



PRESSURE TRANSDUCER WITH TERMINAL BOX

PA-840/848

INSTRUCTION MANUAL Ver.3.0

Thank you for purchasing NIDEC COMPONENTS CORP. product.

In order to use the product correctly and most appropriately, please completely read this manual before use and keep it for future reference.

For inquiries regarding the product, please contact:

NIDEC COMPONENTS CORPORATION

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Important Information and Warnings

[CAUTION]

These products (pressure sensors, pressure switches, pressure gauges, pressure indicators, leakage sensors, etc.) are designed and manufactured as general industrial parts. Therefore, a person with sufficient knowledge and experience shall confirm the conditions and environments described in the catalog, specifications, and instruction manual of each product, check the suitability of the product for the machine, device, or system which you use, and ensure safety before use.

These products are not intended to be used for applications particularly requiring high reliability (These include, but are not limited to, nuclear power control, aerospace and military purposes).

The details of warranty shall be as per the descriptions in this document and we shall not be liable for any damage on you resulting from the use of any equipment or device (including control systems) which is not in accordance with this document (hereinafter referred to as "use in violation"). In the case where you resell our products, we shall not be liable for any damage on a third party resulting from use in violation by the third party, and even if we make payment to the third party in connection with such use in violation regardless of the name by which such payment may be called, we may demand the whole amount thereof from you.



This caution mark indicates a chance of physical damages to the user and/or the product if it is used improperly and/or incorrectly.
The damage can be substantial.



- The product is not explosion-proof. Do not use the product in designated areas where explosion-proof specification is required.
- The product is not drip-proof/dust-proof.
- The product is designed for measurement of intended articles and does not feature control functions that ensure security, such as prevention of accidents.

Operating Precautions

- ① The applicable media are gases/liquids compatible with SUS316L and Fuloro rubber O-ring (G2 Fitting) So please be careful about compatibility with applicable media. Use of corrosive fluid may cause injury and/or malfunction of products. In addition, The product is not explosive-proof. Never use flammable fluid as media.
- ② Maintain the measuring pressure within the pressure range as stated in specifications. Pressures exceeding the maximum pressure rating may cause product failure.
- ③ Other than specified pressure media, never insert any foreign matter into the pressure port (ex.Needle) It may result in malfunction.
- ④ Use a stable DC power supply. For inductive loads such as relays and solenoids, put voltage surge protectors (diodes, varistors, etc.) in the circuit.
- ⑤ If noise tends to affect products, please install low-pass filter in the input side of analog output.
- ⑥ Cable wiring should be conducted in the state of power off. Shorting the output terminal and power terminal will damage the internal circuit. Please be careful not to wire incorrectly.
- ⑦ Torque rating for the terminal block screws is 0.5Nm max. In tightening, please do not apply excessive stress to the substrate since it may damage the substrate and terminal block.
- ⑧ Tighten wiring opening with the supplied cable gland for avoiding water intrusion (Tightening torque depends on the cable you will use, so please check its sealing level before use.) Once cable is mounted, please tighten the lid of products firmly since incomplete tightening of the lid may reduce the sealing level.
- ⑨ Please provide enough straight-part at the cable near the sensor. Bending the cable near the sensor will lead to damage or decrease in waterproof structure
- ⑩ In piping, please do so with the hexagonal portion of the fitting grabbed tightly. Tightening by grabbing only terminal box may cause damage. Also do not apply excessive force after piping.
- ⑪ Don't try to rotate span adjustment VR because that will affect analog output. In wiring please be careful not to make contact with the VR.
- ⑫ Please be careful about the possibility of products starting to have heating in measurement of pressure medium with high temperature.
- ⑬ Be careful about the possibility that the medium may become frozen. The freezing of the medium in the pressure port can cause diaphragm damage.
- ⑭ Do not put products in direct sunlight or where ozone concentrations are high since its sealing materials will be negatively affected and sealing level will deteriorate as a result.
- ⑮ Should you have any concern about products, please contact our sales office

Maintenance Precautions

- ① Make sure the product operates normally before using. Unexpected event may cause product failure and affect its basic function.
- ② Do not disassemble or modify the product. Unauthorized disassembly or modification may result in a malfunction. The product warranty does not cover failures caused by disassembly and/or modification of the product.
- ③ The cable gland and/or lid may get loose in certain usage environments and the sealing level may lower as a result. So please use a locking nut or tighten regularly.

