

48×48 type digital fine differential pressure sensor

- Selectable from eight ranges including 0 to 100 Pa and 0 to 5 kPa
- It is possible to select analog output function in the range of 4 to 20 mA or 1 to 5 V.
- It is possible to select the alarm output type from NPN open collector or PNP open collector.
- Compatible with 12 to 24 V DC power source
- Equipped with abundant additional functions for differential pressure measurement including movement average filter, maximum/minimum value memory, and delay timer
- It is possible to set the alarm function mode in accordance with the usage.
- Product compliant with the EU directive and UL standard



EMD7D3

<Main application fields>

- Part of 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

Product code

EMD7 **D3** **N** **1** **D** **100** (Example)

Pressure range code	Range	Maximum value
	Unit	
Analog output	D	Pa
	E	kPa
Alarm output	1	4–20 mA
	4	1–5 V
Power source	N	NPN transistor
	P	PNP transistor
	D3	12–24 V DC

*(Refer to pages 114 to 117)

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

Specifications

Model	EMD7D3			
Pressure unit	Pa, kPa		Alarm output	Output type <ul style="list-style-type: none">• EMD7D3N NPN open collector One each for upper limit and lower limit Maximum load current: 100 mA (per output) Maximum load voltage: 30 V DC or lower Output saturated voltage: 1 V DC or lower• EMD7D3P PNP open collector One each for upper limit and lower limit Maximum load current: 100 mA (per output) Maximum load voltage: 30 V DC or lower Output saturated voltage: 2 V DC or lower Setting range Upper limit: 0 to 100% FS Lower limit: 0 to 100% FS Hysteresis width can be set in the range of 1 to 5% FS. Setting method Push-type digital setting Output display Red LED × 2
Pressure measurement method	Differential pressure method		Analog output	Output type <ul style="list-style-type: none">• EMD7D3□1 4 to 20 mA (at pressure of 0 to FS) Load resistance: 0 to 250 Ω• EMD7D3□4 1 to 5 V (at pressure of 0 to FS) Load resistance: 10 kΩ or higher Accuracy ± 1.5% FS (at 20°C) Temperature characteristics ± 0.15% FS/°C (zero + span)
Electric signal conversion method	Variable inductance		Maximum consumption current	• EMD7D3N (alarm output: NPN transistor type) Total consumption: 100 mA (internal consumption only) • EMD7D3P (alarm output: PNP transistor type) Internal consumption: 100 mA Total consumption: 300 mA (including load current for alarm output of 100 mA × 2)
Measured gas	Air and noncorrosive gas (liquid cannot be measured)		Power voltage	12 to 24 V DC ± 10% (ripple of 10% or below)
Pressure-receiving element	Diaphragm (silicone rubber)		Mass	Approx. 130 g (including terminal cover and adapter for panel mounting)
Mounting orientation	Mounting on vertical surface		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)
Instrument body withstanding pressure	20 kPa (refer to page 118)		Durable impact	100 m/s ² (six times each for three axial directions)
Withstanding pressure of pressure-receiving element	20 kPa (refer to page 118)			
Operating ambient temperature	0°C to 50°C (no freezing allowed)			
Operating ambient humidity	35% to 85% RH (no condensation allowed)			
Compatible pipe	Vinyl pipe or rubber pipe (inner diameter of 4 mm; however, the outer diameter must be 6 mm or lower)			
Base polarity	Indicating high-pressure side and low-pressure side with "H" and "L" marks, respectively, at piping connection base part.			
Display	Display section Seven-segment LED, four red digits Pressure indication/alarm setting indication, three digits at maximum (The highest digit indicates the mode.) Accuracy ± 1.5% FS ± 1 digit (at 20°C) Temperature characteristics ± 0.15% FS/°C (zero + span)			
Zero adjustment method	Push-type automatic zero return (The displayed value and analog output are adjusted to zero at the same time.)			
Insulation resistance	Between terminal and case 10 MΩ or higher (500 V DC megger)			
Withstand voltage	Between terminal and case 500 V AC, 50/60 Hz, for one minute			
Exterior material	ABS resin (color: ivory)			
Operating altitude	Altitude of 2000 m or below			
Protection level	Standard: IEC 60529 Grade code: IP41			
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.)			
Accessories	Adapter for panel mounting, terminal cover (already mounted on instrument body)			
Pressure range code	Pressure range	LED display	Alarm output	Analog output
D 100	0–100 Pa	0–100	NPN transistor	4–20 mA
D 200	0–200 Pa	0–200		
D 300	0–300 Pa	0–300		
D 500	0–500 Pa	0–500		
E 1	0–1 kPa	0.00–1.00	PNP transistor	1–5 V
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		

◆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.
(1) EMI (electromagnetic emission) standardEN 61000-6-3
(2) EMS (electromagnetic immunity) standardEN 61000-6-2
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.

