

Nidec

PRESSURE TRANSDUCER
WITH TERMINAL BOX

PA-840/848

INSTRUCTION MANUAL Ver.2.0

Thank you for purchasing NIDEC COPAL
ELECTRONICS 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 COPAL ELECTRONICS CORPORATION

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Important Information and Warnings



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°C、 Pressure port : -20~100°C			
	PA-848	Ta : -20~70°C、 Pressure port : -20~100°C			
Compensation temp	0~50°C				
Operating humidity	35~85% R H				
Storage temp	-20~80°C				
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				

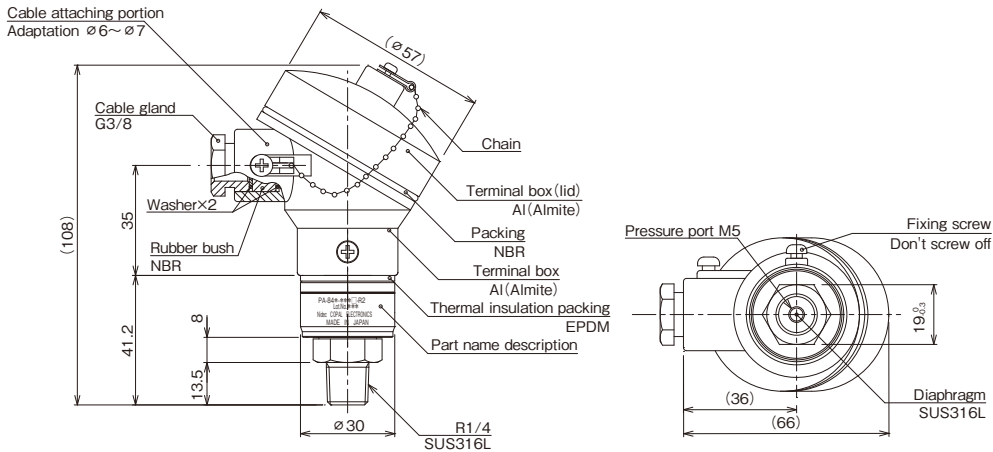
※ Atmospheric pressure is released through wiring cable (Copal recommends a cable with built-in atmospheric-pressure-releasing tube)

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

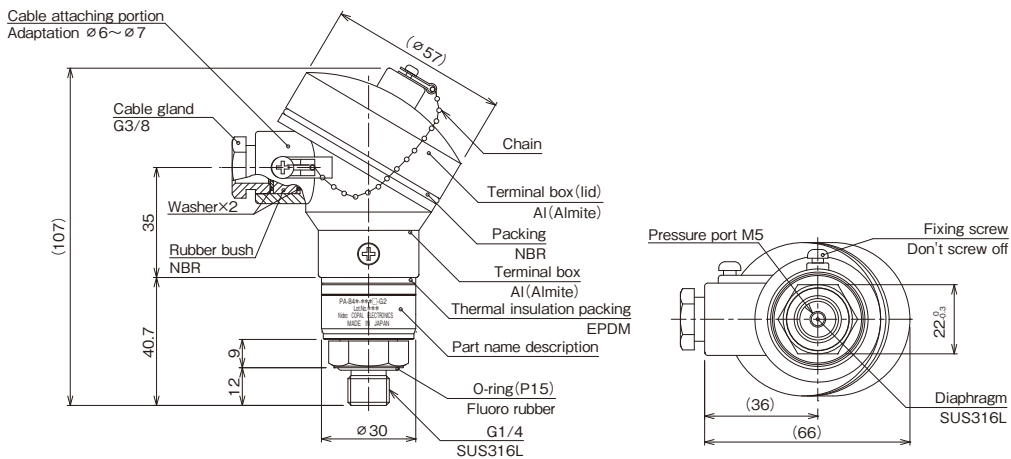
※ For more details about product, please refer to a specification sheet or catalog

External dimensions (mm)

Fitting : R2(R1 / 4)



Fitting : G2(G1 / 4)

