

EMD8A



RoHS

24×48 type digital fine differential pressure sensor

- Product compliant with the UL standard and the EU directive
- Designed with consideration for ease of incorporation into the device, such as employment of RITS connector and snap-in type panel mounting method
- The displacement sensor employs a high-performance diaphragm and a differential inductance method.
- Variation of fourteen ranges in total, including five zero center range types
- Easily visible 12 mm high red LED display
- Equipped with a variety of functions that include a movement average filter, maximum/minimum value memory, and comparison output
- Sign inversion function convenient for negative pressure measurement (negative value indication is possible)



EMD8A

*The wiring side connector and cable are not supplied. If they are necessary, use the RITS plug/connector 5P (refer to page 70).

<Main application fields>

- Semiconductor manufacturing equipment
- Negative pressure for dust collector/differential pressure of air conditioners
- Filter pressure loss management
- Precision machine manufacturing line
- General factory management equipment

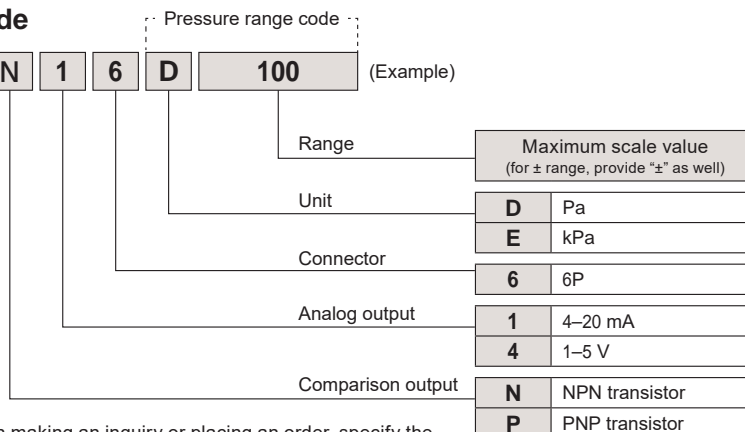
<Usage>

- Measurement of internal pressure of indoor device
- Detection of clogging of air filter
- Measurement of clogging of bug filter
- Measurement of dynamic pressure at ventilation/exhaust device
- Room pressure measurement in a clean room

*(Refer to pages 114 to 117)

Product code

EMD8A N 1 6 D 100 (Example)



◆When making an inquiry or placing an order, specify the above product code.

List of products

WO81

WO71

FR51A

MS99

MS99S

MS61A-RA

QDP33

EMD8A

EMD7

EMT1

EMTGP1

EMT1H

EMT6

EMP5A

EMRT1

HWS15A

Accessories

Application

Precautions

Maintenance

Specifications

Model	EMD8A			
Pressure unit	Pa, kPa		Analog output	Accuracy $\pm 1.5\%$ FS (at 20°C) Temperature characteristics $\pm 0.15\%$ FS/°C (zero + span) Output type • EMD8A□1 4 to 20 mA (biased pressure: 0 to FS, \pm : at pressure of -50% to +50% FS) Load resistance: 0 to 250 Ω • EMD8A□4 1 to 5 V (biased pressure: 0 to FS, \pm : at pressure of -50% to +50% FS) Load resistance: 10 k Ω or higher
Pressure measurement method	Differential pressure method		Power voltage	12 to 24 V DC $\pm 10\%$ (ripple of 10% or below)
Measured gas	Air and noncorrosive gas (liquid cannot be measured)		Maximum consumption current	• EMD8AN (comparison output: NPN transistor type) Total consumption: 100 mA (internal consumption only) • EMD8AP (comparison output: PNP transistor type) Internal consumption: 100 mA Total consumption: 300 mA (including load current for comparison output of 100 mA \times 2)
Pressure-receiving element	Diaphragm (silicone rubber)		Insulation resistance	Between terminal and case: 10 M Ω or higher (500 V DC megger)
Mounting orientation	Mounting on vertical surface		Withstand voltage	Between terminal and case: 500 V AC, 50/60 Hz, for one minute
Operating ambient temperature	0°C to 60°C (no freezing allowed)		Installation category	Standard IEC 60664 level II (However, this product must be connected to the secondary side of a safety insulation transformer such as DC switching power.)
Operating ambient humidity	35% to 85% RH (no condensation allowed)		Operating altitude	Altitude of 2000 m or below
Instrument body withstanding pressure	10 kPa (refer to page 118)		Protection level	Standard: IEC 60529 Grade code: IP40 (front panel)
Withstanding pressure of pressure-receiving element	10 kPa (refer to page 118)		Degree of contamination	Standard: IEC 60664 Grade: 2 (If it is not possible to install this product in a dry clean location, house it in a housing.)
Exterior material	Polycarbonate		Durable vibration	5 to 10 Hz Amplitude of 10 mm, 10 to 50 Hz Acceleration of 39 m/s ² (two hours each for three axial directions)
Electric signal conversion method	Variable inductance		Durable impact	100 m/s ² (six times each for three axial directions)
Display	Display section	7-segment LED, red 3-1/2 digits	Compatible pipe	Vinyl pipe or rubber pipe (inner diameter of 4 mm)
Zero adjustment method	Accuracy	$\pm 1.5\%$ FS ± 1 digit (at 20°C)	Base polarity	Indicating high-pressure side and low-pressure side with "HIGH" and "LOW" marks, respectively, at piping connection base part.
Comparison output	Temperature (characteristics)	$\pm 0.15\%$ FS/°C (zero + span)	Connector	RITS Connector 6P (TE Connectivity) For the connector on the wiring side, use the separately sold accessory (refer to page 70).
	Setting method	Push-type digital setting	Mass	Approx. 60 g
	Output display	Red LED $\times 2$		
	Output type	• EMD8AN Two systems of NPN open collector Maximum load current: 100 mA or lower (per output) Maximum load voltage: 30 V DC or lower Output saturated voltage: 1 V DC or lower (at load current of 100 mA) • EMD8AP Two systems of PNP open collector Maximum load current: 100 mA or lower (per output) Maximum load voltage: 30 V DC or lower Output saturated voltage: 2 V DC or lower (at load current of 100 mA)		
Pressure range code	Rating pressure range	LED display	Comparison output	Analog output
D 50	0-50 Pa	0.0-50.0	NPN transistor or PNP transistor	4-20 mA or 1-5 V
D 100	0-100 Pa	0.0-100.0		
D 200	0-200 Pa	0-200		
D 300	0-300 Pa	0-300		
D 500	0-500 Pa	0-500		
D 1000	0-1000 Pa	0-1000		
E 2	0-2 kPa	0.00-2.00		
E 3	0-3 kPa	0.00-3.00		
E 5	0-5 kPa	0.00-5.00		
D +- 50	-50 to +50 Pa	-50.0 to 50.0		
D +-100	-100 to +100 Pa	-100 to 100		
D +-200	-200 to +200 Pa	-200 to 200		
D +-300	-300 to +300 Pa	-300 to 300		
D +-500	-500 to +500 Pa	-500 to 500		

