For your safety, please read the following before using.

1. Do not use corrosive or flammable gas or liquid with this product.
2. Please use within the operating pressure range. Do not apply pressure beyond the recommended maximum pressure, permanent damage to the pressure sensor may occur.
3. Do not drop, hit or allow excessive shock. Even if switch body appears undamaged, internal components may be damaged and switch may malfunction.
4. Turn power off before connecting wiring. Improper wiring or a short circuit will damage and/or cause malfunction.
5. Do not use in environment containing steam or oil vapor.
6. This product is not explosion-proof rated. Do not use in atmosphere containing flammable or explosive gases.
7. Wiring for pressure sensor should avoid power source line and high voltage line. If used in the same circuit, noise may cause malfunction.

**Output Circuit Wiring Graph**

- **VDSN**
  - NPN output

- **VDSP**
  - PNP output

**Panel Instructions**

- **Switch (OUT1)**
  - (Green LED)
- **Switch (OUT2)**
  - (Red LED)

- **Button**
  - Use the A button to change setting mode and pre-set desired value.
  - Use the V button to change setting mode and pre-set final desired value.

- **3 1/2 digit LED display**
  - Display the measured pressure value, each set content and error code.

**Dimension**

**Installation**

1. This product has two inlet pressure ports, select the one most convenient for installation.
2. Please plug the unused inlet port with supplied port plug. Use seal tape to prevent pressure leak.
## Specification

<table>
<thead>
<tr>
<th>Specification</th>
<th>Data / Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated pressure range</td>
<td>0.0 ~ -101.3kPa</td>
</tr>
<tr>
<td>Setting pressure range</td>
<td>10.0 ~ -101.3kPa</td>
</tr>
<tr>
<td>Withstand pressure</td>
<td>300 kPa</td>
</tr>
<tr>
<td>Fluid</td>
<td>Air, Non-corrosive gases, incombustible gases</td>
</tr>
<tr>
<td>Set pressure resolution</td>
<td>kPa: 0.1</td>
</tr>
<tr>
<td></td>
<td>MPa: —</td>
</tr>
<tr>
<td></td>
<td>kgf/cm²: 0.001</td>
</tr>
<tr>
<td></td>
<td>bar: 0.001</td>
</tr>
<tr>
<td></td>
<td>psi: 0.01</td>
</tr>
<tr>
<td></td>
<td>lnHg: 0.1</td>
</tr>
<tr>
<td></td>
<td>mmHg: 1</td>
</tr>
<tr>
<td></td>
<td>mmH₂O: 0.1</td>
</tr>
<tr>
<td>Power supply voltage</td>
<td>12 to 24VDC ±10%, Ripple (P-P) 10% or less</td>
</tr>
<tr>
<td>Current consumption</td>
<td>≤55mA</td>
</tr>
</tbody>
</table>

**Switch output**
- NPN: open collector 2 outputs Max. load current: 80mA Max. supply voltage: 30VDC Residual voltage: ≤1V (load current 80mA)
- PNP: open collector 2 outputs Max. load current: 80mA Max. supply voltage: 24VDC Residual voltage: ≤1V (load current 80mA)

**Repeatability (Switch output)**: ±0.2% F.S. ±1digit

**Hysteresis**
- Adjustable

**Window comparator mode**: Fixed (3 digits)

**Response time**: ≤2.5ms (chattering-proof function: 24ms, 192ms and 768ms selections)

**Output short circuit protection**: Yes

**7 segment LED display**: 3 1/2 digit LED display (Sampling rate: 5 times/1sec.)

**Indicator accuracy**: ≤±2% F.S. ±1 digit (ambient temperature: 25 ±3°C)

**Indicator**: Green LED (OUT1) Red LED (OUT2)

**Analog output**: Output voltage: 1 to 5V ±±2.5% F.S. (within rated pressure range) Linearity: ±±1% F.S.

**Enclosure**: IP 65

**Ambient temp. range**: Operation: 0 ~ 50°C, Storage: -20 ~ 60°C (No condensation or freezing)

**Ambient humidity range**: Operation/Storage: 35 ~ 85% RH (No condensation)

**Withstand voltage**: 1000VAC in 1-min (between case and lead wire)

**Insulation resistance**: 50Mohm min. (at 500VDC, between case and lead wire)

**Vibration**: Total amplitude 1.5mm, 10Hz-55Hz-10Hz scan for 1 minute, two hours each direction of X, Y and Z

**Shock**: 980m/s² (100G), 3 times each in direction of X, Y and Z

**Temperature characteristic**: ±±2% F.S. of detected pressure (25°C) at temp. Range of 0~50°C

**Port size**: 1/8"NPT, G1/8"

**Lead wire**: Oil-resistance cable (0.15mm²)

**Weight**: Approx.*95g (with male connector)
Operating / Installation Instructions: VDSN,P Vacuum Switch Series

① Cordset W/ M12 Female Connector

QDS-12-5F

② Mounting Bracket MB

Mounting bracket A

Mounting bracket B

③ Panel Mount PMC

Front protective lid C

Panel adapter A

Panel adapter B ≤4.5mm

36×36 ± 0.3mm

A

B

C

IP65 Protector

Dustproof protector

Caution:
This device must be installed to maintain IP 65 (Dust and splash proof) enclosure rating.
**SETTING STEPS**