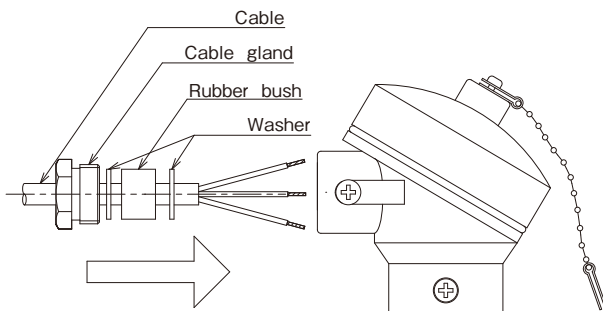


Cable Assembly

- 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.

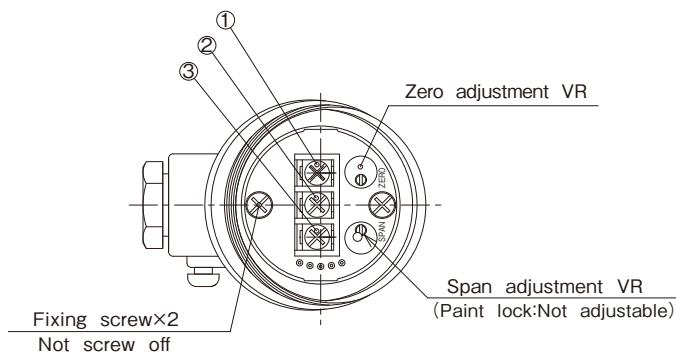
- Please select a cable whose sheath is perfect circle shape and surface is flat and smooth. Copal recommends a cable with built-in atmospheric-pressure-releasing tube
(Air inlet tube containing cable recommended)



Wiring

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

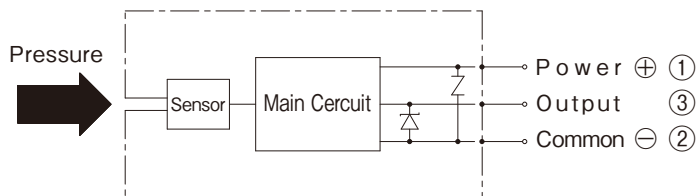
- The size of terminal block screw is M3.
- Please select a proper size of crimp terminal if you plan to use. (The width of crimp terminal is 5.7mm max.)
- The diameter of applicable terminal is AWG 14~26.



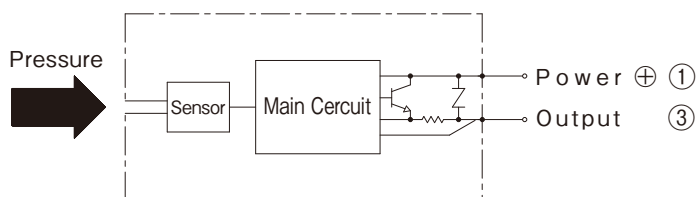
- In conducting zero-adjustment with the trimmer, please do so with atmospheric pressure released to the pressure port. Please use a precision driver for zero adjustment. (Zero adjustment is not available for absolute pressure type, 102A.)
- Span adjustment isn't available. Please don't rotate span adjustment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

Internal Circuit

PA-840



PA-848



Warranty

The warranty period for the product shall be one year. A failure due to causes attributed to design or manufacturing defects during the period one year from the date of delivery shall be repaired or replaced free of charge. However, the term "warranty" herein referred to shall imply the warranty for the product unit only, and damages from failure of the product shall be excluded. The following shall be excluded from the warranty:

- (1) Failure or damage caused by improper use and careless operation in violation of the Operating Instructions.
- (2) Failure or damage caused by inappropriate modification, adjustment, or repair.
- (3) Failure or damage caused by acts of God, fire, or other unavoidable accidents.
- (4) Replacement of accessories (cables, etc.) and supplies that come with the product.

[Note]

Copying or reprinting the entire or part of the Operating Instructions shall be prohibited except where exceptions to copyright laws apply. Furthermore, descriptions stated in the Operating Instructions are subject to change without prior notice.