◆ For the use environment, refer to page 118.

Conforming standards

1. EU directive

This product is compliant with the EMC directive of EU.

EMC directive basic requirements Standard No. EN 61326-1

This product in combination with HWS15A-24/A (TDK-Lambda Corporation) is confirmed to be compliant with the EMC directive.

When using this product with other power unit, have the final system go through the EMC test.

2. UL standard

This product is certified as an UL standard recognition part. It is also certified with Canada Standard (C-UL).

However, use this product in accordance with the installation conditions shown in (3) below.

(1) Requirements standard No. UL 61010-1

(2) File No. E220685

(3) Installation condition As the DC power source to be connected to this product, use NEC (National Electrical Code) Class 2 power source or LPS (Limited Power Source) power source.

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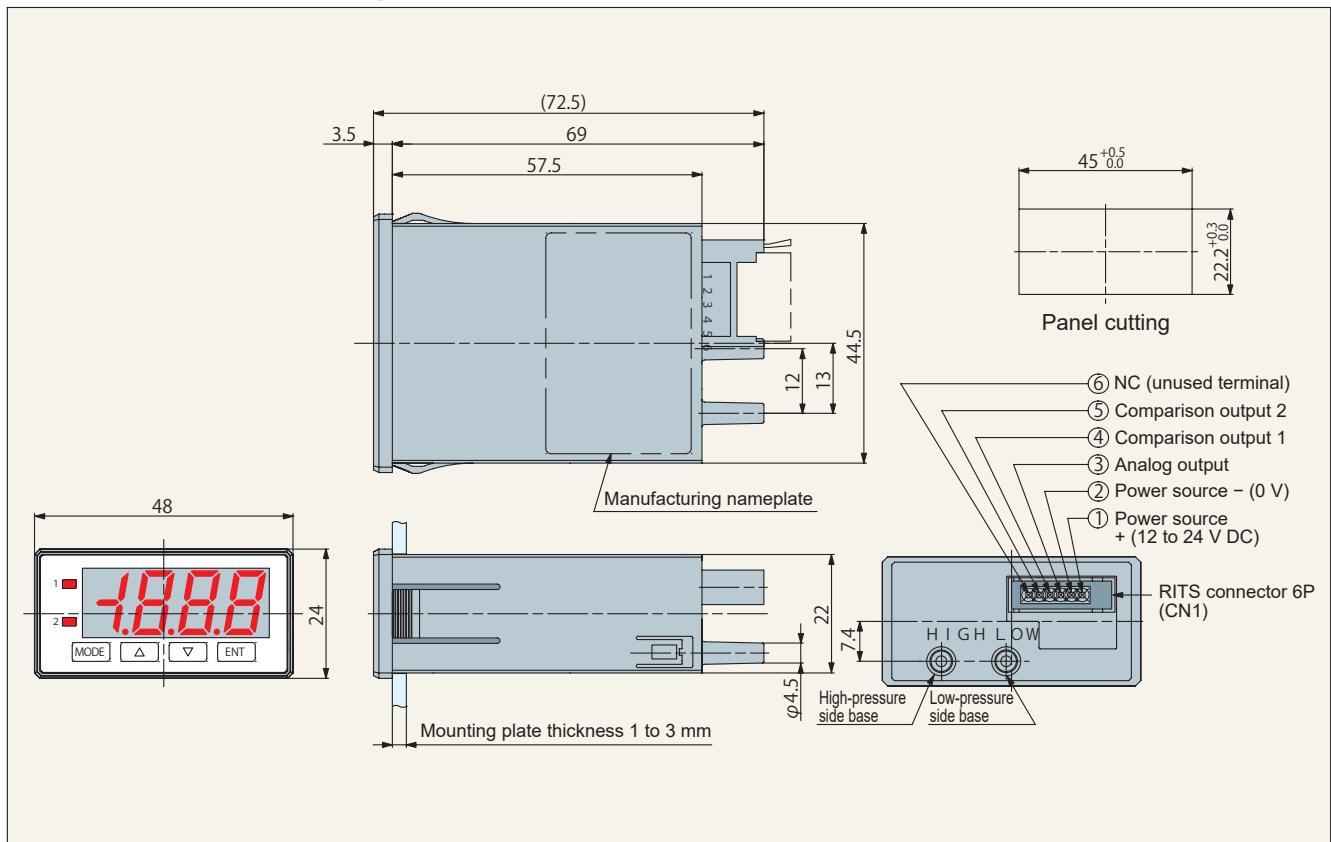
Accessories