- Measure mode
- Initial Setting
- Pressure Setting
- Zero point Setting

**INITIAL SETTING MODE**

**Measure Mode**

- Press (SET) button for more than 3 seconds.

**Unit Setting**

- Use the ▲ or ▼ button to set desired pressure unit.

**OUT1 Mode Setting**

- NO Mode
- NC Mode

**OUT2 Mode Setting**

- NO Mode
- NC Mode

**Response Time Setting**

- Use the ▲ or ▼ button to select response time.

**Pressure Value Setting (Auto/Manual)**

- Use the ▲ or ▼ button to select auto/ manual setting.
**PRESSURE SETTING MODE**

Select auto/manual setting mode during initial set-up

**Manual setting mode**

- **Measure mode**
  - OUT1
  - OUT2

**Auto setting mode**

- **Measure mode**
  - OUT1
  - OUT2

**NOTE:**

1. The LED shows (P_*) at normal open mode and (n_*) at normal close mode.
Pressure setting value is shown normally and will not lead to pressure sensor pause or stop working.

2. Change pressure value:
   - Press A button, each press will increase one digit. Keep pressing the A button, the pressure value will keep increasing.
   - Press V button, each press will decrease one digit. Keep pressing the V button, the pressure value will keep decreasing.

**Output Type**

**Hysteresis Mode:**

- P1(n1)>P2(n2)
- P3(n3)>P4(n4)

Output hysteresis value can be pre-set.

**Window comparator mode:**

Within pressure setting range, pressure sensor output can be ON or OFF.

**NOTE:**

When hysteresis mode setting is within 2 digits, if the input and pre-set pressure is quite near, pressure sensor output might cause chattering.

**NOTE:**

Hysteresis is fixed in 3 digits. Pressure value level setting: At least 6 digits.
ZERO POINT SETTING / THE MAX. & MIN. DISPLAY MODE

Zero setting:
Press the \(\uparrow\text{A}\) button at the same time until the "00" is shown. Release the button to end zero setting.

The Max. value display mode:
Press \(\text{A}\) button 2 seconds to enter the max. value mode, pressure sensor will detect the max. value and keep display.
Press \(\text{A}\) button 2 seconds to return to measure mode.

The Min. value display mode:
Press \(\downarrow\) button 2 seconds to enter the min. value mode, pressure sensor will detect the min. value and keep display.
Press \(\downarrow\) button 2 seconds to return to measure mode.

KEY LOCK/UNLOCK MODE

Measure mode

Use \(\uparrow\text{A}\) to select key lock/unlock mode. Key lock mode can prevent operation mistakes.

ERROR CODE INSTRUCTION

<table>
<thead>
<tr>
<th>Error Name</th>
<th>Error code</th>
<th>Error instruction</th>
<th>Troubleshooting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exceed load current error OUT1</td>
<td>(\text{tr})</td>
<td>Excess load current of 80 mA</td>
<td>Turn power off and check the cause of overload current.</td>
</tr>
<tr>
<td>Residual pressure error OUT2</td>
<td>(\text{tr})</td>
<td>During zero reset, ambient pressure is over ±3 %F.S.</td>
<td>Change input pressure to ambient pressure and perform zero reset again.</td>
</tr>
<tr>
<td>Applied pressure error</td>
<td>(\text{tr})</td>
<td>The applied pressure is the upper limit of pressure setting.</td>
<td>Adjust the pressure within applied pressure range.</td>
</tr>
<tr>
<td>Applied pressure error</td>
<td>(\text{tr})</td>
<td>The applied pressure is the lower limit of pressure setting.</td>
<td>Turn power off, and then restart. If error condition remains, please return to factory for inspection.</td>
</tr>
</tbody>
</table>

CHANGE PRESSURE UNIT TAG

When the pressure setting is not kPa, please remove the pressure unit tag and place the selected tag on the indicated area of the faceplate to assure the pressure unit is not misemployed and that setting error does not occur.

[NOTE] When using a unit mmHg, please multiply display value by 100.