List of products

WO81

WO71

FR51A

MS99

MS99S

MS61A-RA

QDP33

EMD8A

EMT1

EMTGP1

FMT1H

EMT6

EMP5A

EMRT1

HWS15A

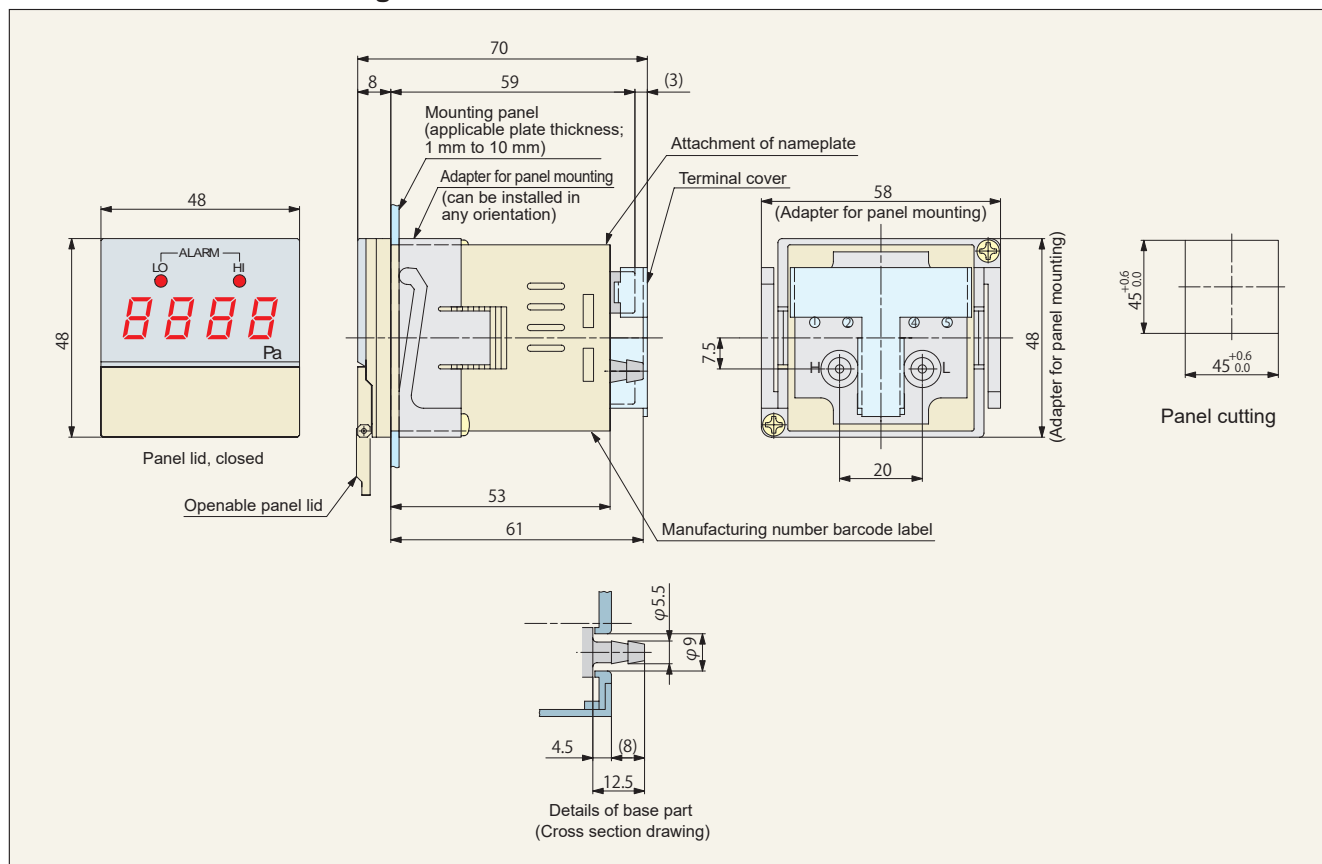
Accessories

Application

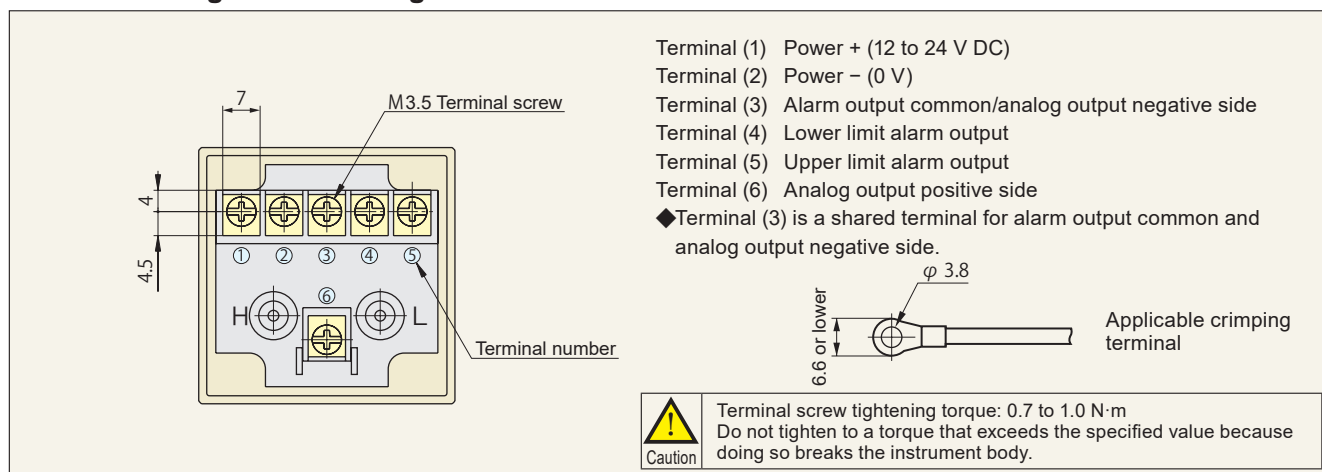
Precautions

Maintenance

External dimension drawing



Terminal arrangement drawing



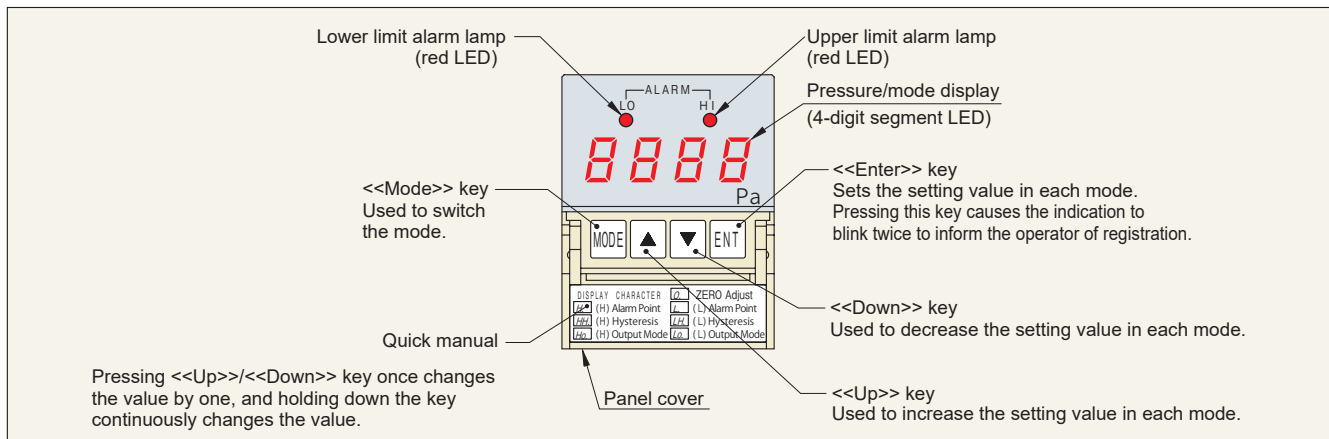