Bundled Items

- Instruction manual (this manual)
- O-ring (Only for G2 fitting)

Model Number Designation

PA-840-103G-R2

(1) (2) (3) (4)

- (1) Model Number : PA-840 (Voltage Output)
: PA-848 (Current Output)
- (2) Pressure Range : 102R -0.1~0.1 MPa
352R -0.1~0.35 MPa
103G 0~1.0 MPa
353G 0~3.5 MPa
102A 0~0.1 MPa (abs)
- (3) Pressure Type : G Gauge Pressure
R Compound Pressure
A Absolute Pressure
- (4) Fitting : R2 (R1/4)
G2 (G1/4, With O-ring)

Specifications

Specification

Item		Specification				
Pressure range		102R	352R	103G	353G	102A
Type		Gauge				Absolute
Rated pressure		0.1MPa	0.35MPa	1MPa	3.5MPa	0.1MPa
Maximum pressure		0.2MPa	0.7MPa	2MPa	4MPa	0.2MPa
Break-down pressure		0.3MPa	1.05MPa	3MPa	4.5MPa	0.3MPa
Operating temp	PA-840	Ta : -20~80℃、Pressure port : -20~100℃				
	PA-848	Ta : -20~70℃、Pressure port : -20~100℃				
Compensation temp		0~50℃				
Operating humidity		35~85% R H				
Storage temp		-20~80℃				
Available media		Gas and liquid which does not corrode SUS316L Gas and liquid which does not corrode O-ring(Fluoro rubber)				
IP protection		IP67				
Weight		Approx. 250g				

Power supply

Item	Specification	
Power supply	PA-840	10.8~26.4VDC (include ripple)
	PA-848	21.6~26.4VDC (include ripple)
Consumption Power	PA-848	20mA Max.

Analog Output (PA-840)

Item		Specification				
Pressure range		102R	352R	103G	353G	102A
Output Voltage		1~5V				
Zero Voltage		3±0.05V	1.89±0.05V	1±0.05V		
Span Voltage		4±0.1V				
Linearity/Hysteresis		±0.5%FS				
Thermal Error	Zero	±0.06%FS/°C				
	Span	±0.06%FS/°C				

Analog Output (PA-848)

Item		Specification				
Pressure range		102R	352R	103G	353G	102A
Output Current		4~20mA				
Zero Current		12±0.2mA	7.56±0.2mA	4±0.2mA		
Span Current		16±0.4mA				
Linearity/Hysteresis		±0.5%FS				
Thermal Error	Zero	±0.06%FS/°C				
	Span	±0.06%FS/°C				
Load resistance		500Ωmax				

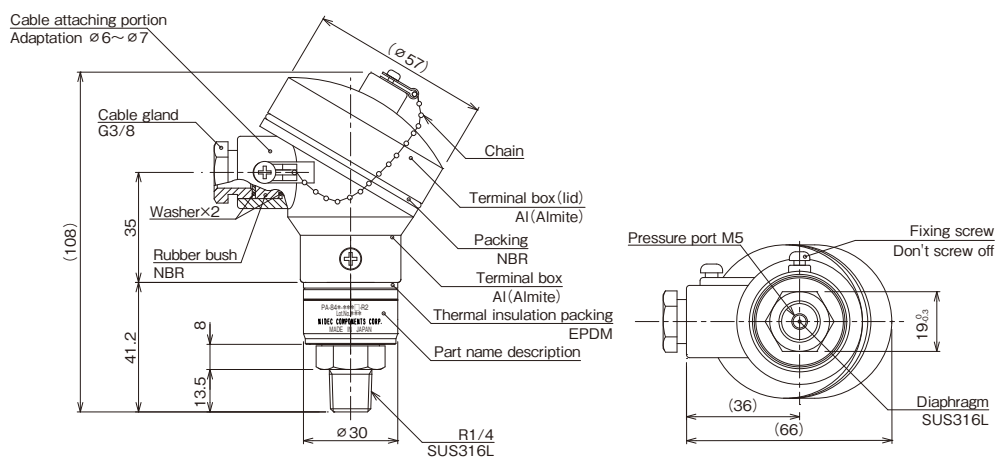
※ Atmospheric pressure is released through wiring cable (Copal recommends a cable with built-in atmospheric-pressure-releasing tube)

Please use load resistance of 500Ω if pressure applied is greater than rated pressure

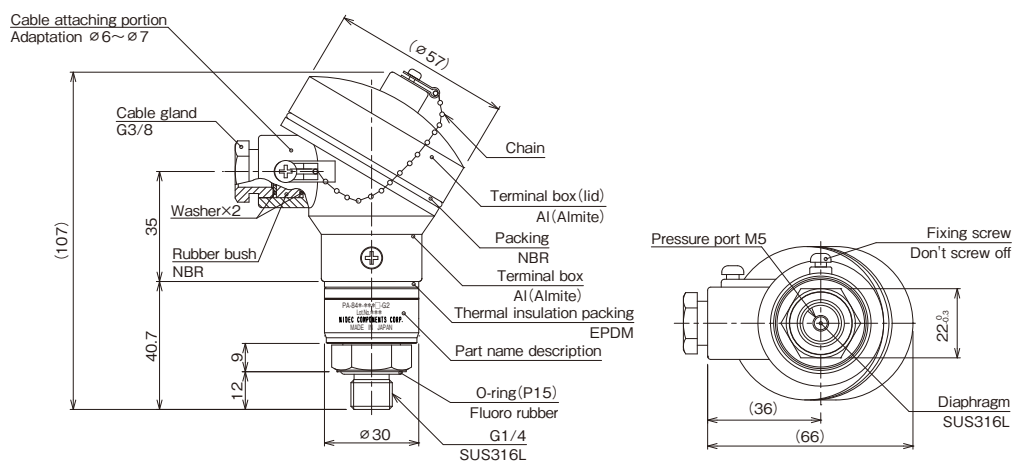
※ For more details about product, please refer to a specification sheet or catalog

