor channels generates a 2nd stage gas alarm
	COM2		Common with AL2
	FAULT	Collective fault alarm output	Fault alarm contact output that is collectively generated if at least one of the sensor channels generates a fault alarm
	COM3		Common with FAULT
4-20mA OUTPUT	G+	Analog output	Analog output + (4-20 mA)
	H–		Analog output –
	E		Earth

Ref. Refer to 5 “External Outputs” for the operation of the terminals.

4.2 Subunit (S1/S2/S3)

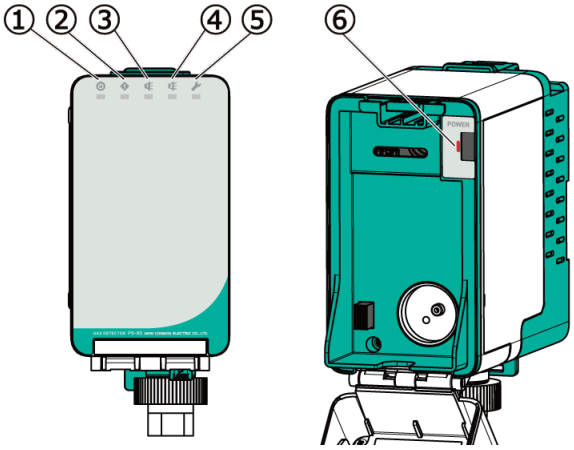
4.2.1 Exterior Appearance



(Dimension unit : mm)

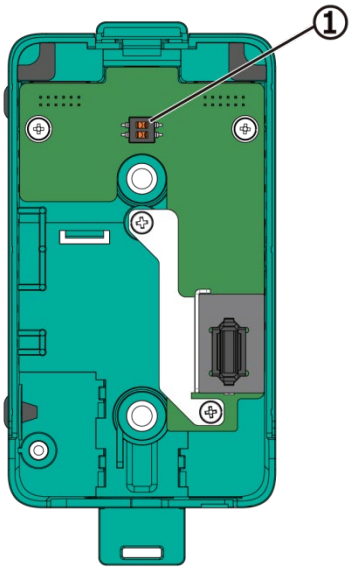
Item	Component	Description
①	Front case	A combination of a front case and a front cover is called “front module”.
②	Rear case	
③	Front cover	
④	Case fixing latch	Secures the rear case to the front case.
⑤	Case fixing lever	
⑥	Front cover open/close latch	Press to open the front cover for sensor unit/sampling module replacement.
⑦	Connector (2 places)	Connects with other unit.
⑧	DIN rail release lever	Pull down this lever to remove the unit from the DIN rail.
⑨	Sampling module	Pumps the gas in and out.
⑩	Fan	Fan for cooling. Provided with a sampling module.
⑪	Gas inlet	Gas intake port. A filter unit (MF-50) is attached to the gas inlet.
⑫	Gas outlet	Gas exhaust port

4.2.2 LEDs



Item	Component		Description
①		Power LED (Green)	Indicates the operational status. The LED status will take precedence in Blinking rapidly > Blinking > Lit. Not lit: when the unit is off. Blinking: when the warm-up is in progress. Blinking rapidly: when the sensor is off. Lit: when the unit operates normally.
②		Fault LED (Yellow)	Indicates a fault condition. Not lit: when the unit operates normally. Blinking: when a fault is detected.
③		AL1 LED (Red)	Indicates the 1st stage gas alarm status. Not lit: when the warm-up is in progress or unit operates normally. Blinking: when a 1st stage gas alarm is activated.
④		AL2 LED (Red)	Indicates the 2nd stage gas alarm status. Not lit: when the warm-up is in progress or unit operates normally. Blinking: when a 2nd stage gas alarm is activated.
⑤		Maintenance LED (Blue)	Indicates the maintenance mode status. The LED status will take precedence in Lit > Blinking rapidly > Blinking. Not lit: when the unit is in normal operation and not in maintenance mode. Blinking: when the unit is in maintenance mode 1. Blinking rapidly: when the unit is in maintenance mode 2. Lit: when the unit is in aging mode.
⑥	Sensor power LED (Red)		Indicates the sensor operational status. Not lit: when the sensor is off. Blinking: when the sensor is on.

4.2.3 Address Switches on Rear Case

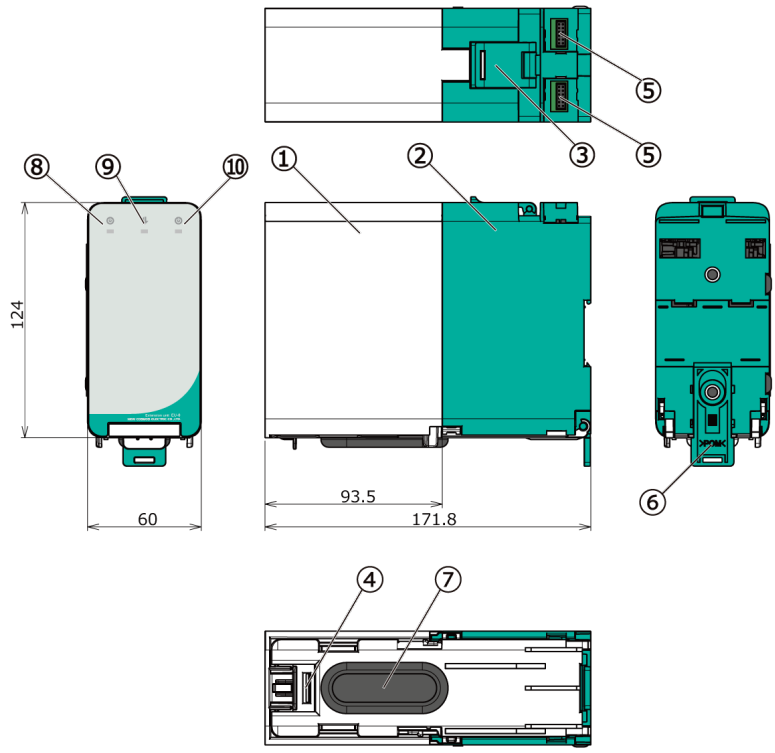


Item	Component	Description
①	Adress switches	DIP switches for setting the address of the subunit.

Ref. Refer to 7.3.1 “Subunit Address Setting” for how to set the address.

4.3 Expansion Unit (EU)

4.3.1 Exterior Appearance

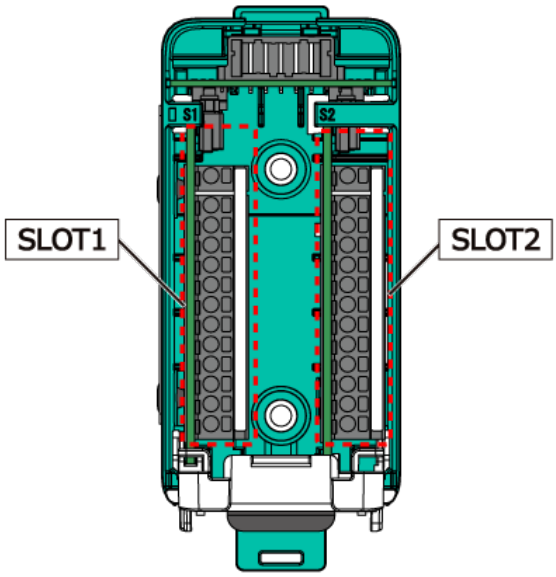


(Dimension unit : mm)

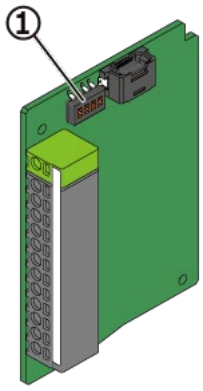
Item	Component		Description
①	Front case		—
②	Rear case		—
③	Case fixing latch		Secures the rear case to the front case.
④	Case release lever		Releases the front case from the rear case.
⑤	Connector (2 places)		Connects with other unit.
⑥	DIN rail release lever		Pull down this lever to remove the unit from the DIN rail.
⑦	Grommet		Cable entry
⑧		Slot 1 Power LED (Green)	Indicates the operational status of Slot 1. Not lit: when the unit is off. Lit: when the unit operates normally. Blinking: when the unit cannot communicate with the main unit, or when the channel allocation (unit/analog output/relay output allocations) is not set*
⑨		Communication LED (Orange)	(Not in use)
⑩		Slot 2 Power LED (Green)	Indicates the operational status of Slot 2. Not lit: when the unit is off. Lit: when the unit operates normally.

* Blinking only on the expansion unit with the AO or DO module(s) installed.

4.3.2 External Wiring Terminals



AO Module (Analog Output) (AO1–AO4)



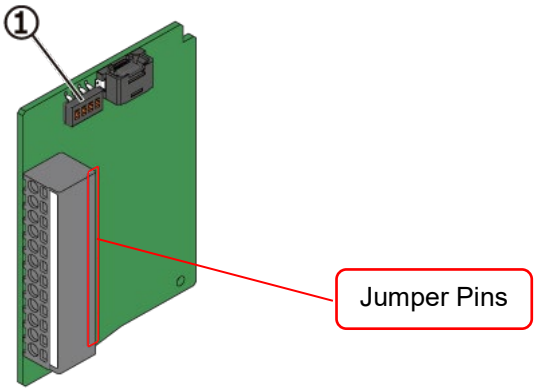
Item	Component	Description
①	Address switches	DIP switches for setting the address of AO module

*Used when adding an AO module.

Terminal No.	Identifier		Terminal Name	Description
–	E	E	Earth	Earth
1	1G+	1G 1H 1E	Analog output ①	Analog output + (4-20 mA)
	1H–			Analog output –
	1E			Earth
2	2G+	2G 2H 2E	Analog output ②	Analog output + (4-20 mA)
	2H–			Analog output –
	2E			Earth
3	3G+	3G 3H 3E	Analog output ③	Analog output + (4-20 mA)
	3H–			Analog output –
	3E			Earth
4	4G+	4G 4H 4E	Analog output ④	Analog output + (4-20 mA)
	4H–			Analog output –
	4E			Earth

*Labels that are not specified above are for control by New Cosmos.

DO Module (Contact Output) (DO1–DO8)



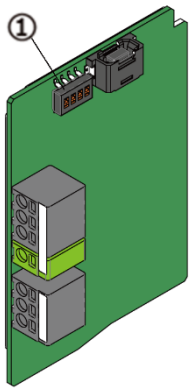
Item	Component	Description
①	Address switches	DIP switches for setting the address of DO module

*Used when adding a DO module.
*Do not touch the jumper pins inside. They are for device setting.

Terminal No.	Identifier		Terminal Name	Description
1	1A1	ZA1 ZC1 ZA2 ZC2 TA TC	Gas alarm output (AL1)	1st stage gas alarm contact output
	1C1			Common with AL1
	1A2		Gas alarm output (AL2)	2nd stage gas alarm contact output
	1C2			Common with AL2
	1FA		Fault alarm output	Fault alarm contact output
	1C3			Common with FA
2	2A1	ZA1 ZC1 ZA2 ZC2 TA TC	Gas alarm output (AL1)	1st stage gas alarm contact output
	2C1			Common with AL1
	2A2		Gas alarm output (AL2)	2nd stage gas alarm contact output
	2C2			Common with AL2
	2FA		Fault alarm output	Fault alarm contact output
	2C3			Common with FA

*Labels that are not specified above are for control by New Cosmos.

AI Module (Analog Input) (AI1–AI4)



Item	Component	Description
①	Address switch	DIP switches for setting the address of AI module

*Used when adding an AI module.

Terminal No.	Identifier		Terminal name	Description
1	1S+	1S+ 1S– 1E	Analog input 1	Analog input + (4-20 mA)
	1S–			Analog input –
	1E			Earth
–	E	E	Earth	Earth
2	2S+	2S+ 2S– 2E	Analog input 2	Analog input + (4-20 mA)
	2S–			Analog input –
	2E			Earth

*Labels that are not specified above are for control by New Cosmos.

Ref.

Refer to 5 "External Outputs" for the functions of the terminals.
Refer to 7.3.2 “Expansion Module Address Setting” for address setting.

5 External Outputs

When shipped, the relay contacts (gas and fault alarm contacts) have been set as per the delivery specifications specified at the time of ordering.

A. **When the relay contacts are set to the "normally de-energized" option**
The relay contacts are not energized during normal operation, and they are energized when an alarm is activated.
- Normally open (N.O.) relay contacts: They are open during normal operation, while they are closed when an alarm is activated. They are open when the unit is off.
- Normally closed (N.C.) relay contacts: They are closed during normal operation, while they are opened when an alarm is activated. They are closed when the unit is off.

B. **When the relay contacts are set to the "normally energized" option**
The relay contacts are energized during normal operation, and they are de-energized when an alarm is activated.
- Normally open (N.O.) relay contacts: They are closed during normal operation, while they are opened when an alarm is activated. They are open when the unit is off.
- Normally closed (N.C.) relay contacts: They are open during normal operation, while they are closed when an alarm is activated. They are closed when the unit is off.

Typical operations of the relay contacts and analog outputs are presented in the tables below with the assumption that the 1st stage and 2nd stage gas alarm contacts are set to the "normally de-energized" option while the fault alarm contacts are set to the "normally energized" option.