Application

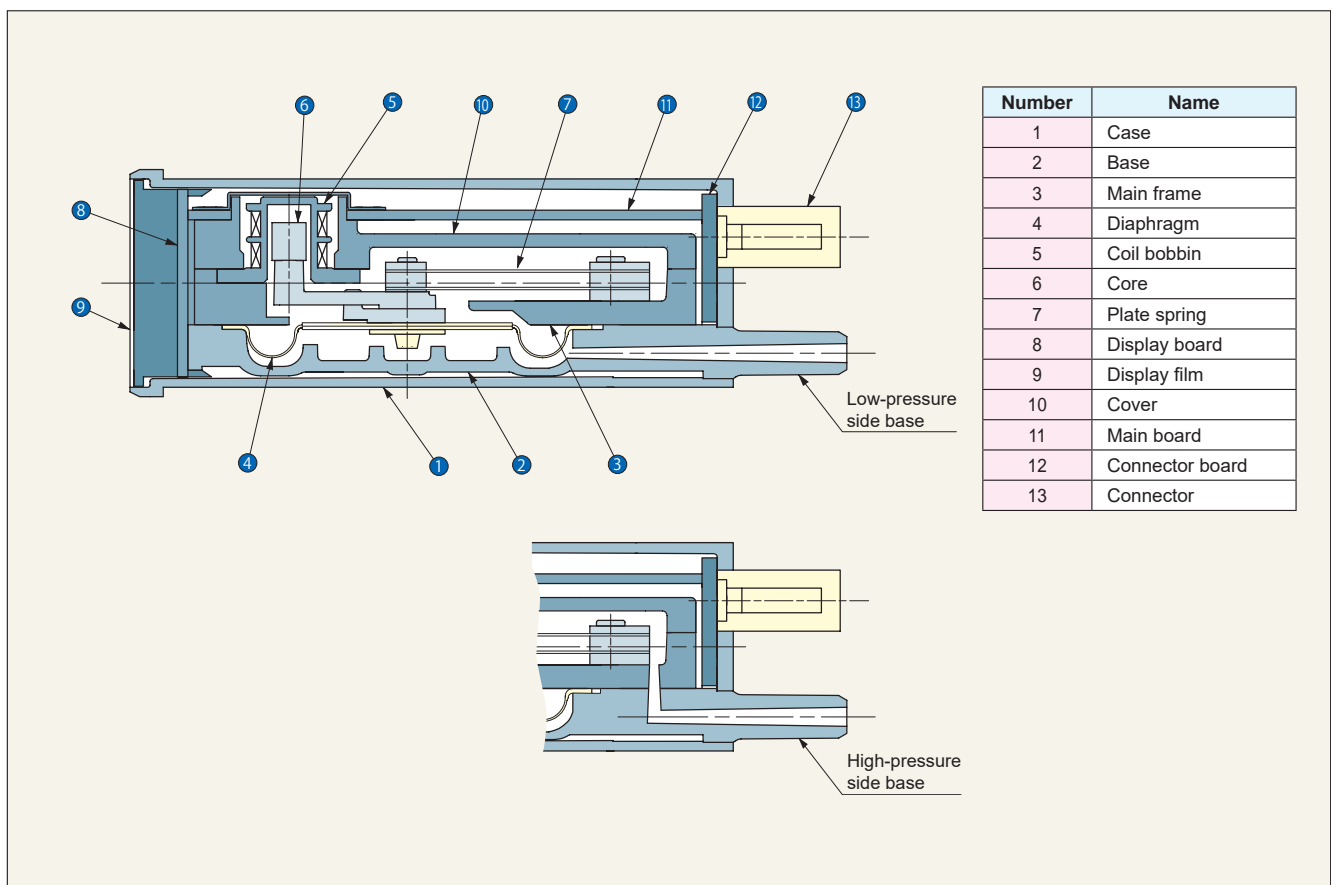
Precautions

Maintenance

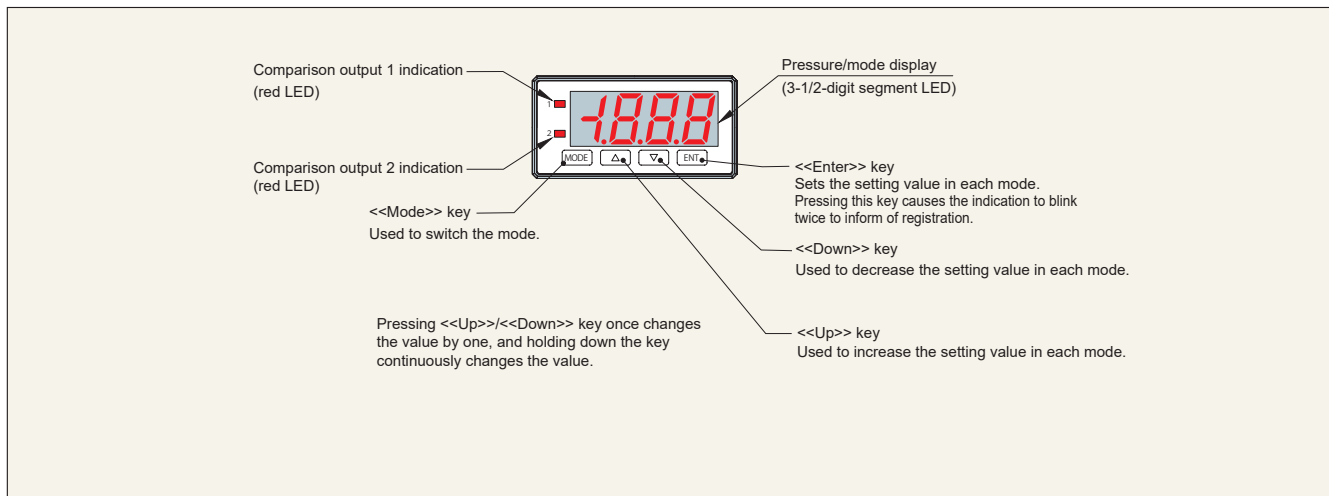
External dimension drawing



Overview of structure



Operation panel



Functions of EMD8A▶▶▶▶

▶ Display function

- Pressure indication
Easily visible 12 mm high seven-segment red LED display
- Push type automatic zero reset
Zero-resets the pressure indication and analog output at the same time.
- Movement average filter (for indication use)
When the measured pressure greatly fluctuates, this function increases the response time to alleviate the fluctuation of display value.
- Maximum value/minimum value memory function
Memorizes and displays the maximum pressure and minimum pressure during measurement.

▶ Comparison output function (NPN or PNP transistor output)

- Equipped with two systems of the exact same function, each of which operates independently.
(Transistor output and output monitor red LED are equipped for each system.)
- By changing the following parameter settings, it is possible to use this instrument for various applications.
 1. Comparison mode (hysteresis mode or window mode)
 2. Comparison pressure setting point
 3. Output mode (OFF, N.O., N.C.)
 4. Output on-delay time
 5. Output off-delay time
 6. Power supply on-delay time

▶ Analog output function

- Analog output (4 to 20 mA or 1 to 5 V)