External dimensions (mm)

Fitting : R2(R1 / 4)

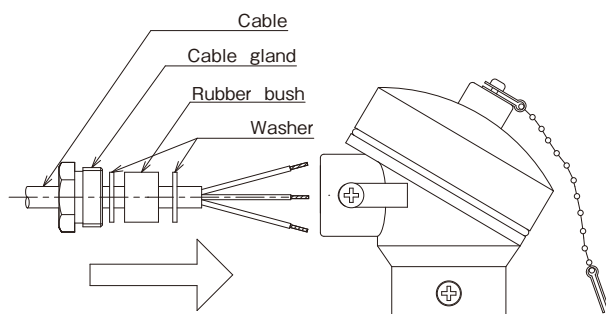


Fitting : G2(G1 / 4)



Cable Assembly

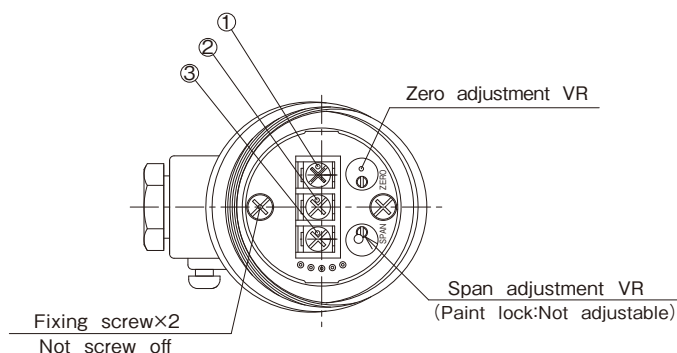
- Please assemble a cable and parts in the order shown in the figure below.
The supplied rubber bush has a hole which is made at Copal's inspection process. It may be left with certain rubber bush film, however that doesn't affect the performance of products.
- Please select a cable whose sheath is perfect circle shape and surface is flat and smooth. Copal recommends a cable with built-in atmospheric-pressure-releasing tube
(Air inlet tube containing cable recommended)



Wiring

Wiring table		
Model	PA-840	PA-848
①	Power+	Power+
②	Common	N.C.
③	Output	Output

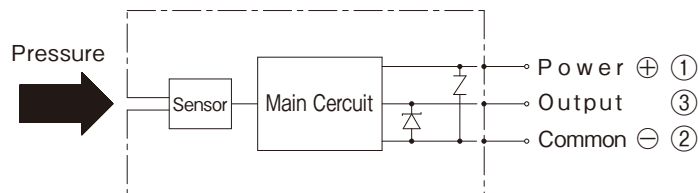
- The size of terminal block screw is M3.
- Please select a proper size of crimp terminal if you plan to use. (The width of crimp terminal is 5.7mm max.)
- The diameter of applicable terminal is AWG 14~26.



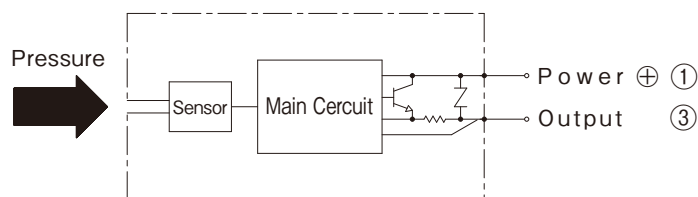
- In conducting zero-adjustment with the trimmer, please do so with atmospheric pressure released to the pressure port. Please use a precision driver for zero adjustment.
(Zero adjustment is not available for absolute pressure type, 102A.)
- Span adjustment isn't available. Please don't rotate span adjustment VR.

Internal Circuit

PA-840



PA-848



Warranty and Disclaimer

- 1) The warranty period of these products is one year after delivery to a designated place. The warranty mentioned here is limited to the warranty of a delivered product itself, and it does not cover consumables such as batteries. Each product has its own specifications such as durability (pressure cycles). Therefore, check with each service office.
- 2) If a failure or damage of the product occurs during the warranty period, for which we are responsible, we will promptly replace or repair the product free of charge. The warranty mentioned here means the warranty of the product itself and does not cover any damage induced by a failure of the product.
- 3) The warranty does not cover when any of the following items is applicable:
 - The failure is caused by conditions, environments, or handling not described in the catalogue and agreed specifications and other documents.
 - The product has been modified, adjusted, or repaired by a person/company other than our company after delivery.
 - The failure cannot be foreseen by the scientific and technological knowledge at the time of delivery.
 - The failure is caused by force majeure such as disasters.