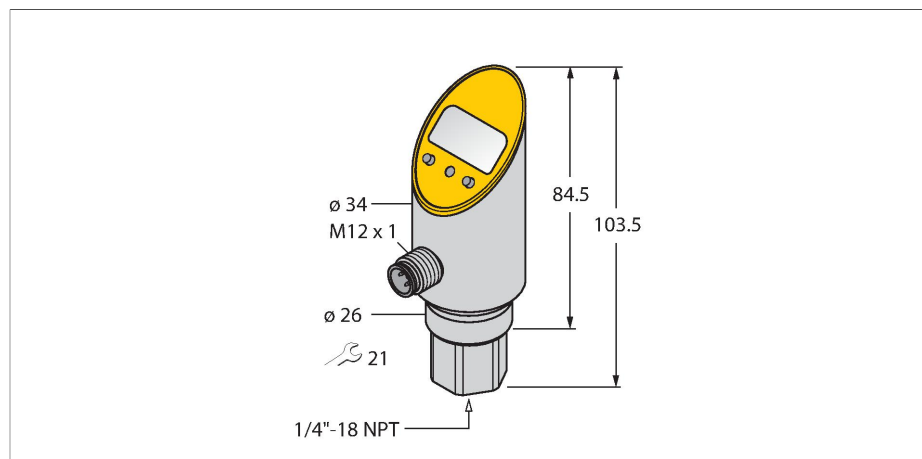


# PS016V-302-LI2UPN8X-H1141

## Pressure sensor – With Analog Output and PNP/NPN Transistor Switching Output

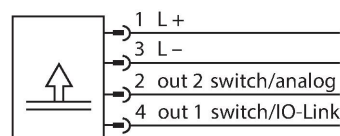
### Output 2 Reprogrammable as Switching Output



#### 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...16 bar rel.

#### Wiring diagram



#### 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

|                                           |                                  |
|-------------------------------------------|----------------------------------|
| Type                                      | PS016V-302-LI2UPN8X-H1141        |
| ID                                        | 6833341                          |
| Medium temperature                        | -40...+85 °C                     |
| Pressure type                             | Relative pressure                |
| Pressure range                            | -1...16 bar                      |
|                                           | -14.5...232.06 psi               |
|                                           | -0.1...1.6 MPa                   |
| Admissible overpressure                   | ≤ 70 bar                         |
| Burst pressure                            | ≥ 70 bar                         |
| Response time                             | < 3 ms                           |
| <b>Power supply</b>                       |                                  |
| Operating voltage $U_s$                   | 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                                  | Analog or switching output       |
| <b>Switching output</b>                   |                                  |
| Communication protocol                    | IO-Link                          |

## Technical data

|                                                   |                                                                                                                                                                 |
|---------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Output function                                   | NO/NC, PNP/NPN                                                                                                                                                  |
| Accuracy                                          | $\pm 0.5 \% \text{ FS BSL}$                                                                                                                                     |
| Rated operational current                         | 0.2 A                                                                                                                                                           |
| Switching frequency                               | $\leq 180 \text{ Hz}$                                                                                                                                           |
| Switching point distance                          | $\geq 0.5 \%$                                                                                                                                                   |
| Switch point:                                     | (Min. + $0.005 \times \text{range}$ )...100 % of full scale                                                                                                     |
| Release point(s)                                  | min up to (SP - $0.005 \times \text{range}$ )                                                                                                                   |
| Switching cycles                                  | $\geq 100 \text{ mil.}$                                                                                                                                         |
| <b>Analog output</b>                              |                                                                                                                                                                 |
| Current output                                    | 4...20 mA                                                                                                                                                       |
| Voltage output                                    | 0...10 V                                                                                                                                                        |
| Load                                              | $\leq 0.5 \text{ k}\Omega$                                                                                                                                      |
| Accuracy LHR                                      | $\pm 0.5 \% \text{ FS BSL}$                                                                                                                                     |
| <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                                          | $\pm 0.5 \% \text{ FS BSL}$                                                                                                                                     |
| Included in the SIDI GSDML                        | Yes                                                                                                                                                             |
| Programming options                               | start/end value analog output; switch/<br>release points; PNP/NPN; NO/NC<br>contact; hysteresis/window mode;<br>damping; pressure unit; peak pressure<br>memory |
| <b>Mechanical data</b>                            |                                                                                                                                                                 |
| Housing material                                  | Stainless-steel/Plastic, 1.4305 (AISI 303)                                                                                                                      |
| Process connection                                | 1/4" NPT-18 female thread                                                                                                                                       |
| Pressure connection material                      | Stainless steel 1.4305 (AISI 303)                                                                                                                               |
| Material pressure transducer                      | Ceramic $\text{Al}_2\text{O}_3$                                                                                                                                 |
| Sealing material                                  | FPM spez.                                                                                                                                                       |
| Wrench size pressure connection /<br>coupling nut | 21                                                                                                                                                              |
| Max. tightening torque of housing nut             | 35 Nm                                                                                                                                                           |
| Electrical connection                             | Connector, M12 $\times$ 1                                                                                                                                       |