This function performs zero setting and movement average filter processing of a digital pressure measurement value, and then performs D/A conversion of the value and outputs it as an analog value.
- Movement average filter (for output use)
When the measured pressure greatly fluctuates, this function increases the response time to alleviate the fluctuation of analog output.

▶ Other functions

- Test mode function
It is possible to check the setting value and operation without applying pressure.
- Display low cut function
When the measurement pressure is near zero, the pressure indication can be forcefully set to zero.
- Measurement indication symbol inversion function
The indication values in the pressure indication mode and maximum/minimum indication mode are displayed with their symbols inverted.
- Analog output inversion function
Under normal conditions, when the differential pressure being measured rises, the analog output value also rises. However, turning on the analog output inversion function makes an opposite action.
- Low power consumption function
Reduces the power consumption by decreasing the LED display brightness.
- Setting protection function
Protects setting values in various setting modes from erroneous operation and others.
- Setting clear function
This function can revert the setting values in all setting modes to the factory default state.

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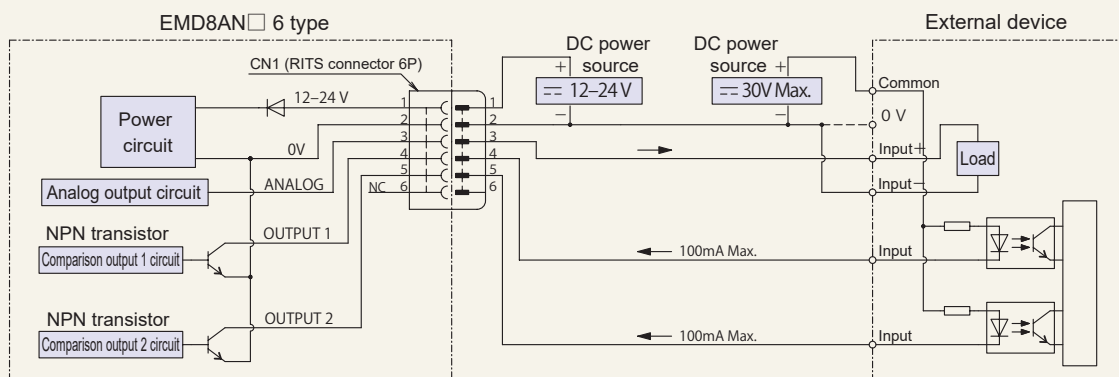
Application