Main Unit

Function	Terminal	Description	Operation		
			Normal	Gas Alarm	Fault Alarm
Collective 1st stage gas alarm contact output	AL1 COM1	Contact will activate in response to a 1st stage gas alarm that occurs in any cannel in the connected gas detectors including main unit and subunits	N.O.: Open N.C.: Closed	N.O.: Closed N.C.: Open	—
Collective 2nd stage gas alarm contact output	AL2 COM2	Contact will activate in response to a 2nd stage gas alarm that occurs in any cannel in the connected gas detectors including main unit and subunits	N.O.: Open N.C.: Closed	N.O.: Closed N.C.: Open	—
Collective fault alarm contact output	FAULT COM3	Contact will activate in response to a fault alarm that occurs in any cannel in the connected gas detectors including main unit and subunits	N.O.: Closed N.C.: Open	—	N.O.: Open N.C.: Closed

Function	Terminal	Description	Operation		
			Gas Concentration	Low Flow Rate Alarm	Fault Alarm
Analog output	G+, H–	Output corresponding to the gas concentration of the relevant channel will be output	4-20 mA*1	Fixed at 0.5mA (or 1.5 mA)*2	Fixed at 0.5 mA

*1: Output accuracy: within ±0.5% of full scale

*2: Fixed at 1.5 mA for the models for which the analog output in the event of a low flow rate alarm is specified to be 1.5 mA at the time of ordering. Fixed at 0.5 mA if not specified at the time of ordering.

N.O.: Normally Open

N.C.: Normally Closed

CAUTION

Analog Output Allocation (Allocating the AO module's output or the main unit's output to the channel)

- If an AO module, not the main unit, is allocated to the channel, the analog output from the main unit will be fixed at 0.5 mA.
- If the analog output allocation target is switched from the main unit to the AO module, the analog output from the main unit will remain unchanged and fixed at the same value as before switching.

Expansion Unit (with DO Module)

Function	Terminal	Description	Operation		
			Normal	Gas Alarm	Fault Alarm
1st stage gas alarm contact output	1A1,1C1 2A1,2C1	Contact will activate in response to a gas alarm that occurs in the relevant channel	N.O.: Open N.C.: Closed	N.O.: Closed N.C.: Open	–
2nd stage gas alarm contact output	1A2,1C2 2A2,2C2	Contact will activate in response to a gas alarm that occurs in the relevant channel	N.O.: Open N.C.: Closed	N.O.: Closed N.C.: Open	–
Fault alarm contact output	1FA,1C3 2FA,2C3	Contact will activate in response to a fault alarm that occurs in the relevant channel	N.O.: Closed N.C.: Open	–	N.O.: Open N.C.: Closed

Expansion Unit (with AO Module)

Function	Terminal	Description	Operation		
			Gas Concentration	Low Flow Rate Alarm	Fault Alarm
Analog output	1G+,1H– 2G+,2H– 3G+,3H– 4G+,4H–	Output corresponding to the gas concentration of the relevant channel will be output	4-20 mA*1	Fixed at 0.5mA (or 1.5 mA)*2	Fixed at 0.5 mA

*1: Output accuracy: within ±0.5% of full scale

*2: Fixed at 1.5 mA for the models for which the analog output in the event of a low flow rate alarm is specified to be 1.5 mA at the time of ordering. Fixed at 0.5 mA if not specified at the time of ordering.

N.O.: Normally Open

N.C.: Normally Closed

CAUTION

- The contacts use mechanical relays, which may falsely activate if exposed to excessive impacts or vibration, or magnetic force. Install the product in a place free from impacts, vibration, and magnetic force.
- Avoid using the relay contacts with PLC digital inputs or other low-current loads. Doing so may result in poor contact between the relay contacts.

CAUTION

- If the relay contacts are set to the "normally energized" option, these relay contacts and analog output are inoperable during the warm-up cycle. Release the interlocks of the external devices as needed to prevent their unintended operation.

6 Preparation

6.1 Tools Required

The below tools required for installation are not included, and should be prepared by the user:

- Phillips screwdriver (#2) for M4 screw
- Spanner or monkey wrench
- Flat-bladed screwdriver (blade width: 3.0 mm)

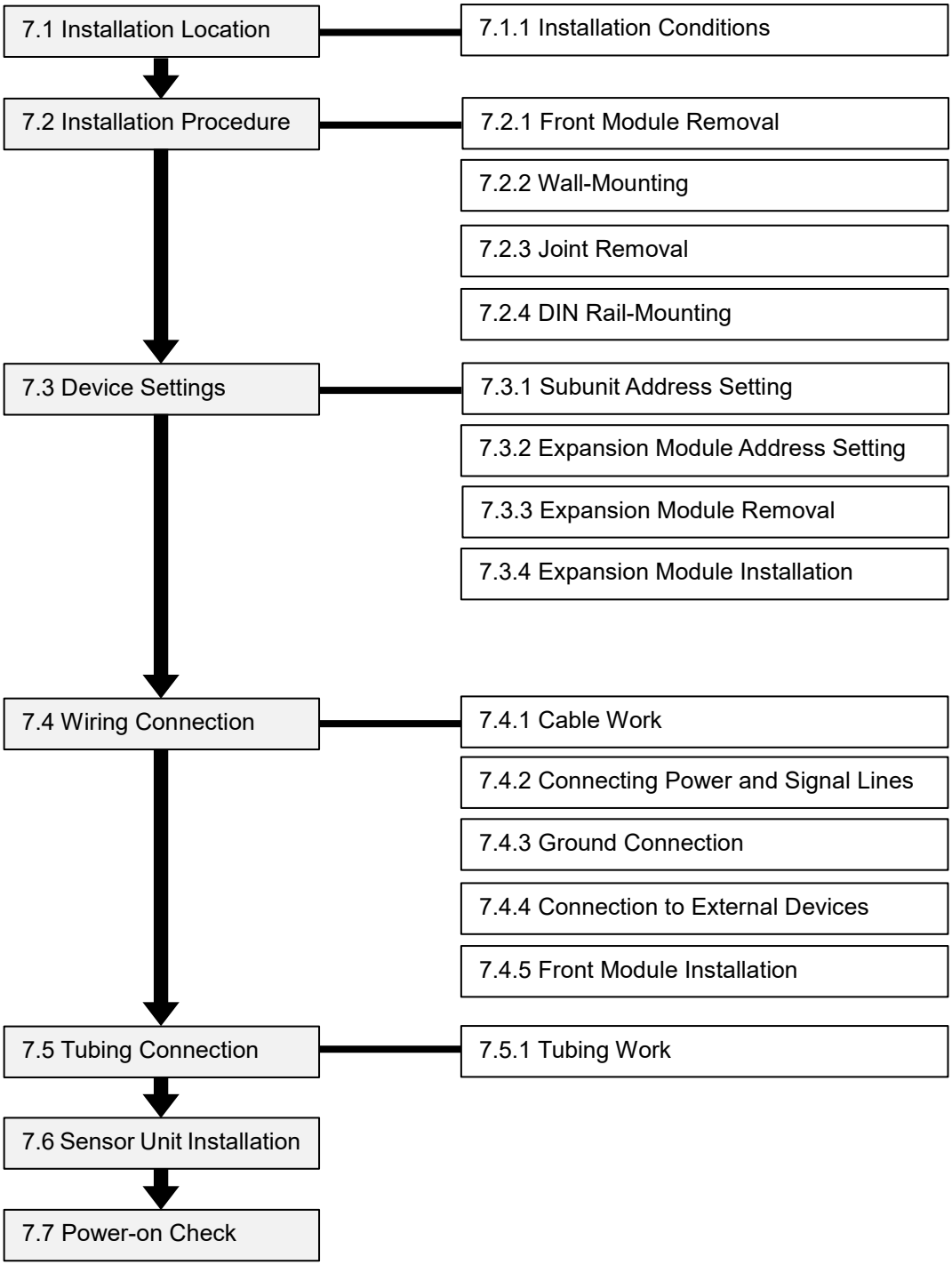
6.2 Disposal of Packing Materials

The packing materials (e.g., corrugated cardboard, plastic bags) used to enclose the product and optional items should be disposed of in accordance with the applicable local laws and regulations.

7 Installation

This chapter describes the installation flow and procedures.
Ensure proper installation in accordance with the given specifications.

Perform installation in the following order.
When using a main unit as a stand-alone detector, device settings (refer to 7.3 “Device Settings”) are not necessary.



Installation Flow

DANGER

- This product is not explosion-proof and must not be installed in a hazardous area.

WARNING

- Do not use organic solvents for cleaning the product. Organic solvents may negatively affect the product's exterior as well as internal components.

WARNING

- Ground the product to prevent electric shocks. Class D grounding is mandatory.
- In the event of a gas alarm, follow the safety procedures in accordance with your company's regulations.
- The contacts use mechanical relays, which may falsely activate if exposed to excessive impacts or vibration, or magnetic force. Install the product in a place free from excessive impacts or vibration, or magnetic force. Set a delay time greater than one second for external devices connected to the product.
- Do not install the product in the vicinity of equipment that can generate high frequencies or a magnetic field, since such factors may result in malfunctioning of the product.
- This product is heavyweight. Handle it with care not to drop it. Failure to do so may cause injury or property damage such as damaged floor.

CAUTION

- This product needs to be periodically checked and maintained. Do not install the product in a place that may pose a danger during maintenance or inspection.
- Do not install the product in the following conditions:
  - Ambient temperature beyond the specified operating temperature range;
  - Condensation-prone areas;
  - Exposure to sudden temperature/humidity change;
  - Exposure to water splash;
  - Presence of corrosive gas;
  - In the vicinity of equipment that can generate high frequencies or a magnetic field;
  - Near to a heat source;
  - Vibration-prone areas;
  - In the presence of an ignition source;
  - On a ceiling.

CAUTION

- Install the product in a place free from vibration, electrical noise, corrosive gas, high temperature and/or high humidity. Failure to do so may cause product damage or malfunction.
- Adding a ferrite core to the power cable is recommended, in case the product needs to be installed in a place exposed to electrical noise (e.g., near a boiler or a motor).
- Do not install the product in a place exposed to direct sunlight. Exposure to direct sunlight will cause sudden temperature change inside the product, which may impair its performance.
- This product is not drip-proof and must be installed indoors to keep away from splashing water.
- Take care to avoid damaging the product during installation.
- Install the product in a place where it can be easily accessed for maintenance or inspection.

7.1 Installation Location

7.1.1 Installation Conditions

Install the product in a highly visible and easily accessible position, so that the situation can be easily recognized and addressed in the event of an emergency. The required space for installation is explained below.

CAUTION

- Install the product in the position where its LCD is visible.
- This product needs to be periodically checked and maintained. Install the product in a place where it can be easily accessed for maintenance or inspection.

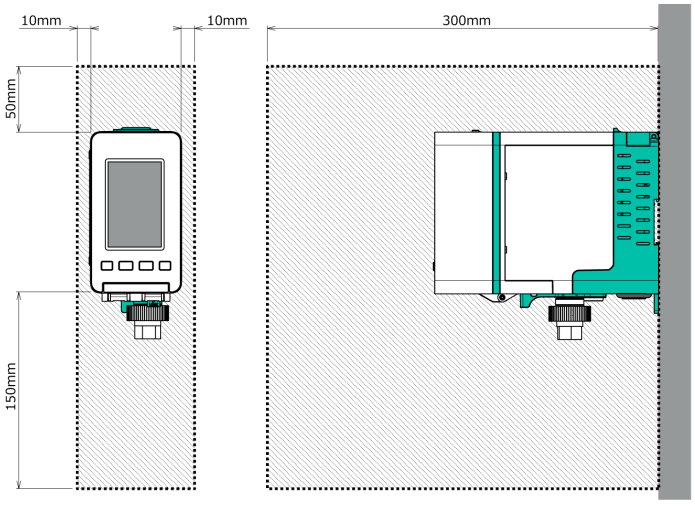
CAUTION

- Do not install the product in a high location that cannot be accessed with a stepladder or similar equipment.

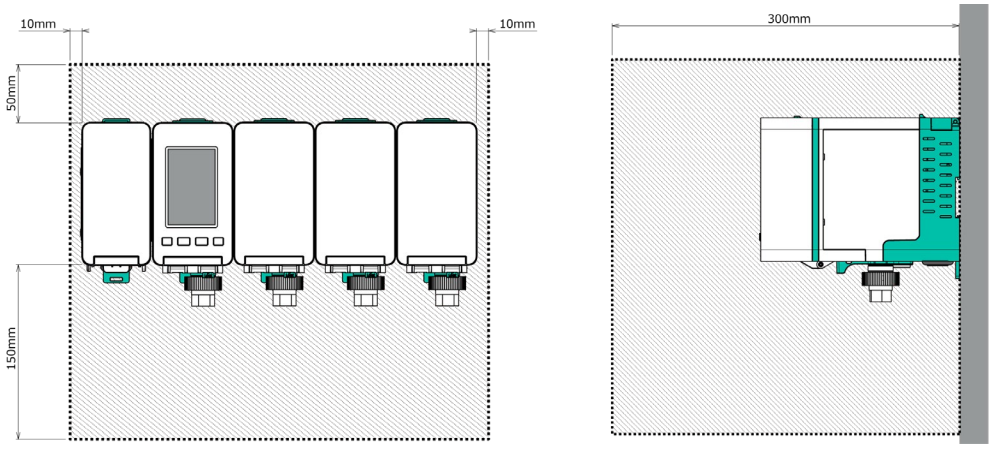
Required Space for Maintenance

As shown below, install the product vertically in such a way that the space (shaded area) is maintained.

Single Unit Installation



Multiple Units Installation



Installation at Raised Position

The installation of the product in a high place is not recommended; however, if you need to install it in a high place, ensure that enough space is left below the product to allow for inspection or maintenance which may require a stepladder, among others.

7.2 Installation Procedure

There are two installation methods for the product: wall-mounting and DIN rail-mounting.

