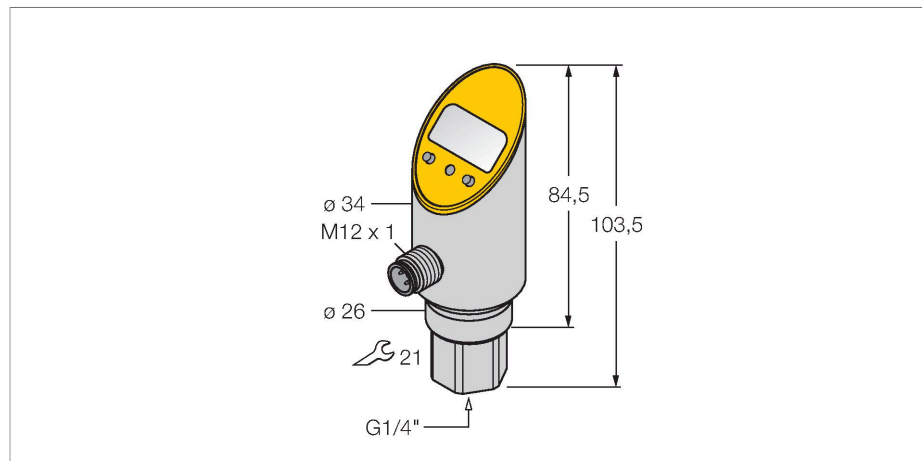


# PS01VR-301-2UPN8X-H1141

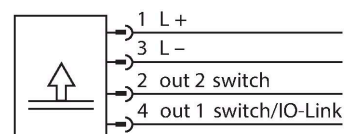
## Pressure sensor – 2 PNP/NPN Transistor Switching Outputs



### Features

- Rigid process connection, non-rotatable body
- Reading of adjusted values without tool
- Recessed pushbutton and keylock for secure programming
- Permanent indication of pressure (bar, psi, kPa, MPa, misc)
- Peak pressure memory
- Pressure range -1...0 bar rel.

### Wiring diagram



### Technical data

|                                           |                                  |
|-------------------------------------------|----------------------------------|
| Type                                      | PS01VR-301-2UPN8X-H1141          |
| ID                                        | 6833312                          |
| Medium temperature                        | -40...+85 °C                     |
| Pressure type                             | Relative pressure                |
| Pressure range                            | -1...0 bar                       |
|                                           | -14.5...0 psi                    |
|                                           | -0.1...0 MPa                     |
| Admissible overpressure                   | ≤ 5.5 bar                        |
| Burst pressure                            | ≥ 5.5 bar                        |
| Response time                             | < 3 ms                           |
| <b>Power supply</b>                       |                                  |
| Operating voltage $U_b$                   | 18...30 VDC                      |
| Current consumption                       | ≤ 50 mA                          |
| Protective measure                        | SELV; PELV according to EN 50178 |
| Short-circuit/reverse polarity protection | yes / yes                        |
| Insulation class                          | III                              |
| <b>Outputs</b>                            |                                  |
| Output 1                                  | Switching output or IO-Link mode |
| Output 2                                  | Switching output                 |
| <b>Switching output</b>                   |                                  |
| Communication protocol                    | IO-Link                          |
| Output function                           | NO/NC, PNP/NPN                   |
| Accuracy                                  | ± 0.5 % FS BSL                   |
| Rated operational current                 | 0.2 A                            |

### Functional principle

The pressure sensors in the PS product series operate with ceramic measuring cells. As a result of the pressure acting on the ceramic substrate, a signal that is proportional to the pressure is generated and processed electronically. The processed signal is available either as a switching or an analog output signal, depending on the sensor type used. Maximum flexibility thanks to a rigid or rotatable sensor body, a variety of thread types, front-flush or dead-space-free pressure membranes and an accuracy of 0.5 % of full scale guarantee a safe connection to the process.