Accessories dedicated to EMD7

RoHS

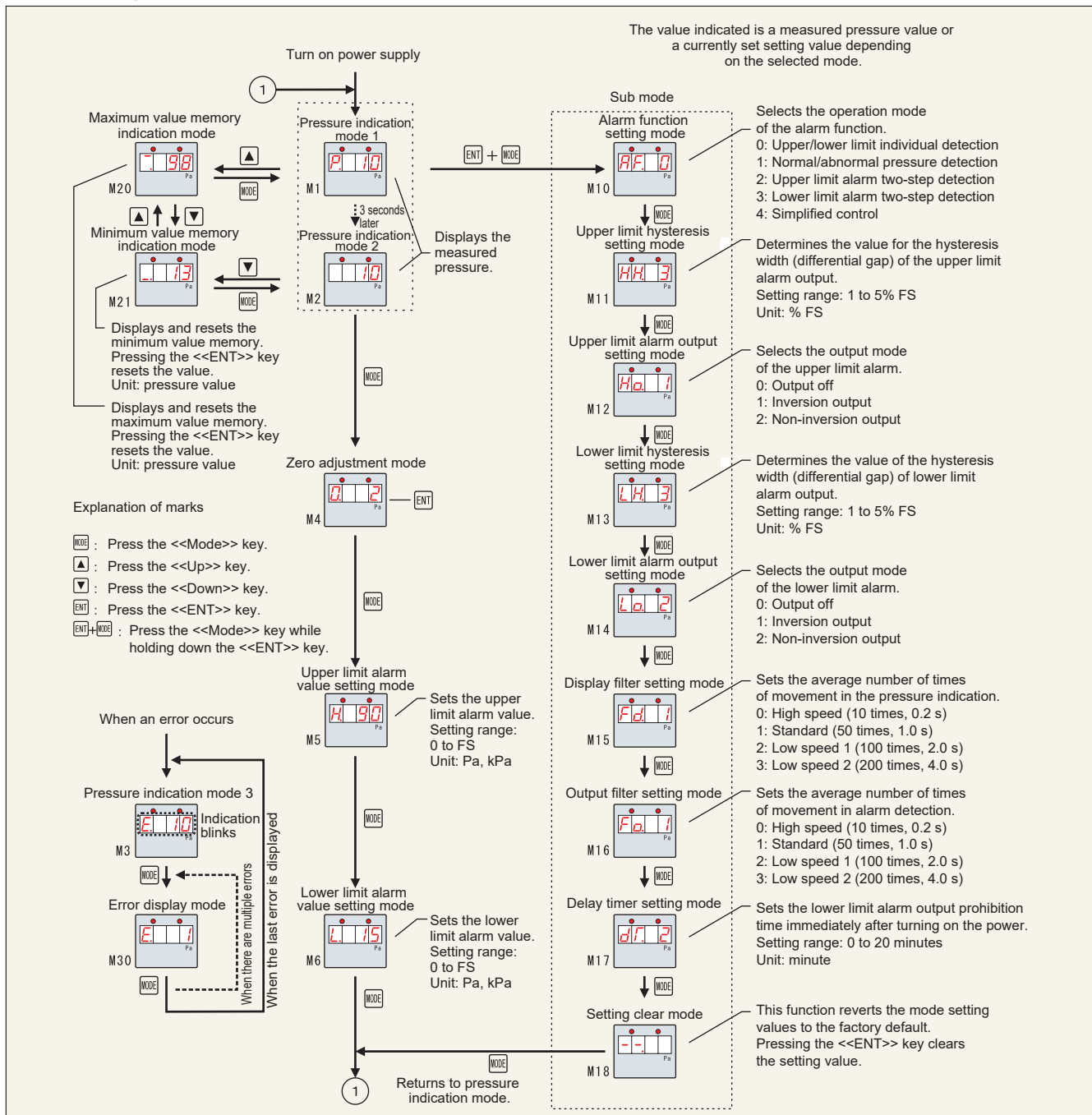
Terminal cover	
(Auxiliary item)	
This is already installed at the time of purchase of the instrument.	
Item number	Material
TCA-D7	Polycarbonate

Adapter for panel mounting	
(Auxiliary item)	
Item number	Material
ADPA-EMD7	Polyacetal/steel