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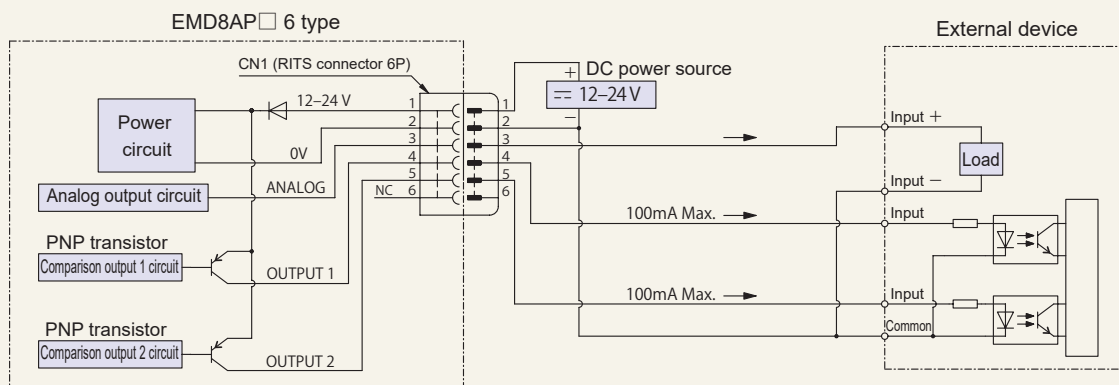
Maintenance

Wiring

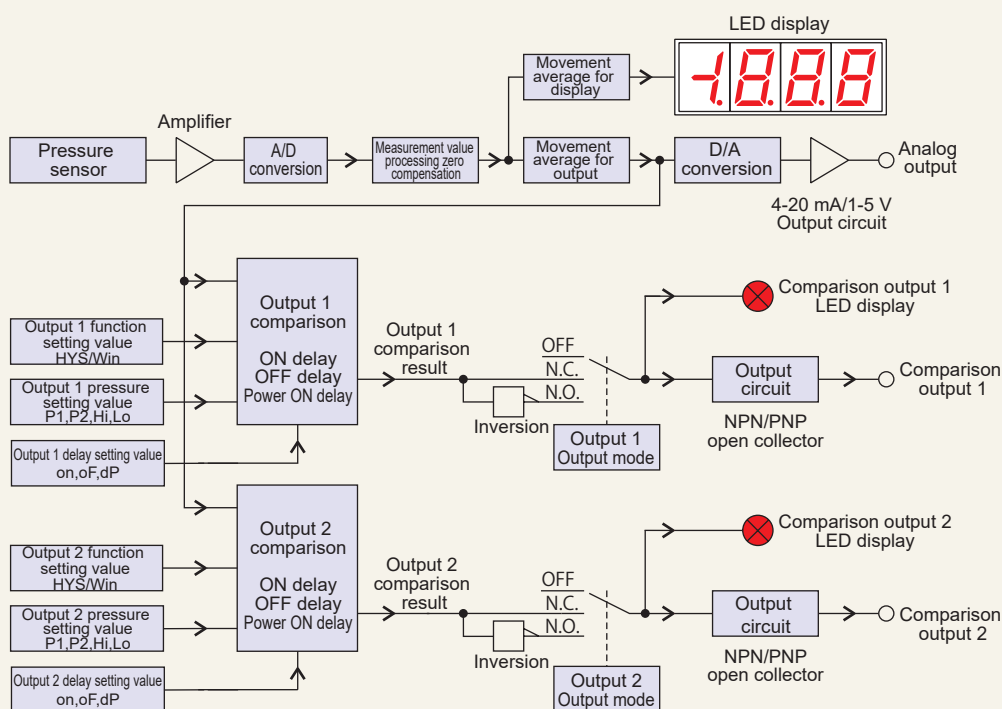
Comparison output: NPN transistor type (when photocoupler is to be connected)