## Technical data

|                                                |                                                                                                           |
|------------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| Switching frequency                            | ≤ 180 Hz                                                                                                  |
| Switching point distance                       | ≥ 0.5 %                                                                                                   |
| Switch point:                                  | (Min. + 0.005 × range)...100 % of full scale                                                              |
| Release point(s)                               | min up to (SP - 0.005 x range)                                                                            |
| Switching cycles                               | ≥ 100 mil.                                                                                                |
| <b>IO-Link</b>                                 |                                                                                                           |
| IO-Link specification                          | V 1.0                                                                                                     |
| Transmission physics                           | corresponds to 3-wire physics (PHY2)                                                                      |
| Transmission rate                              | COM 2 / 38.4 kbps                                                                                         |
| Process data width                             | 16 bit                                                                                                    |
| Measured value information                     | 14 bit                                                                                                    |
| Switching point information                    | 2 bit                                                                                                     |
| Frame type                                     | 2.2                                                                                                       |
| Programming                                    | FDT / DTM                                                                                                 |
| Accuracy                                       | ± 0.5 % FS BSL                                                                                            |
| Included in the SIDI GSDML                     | Yes                                                                                                       |
| Programming options                            | switch/release point, PNP/NPN; NO/NC; hysteresis/window mode, muting; pressure unit, peak pressure memory |
| <b>Mechanical data</b>                         |                                                                                                           |
| Housing material                               | Stainless-steel/Plastic, 1.4305 (AISI 303)                                                                |
| Process connection                             | G 1/4" female thread                                                                                      |
| Pressure connection material                   | Stainless steel 1.4305 (AISI 303)                                                                         |
| Material pressure transducer                   | Ceramic Al <sub>2</sub> O <sub>3</sub>                                                                    |
| Sealing material                               | FPM spez.                                                                                                 |
| Wrench size pressure connection / coupling nut | 21                                                                                                        |
| Max. tightening torque of housing nut          | 35 Nm                                                                                                     |
| Electrical connection                          | Connector, M12 × 1                                                                                        |
| Protection class                               | IP67<br>IP69K                                                                                             |
| <b>Environmental conditions</b>                |                                                                                                           |
| Ambient temperature                            | -40...+80 °C                                                                                              |
| Storage temperature                            | -40...+80 °C                                                                                              |
| Shock resistance                               | 50 g (11 ms) acc. to IEC 68-2-27                                                                          |
| Vibration resistance                           | 20 g (9...2000 Hz), according to IEC 68-2-6                                                               |
| EMV                                            | EN 61000-4-2 ESD:4 kV CD / 8 kV AD<br>EN 61000-4-3 HF radiated: 15 V/m<br>EN 61000-4-4 Burst: 2 kV        |

## Technical data

EN 61000-4-5 Surge: 1000 V, 42 Ohm  
EN 61000-4-6 HF cable bound: 10 V

| Tests/approvals                                    |                                                                        |
|----------------------------------------------------|------------------------------------------------------------------------|
| UL registration number                             | E183243                                                                |
| Reference conditions acc. to IEC 61298-1           |                                                                        |
| Temperature                                        | 15...+25 °C                                                            |
| Atmospheric pressure                               | 860...1060 hPa abs.                                                    |
| Humidity                                           | 45...75 % rel.                                                         |
| Auxiliary power                                    | 24 VDC                                                                 |
| Display                                            | 4-digit 7-segment display, rotatable by 180°, with switch-off function |
| Switching state                                    | 2 × LEDs, Yellow                                                       |
| Unit display                                       | 5 × LEDs green (bar, psi, kPa, MPa, misc)                              |
| Temperature behaviour                              |                                                                        |
| Temperature coefficient range TK <sub>s</sub>      | ± 0.3 % of full scale/10 K                                             |
| Temperature coefficient zero point TK <sub>0</sub> | ± 0.3 % of full scale/10 K                                             |
| MTTF                                               | 242 years acc. to SN 29500 (Ed. 99) 40 °C                              |

## Technical data

| Type                                      | PS01VR-301-2UPN8X-H1141          |
|-------------------------------------------|----------------------------------|
| ID                                        | 6833312                          |
| Pressure type                             | Relative pressure                |
| Pressure range                            | -1...0 bar                       |
|                                           | -14.5...0 psi                    |
|                                           | -0.1...0 MPa                     |
| Admissible overpressure                   | ≤ 5.5 bar                        |
| Burst pressure                            | ≥ 5.5 bar                        |
| Response time                             | < 3 ms                           |
| Power supply                              |                                  |
| Operating voltage U <sub>s</sub>          | 18...30 VDC                      |
| Current consumption                       | ≤ 50 mA                          |
| Voltage drop at I <sub>s</sub>            | ≤ 2 V                            |
| Protective measure                        | SELV; PELV according to EN 50178 |
| Short-circuit/reverse polarity protection | yes / yes                        |
| Protection class                          | IP67<br>IP69K                    |
| Insulation class                          | III                              |