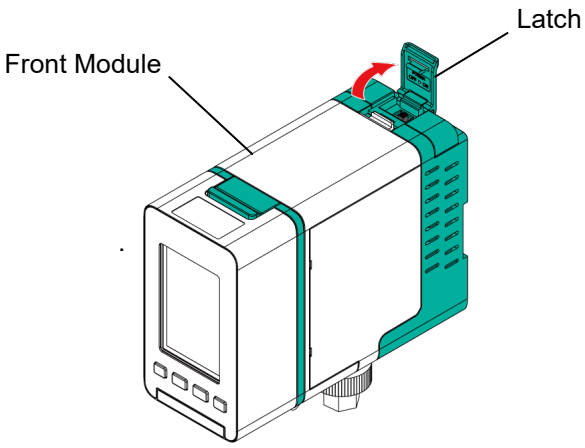
⚠ WARNING

- Turn off the product by setting the power switch to the off position before installation. Installing the product with the power switch on may cause device failure.
- Do not install the product in an area directly exposed to persistent vibration or excessive impact. Persistent vibration or excessive impact may cause device failure.

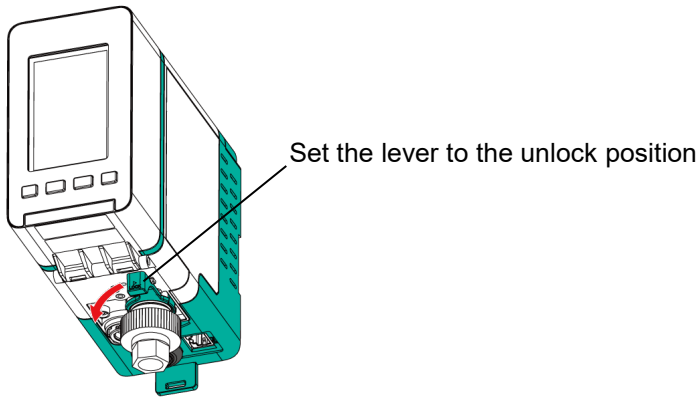
7.2.1 Front Module Removal

Main Unit/Subunit

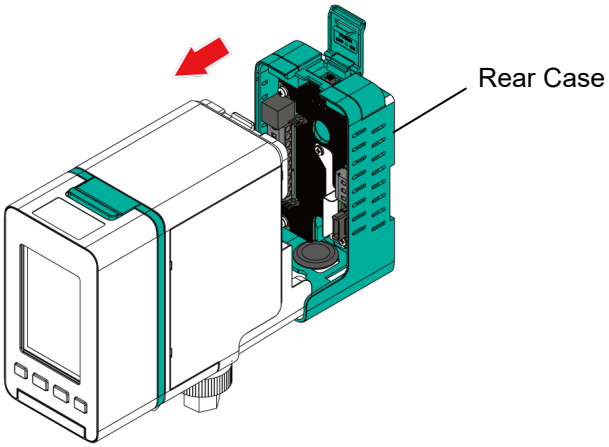
1. Pull the latch open.



2. Rotate the lever on the bottom in the direction of the arrow.

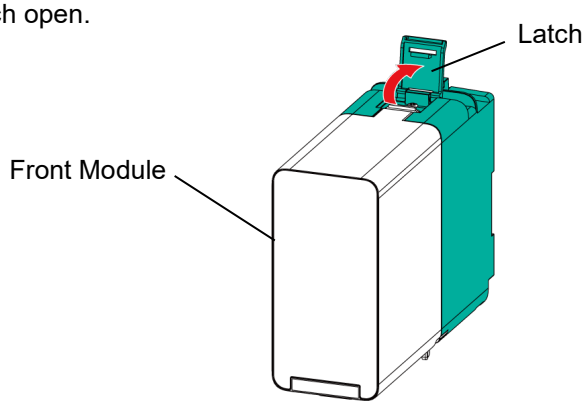


3. Pull the front module forward to separate it from the rear case.

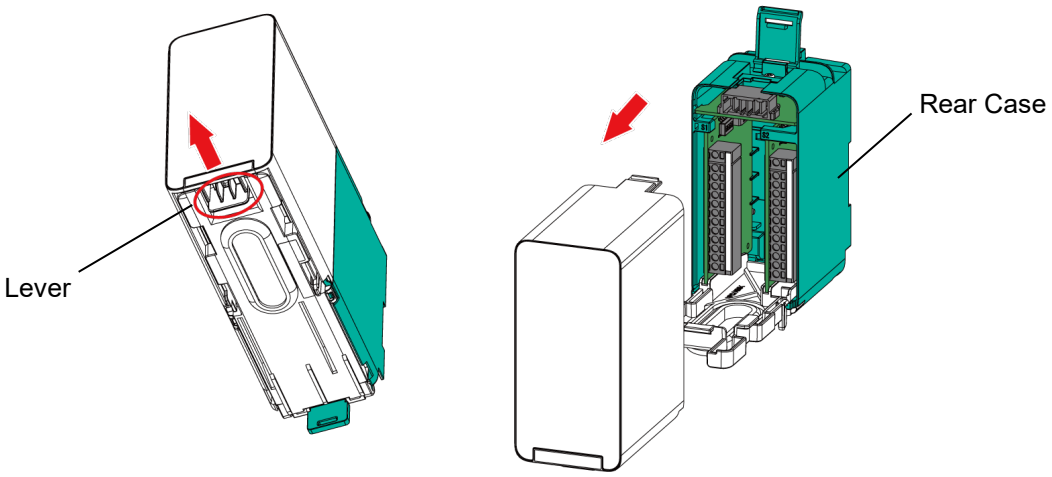


Expansion Unit

1. Pull the latch open.



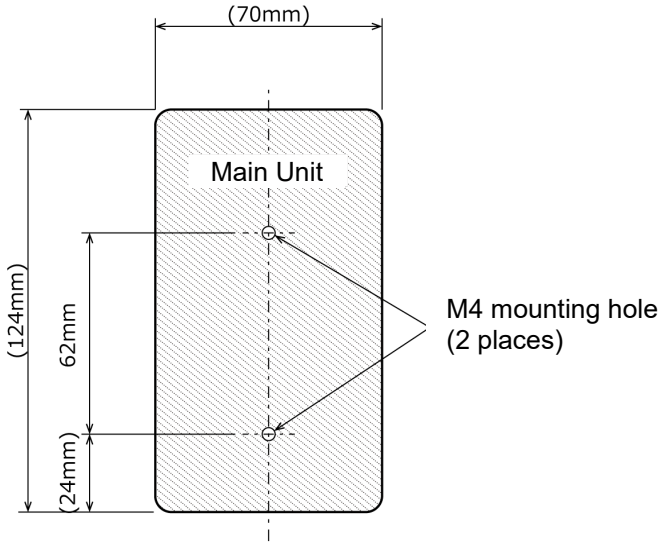
2. Pull the front module forward while pulling the case release lever. The front module will separate from the rear case.



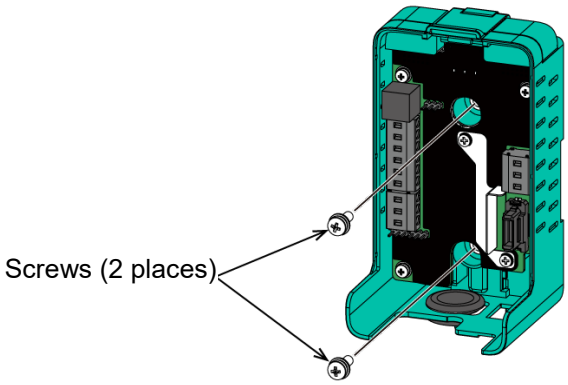
7.2.2 Wall-Mounting

Mounting a Single Unit of main unit

1. Cut two mounting holes in the wall as shown below. Install a wall anchor or plug into each of the mounting holes.

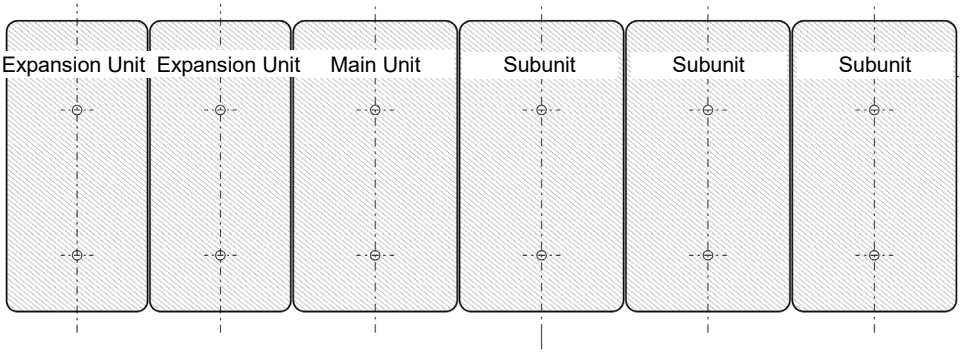


2. Install the two provided screws (M4x12) into the mounting holes in the wall through the holes on the rear case.



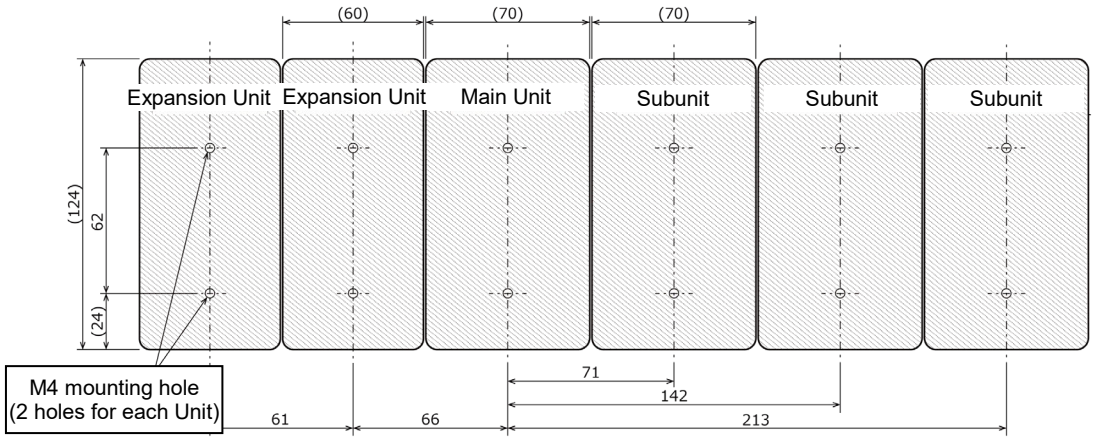
Mounting Multiple Units

Connect subunits to the right of the main unit and the expansion units to the left of the main unit.
If incorrectly connected, malfunction may occur.



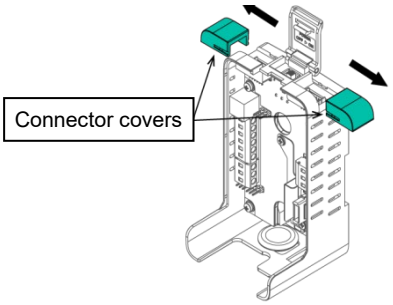
1. Cut mounting holes in the wall as shown below. Install a wall anchor or plug into each of the mounting holes.

   The figure below is a typical system configuration. The configuration varies depending on the number of units and how they are combined. Cut mounting holes (two holes for each unit) in the wall by using the pitches shown below.

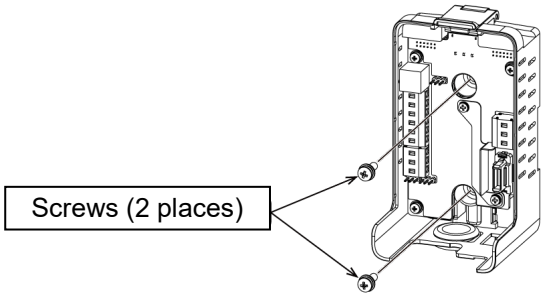


(Dimension unit : mm)

2. Remove the connector cover between each pair of adjacent units.

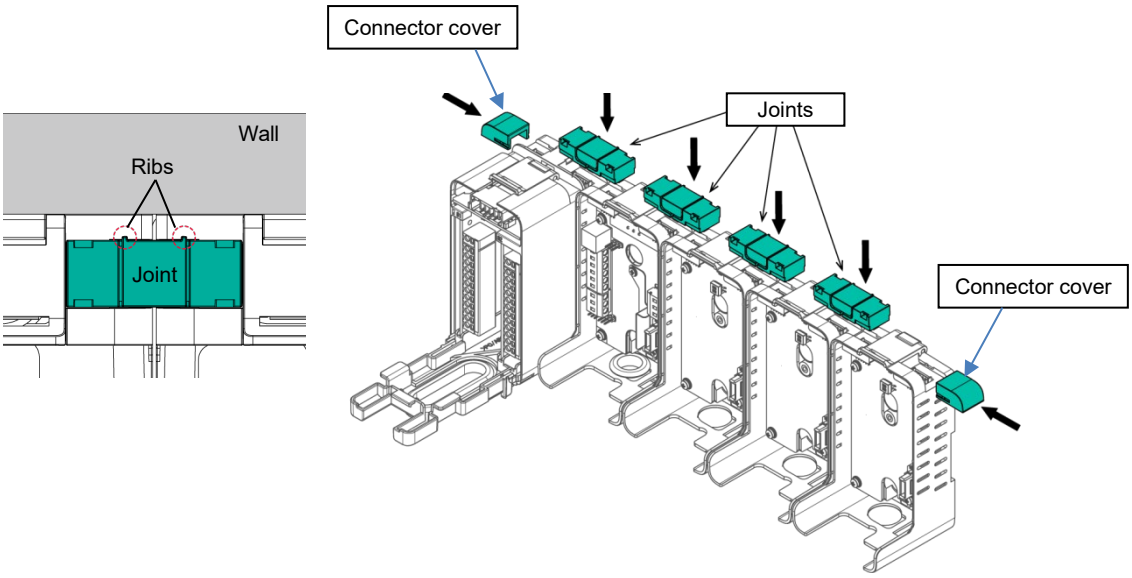


3. Install the provided screws (M4×12) into the mounting holes in the wall through the holes on the rear cases (two holes per unit).