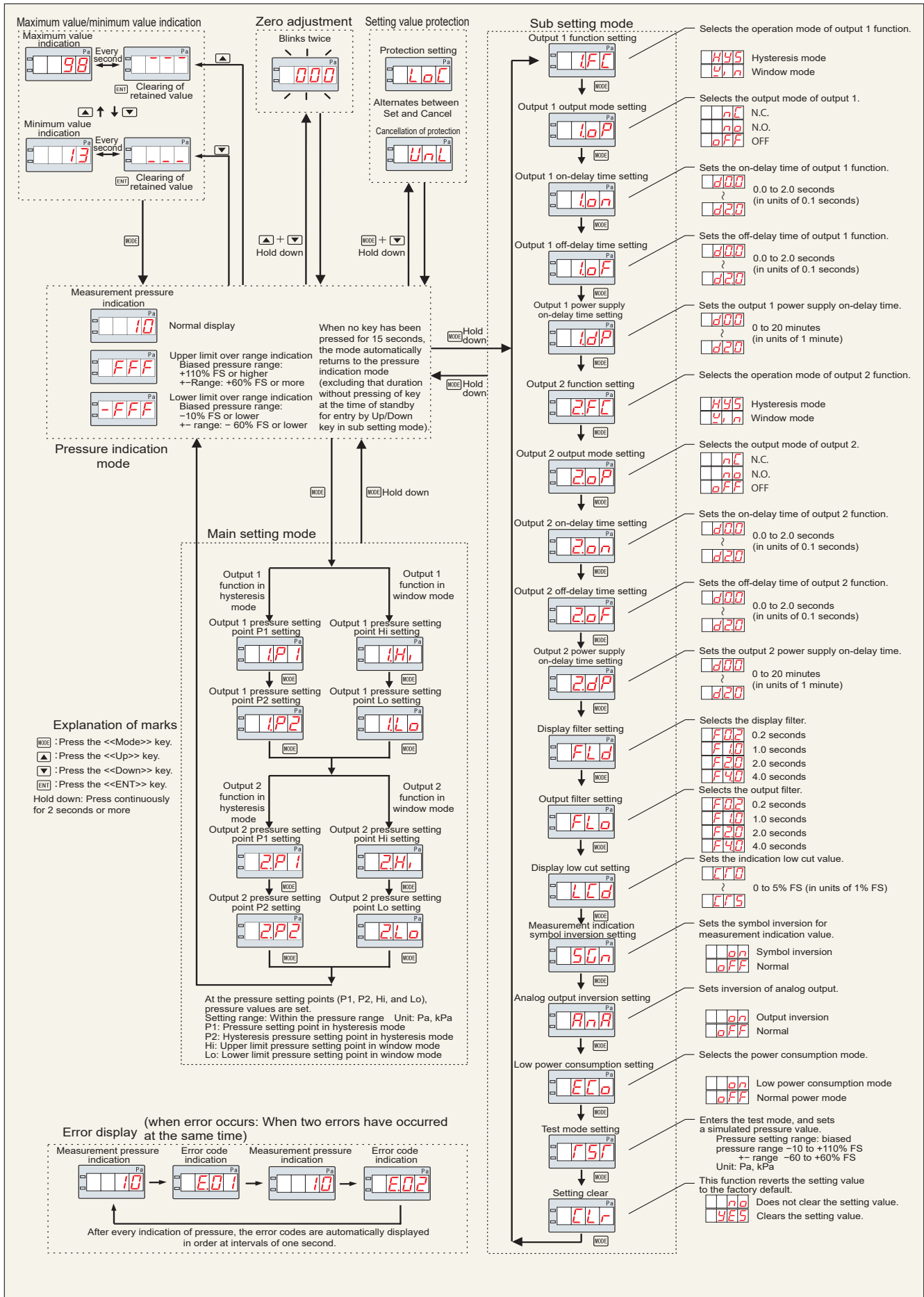
Comparison output: PNP transistor type (when photocoupler is to be connected)



