NIDEC COMPONENTS CORPORATION
Pressure Transducer with Built-in Amplifier
**PA-920S/928S**
CE marking/RoHS
(Compliance with EMC & RoHS standards)
Instruction Manual Ver.2.0

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

## 【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.

## ◆Operating Precautions

⚠①Applicable media are gases/liquids which would not cause the corrosion of SUS316L. Using corrosive media may cause injury and/or malfunction of the product. And the product is not explosive proof so that never use flammable fluid as media.
②Use stable regulated direct current for power supply. When using switching power supply, please earth the terminal FG.
③When connecting inductive loads such as relays of solenoids with the same curcuit for PA-920S/928S use surge absorbining devices (diodes, varistors, etc).
⚠④Turn off the power while wiring. Also, please do not mis-wire.
⑤Do not wire parallel to high tension cables or power lines and also in the same pipe arrangement.
⑥Cables connectors should be removed from the product while piping.
⑦When cleaning the product to remove any stain, use the cloth which contains a little pure alcohol. Prevent from any cleaning material enter into the product.
⑧This product is dust proof and drip proof (to IP40 of IEC standards). Using the product at any environment higher than this standard, the product is out of gurarantee.
⑨Do not insert any foreign material such as needle into the pressure port. It may damage diafram inside and may result with malfunction.
⑩Do not touch or scratch the edge of fitting, as it may damage the sealing and cause leakage.
⑪Analog output may have noise sumperimpose. Low-pass filter is requested in the circuit. And ground a remote controller.
⑫As contermeasure for EMC, earth the power supply. Also, please connect the fitting block to an earthed metalic casing or to the ground. The product is not thunder surge resistance, therefore do not use this product at unprotected outdoors or extend the cable to oover 30M.
⑬Please use the optional CN (5P) cable for wiring.
⑭When insertion and removal of the connector, check the direction of key slot and handle with care. Inadequate insertion and/or removal of the connector may cause failure.

## ◆Model

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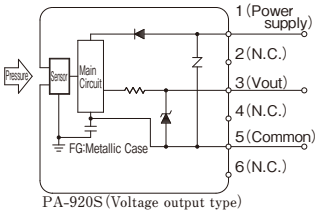
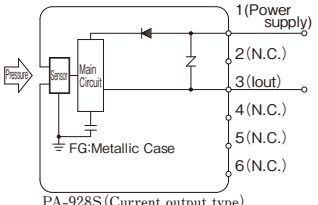
(1) (2) (3) (4)

(1)Model
PA-920S：Voltage output (1 to 5V)
PA-928S：Curent output (4 to 20mA)
(2)Pressure range
502G： 0～0.5MPa
502R：－0.1～0.5MPa
103G： 0～1.0MPa
103R：－0.1～1.0MPa
(3)Pressure reference
G：Gauge pressure (Positive)
R：Gauge pressure (Compound)
(4)Fitting
W 2：1.125 W-seal block
C 2：1.125 C-seal block
VCF：Straight fitting with metal gusket joint (female)
UJR：Straight fitting with union gusket joint (male)
V C：Straight fitting with metal gusket joint (male)
TVC：T-fitting with metal gusket joint (male)

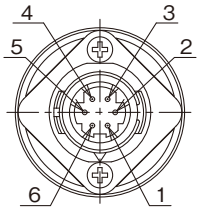
## ◆Internal Circuit/Wiring



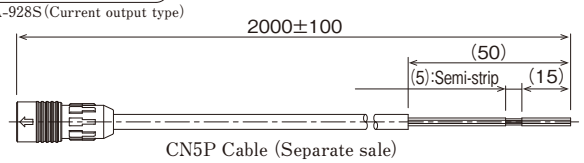
PA-920S (Voltage output type)



PA-928S (Current output type)



Connector (Sensor side)
HR30-6R-6P (Hirose)



CN5P Cable (Separate sale)
Cable model:2517VVC AWG#26×3
Connector (Cable side) ：HR30-6P-6S (31) (Hirose)

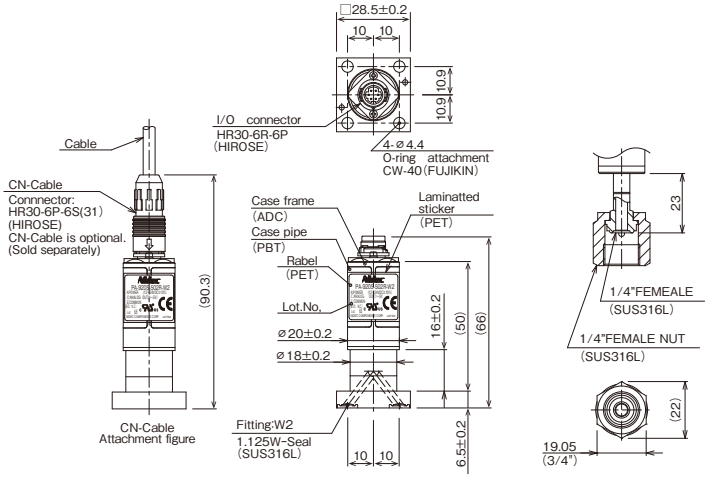
| Terminal | Wire color | PA-920S | PA-928S |
|---|---|---|---|
| 1 | Red | Power supply(12～24VDC±10%) | Power supply(24VDC±10%) |
| 2 | - | N.C. | N.C. |
| 3 | White | Voltage output (1～5V) | Current output (4～20mA) |
| 4 | - | N.C. | N.C. |
| 5 | Black | Common | N.C. |
| 6 | - | N.C. | N.C. |