## Technical data

|                                                    |                                                                                                                                                                               |
|----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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<br>EN 61000-4-5 Surge: 1000 V, 42 Ohm<br>EN 61000-4-6 HF cable bound: 10 V |
| <b>Tests/approvals</b>                             |                                                                                                                                                                               |
| UL registration number                             | E183243                                                                                                                                                                       |
| <b>Reference conditions acc. to IEC 61298-1</b>    |                                                                                                                                                                               |
| 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 x LEDs green (bar, psi, kPa, MPa, misc)                                                                                                                                     |
| <b>Temperature behaviour</b>                       |                                                                                                                                                                               |
| Temperature coefficient range TK <sub>s</sub>      | ± 0.15 % of full scale/10 K                                                                                                                                                   |
| Temperature coefficient zero point TK <sub>0</sub> | ± 0.15 % of full scale/10 K                                                                                                                                                   |
| MTTF                                               | 242 years acc. to SN 29500 (Ed. 99) 40 °C                                                                                                                                     |
| <b>Technical data</b>                              |                                                                                                                                                                               |
| Type                                               | PS016V-302-LI2UPN8X-H1141                                                                                                                                                     |
| ID                                                 | 6833341                                                                                                                                                                       |
| Pressure type                                      | Relative pressure                                                                                                                                                             |
| Pressure range                                     | -1...16 bar                                                                                                                                                                   |
|                                                    | -14.5...232.06 psi                                                                                                                                                            |
|                                                    | -0.1...1.6 MPa                                                                                                                                                                |
| Admissible overpressure                            | ≤ 70 bar                                                                                                                                                                      |
| Burst pressure                                     | ≥ 70 bar                                                                                                                                                                      |
| Response time                                      | < 3 ms                                                                                                                                                                        |

## Technical data

|                                           |                                                     |
|-------------------------------------------|-----------------------------------------------------|
| <b>Power supply</b>                       |                                                     |
| Operating voltage $U_s$                   | 18...30 VDC                                         |
| Current consumption                       | $\leq 50$ mA                                        |
| Voltage drop at $I_s$                     | $\leq 2$ V                                          |
| Protective measure                        | SELV; PELV according to EN 50178                    |
| Short-circuit/reverse polarity protection | yes / yes                                           |
| Protection class                          | IP67<br>IP69K                                       |
| Insulation class                          | III                                                 |
| <b>Outputs</b>                            |                                                     |
| Output 1                                  | Switching output or IO-Link mode                    |
| Output 2                                  | Analog or switching output                          |
| <b>Switching output</b>                   |                                                     |
| Communication protocol                    | IO-Link                                             |
| Output function                           | NO/NC, PNP/NPN                                      |
| Accuracy                                  | $\pm 0.5$ % FS BSL                                  |
| Rated operational current                 | 0.2 A                                               |
| Switching frequency                       | $\leq 180$ Hz                                       |
| Switching point distance                  | $\geq 0.5$ %                                        |
| Switch point:                             | (Min. + $0.005 \times$ range)...100 % of full scale |
| Release point(s)                          | min up to (SP - $0.005 \times$ range)               |
| Switching cycles                          | $\geq 100$ mil.                                     |
| <b>Analog output</b>                      |                                                     |
| Current output                            | 4...20 mA                                           |
| Voltage output                            | 0...10 V                                            |
| Load                                      | $\leq 0.5$ k $\Omega$                               |
| Accuracy LHR                              | $\pm 0.5$ % FS BSL                                  |
| <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                                  | $\pm 0.5$ % FS BSL                                  |
| Included in the SIDI GSDML                | Yes                                                 |

## Technical data

|                                                    |                                                                                                                                                                                |
|----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Temperature behaviour</b>                       |                                                                                                                                                                                |
| Medium temperature                                 | -40...+85 °C                                                                                                                                                                   |
| Temperature coefficient zero point TK <sub>0</sub> | ± 0.15 % of full scale/10 K                                                                                                                                                    |
| Temperature coefficient range TK <sub>s</sub>      | ± 0.15 % 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 |
| <b>Mechanical data</b>                             |                                                                                                                                                                                |
| Housing material                                   | Stainless-steel/Plastic, 1.4305 (AISI 303)                                                                                                                                     |
| 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.                                                                                                                                                                      |
| Process connection                                 | 1/4" NPT-18 female thread                                                                                                                                                      |
| Wrench size pressure connection / coupling nut     | 21                                                                                                                                                                             |
| Electrical connection                              | Connector, M12 × 1                                                                                                                                                             |
| Max. tightening torque of housing nut              | 35 Nm                                                                                                                                                                          |
| <b>Reference conditions acc. to IEC 61298-1</b>    |                                                                                                                                                                                |
| 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 x LEDs green (bar, psi, kPa, MPa, misc)                                                                                                                                      |
| Programming options                                | start/end value analog output; switch/release points; PNP/NPN; NO/NC contact; hysteresis/window mode; damping; pressure unit; peak pressure memory                             |
| <b>Tests/approvals</b>                             |                                                                                                                                                                                |
| Approvals                                          | cULus                                                                                                                                                                          |

Technical data

|                        |                                           |
|------------------------|-------------------------------------------|
| UL registration number | E183243                                   |
| MTTF                   | 242 years acc. to SN 29500 (Ed. 99) 40 °C |