Functional block diagram



Mode changeover



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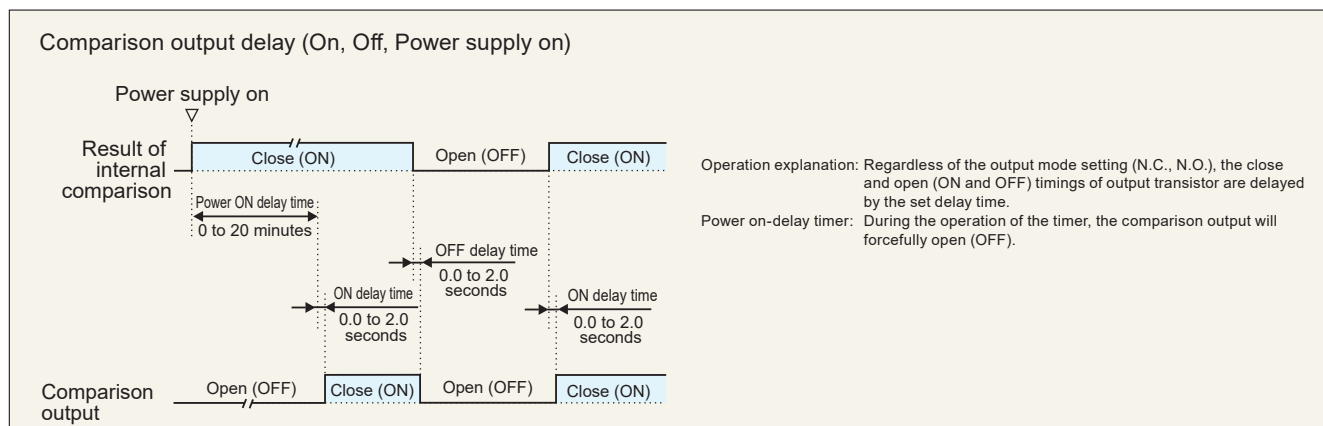
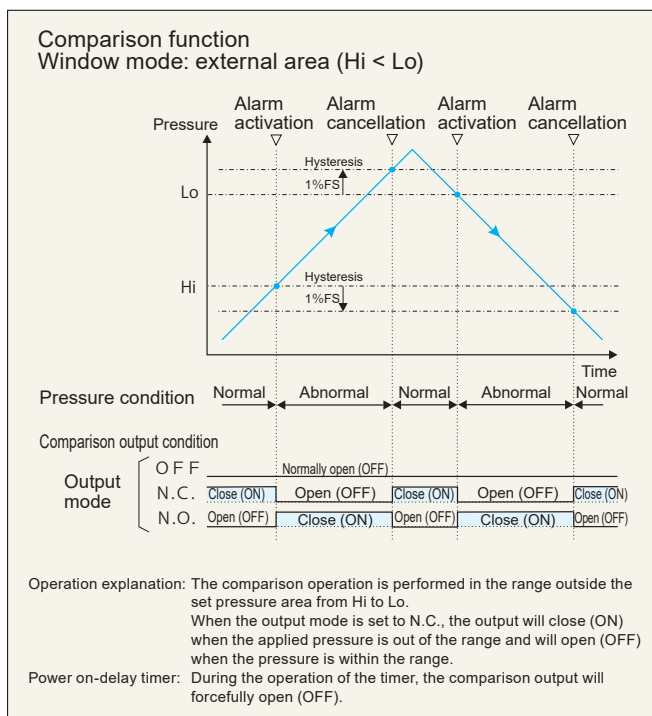
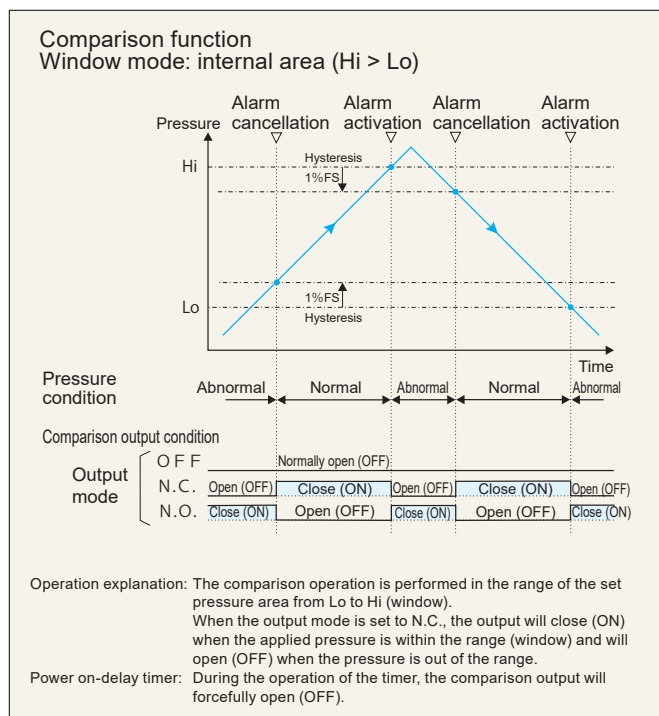
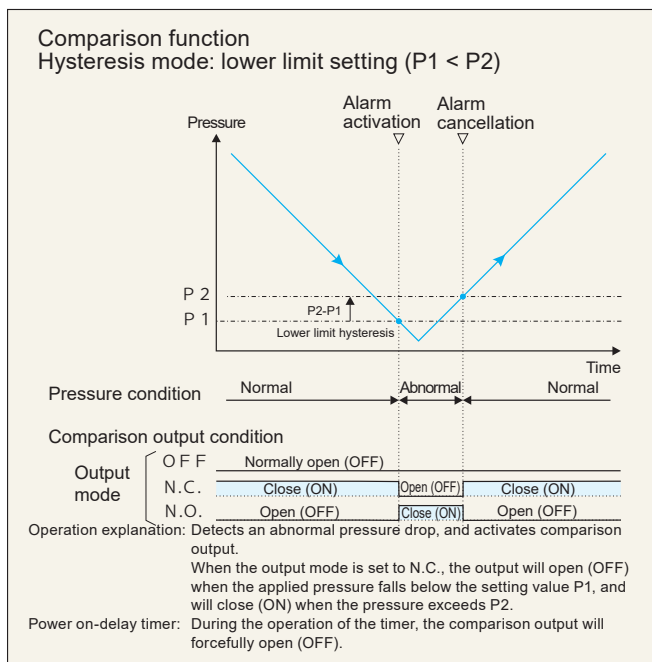
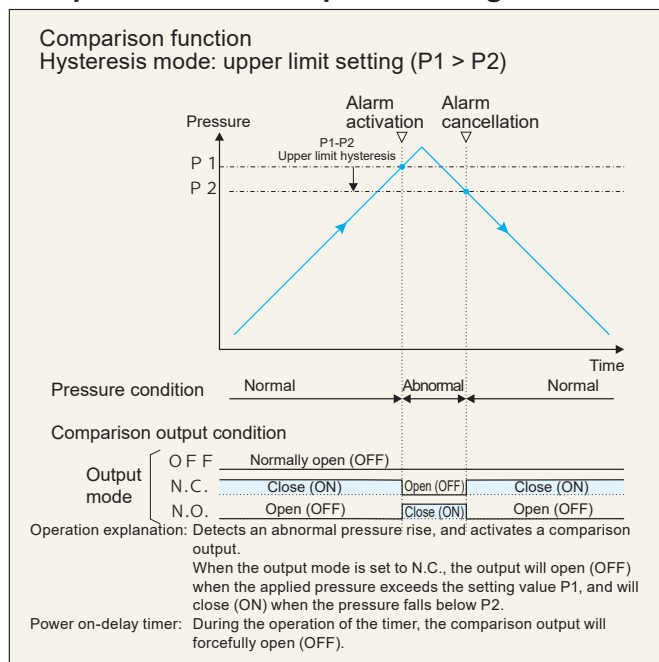
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Comparison function operation diagrams