4. Connect each pair of the adjacent units with a joint. Ensure that the ribbed side of each joint is facing the wall.

5. Attach the connector cover to the unit at each end.



⚠ CAUTION	
	• Ensure that the joints are correctly aligned before insertion, as forcing them in may cause damage. • Ensure that the rear case is securely attached to the wall and there is no clearance between the case and the wall surface. • Ensure that the provided screws are firmly installed to secure the rear case to the wall. Forcing the screws in may cause damage.

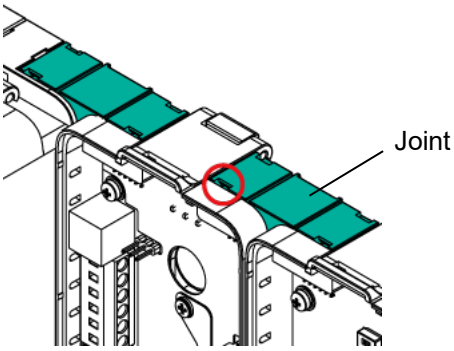
7.2.3 Joint Removal

Tools Required

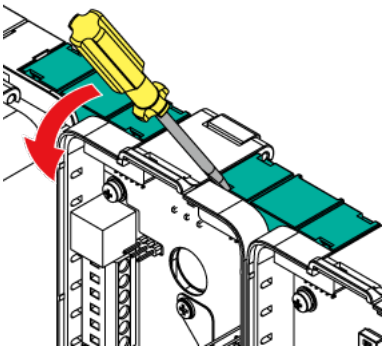
- Flat-bladed screwdriver (blade width: 3.0–5.0 mm)

Removal Procedure

1. Insert the flat-bladed screwdriver into the joint (circled area).



2. Tilt the flat-bladed screwdriver in the direction of the arrow to disconnect the connector on one side.
   *Each joint is equipped with two connectors, one on each side.



3. Repeat steps 1 and 2 to disconnect the connector on the other side in the same manner. The joint will come off.

7.2.4 DIN Rail-Mounting

Install the product in an environment free from shock and vibration. Secure both ends of the DIN rail with mounting brackets if necessary.

⚠ CAUTION

Do not install the product in a place prone to shock and vibration. Failure to do so may damage the product. However, if you need to install it in a place prone to shock and vibration, wall-mounting is recommended.

Applicable DIN Rail

Use the rails that conform to the DIN, EN, IEC, or JIS C2812 standards, which are shown below.

Model	Material	Specifications
TH35-7.5	Fe	Rail width: 35 mm, Height: 7.5 mm
	Al	Rail width: 35 mm, Height: 7.5 mm

⚠ CAUTION

Only use the specified DIN rail. The use of similar but unspecified DIN rail may damage the product.

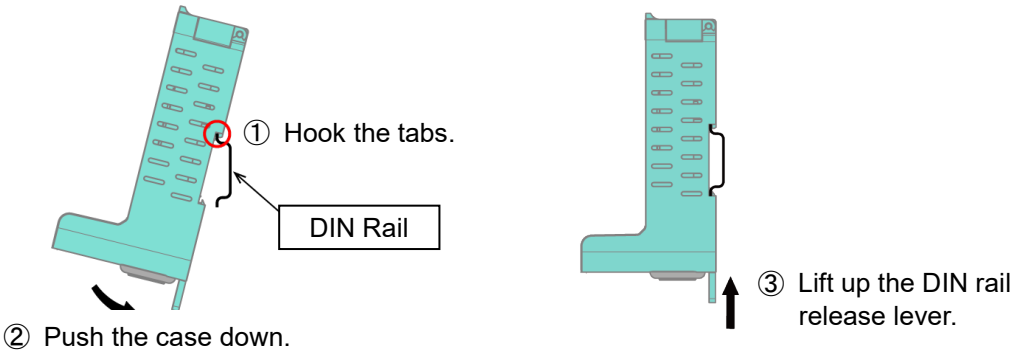
DIN Rail Mounting Screw Spacing

For DIN rail installation, install the mounting screws at pitches of 75 mm or less to ensure strength.

Mounting a Unit on the DIN Rail

Mounting a Single Main Unit

1. To mount the main unit, hook the tabs (2 places) on the rear case onto the upper edge of the DIN rail. Then push the case down until it clicks into place. Ensure that the rear case is securely attached to the DIN rail.



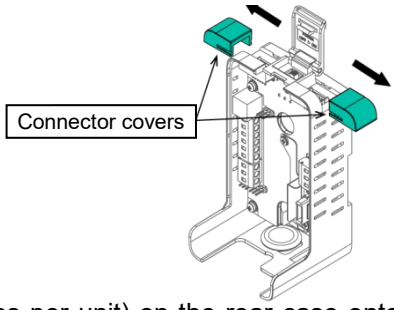
⚠ CAUTION

After mounting the main unit onto the DIN rail, lift up the DIN rail release lever to confirm that the rear case is firmly secured.

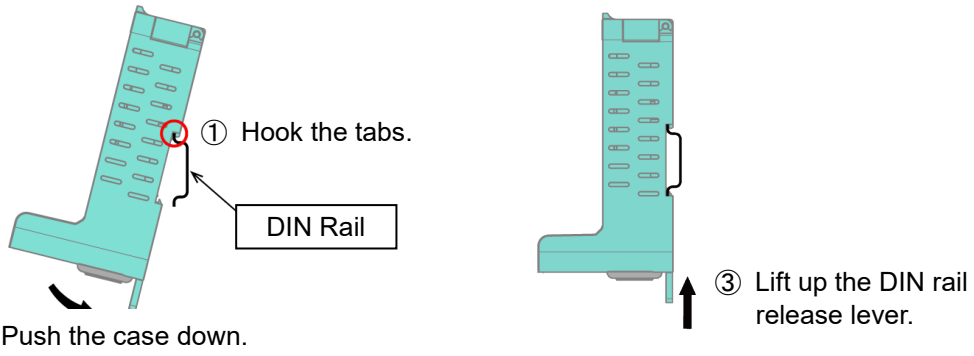
Mounting Multiple Units

Connect the subunits to the right of the main unit and the expansion units to the left of the main unit. If incorrectly connected, malfunction may occur.

1. Remove the connector cover between each pair of adjacent units.

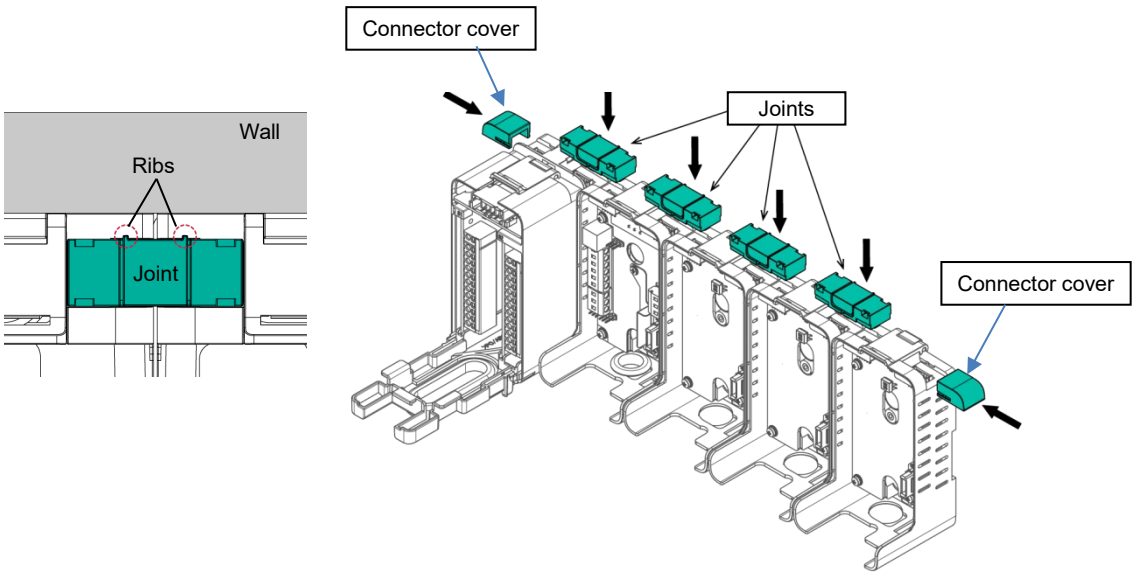


2. Hook the tabs (2 places per unit) on the rear case onto the upper edge of the DIN rail. Then push the case down until it clicks into place. Ensure that there is no gap between the adjacent units.



⚠ CAUTION	
	After mounting the units onto the DIN rail, lift up the DIN rail release lever to confirm that the rear case of each unit is firmly secured.

3. Connect each pair of the adjacent units with a joint. Ensure that the ribbed side of each joint is facing the wall.
4. Attach the connector cover to the unit at each end.

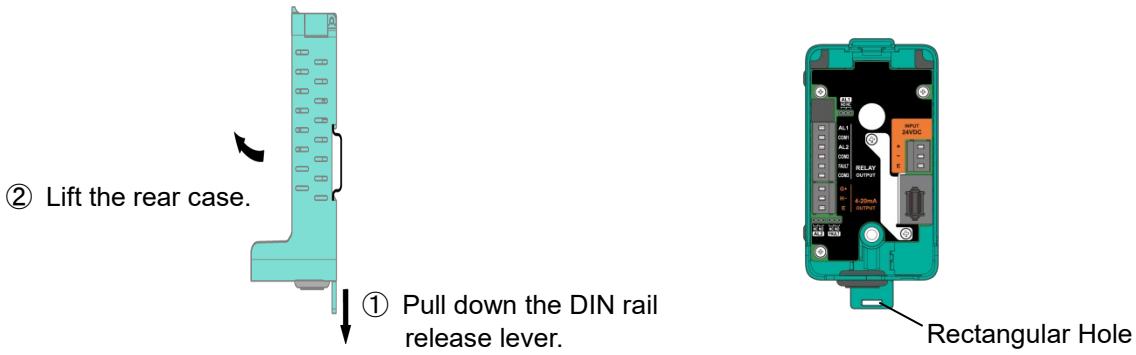


CAUTION

Ensure that the joints are correctly aligned before insertion, as forcing them in may cause damage.

Removing the Unit from the DIN Rail

1. To remove the unit, lift the rear case from the DIN rail while pulling the DIN rail release lever straight down.
   * If you find it difficult to pull the lever by hand, you may use a flat-blade screwdriver to assist by inserting it into the rectangular hole.



CAUTION

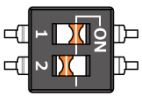
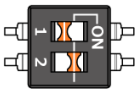
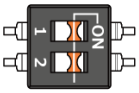
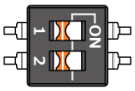
Remove the joints between the adjacent units before removing the units from the DIN rail. Forced removal may cause damage to the joints and the units.

7.3 Device Settings

When connecting a subunit or when adding a module of the same type, device settings are required. When using the main unit as a stand-alone detector, no device settings are required.

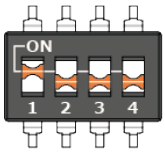
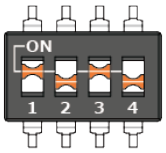
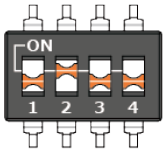
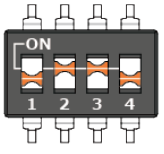
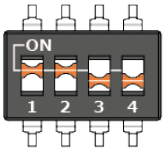
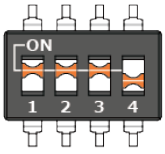
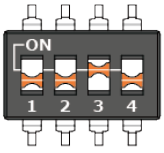
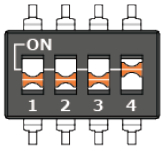
7.3.1 Subunit Address Setting

Set the address for each subunit using the address switches (DIP switches) according to the table below. Once set, these addresses do not need to be changed. Assign addresses “S1”, “S2” and “S3” to subunits from left to right, respectively.
If the addresses are duplicated, the units cannot operate normally.

Address	DIP Switch Setting	
S1		1: ON 2: OFF
S2		1: OFF 2: ON
S3		1: ON 2: ON
(Not set)		1: OFF 2: OFF

7.3.2 Expansion Module Address Setting

Set the address for each expansion module using the address switches (DIP switches) according to the table below. Once set, these addresses do not need to be changed. The addresses for the pre-installed expansion modules have been set when shipped out. However, when adding an expansion module of the same type to the expansion unit, the address for that module needs to be set. Refer to 7.3.4 “Expansion Module Installation" for instructions on installing the module.
If the addresses are duplicated, the units cannot operate normally.

