

User's Manual of Small Pressure Sensor (VUS12 Series)

Thank you for purchasing PISCO small pressure sensor. In order to safely handle the sensor, please be sure to read and understand this User's Manual before using it. Please keep this manual handy with care so you can refer to this manual as necessary.

Safety instructions are classified into "danger", "warning", and "cautions" depending on the grade of damage or danger involved when the safety instructions are not complied with in handling.

! Danger Failure to heed the warning of apparent danger may result in death or serious injuries.

! Warning Failure to heed the warning of conditionally dangerous situations may result in death or serious injuries.

! Caution Failure to heed the warning of conditionally dangerous situations may result in minor or not too serious injuries or damage to properties.

! Warning

- The sensor must not be used in the atmosphere or gas where corrosive substance is dissolved. To do so can cause damage to the sensor.
- Avoid using the sensor in the inflammable and explosive gas, liquid or atmosphere. The sensor is not designed as explosion-proof and may cause fire or explosion.

! Caution

- The sensor is for air or inert gases.
- An applied or impressed wiring such as with noise may cause functional failure of the sensor.
- Make sure that the power supply is turned off when wiring. Make sure of the color of the lead wires and terminal numbers so that the output terminal and the power supply terminal or the common (-) terminal shall not be shorted out. If it happens, it can cause damage to the sensor.
- The sensor shall not be used to generate heat across a specified service temperature range. In such a case, it can cause damage to the sensor.
- There is a possibility of receiving an electric shock if a wiring terminal area (bare live part) is touched. Please be sure to work after turning off the power at the time of wiring. Please do not touch a live part by the wet hand.
- The stable direct-current power should be supplied.
- Please put a surge voltage absorption circuit into the apparatus (a relay, a valve, etc.) connected to an output terminal or a power supply terminal. The usage exceeding amperage rating should be avoided.
- When using the unit current such as the switching current, make sure that the FG terminal is grounded.
- The output terminal shall never be short circuited with other terminals.
- Please do not give excessive load to the main body of the sensor. Doing so may cause damage to the sensor.
- The sensor is not a drip-proof and a dustproof structure. Please do not use it in getting water drop, oil drop, or dust.
- When you perform pressure regulation of the sensor with a switch output, with reference to Fig-1, please do not apply excessive force but turn the trimmer gently with an attached small screwdriver.

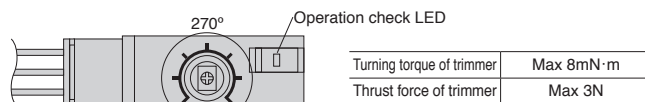


Fig-1, turning angle limit of the trimmer

- Avoid applying an extreme pulling or bending of connector or lead wires that may cause disconnection of wire or breakage.
- When other apparatus is connected to the same power supply for the sensor, where the "-" side (COM) is intercepted, if the switch (SW) output terminal is short-circuited with "-" pole with the operational test switch for a load, reverse current will flow in the switch output circuit, and the sensor will be damaged. When you use it in such a circuit, please install reverse current prevention diodes by direction of Fig-2 on the "-" power supply line, or on the switch (SW) output line.

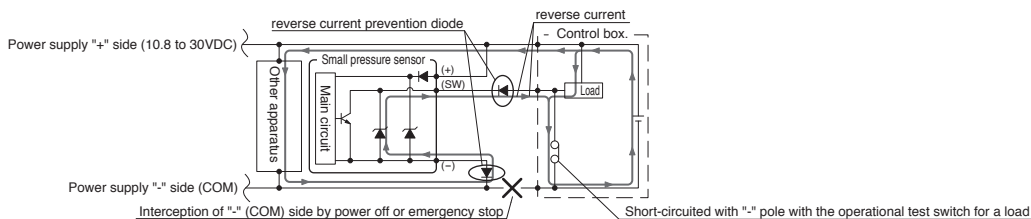


Fig-2

1.Characteristics

- With a separate indicator, a remote display using analog output is possible.

2.Specification

| | Switch output type | Analog output type |
|---------------------------|---|---------------------------|
| Fluid admitted | Air, Inert gas | |
| Pressure detection method | Diffusion semiconductor pressure switch | |
| Supply voltage | 10.8 to 30VDC (including ripple) | |
| Service pressure range | -100 to 0kPa | |
| Proof pressure | 1MPa | |
| Storage temp. range | -20 to 70°C (atmospheric pressure, max 60%RH) | |
| Operating temp. range | 0 to 60°C (without freezing) | |
| Operating humidity range | 30 to 85%RH (without freezing) | |
| Protective structure | Equivalent to IP40 of IEC standard | |
| No. of pressure setting | 1 | |
| Switch output | NPN open collector output: max. 30V80mA (residual voltage: max. 0.8V) | |
| Operation indication | N.O. (red LED lights up on or higher set vacuum) | |
| Differential response | Fixed (max. 2% of full span) | |
| Operation accuracy | Max. +/-3% of full span (at Ta=25 °C) | |
| Response | About 1msec. | |
| Pressure setting range | -100 to 0kPa | |
| Output voltage | | 1 to 5V |
| Zero point voltage | | 1 +/-0.04V |
| Voltage at -90kPa | | 4.6 +/-0.04V |
| Thermal characteristic | | Max. +/-2% of full span |
| Linearity | | Max. +/-0.5% of full span |
| Output impedance | | 1kΩ |

3.Wiring

Switch output type

- Make sure to shut off the power before and during wiring.
- At the time of wiring, make sure to confirm the color of lead wires and terminal output.
 - Brown: V+ (10.8 to 30VDC)
 - Blue: com (-)
 - Black: SW OOUT (NPN open collector output)
- Please refer to Fig-3 for wiring connection.
- Do not apply excessive tension or bend to the connector or cables.

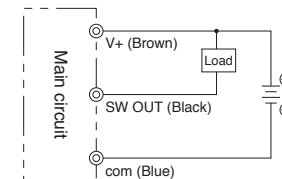


Fig-3

Analog output type

- Make sure to shut off the power before and during wiring.
- At the time of the wiring, make sure to confirm the color of lead wires and terminal output.
 - Brown: V+ (10.8 to 30VDC)
 - Blue: com (-)
 - Black: Analog OUT (1 to 5V)
- Please refer to Fig-4 for wiring connection.
- Do not apply excessive tension or bend to the connector or cables.

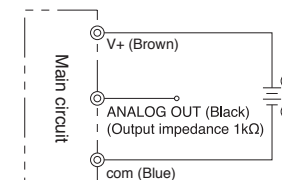


Fig-4

4.Pressure setting

Switch output type

- Supply electricity (supply direct current after checking the wiring.)
- Set to the desired pressure with turning pressure setting trimmer by an auxiliary small screwdriver.
- Apply pressure and confirm if the sensor actually operates. (The operations check LED lights up on or higher set vacuum.)

Analog output type

- Supply electricity (supply direct current after checking the wiring.)
- Confirm the actual analog output (1 to 5V) by a tester.

※ For other details, please contact the following.

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