EMD8A accessories RoHS

RITS 5P cable w/connector			
This is a cable with connector used for connection with EMD8A. In the sheath cable and other constituting parts of this product, vinyl chloride is not intentionally used. RITS plugs and connectors are products of TE Connectivity.			
Item number	Cover color	Core wire insulation sheath color	Terminal number
CAB-RITS5-15	Yellow	Brown	①
		Blue	②
		Pink	③
		Black	④
		White	⑤
This product is not UL-certified.		Core wire sheath outer diameter: 1.0 mm Standard: AWG#24	

RITS plug/connector 5P (TE Connectivity)			
This is a wiring side plug/connector used on EMD8A.			
Item number	Color	Applicable wiring	
1473562-5	Yellow	Nominal cross-section area	Finish outer diameter
		0.1–0.5 mm ²	1.0–1.15 mm
When crimping of the connector is performed, use the dedicated tool (item number: 1729940-1 from TE Connectivity). For other RITS connectors and details, contact TE Connectivity.		*Cable is not supplied.	

Connectability of the RITS connector

<p><EMD8A main body 6P></p>	○ ... Connectable × ... Non-connectable	<p><RITS plug/connector 5P> Item number: 1473562-5</p> <p>Without contact pin</p>
<p><EMD8 main body 5P> Discontinued product</p> <p>Contact hole is sealed with resin.</p>		<p><RITS plug/connector 6P></p> <p>With contact pin</p>
As the connector on the wiring side, be sure to use the RITS plug/connector from TE Connectivity. As the RITS connector is not compliant with e-CON, it is not compatible with connectors from other manufacturers.		

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Warranty

Warranty period

The warranty period for our product is one (1) year from delivery to the location specified by the orderer who makes a direct transaction with us.

Scope of warranty

If any failure or defect attributable to us becomes clear during the above warranty period, we will repair the product or supply a substitute product free of charge. However, even during the warranty period, we will exclude the product from the scope of the warranty if the failure or defect corresponds to any of the following:

- (1) The failure or defect was caused by an unreasonable condition, environment, handling, or usage not mentioned in the instruction manual, specifications, and our product catalog.
- (2) The failure or defect was caused by a factor other than our product.
- (3) The failure or defect was caused by a modification or repair conducted by a party other than us.
- (4) The failure or defect was caused by an event that could not be foreseen at the scientific and technical levels at the time of product shipment from us.
- (5) The failure or defect was caused by an external factor not attributable to us, such as acts of God and disasters.

Please note that the warranty mentioned here means the warranty for our individual product, and damage provoked by a failure or defect of the product is excluded from the scope of the warranty.

*This warranty is valid only in Japan.

Application and usage

Our products are designed and manufactured as general-purpose instruments for general industries.

Therefore, our products are not intended for the following uses, and our products used in such a manner are outside the scope of application.

- (1) Equipment that is anticipated to greatly affect lives and properties, such as nuclear power generation, aviation, railways, marine vessels, vehicles, and medical devices
- (2) Utilities that include electricity, gas, and service water
- (3) Use in outdoor locations and under similar conditions or environments other than those stipulated in the instruction manual
- (4) Usage to which considerable safety consideration and attention equivalent to (1) and (2) above need to be given

Service

Scope of service

Because the product price does not include service expenses, such as the dispatch of engineers, we will separately charge for the expenses in the following cases:

- (1) Instruction for installation and adjustment and a witnessed test run
- (2) Maintenance inspection, adjustments, and repairs
- (3) Technical guidance and technical education
- (4) Witnessed inspections of products at our factory

<<Note>> The product specifications and information in this catalog are subject to change without prior notice for product improvement or other reasons.

● For order placement, contact

General agent  **Manostar Shop Co., Ltd.**

1-2-3 Nishishiriike-cho, Nagata-ku, Kobe City, Hyogo 653-0031
TEL. +81-78-621-7000 FAX. +81-78-621-7788

Manufacturer  **Yamamoto Electric Works Co., Ltd.**

1-2-3 Nishishiriike-cho, Nagata-ku, Kobe City, Hyogo 653-0031
TEL. +81-78-631-6000 FAX. +81-78-631-6020