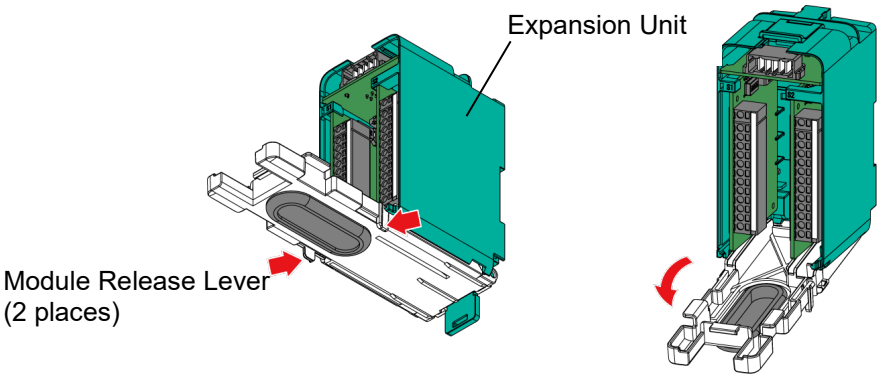
Address	Dip Switch Setting		Address	Dip Switch Setting	
AO1 DO1 AI1		1: ON 2: OFF 3: OFF 4: OFF	DO5		1: ON 2: OFF 3: ON 4: OFF
AO2 DO2 AI2		1: OFF 2: ON 3: OFF 4: OFF	DO6		1: OFF 2: ON 3: ON 4: OFF
AO3 DO3 AI3		1: ON 2: ON 3: OFF 4: OFF	DO7		1: ON 2: ON 3: ON 4: OFF
AO4 DO4 AI4		1: OFF 2: OFF 3: ON 4: OFF	DO8		1: OFF 2: OFF 3: OFF 4: ON

7.3.3 Expansion Module Removal

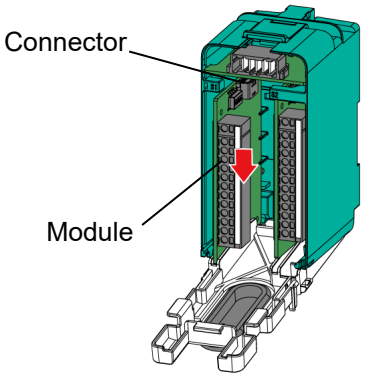
*Expansion module: AO module, DO module, or AI module

When removing the expansion module, follow the steps given below.

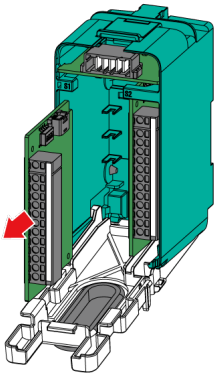
1. While pressing the module release levers (2 places), pull down to open the bottom.



2. Pull the module downward. The module will come off the connector on the expansion unit.



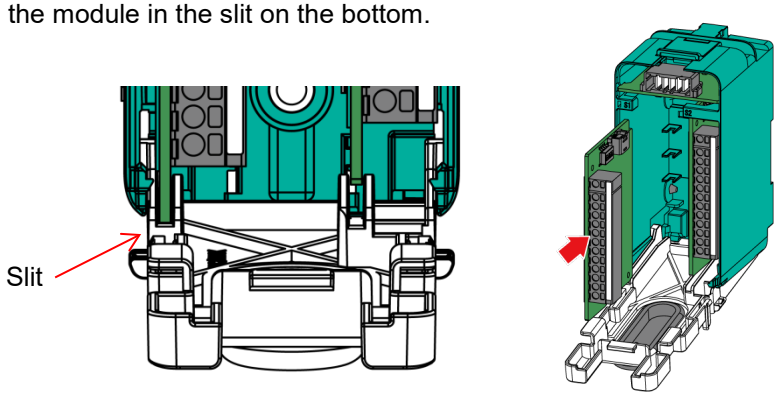
3. Pull the module out.



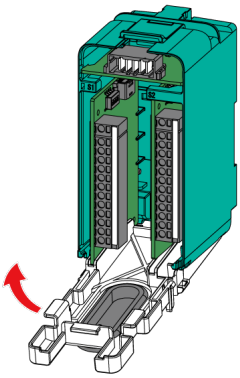
7.3.4 Expansion Module Installation

When installing the expansion module, follow the steps given below.

1. Place the module in the slit on the bottom.



2. Lift the bottom close to secure the module to the case.



7.4 Wiring Connection

7.4.1 Cable Work

Take care to avoid damaging the cables during installation and wiring.
While performing wiring for the maintenance or addition in some connected units (not all), remove the front modules of the adjacent units.

⚠ WARNING

- To prevent electric shocks, turn off the product by setting the power switch to the off position before installation or wiring.
- Ground the product to prevent electric shocks.
- Incorrect wiring may lead to damage or burnout of the product.

⚠ CAUTION

- Keep the connection cables (power and signal lines of the product) away from other power lines.
- While performing the wiring, do not stress the cables excessively.
- The analog output line and power line of this product are not isolated from each other. When using the product with external devices, provide isolation to prevent noise from other power lines from interfering with the analog output of the product.

Connectable Cable List

PS-8M/N

Terminal	Identifier		Description
PoE *PS-8M only	PoE		Ethernet cable (Category 5e or higher, STP cable)
Power input	24 VDC	(+)	CVV (1.25 mm^2) 2-wire cable
		(–)	
Earth	E		1.25 mm^2 single-wire cable (Green)
Collective gas alarm output (1st stage)	AL1		CVV (1.25 mm^2) 6-wire cable
	COM1		
Collective gas alarm output (2nd stage)	AL2		
	COM2		
Collective fault alarm output	FAULT		
	COM3		
Analog output	G+		CVVS (1.25 mm^2) 2-wire cable
	H–		
	E		

PS-8EU

AO Module (Analog Output)

Terminal	Identifier	Description
Earth	E	1.25 mm^2 single-wire cable (Green)
Analog output ①	1G+	CVVS (1.25 mm^2) 2-wire cable
	1H–	
	1E	
Analog output ②	2G+	CVVS (1.25 mm^2) 2-wire cable
	2H–	
	2E	
Analog output ③	3G+	CVVS (1.25 mm^2) 2-wire cable
	3H–	
	3E	
Analog output ④	4G+	CVVS (1.25 mm^2) 2-wire cable
	4H–	
	4E	

DO Module (Contact Output)

Terminal	Identifier	Description
Gas alarm output ① (1st stage)	1A1	CVV (1.25 mm^2) 6-wire cable
	1C1	
Gas alarm output ① (2nd stage)	1A2	
	1C2	
Fault alarm output ①	1FA	
	1C3	
Gas alarm output ② (1st stage)	2A1	CVV (1.25 mm^2) 6-wire cable
	2C1	
Gas alarm output ② (2nd stage)	2A2	
	2C2	
Fault alarm output ②	2FA	
	2C3	

AI Module (Analog Input)

Terminal	Identifier	Description
Earth	E	1.25 mm^2 single-wire cable (Green)
Analog input ①	1S+	CVVS (1.25 mm^2) 2-wire cable
	1S–	
	1E	
Analog input ②	2S+	CVVS (1.25 mm^2) 2-wire cable
	2S–	
	2E	

7.4.2 Connecting Power and Signal Lines

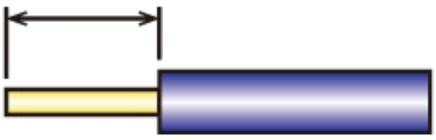
- If needed, use a dedicated breaker for the power cable going towards the product.
- Ensure that the power voltage supplied to the product is within the specifications.
- 24 VDC should not be supplied to the product when PoE is supplied. Conversely, PoE should not be supplied to the product when 24 VDC is supplied.
- Use a PoE power supply unit that complies with IEEE802.3at (up to 30 W per port).
  Even if the power supplied per port is sufficient, the maximum power from the power supply unit may be insufficient when all the ports are connected. In such cases, limit the number of connected units or select a power supply device capable of providing sufficient power even for all connections. If the power supply becomes insufficient based on the combination of the units, use a 24 VDC power supply instead of a PoE power supply.
  The recommended PoE power supply device that has been verified to work properly with our product is the Panasonic FA-ML8TPoE+. *All ports cannot be simultaneously used at 30 W each.
  Estimated consumption power: 16 W (Typ.) / 23 W (Max.)
- Ensure that the load resistance of the signal line, including the resistance of the wire, is 300 ohm or less.
- Ensure that the Ethernet cable length to the hub is 100 m or less.
- Please refer to the PS-8 Series Instruction Manual for Operation as well.

Terminal Block Specifications

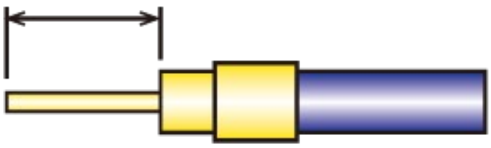
- Solid and stranded wires can be connected to the terminal blocks without wire ferrules nor soldering, but it is recommended to use wire ferrules to prevent unraveled or stray wires.

- Prepare wires/pins that meet the following cable specifications:
  Wire cross section (solid wire): 0.2 mm^2 to 2.5 mm^2 (Outside cable dia.: 5.0 mm or less)
  Wire cross section (stranded wire): 0.2 mm^2 to 1.5 mm^2 (Outside cable dia.: 5.0 mm or less)
  *Do not twist the striped wire.
  Striped wire length: 10 mm
  Wire ferrule with sleeve: 0.25 mm^2 to 1.25 mm^2 (Outside cable dia.: 5.0 mm or less)
  Wire ferrule rod length: 10 mm
  *Do not use the wire ferrule with sleeve shorter than 10 mm.

Stripped wire length



Wire ferrules rod length



Recommended wire ferrule with sleeve: NICHIFU NF0.5-10
NICHIFU NF0.75-10
NICHIFU NFG1.0-10

*Select a wire ferrule that can meet the outside cable dia.

Wiring for Terminal Block

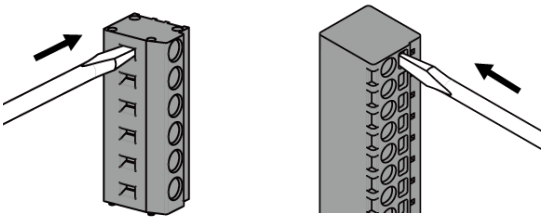
- Recommended tool: Provided flat-bladed screwdriver
  Use a flat-bladed screwdriver (blade width: 3.0 mm) when using a commercially available one.

Installing Wire into Terminal

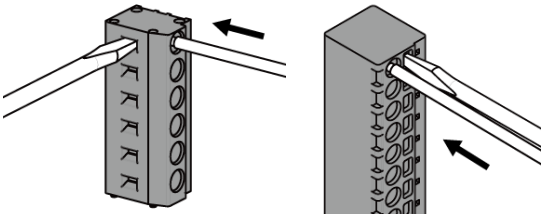
WARNING

After connecting the wires to the terminals, ensure that they are securely in place. Check for any loose strands or exposed bare wires outside the terminals, as failure to do so may result in electric shock or damage to the product.

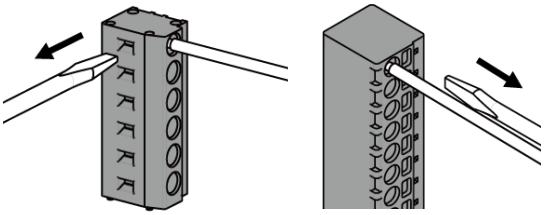
1. Fully insert the flat-bladed screwdriver into the square slot on the terminal block to open the corresponding round slot.



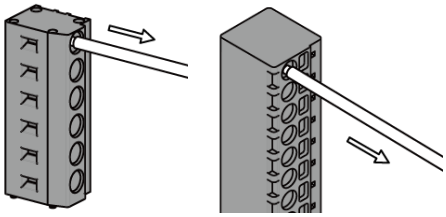
2. Fully insert the tip of each wire into the round slot.



3. While holding the wire, remove the screwdriver from the square slot. This will securely connect the wire to the terminal.



4. Slightly pull the wire to ensure that it is secure in the terminal.

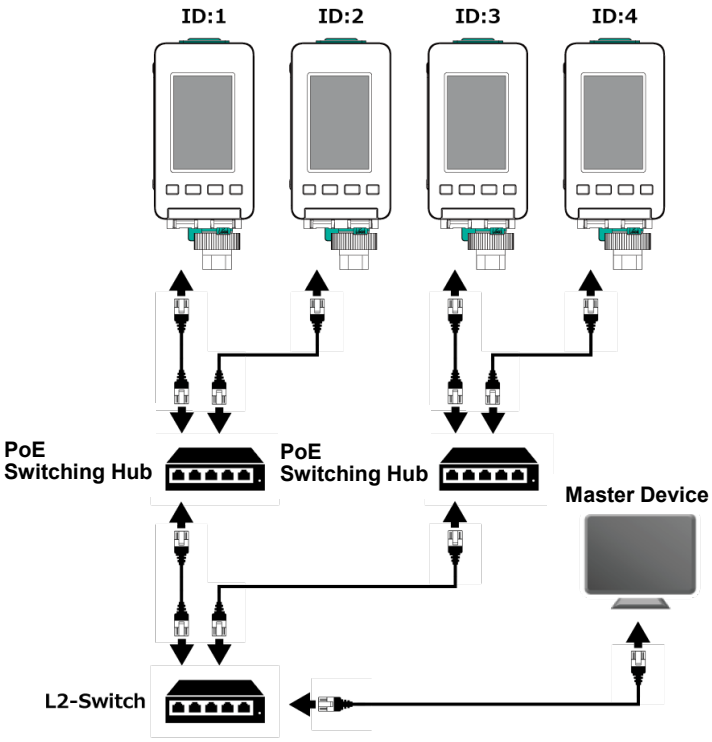


Removing Wire from Terminal

Insert the screwdriver into the square slot to open its corresponding round slot. In this way, the wire will be released.

Connecting to Modbus TCP (Ethernet) for PS-8M

1. Connect the Ethernet cable to the main unit.
2. If the switching hub is not PoE-compliant, provide 24 VDC to the main unit.