Operation panel

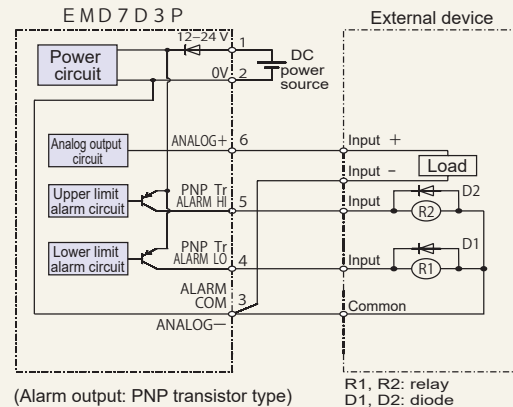
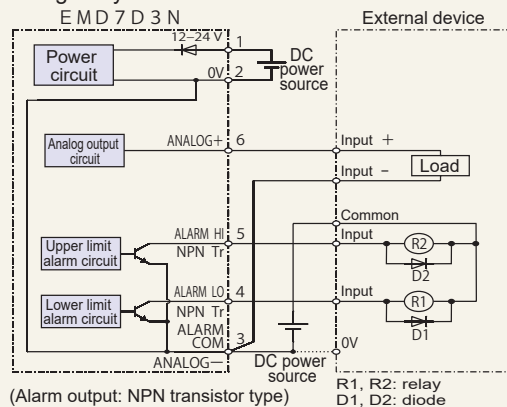


Mode changeover

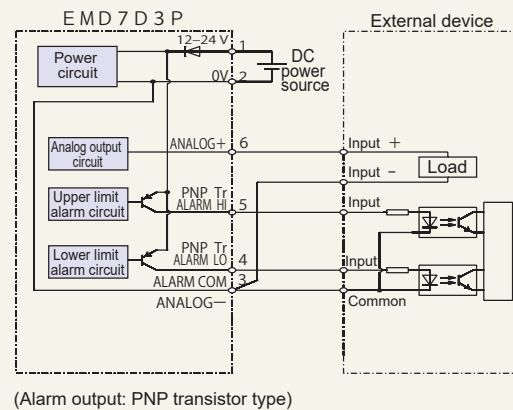
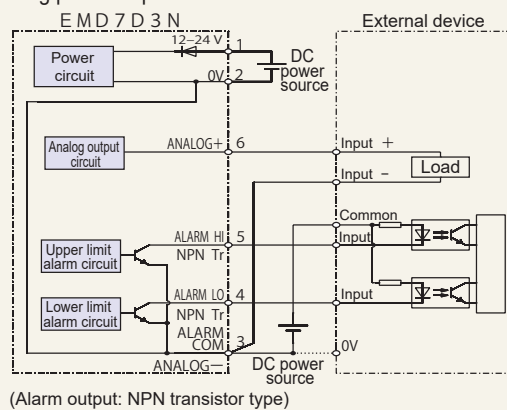