## ◆Supecification

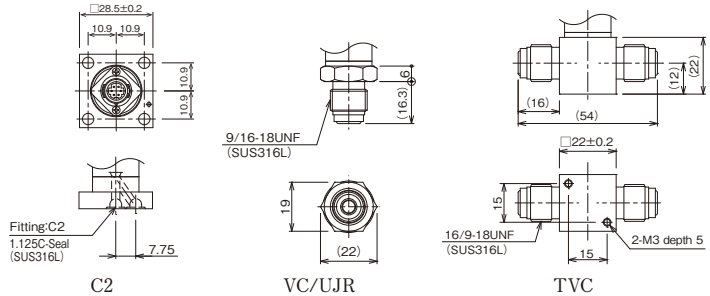
| Spec item | Model | PA-920S (Voltage output type) | | PA-928S (Current output type) | |
|---|---|---|---|---|---|
| | Pressure range | 502G/R | 103G/R | 502G/R | 103G/R |
| Pressure | Type | Gauge pressure (G: Gauge、R: Compound) | | | |
| | Rated pressure range | 0.5MPa | 1.0MPa | 0.5MPa | 1.0MPa |
| | Maximum Pressure | 0.75MPa | 1.5MPa | 0.75MPa | 1.5MPa |
| | Vacuum pressure | $1.4\times10^{-4}$ Pa abs maximum | | | |
| | Leakage | $5\times10^{-12}$ Pa·m³/sec maximum (He Leake) | | | |
| | Acceptable medium | Gas and liquid which does not corrode SUS316L | | | |
| Power supply | Operating voltage | 12～24VDC±10% (include ripple) | | 24VDC±10% (include ripple) | |
| | Current consumption | 20mA maximum (not include output current) | | — | |
| | Insulation resistance | DC125V, 50MΩ minimum/Between bundled electrical wirings and the pressure port. | | | |
| | Dielectric strength | DC125V 1minuts (current leakeage:5mA max.) /Between bundled electrical wirings and the pressure port. | | | |
| Analog output | Output method | Voltage output (1～5V) | | 2wire,Current output (4～20mA) | |
| | Range of output | G : 0～0.5MPa | G : 0～1.0MPa | G : 0～0.5MPa | G : 0～1.0MPa |
| | | R : -0.1～0.5MPa | R : -0.1～1.0MPa | R : -0.1～0.5MPa | R : -0.1～1.0MPa |
| | Vzero/Izero | G : 1V | | G : 4mA | |
| | | R : 1.67V | R : 1.36V | R : 6.67mA | R : 5.46mA |
| | Vfull/Ifull | G/R : 5V | | G/R : 20mA | |
| | Load resistance | 5kΩ minimum (1MΩ or more recommended) | | 250～500Ω | |
| | Output accuracy | ±1%FS (include adjustment eror and LIN/HYS) | | | |
| | Thermal error | ±0.1%FS/℃ (0～50℃, reference temperature at 25℃.) | | | |
| | Response | Approx.2ms | | | |
| Pressure contact | Fitting | Select model (W2/C2/VCF/UJR/VC/TVC) | | | |
| | Material | SUS316L | | | |
| | Roughness | (Ra: 0.15μm, Rz: 0.7μm) maximum | | | |
| | Particle | Zero count for size 0.1μm or greater (by our inspection standard) | | | |
| Use conditions | Operating temp. | -20～70℃ | | | |
| | Operation humidity | 35～85%RH (No condensation) | | | |
| | storage temp. | -20～80℃ (Atmospheric pressure , 65%RH maximum) | | | |
| Environment Characteristics | Vibration | 10～500Hz 1.5mm max./98.1m/s2 3 directions, 2 hours each (Note1.) | | | |
| | Shock | 490m/s², 3 directions for 3 times each. (Note1.) | | | |
| | Humidity | 40℃, 90～95%RH, 240hrs. (Note1.) | | | |
| | Pressure cycle | 0～Rated pressure range, $10^6$ cycles (Note1.) | | | |
| Others | EMC | EN55011:2009, A1:2010 Group1,ClassA<br>EN61326-1:2013 (Table2) , -2-3:2013 (Table101,AnnexBB)<br>Change in analog output Zero/Span during the EMC test are ±5%FS maximum. | | | |
| | IP protection | Close type structure (EC standard: P40) | | | |
| | Net weight | W2/C2/VCF: Approx.90g, UJR/VC: Approx.80g, TVC: Approx.130g | | | |
| | Accessories | Instruction manual (sole separately: CN5P cable) | | | |

Note1. Change in analog output Zero/Span after the test are ±2%FS maximum.

## ◆Outline



Outline W2 VCF



C2 VC/UJR TVC

## ◆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.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For inquiry and opinion concerning the product, please contact us or your sales agancy.