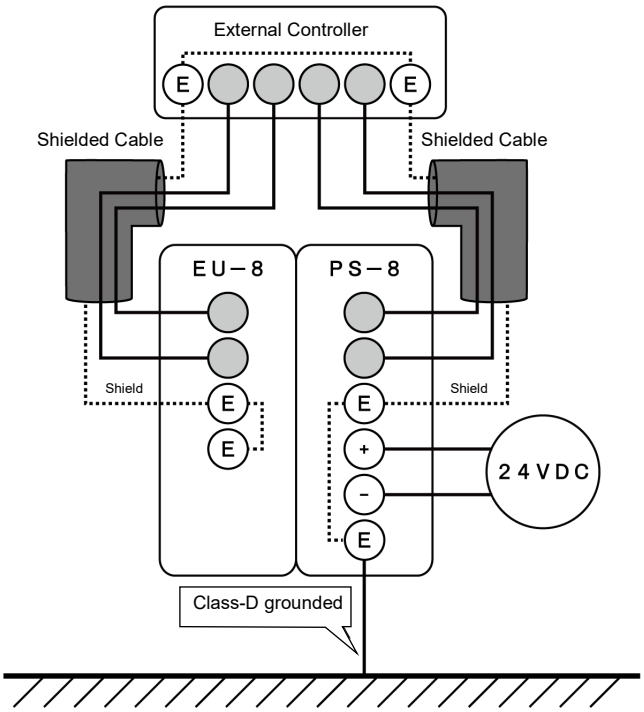


Typical Modbus TCP (Ethernet) Configuration

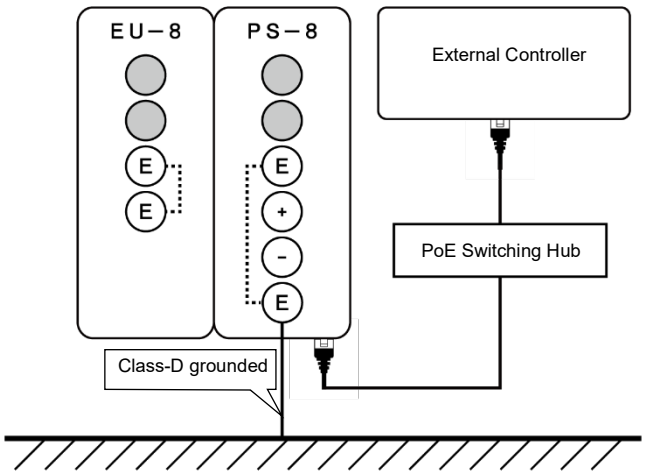
7.4.3 Ground Connection

⚠ CAUTION	
	Wiring and installation must be only performed by a qualified electrician with sufficient knowledge of wiring/installation procedures in accordance with the applicable technical standards.

(1) Typical wiring when 24 VDC is provided



(2) Typical wiring when PoE power is provided



NOTE

- Single-point grounding is mandatory. If this product is grounded at the external device side, do not connect the shielded cable to the ground terminal (E) inside the gas detector(s). Doing so would create a 2-point grounding.
- Since there is no ground connection between the ground terminal (E) of PS-8EU (module) and the ground terminal (E) of PS-8 main unit, and between modules, each module should be grounded separately.

7.4.4 Connection to External Devices

Connecting to an external controller or annunciator

Normally open or closed dry contacts are turned on/off for activating/deactivating a 1st stage gas alarm, 2nd stage gas alarm, and fault alarm.

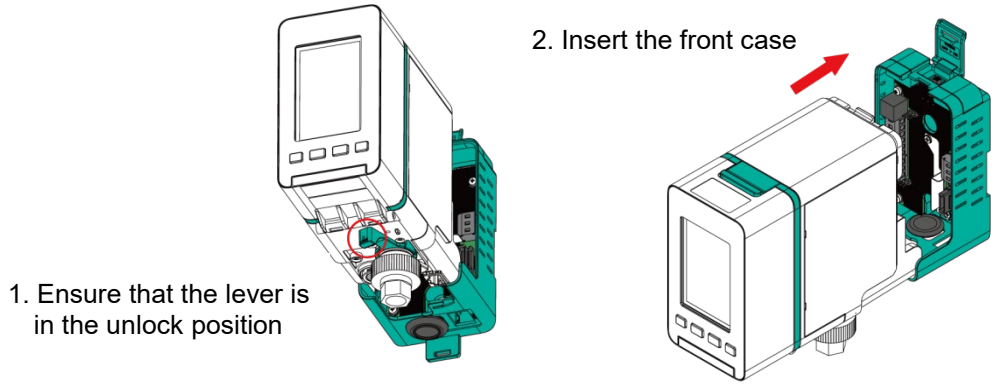
⚠ CAUTION	
	• New Cosmos is not liable for any cost incurred or any damage resulting from controlling external equipment (e.g., interlock) by using the product's outputs (e.g., analog output, alarm contact output).

⚠ CAUTION	
	• The alarm contacts should be used for external gas alarms or indicators (e.g., signal towers, alarm horns, etc.). • The load current and voltage should not exceed the product's relay contacts' rating.

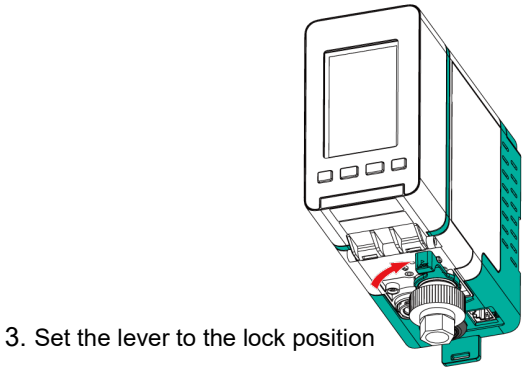
7.4.5 Front Module Installation

Main Unit/Subunit

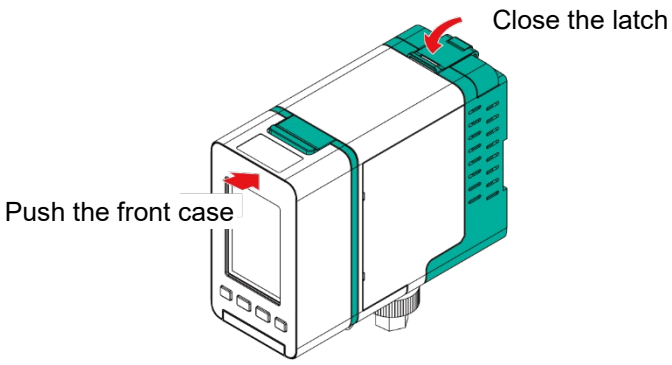
1. Ensure that the lever is in the unlock position as shown below.
2. Insert the front case into the rear case.



3. Rotate the lever in the direction of the arrow.



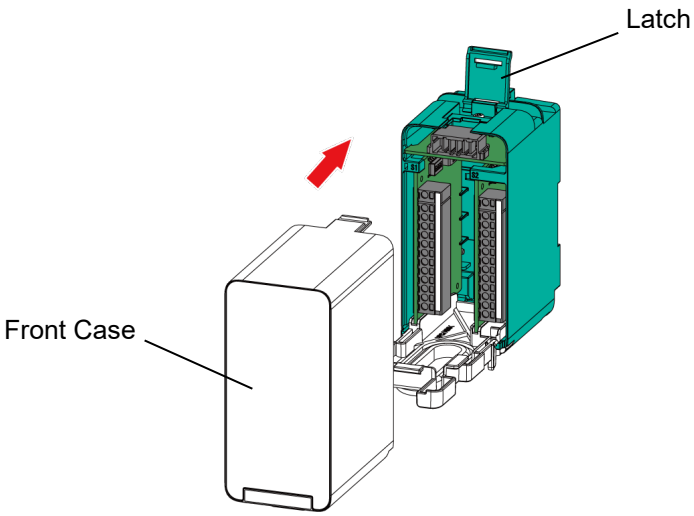
4. While pushing the front case, close the latch on the top of the rear case.



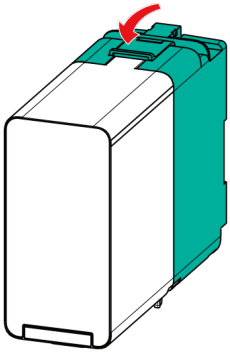
CAUTION	
	Ensure that the lever is in the lock position after closing the latch. If the latch and lever are not in the lock position, the case will loosen or open, which may cause injury or product damage such as a broken LCD.

Expansion Unit

1. Insert the front case into the rear case.



2. While pushing the front case, close the latch on the top of the rear case.



CAUTION	
	Ensure that the latch is in the lock position after closing it. If the latch is not in the lock position, the front case will loosen or open, which may cause injury or product damage.

7.5 Tubing Connection

7.5.1 Tubing Work

The PS-8 main unit (or subunit) has two Rc1/4 threaded holes (gas inlet and outlet) into which the PP half unions (provided) are to be installed. However, when a metal tube fitting (not provided) needs be installed into the gas outlet, use Swagelok SS-6M0-1-4RT or equivalent.

⚠ WARNING

- For detection of highly adsorptive gas (e.g., HF, F_2), remove the filter element (FE-1) from the filter unit (MF-50). Correct detection is not possible if the filter element is present. Refer to 12.3.1 “Filter Element Replacement” of the PS-8 Series Instruction Manual for Operation for the removal procedure.

Typical gases for which FE-1 filter element should be removed	
Gas Name	**Chemical Formula**
Hydrogen fluoride*	HF
Silicon tetrafluoride	SiF_4
Boron trifluoride	BF_3
Tungsten hexafluoride	WF_6
Fluorine	F_2

* For detection of hydrolyzed HF, the filter element (FE-1) should be removed.

- Tubing should be Teflon, dia. 6/4, and less than 20 m in length. For detection of highly adsorptive gases (e.g., HF, F_2, HCl, Cl_2, NH_3), the tube length should be less than 5 m.

Typical gases for which the tube length should be less than 5 m			
Gas Name	**Chemical Formula**	**Gas Name**	**Chemical Formula**
Fluorine	F_2	Hydrogen bromide	HBr
Hydrogen fluoride*1	HF	Boron trifluoride	BF_3
Chlorine	Cl_2	Tungsten fluoride	WF_6
Ozone	O_3	Silicon tetrafluoride	SiF_4
Bromine	Br_2	Ammonia	NH_3
Hydrogen chloride*1	HCl	Hydrogen sulfide	H_2S
Boron trichloride	BCl_3	Dimethylamine*2	$(CH_3)_2NH$
Dichlorosilane	SiH_2Cl_2	Tetrakis dimethylamino titanium	$Ti[N(CH_3)_2]_4$
Trichlorosilane	$SiHCL_3$	Arsenic trichloride	$AsCl_3$
Silicon tetrachloride	$SiCl_4$	Phosphorus trichloride	PCl_3
Chlorine trifluoride	CIF_3	Phosphoryl chloride	$POCl_3$
Carbon tetrachloride	CCl_4	Sulfur dioxide	SO_2

*1. For detection of hydrolyzed HF, HCl, or $(CH_3)_2NH$, the tube length should be less than 5 m.

*2. For detection of highly adsorptive gases other than those listed in the table above, the tube length should be less than 5 m.

⚠ CAUTION

- Do not use a gas collector in a confined space (e.g., inside a duct).
- The pressure differential between the gas inlet/outlet and the outside air pressure (atmospheric pressure) should be within ± 1kPa. In addition, the pressure differential between the gas inlet and the gas outlet should be within 1kPa, with negative pressure applied to the gas inlet. Using the detector under overpressure will cause an excess flow, which may result in flow rate error or incorrect measurement.
- Due to the structure of the diaphragm pump built in this product, the flow rate may fluctuate depending on the balance of the inlet and outlet tubing length. Ensure that the flow rate is stable before use.
- Install the gas detector vertically with its gas inlet and outlet facing down.
- Determine the height for the tip of the sampling tube by considering the specific gravity of the target gas and install the gas detector where gas is expected to accumulate.

Gas Type	Installation Height
Gas heavier than air	Maximum of 30 cm above the floor
Gas near the specific gravity as air	75 to 150 cm above the floor
Gas lighter than air	Near the ceiling

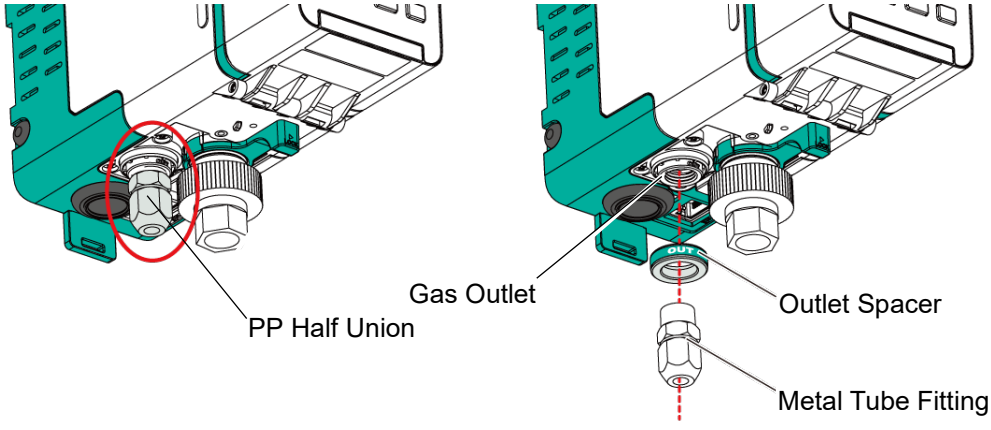
- For the sensor unit with pyrolyzer built in, install the provided activated carbon filter outer case (KF-6S-☐) to the gas inlet.