Wiring

When connecting relays

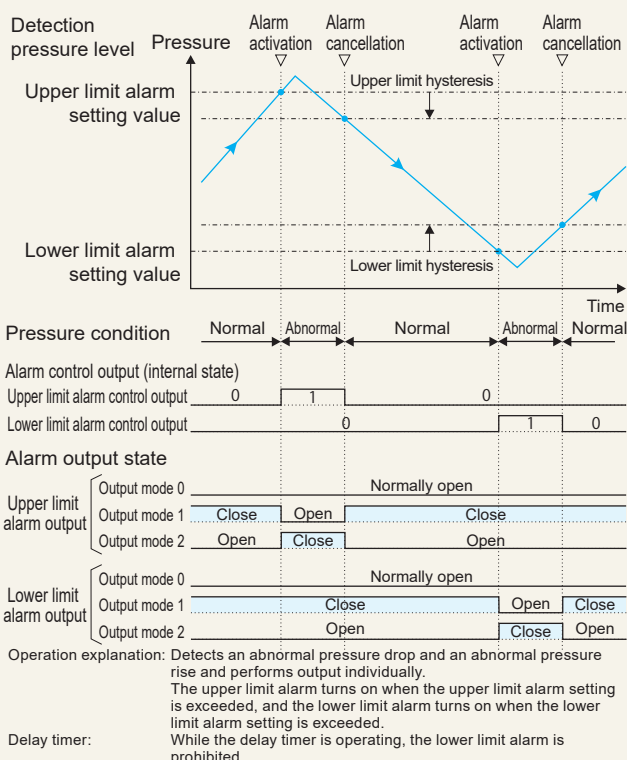


When connecting photocouplers

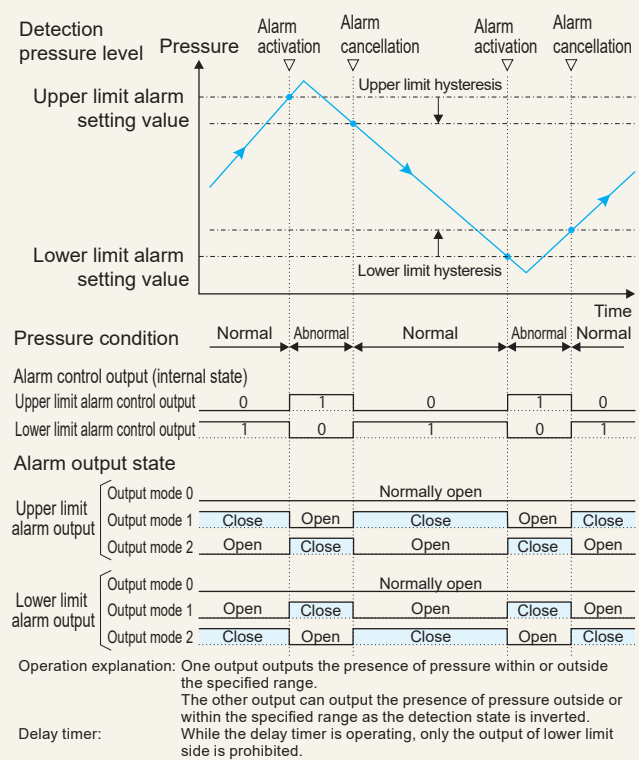


