

# COPAL ELECTRONICS

Pressure Transducers  
with Amp.

## PA-838-D

series

INSTRUCTION MANUAL Ver.1.1a

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 more details information please ask for the nearest distributor or the following sales center.

## COPAL ELECTRONICS

NIDEC COPAL ELECTRONICS CORPORATION

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## 1. Attention on handling



**CAUTION** ... This caution mark describes when there is a possibility that user may suffer from damage or physical damage may occur if the product is used improperly.



- The application medium of this product is corrosive gases/liquids compatible with SUS304.
  - Never insert any foreign matters, like wire or needle, into the pressure port hole. It causes the breakdown.
  - Do not apply exceeding the maximum pressure as shown in the specification. The excessive pressure may affect the sensor characteristics and may make accurate measurement impossible.
  - Do not give unnecessary force to the main body and cable when installing the product. The excessive pressure may affect the sensor characteristics and may make accurate measurement impossible.
  - Be sure to connect the output terminals correctly. Wrong connection will cause damage of the internal electric circuit.
  - Please supply a stable power source and do not exceed the specified supply voltage. It will cause damage of the electric circuit.
  - Please make a high-pressure side the same as the piping condition on a low-pressure side when you lay pipes. (Diameter and length of the tube etc.) When a transitional pressure fluctuation is caused, it causes the breakdown if the condition is not the same.
  - This product is dust proof and drip proof (to IP65 of IEC standards) and is not suitable for use in environments requiring higher standards.
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- Please supply a stable power source.
  - Place the wiring as far away as possible from the power lines carrying large power. The output becomes unstable because of the noise etc.

## 2. Part number designation

Please confirm the part number of the product you purchased.

PA-838-□□□D-□□

Fitting    Blank : Rc1/4  
            F2 : Flare fitting (7/16-20 UNF)

Rated pressure range    101 : 10kPa  
                                  501 : 50kPa  
                                  102 : 100kPa

- F2 type includes 2 pieces of flare fitting in the same package.

## 3. Instruction for use

Rated pressure, maximum pressure, and line pressure are decided to this product in each pressure range.

Be careful when you use this product.

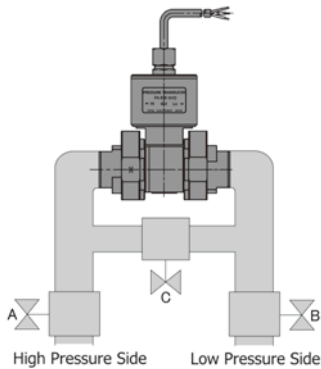
**Rated pressure** : Pressure value in which specification of differential pressure sensor is guaranteed.

(On the specification, it is provided by low pressure side is equal to 0kPa.)

**Maximum pressure** : Maximum pressure value that can be applied only to one of high pressure side or low pressure side.

**Line pressure** : Maximum pressure value in which product is not damaged when equal pressure to high pressure side and low pressure side is applied.

## 4. Installation



· Piping

The fitting for PA-838-D is Rc1/4. Use an appropriate pipe to its fitting. To secure the fitting, hold the flange-part when securing the fitting. The tightening torque of R1/4 that our company recommends is from 12N · m to 14N · m

· Valve

In order to prevent from applying pressure exceeding the specification, piping is done with the following valve. (Please refer to left figure.)

Follow the procedure below when applying pressure:

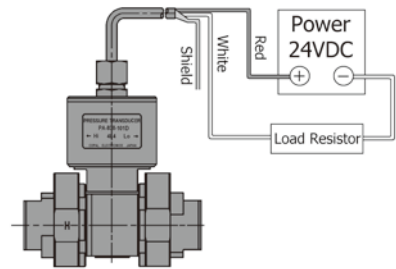
- ( I ) Valve A, B must be closed and valve C must be open when piping.
- ( II ) Slowly, open valve A.
- ( III ) When the pressure is stabilized, close valve C
- ( IV ) Slowly, open valve B

· Air-bleeding

Residual air in the piping can result in inaccurate measurement and causes difference in high-pressure side and low-pressure side which could result in developing excessive pressure. Please Air-bleed the sensor after installation. During Air-bleed, do not completely remove the air-bleed screw. Please be aware that accurate measurement can not be done without the stop ball below the air-bleed screw. Please tighten the air-bleed screw from the place where the screw stopped by 1/8 rotations. (standard tightening torque 1.5N · m)

· Wiring

Wire the red wire to DC24V (+), and white wire through load resistance (below 500ohm), and to DC.COM. In case there is a possibility of applying pressure over the rated pressure, set the load resistance to 500ohm. In case the pressure exceeds rated pressure, the 500ohm load resistance limits the power current to about 28mA, thus prevent from circuit damage caused by overloaded power current.