Tubing Connection

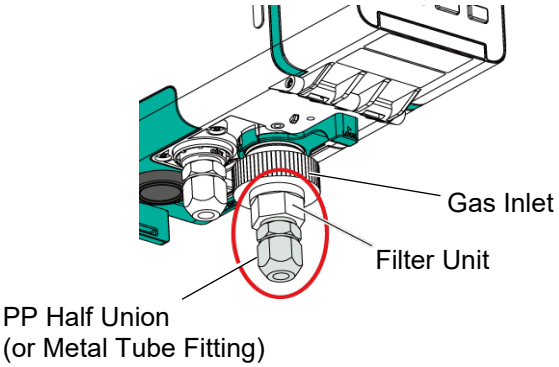
⚠ CAUTION

- Over-tightening the filter unit inlet may cause the gas inlet to break.
- Over-tightening the metal tube fitting may cause the gas outlet to break. To prevent this, install the outlet spacer (provided) to the gas outlet first and then connect the metal tube fitting over the spacer.
- Wrap sealing tape tautly around the threads of each metal tube fitting to prevent slack (approx. 2.5 wraps).
  Tape size: 8 mm (width) × 100 ± 5mm (length) × 0.1 mm (thickness)
- Tighten the metal tube fitting until the outlet spacer lightly touches the gas outlet and the metal tube fitting. Do not over-tighten the tube fitting or the gas outlet may break.

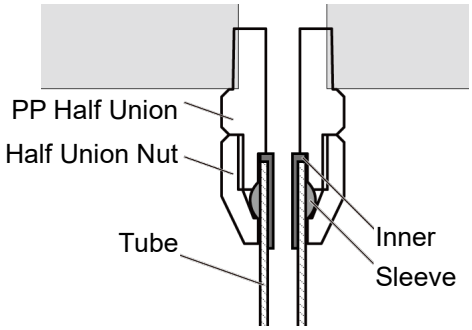
1. Install the PP half union (provided) into the gas outlet. (See the figure to the left.)
   * For the installation of a metal tube fitting (not provided) (in place of the PP half union) into the gas outlet, insert the outlet spacer (provided) between the metal tube fitting and the threaded hole of the gas outlet. (See to the figure to the right.)



2. Install the PP half union (provided) into the gas inlet.
   When connecting the PP half union (provided) to the gas inlet, secure the filter unit with one adjustable wrench or spanner, etc. to prevent the filter unit from rotating and another to install to the PP half union.
   * For the installation of a metal tube fitting (not provided) into the gas inlet, a spacer is not required because the spacer is pre-installed when shipped.



3. Connect the tube to the PP half union (2 places, at the gas inlet and outlet)
   Install an inner and a sleeve (provided with a PP half union) between the tube and the PP half union to prevent tube deformation resulting in gas leaks.
   * For connecting the tube to a metal tube fitting (not provided), refer to the instruction manual for the metal tube fitting.



⚠ CAUTION	
	Before connecting the tube into the gas inlet, cut the tube at a right angle keeping a perfect circular cross-section. Ensure that there are no scratches on the outer surface.

7.6 Sensor Unit Installation

WARNING

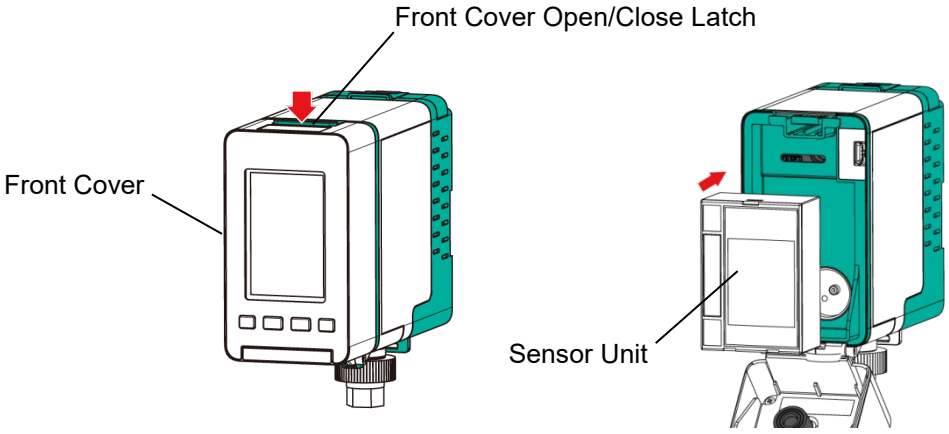
- Check that the target gas and full scale value are correct before using a sensor unit. Also, check that the sensor expiration year/month has not been reached.

  Note: The target gas name, full scale value and expiration year/month are indicated on the sensor unit. However, the expiration year/month is not indicated on a flammable gas sensor unit (CHS-7).
- Fully insert the sensor unit. If the sensor unit is not completely inserted, an airtight seal will not be created, and correct gas detection will not be possible.

CAUTION

- Before sensor unit installation, turn off the product by setting the power switch to the off position.
- Ensure that the front cover open/close latch is in the lock position after closing it. If the latch is not in the lock position, the front cover will loosen or open, which may cause injury or product damage such as a broken LCD.

1. Press the front cover open/close latch to open the front cover. Insert the sensor unit into the unit.



2. Close the front cover.

7.7 Power-on Check

After the installation, turn the product on and check that it starts up normally. Take the following steps to turn on the product.

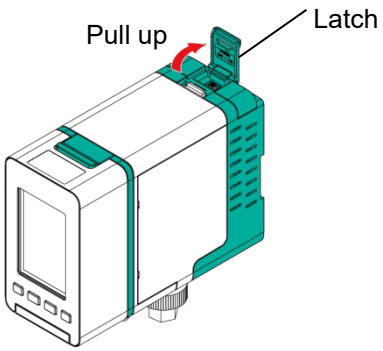
CAUTION

- The load current and voltage should not exceed the product's relay contacts' rating.

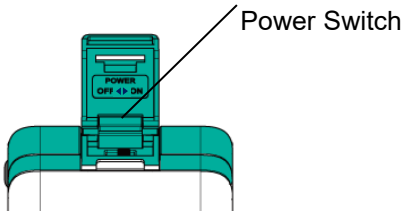
CAUTION

- Turn on the product while no gas is present around the gas sampling inlet.
- Check that all wiring is correct before turning on the external devices (e.g., signal towers, alarm horns, etc.) connected to this product.
- If the sensor is not stable, the alarm relay contacts may be activated upon the completion of a warm-up cycle. Release the interlocks of the external devices as needed, to prevent their possible activation.
- If the sensor output is not stable during the warm-up cycle, the product operation may also become unstable. To prevent possible activation of alarm relay contacts, set the product to maintenance mode 2.
- During the warm-up cycle, the 1st stage and 2nd stage gas alarm contacts are disabled. However, the fault alarm contact is enabled.
- Ensure that the latch is in the lock position after closing it. If the latch is not in the lock position, the case will loosen or open, which may cause injury or product damage such as a broken LCD.

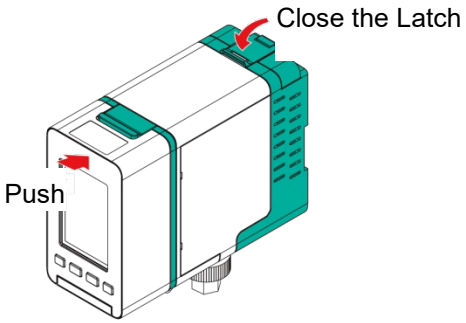
1. Pull the latch open.



2. Set the power switch to the on position to turn on the unit.



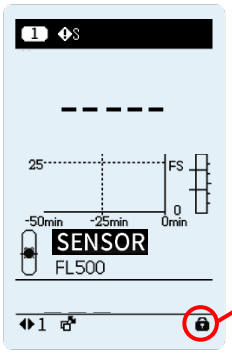
3. While pushing the front case, close the latch.



4. Ensure that the product is powered on.

5. If this is the initial power-up, the Fault LED will start blinking and 【SENSOR】 will appear on the screen.

6. Press and hold [^] until the lock icon disappears to deactivate the safety lock.

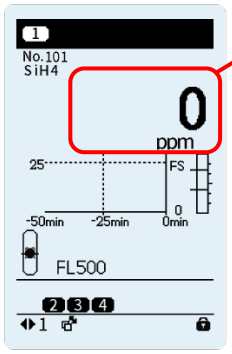


7. Press and hold [<] and [v] simultaneously while on the gas concentration screen to set all the channels to maintenance mode 2 at the same time. Check that the Manit LED blinks and “MAINTE2” appears on the screen.

8. Renew all the sensors’ data by pressing and holding [<] and [^] simultaneously while on the gas concentration screen.

9. The unit will enter the warm-up cycle, and the power LED will start blinking. When the warm-up cycle is complete, the unit will enter normal operation mode, the power LED will turn on, and the gas concentration will appear on the screen.

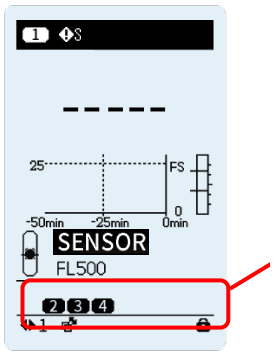
   * When using the main unit as a stand-alone detector, proceed to Step 14.
   * When using the main unit with subunits and/or extension units connected as a system, proceed to Step 10. In this case, channel allocation must be performed by supervisor or service personnel.



10. Enter the password to gain access to supervisor mode.

    Password Entry Procedure
    (1) Press and hold [>] to go to Menu.
    (2) Select “Password entry” by using [^] or [v]. Press [>] to go to the Password entry screen.
    (3) Enter the password.
        * Press [^] or [v] to enter each digit.
        * Pressing [>] moves the cursor to the next digit.
        * Pressing [<] returns the cursor to the previous digit.
    (4) Press and hold [>] to confirm the password.
        * If “Error (Password mismatch)” appears:
        ⇒ Solution: The password entered is invalid. Enter a valid password.
        * The default password for supervisor mode is “0 0 0 0”.

11. Press and hold [<] and [>] simultaneously while on the gas concentration screen to perform the auto channel allocation.



Channel numbers for the connected sensor units

Pressing and holding [<] and [>] simultaneously while on the gas concentration screen will automatically allocate all the connected units and modules (from the main unit, the subunits, to the AI modules) to the channels (from the youngest number to the oldest).
For example, when a main unit (M) is connected to two subunits (S1 and S2), and three extension units (AI module (AI1), AO module (AO1), and three DO modules (DO1-DO3)), the auto channel allocation will be made as shown in the table below.
If one more subunit (S3) is added, it will be allocated to Channel 6 and the allocation to Channels 1-5 will remain unchanged.

Channel	Auto Channel Allocation		
	Unit Allocation	Analog Output Allocation	Relay Output Allocation
1	M	M	DO1-1
2	S1	AO1-1	DO1-2
3	S2	AO1-2	DO2-1
4	AI1-1	AO1-3	DO2-2
5	AI1-2	AO1-4	DO3-1
6 (if subunit is newly added)	S3	None	DO3-2

M: Main unit S: Subunit AI: AI module AO: AO module DO: DO module
*See the Allocation table below for details.

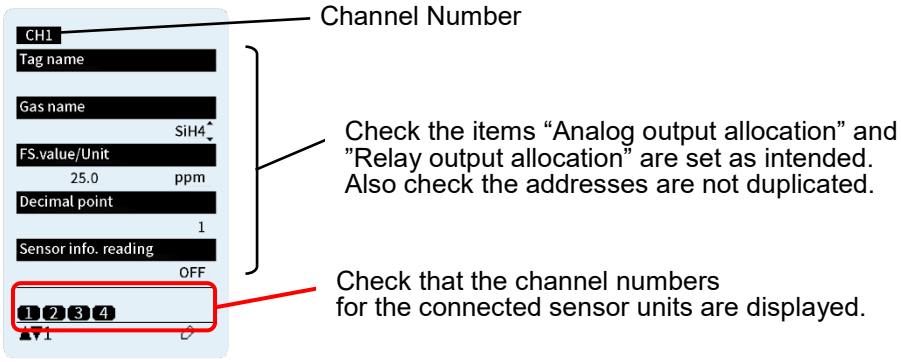
Allocation Table

Item	Description
Unit allocation	M: Sensor unit in main unit S1–S3: Sensor unit in subunit AI(1)– AI(2): AI module's terminals in expansion unit
Analog output allocation	M: Main unit's terminals None: Unallocated AO(1)– AO(2): AO module's terminals in expansion unit
Relay output allocation	None: Unallocated DO(1)– DO(2): DO module's terminals in expansion unit

(1): Address (2): Terminal number

12. Check the auto channel allocation result.

(1) Press and hold [>] to go to Menu.
(2) Select “Individual CH Info.” to go to the Individual CH Info screen.
To return to Menu, press and hold [<].



(3) Pressing [<] or [>] navigates through the channels. Go to the channel you want to check.
(4) Pressing [^] or [v] navigates through the pages. Go to the page where the target items, “Analog output allocation” and “Relay output allocation”, are present.

Item	Description
Analog output allocation	Indicates the analog output allocated to the channel. M: Main unit’s terminals None: Unallocated AO(1)– AO(2): AO module’s terminals in expansion unit
Relay output allocation	Indicates the relay output allocated to the channel. None: Unallocated DO(1)– DO(2): DO module’s terminals in expansion unit

(1): Address (2): Terminal number

If the channel numbers for the connected sensor units are not displayed or the allocations displayed for the Items “Analog output allocation” and “Relay output allocation” are not as intended, it indicates that the auto channel allocation has failed.
Also check that the addresses of the subunits and modules are not duplicated. If duplicated, change their addresses. For the address setting procedure, refer to 7.3.1 “Subunit Address Setting” and “7.3.2 Expansion Module Address Setting”.
If the auto channel allocation fails, the allocation settings need to be cleared once. To clear the allocation settings, take the following steps or contact New Cosmos service personnel.