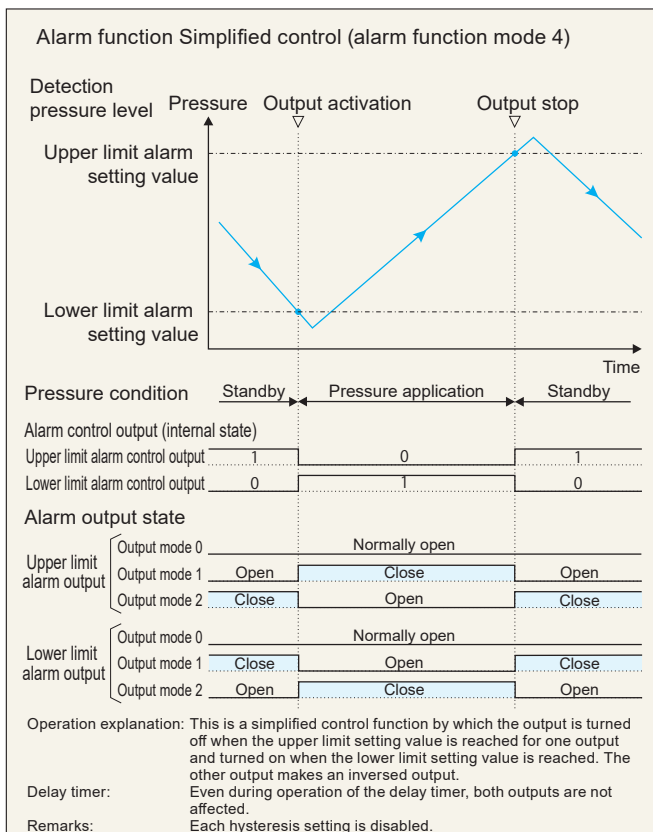
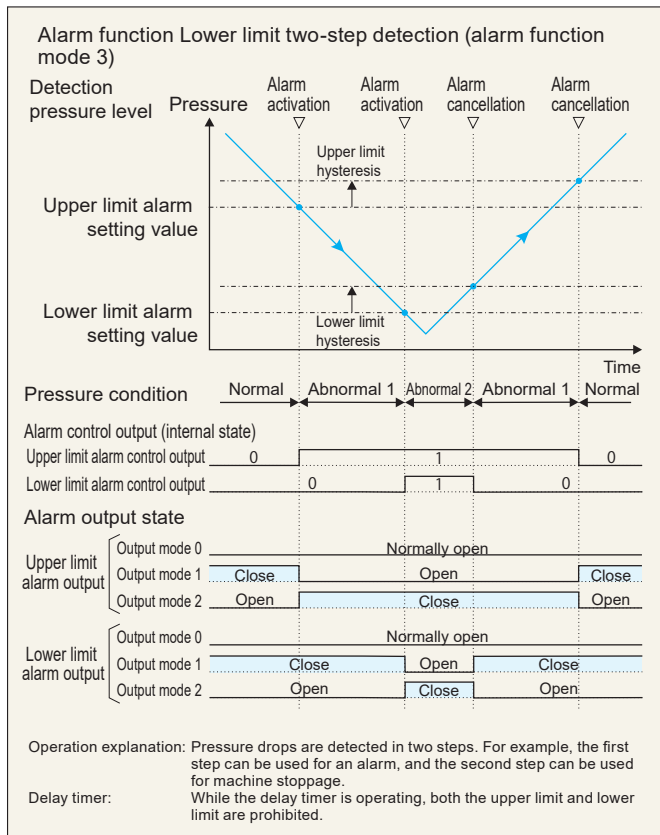
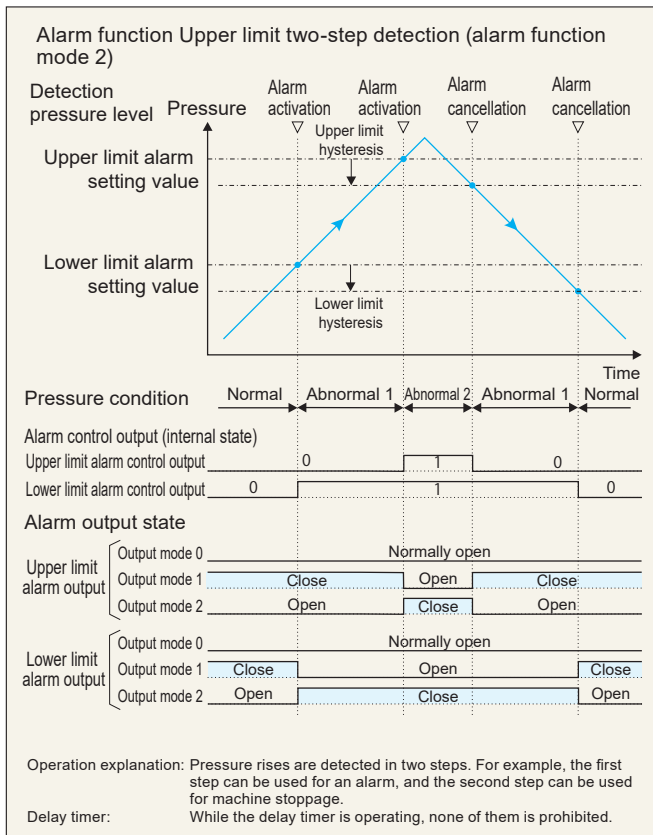
Alarm operation diagram