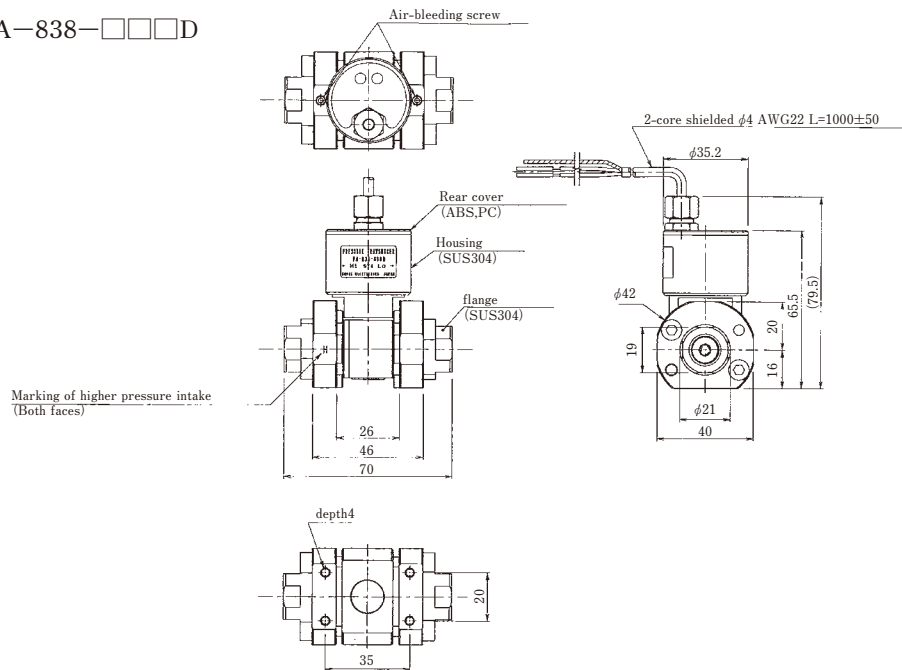


## 5. Specifications

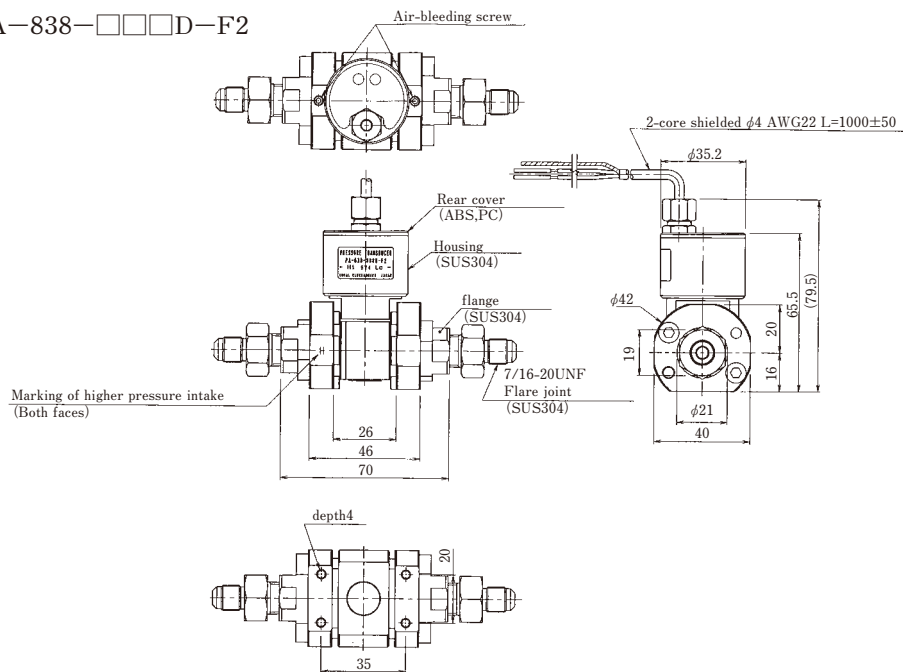
Item		Specification		
Pressure range		101	501	102
Pressure reference		Differential		
Rated pressure range		10kPa	50kPa	100kPa
Maximum Pressure(Single side)		200kPa	300kPa	500kPa
Line pressure(Both side)		2MPa		
Operating temp. range		-20~70°C		
Compensated temp. range		0~50°C		
Operating humidity		35~85%RH		
Storage temp.		-20~70°C		
Pressure medium		Corrosive gases/liquids compatible with SUS304.		
Weight		About 410g, about 500g for F2		
Enclosed liquid		Silicone oil		
Protective structure		IP65		
Supply voltage		24V±10%DC		
Output current	Zero	4±0.2mA		
	Span	16±0.2mA		
Linearity/Hysteresis		±0.5%FS		
Thermal error (0 to 50°C)	Zero	±0.10%FS	±0.05%FS	
	Span	±0.10%FS	±0.05%FS	
Response		Approx. 2ms.		
Gravitational effect		±5%FS max.	±3%FS max.	±1%FS max.

6. Outline Dimensions (unit : mm)

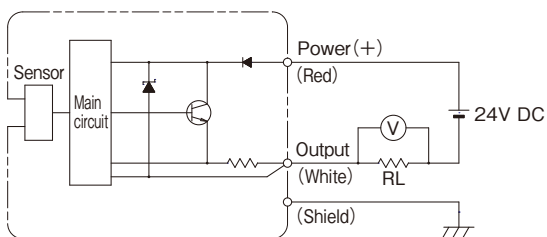
PA-838-□□□D



PA-838-□□□D-F2



7. Output Electrical Diagram



Wire color	Connection
Red	Power ⊕
White	Output
Shield	-

## 8. Warranty

This product is covered by a warranty for a period of one year from the date of delivery. This warranty covers free-of-charge repair and replacement for defects occurring through design or manufacturing inadequacy of NIDEC COPAL ELECTRONICS CORP. Even during the warranty period, the following failures will be handled on a fee basis.

- (1) Failures or damages occurring through misuse or disoperation performed not following the instruction manual.
- (2) Failures or damages occurring through improper modification, adjustment, or repair.
- (3) Failures or damages occurring through natural calamities, fires or other inevitable accidents.
- (4) Replacement of accessories (e.g. O-ring rubber, etc.)