## Technical data

|                                                    |                                                                                                                                                                               |
|----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Outputs</b>                                     |                                                                                                                                                                               |
| Output 1                                           | Switching output or IO-Link mode                                                                                                                                              |
| Output 2                                           | Switching output                                                                                                                                                              |
| <b>Switching output</b>                            |                                                                                                                                                                               |
| Communication protocol                             | IO-Link                                                                                                                                                                       |
| Output function                                    | NO/NC, PNP/NPN                                                                                                                                                                |
| Accuracy                                           | ± 0.5 % FS BSL                                                                                                                                                                |
| Rated operational current                          | 0.2 A                                                                                                                                                                         |
| Switching frequency                                | ≤ 180 Hz                                                                                                                                                                      |
| Switching point distance                           | ≥ 0.5 %                                                                                                                                                                       |
| Switch point:                                      | (Min. + 0.005 × range)...100 % of full scale                                                                                                                                  |
| Release point(s)                                   | min up to (SP - 0.005 x range)                                                                                                                                                |
| Switching cycles                                   | ≥ 100 mil.                                                                                                                                                                    |
| <b>IO-Link</b>                                     |                                                                                                                                                                               |
| IO-Link specification                              | V 1.0                                                                                                                                                                         |
| Programming                                        | FDT / DTM                                                                                                                                                                     |
| Transmission physics                               | corresponds to 3-wire physics (PHY2)                                                                                                                                          |
| Transmission rate                                  | COM 2 / 38.4 kbps                                                                                                                                                             |
| Process data width                                 | 16 bit                                                                                                                                                                        |
| Measured value information                         | 14 bit                                                                                                                                                                        |
| Switchpoint information                            | 2 bit                                                                                                                                                                         |
| Frame type                                         | 2.2                                                                                                                                                                           |
| Accuracy                                           | ± 0.5 % FS BSL                                                                                                                                                                |
| Included in the SIDI GSDML                         | Yes                                                                                                                                                                           |
| <b>Temperature behaviour</b>                       |                                                                                                                                                                               |
| Medium temperature                                 | -40...+85 °C                                                                                                                                                                  |
| Temperature coefficient zero point TK <sub>0</sub> | ± 0.3 % of full scale/10 K                                                                                                                                                    |
| Temperature coefficient range TK <sub>s</sub>      | ± 0.3 % of full scale/10 K                                                                                                                                                    |
| <b>Environmental conditions</b>                    |                                                                                                                                                                               |
| Ambient temperature                                | -40...+80 °C                                                                                                                                                                  |
| Storage temperature                                | -40...+80 °C                                                                                                                                                                  |
| Vibration resistance                               | 20 g (9...2000 Hz), according to IEC 68-2-6                                                                                                                                   |
| Shock resistance                                   | 50 g (11 ms) acc. to IEC 68-2-27                                                                                                                                              |
| EMV                                                | EN 61000-4-2 ESD:4 kV CD / 8 kV AD<br>EN 61000-4-3 HF radiated: 15 V/m<br>EN 61000-4-4 Burst: 2 kV<br>EN 61000-4-5 Surge: 1000 V, 42 Ohm<br>EN 61000-4-6 HF cable bound: 10 V |

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| Sealing material                               | FPM spez.                                                                                                 |
| Process connection                             | G 1/4" female thread                                                                                      |
| Wrench size pressure connection / coupling nut | 21                                                                                                        |
| Electrical connection                          | Connector, M12 × 1                                                                                        |
| Max. tightening torque of housing nut          | 35 Nm                                                                                                     |
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| Humidity                                       | 45...75 % rel.                                                                                            |
| Auxiliary power                                | 24 VDC                                                                                                    |
| Display                                        | 4-digit 7-segment display, rotatable by 180°, with switch-off function                                    |
| Switching state                                | 2 × LEDs, Yellow                                                                                          |
| Unit display                                   | 5 × LEDs green (bar, psi, kPa, MPa, misc)                                                                 |
| Programming options                            | switch/release point, PNP/NPN; NO/NC; hysteresis/window mode, muting; pressure unit, peak pressure memory |
| Tests/approvals                                |                                                                                                           |
| Approvals                                      | cULus                                                                                                     |
| UL registration number                         | E183243                                                                                                   |
| MTTF                                           | 242 years acc. to SN 29500 (Ed. 99) 40 °C                                                                 |