How to clear the allocation settings

(1) Turn off the product by setting the power switch to the off position.
(2) Remove the joints which connect between the main unit and other units (subunit/expansion unit). For how to remove joints, refer to 7.2.3 “Joint Removal”.
(3) Turn on the product by setting the power switch to the on position.
(4) Deactivate the safety lock and go to Menu. Select "Password entry” to go to the Password Entry screen. Enter supervisor mode. A password is required to access supervisor mode.
(5) Press and hold [<] and [>] simultaneously while on the gas concentration screen to clear the allocation settings.
(6) Turn off the product. Iinstall the joints which connect between the main unit and other units (subunit/expansion unit).
(7) Turn on the product. Perform auto channel allocation again.

13. Press and hold [<] and [⌄] simultaneously while on the gas concentration screen to set all the channels to maintenance mode 2 at the same time. Check that the Manit LED blinks and “MAINTE2” appears on the screen.

14. Perform an initial checkup. For the check procedure, refer to 12.2 “Check/Inspection Procedure” in the PS-8 Series Instruction Manual for Operation.

8 Specifications

8.1 Main Unit

Model	PS-8M, PS-8N			
Detection Principle	Electrochemical, Hotwire semiconductor, Galvanic cell			
Gas Sampling Method	Extractive type (0.5L/min) Flow rate automatically controlled			
Sampling Tubing	PTFE with OD 6mm ID 4mm or OD 1/4 inch ID 11/64 inch*1 Tube length to be at least 1 m but not more than 20 m*2			
Target Gas	(As per the delivery specifications)			
Detection Range	(As per the delivery specifications)			
Display	Monochrome full dot LCD display Gas concentration value: 5-digit with measurement unit Displays gas name, flow rate status, 1st and 2nd stage gas alarms, fault alarm, etc.			
Power Indicator	Power LED (green) is lit when the unit is on			
Gas Alarm Set Value	(As per the delivery specifications)			
Alarm Accuracy	• Flammable gas: ±25% of the gas alarm set value under the identical conditions • Toxic gas: ±30% of the gas alarm set value under the identical conditions • Low oxygen: ±1 vol% under the identical conditions			
Response Time	Flammable gas: ≤ 30 seconds with a gas concentration that is 1.6 times higher than the gas alarm set value Toxic gas: ≤ 60 seconds with a gas concentration that is 1.6 times higher than the gas alarm set value Low oxygen: ≤ 5 seconds until the reading reaches 18 vol% with a 10 vol% concentration at 20±2°C *Excludes delay time caused by tube length and communication time.			
Gas Alarm	1st stage gas alarm	AL1 LED (red) is blinking "ALARM1" appears on the screen		
	2nd stage gas alarm	AL2 LED (red) is blinking "ALARM2" appears on the screen		
Fault Diagnosis	Internal failure, sensor error, low flow rate, abnormal power supply voltage, communication error between units, sensor incorrectly inserted			
Fault Alarm	Fault LED (yellow) is blinking, and the corresponding event icons appear on the screen			
Maintenance Mode	Maintenance mode 1	Maintenance LED (blue) is blinking, and the corresponding event icons appear on the screen		
	Maintenance mode 2	Maintenance LED (blue) is blinking rapidly, and the corresponding event icons appear on the screen		
External Output	Model		PS-8N	PS-8M
	Digital signal		-	Ethernet 10BASE-T/100base-Tx (Modbus/TCP) (Max. number of connectable units changes depending on system configuration) Communication mode: RTU Transmission distance up to hub: 100 m or less
	Gas concentration analog signal		4-20 mADC (common negative with power supply) (Output accuracy: within ±0.5% of full scale) *0.6 mA or less in the event of a fault alarm *300 Ω or less including a wiring resistance	
	· Collective 1st and 2nd stage gas alarm contacts · Collective fault alarm contact		Normally open dry contact, auto-resetting *Max. load: 125 VAC 0.5 A or 30 VDC 1.0 A (resistive load) *For dedicated contact output, refer to 8.3 "Expansion Unit" (DO module's external output) on page 55.	
Explosion-proof	This product is not explosion-proof			
Compliance	CE (EMC:2014/30/EU and RoHS:2011/65/EU)			

<table>
<tr><td rowspan="4">Applicable Cable for External Terminals</td><td>Model</td><td>PS-8N</td><td>PS-8M</td></tr>
<tr><td colspan="3">Terminal: Terminal blocks (3-pin x 1 and 6-pin x 1)
Applicable cable: CVV 1.25mm²
Target signal: Power, gas alarm contact (1st and 2nd stages), and fault alarm contact signals</td></tr>
<tr><td>Terminal: RJ-45 jack 8P8C</td><td>None</td><td>Applicable cable: STP Ethernet cable, Category 5e or higher
Target signal: Digital signal Ethernet 10BASE-T /100base-Tx and PoE</td></tr>
<tr><td colspan="3">Terminal: Terminal block (3-pin x 1)
Applicable cable: CVV-S 1.25mm²
Target signal: Gas concentration analog signal</td></tr>
<tr><td>Operating Temperature/Humidity</td><td colspan="3">0°C to 40°C No sudden temperature change
30 to 85%RH No condensation</td></tr>
<tr><td rowspan="2">Power Supply</td><td>Model</td><td>PS-8N</td><td>PS-8M</td></tr>
<tr><td>Power Supply</td><td>24 VDC ±10%</td><td>24 VDC ±10% or Power over Ethernet (PoE), IEEE 802.3at)</td></tr>
<tr><td rowspan="5">Power Consumption*3</td><td>Sensor Unit</td><td colspan="2">Typical</td><td>Max.</td></tr>
<tr><td>CDS-7</td><td colspan="2">3.5 W</td><td>5.2 W</td></tr>
<tr><td>CDS-7 (with pyrolyzer)</td><td colspan="2">4.0 W</td><td>5.9 W</td></tr>
<tr><td>COS-7</td><td colspan="2">3.5 W</td><td>5.2 W</td></tr>
<tr><td>CHS-7</td><td colspan="2">4.0 W</td><td>5.9 W</td></tr>
<tr><td>Dimensions</td><td colspan="3">W 70 mm × H 124 mm × D 172 mm (excluding protrusions)</td></tr>
<tr><td>Mass</td><td colspan="3">Approx. 850 g (without sensor units)</td></tr>
<tr><td>Mounting Method</td><td colspan="3">Wall-mounting or DIN rail-mounting*4</td></tr>
</table>

* Specifications above may be subject to change without notice.

*1: Inch size tubing must be specified at the time of ordering.

*2: For detection of highly adsorptive gases including halogen-based gases, the tube length of 5 m or less is recommended. When used in an environment exposed to dust, the tube length should be shorter than the recommended one and periodic tube replacement may be required.

*3: Power consumption will increase when using analog and digital outputs simultaneously.

*4: Do not install the product in an area directly exposed to persistent vibration or excessive impact. Persistent vibration or excessive impact may cause device failure. Wall mounting is recommended if the product needs to be installed in a location exposed to vibration or impact.
Specified DIN rail: TH35-7.5

8.2 Subunit

Model	PS-8S		
Detection Principle	Electrochemical, Hotwire semiconductor, Galvanic cell		
Gas Sampling Method	Extractive type (0.5L/min) *Flow rate automatically controlled		
Sampling Tubing	PTFE with OD 6mm ID 4mm or OD 1/4 inch ID 11/64 inch*1 Tube length to be at least 1 m but not more than 20 m*2		
Target Gas	(As per the delivery specifications)		
Detection Range	(As per the delivery specifications)		
Display	No display (displayed on main unit's LCD)		
Power Indicator	Power LED (green) is lit when the unit is on		
Gas Alarm Set Value	(As per the delivery specifications)		
Alarm Accuracy	• Flammable gas: ±25% of the gas alarm set value under the identical conditions • Toxic gas: ±30% of the gas alarm set value under the identical conditions • Low oxygen: ±1 vol% under the identical conditions		
Response Time	Flammable gas: ≤ 30 seconds with a gas concentration that is 1.6 times higher than the gas alarm set value Toxic gas: ≤ 60 seconds with a gas concentration that is 1.6 times higher than the gas alarm set value Low oxygen: ≤ 5 seconds until the reading reaches 18 vol% with a 10 vol% concentration at 20±2°C *Excludes delay time caused by tube length and communication time.		
Gas Alarm	1st stage gas alarm	AL1 LED (red) is blinking	
	2nd stage gas alarm	AL2 LED (red) is blinking	
Fault Diagnosis	Internal failure, sensor error, low flow rate, abnormal power supply voltage, sensor incorrectly inserted		
Fault Alarm	Fault LED (yellow) is blinking		
Maintenance Mode	Maintenance mode 1	Maintenance LED (blue) is blinking	
	Maintenance mode 2	Maintenance LED (blue) is blinking rapidly	
External Output	None (external output is generated from expansion unit)		
Explosion-proof	This product is not explosion-proof		
Compliance	CE (EMC:2014/30/EU and RoHS:2011/65/EU)		
Applicable Cable for External Terminals	No cable connected		
Operating Temperature/Humidity	0°C to 40°C No sudden temperature change 30 to 85%RH No condensation		
Power Supply	Supplied by main unit		
Power Consumption	Sensor Unit	Typical	Max.
	CDS-7	2.7 W	3.5 W
	CDS-7 (with pyrolyzer)	3.0 W	3.8 W
	COS-7	2.7 W	3.5 W
	CHS-7	3.2 W	4.2 W
Dimensions	W 70 mm × H 124 mm × D 172 mm (excluding protrusions)		
Mass	Approx. 770 g (without sensor units)		
Mounting Method	Wall-mounting or DIN rail-mounting*3		

* Specifications above may be subject to change without notice.

*1: Inch size tubing must be specified at the time of ordering.

*2: For detection of highly adsorptive gases including halogen-based gases, the tube length of 5 m or less is recommended. When used in an environment exposed to dust, the tube length should be shorter than the recommended one and periodic tube replacement may be required.

*3: Do not install the product in an area directly exposed to persistent vibration or excessive impact. Persistent vibration or excessive impact may cause device failure. Wall mounting is recommended if the product needs to be installed in a location exposed to vibration or impact.
Specified DIN rail: TH35-7.5

8.3 Expansion Unit

Model		PS-8EU				
Module Type		AO Module (Analog output)		DO Module (Contact output)		AI Module (Analog input)
External Output	Signal	Gas concentration analog signal		Gas alarm contacts (1st and 2nd stages) and Fault alarm contact		None
	Number of Outputs	4		2		
	Output	4-20 mADC (common negative with power supply) (Output accuracy: within ±0.5% of full scale) *0.6 mA or less in the event of a fault alarm *300 Ω or less including a wiring resistance		Normally open dry contact, auto-resetting *Max. load: 125 VAC 0.5 A or 30 VDC 1.0 A (resistive load)		
External Input	Signal	None		None		4-20 mA analog input
	Number of Inputs					2
	Input					0-21.6 mA
Power Indicator		Power LED (green) is lit when the unit is on				
Communication Indicator		None				
Explosion-proof		This product is not explosion-proof				
Compliance		CE (EMC:2014/30/EU and RoHS:2011/65/EU)				
Applicable Cable for External Terminals		Terminals: Terminal blocks (1-pin × 1 and 12-pin×1) Applicable cable: CVV-S 1.25 mm²		Terminals: Terminal blocks (12-pin×1) Applicable cable: CVV 1.25 mm²		Terminals: Terminal block (1-pin × 1, 3-pin × 2) Applicable cable: CVV-S 1.25 mm²
Operating Temperature/Humidity		0°C to 40°C No sudden temperature change 30 to 85%RH No condensation				
Power Supply		Supplied by main unit				
Power Consumption*1		Typical	Max.	Typical	Max.	Typical	Max.
		1.1 W	2.2 W	0.8 W	1.6 W	0.8 W	1.1 W
Dimensions		W 60 mm × H 124 mm × D 172 mm (excluding protrusions)				
Mass		Approx. 410 g (including two modules)				
Mounting Method		Wall-mounting or DIN rail-mounting*2				

* Specifications above may be subject to change without notice.

*1: Power consumption when the maximum number of channels are used.

*2: Do not install the product in an area directly exposed to persistent vibration or excessive impact. Persistent vibration or excessive impact may cause device failure. Wall mounting is recommended if the product needs to be installed in a location exposed to vibration or impact.
Specified DIN rail: TH35-7.5

9 Glossary

Term	Definition
Gas detector (or gas detector head)	Device used to detect the presence of a target gas and to give its concentration in the form of an electrical signal.
Target gas	Specific gas to be detected, concentration displayed, and used to trigger alarms.
Detection range	A range of target gas concentrations that can be displayed and trigger alarms.
Alarm accuracy	Difference between the gas alarm set value and the detected gas concentration that activates the alarms. It may also be expressed as a % with respect to the gas alarm set value.
Explosion-proof structure	Structure of an electrical apparatus in order not to become an ignition source in a flammable atmosphere
Maintenance and inspection	Tasks performed to ensure that equipment operates normally and correctly.
Aging mode	For use by service personnel. This mode is used to energize the sensor inside to stabilize the sensor output.

Revision History

Document No.	Date	Revision
GAE-178-00	December 2024	00 (Initial issue)

Additional copies of this instruction manual may be purchased. Contact New Cosmos or its authorized representative for ordering.

Authorized representative:

Manufacturer:

NEW COSMOS ELECTRIC CO., LTD.

2-5-4 Mitsuya-naka, Yodogawa-ku,

Osaka 532-0036, Japan

www.newcosmos-global.com

NEW COSMOS ELECTRIC CO.,LTD.