Alarm function Upper limit/lower limit individual detection (alarm function mode 0)

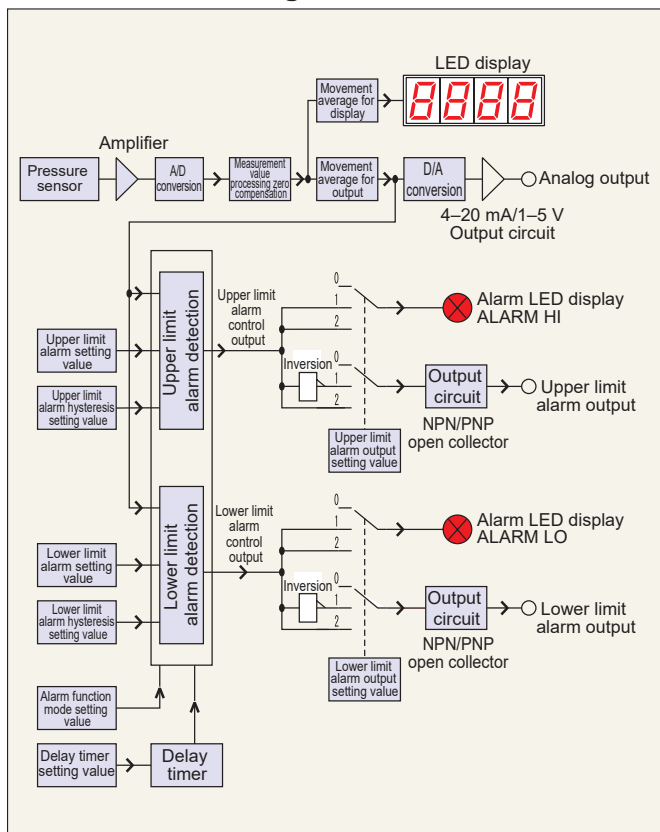


Alarm function Normal/abnormal detection (alarm function mode 1)





Functional block diagram



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



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Manufacturer



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