

# PS510-250-01-2UPN8 -H1141

## Pressure Sensor – Relative Pressure: 0...250 Bar



### Technical data

|                                           |                                      |
|-------------------------------------------|--------------------------------------|
| Type                                      | PS510-250-01-2UPN8 -H1141            |
| ID                                        | 100004763                            |
| Medium temperature                        | -40...+80 °C                         |
| Application area                          | Liquids and gases                    |
| Pressure range                            |                                      |
| Pressure type                             | Relative pressure                    |
| Pressure range                            | 0...250 bar                          |
|                                           | 0...3625.94 psi                      |
|                                           | 0...25 MPa                           |
| Admissible overpressure                   | ≤ 800 bar                            |
| Burst pressure                            | ≥ 4000 bar                           |
| Response time                             | Typically 1 ms (max. 2.5 ms)         |
| Long-term stability                       | ± 0.2 % FS, /annum                   |
| Accuracy                                  | 0.25 % FS (LHR) at +25 °C using BFSL |
| Electrical data                           |                                      |
| Operating voltage U <sub>B</sub>          | 18...33 VDC                          |
| Short-circuit/reverse polarity protection | yes, cyclic / yes (voltage supply)   |
| Capacitive load                           | 100 nF                               |
| Insulation class                          | III                                  |
| Outputs                                   |                                      |
| Output 1                                  | Switching output or IO-Link mode     |
| Output 2                                  | Switching output                     |
| Switching output                          |                                      |
| Communication protocol                    | IO-Link                              |
| Output function                           | NO/NC, PNP/NPN                       |
| Rated operational current                 | 0.25 A                               |
| Switching frequency                       | ≤ 300 Hz                             |



### Features

- 4-digit, 2-color (red/green), 12-segment display, rotatable by 180°
- Housing is rotatable after mounting the process connection
- Metal measuring cell
- Pressure range 0...250 bar relative
- 18...33 VDC
- NO/NC contact, PNP/NPN output, IO-Link SSP4.1.1
- Process connection G1/4" female thread
- Connector device, M12 × 1

### Wiring diagram



### Functional principle

The pressure sensors from the P510 product series operate with fully welded metal measuring cells. As a result of the pressure acting on the metal substrate, a signal that is proportional to the pressure is generated and processed electronically. Depending on the sensor variant, the processed signal is available either as a switching or an analog output with an accuracy of 0.25 % of full scale. The rotatable sensor body and a variety

of process connections guarantee flexible process integration.

## Technical data

|                                                |                                                                                                                      |
|------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| Switching point distance                       | ≥ 0.5 %                                                                                                              |
| Switch point:                                  | (Min. + 0.005 × range)...100 % of full scale                                                                         |
| Release point(s)                               | min. up to (SP - 0.005 × range)                                                                                      |
| Switching cycles                               | ≥ 100 mil.                                                                                                           |
| <b>IO-Link</b>                                 |                                                                                                                      |
| IO-Link specification                          | V 1.1                                                                                                                |
| IO-Link port type                              | Class A                                                                                                              |
| Transmission physics                           | corresponds to 3-wire physics (PHY2)                                                                                 |
| Transmission rate                              | COM 2/38.4 kbps                                                                                                      |
| Process data width                             | 32 bit (of which 5 bits are not used)                                                                                |
| Measured value information                     | 24 bit (16-bit process value + 8-bit scale)                                                                          |
| Switching point information                    | 3 bit                                                                                                                |
| Frame type                                     | 2.2                                                                                                                  |
| Minimum cycle time                             | 6 ms                                                                                                                 |
| Function pin 4                                 | IO-Link                                                                                                              |
| Function Pin 2                                 | DI                                                                                                                   |
| Maximum cable length                           | 20 m                                                                                                                 |
| Programming                                    | FDT/DTM                                                                                                              |
| Profile support                                | Smart Sensor Profile (SSP4.1.1)                                                                                      |
| Included in the SIDI GSDML                     | In preparation                                                                                                       |
| <b>Programming</b>                             |                                                                                                                      |
| Programming options                            | Switching/reversing points; PNP/NPN; opener/closer; hysteresis/window mode; damping; pressure unit; printhead memory |
| <b>Mechanical data</b>                         |                                                                                                                      |
| Housing material                               | Stainless-steel/Plastic, 1.4404 (AISI 316L)/Grilamid TR90 UV/Elastollan C 65 A 15 HPM 000/Ultramid A3X2G5            |
| Materials (contact with media)                 | Stainless steel 1.4404 (AISI 316L)/1.4542 (AISI 630)                                                                 |
| Process connection                             | G 1/4" female thread                                                                                                 |
| Wrench size pressure connection / coupling nut | 24                                                                                                                   |
| Max. tightening torque of housing nut          | 35 Nm                                                                                                                |
| Electrical connection                          | Connector, M12 × 1                                                                                                   |
| Protection class                               | IP66<br>IP67<br>IP69K                                                                                                |
| <b>Environmental conditions</b>                |                                                                                                                      |
| Ambient temperature                            | -40...+80 °C                                                                                                         |
| Storage temperature                            | -40...+80 °C                                                                                                         |
| Shock resistance                               | 50 g (11 ms) DIN EN 60068-2-27                                                                                       |
| EMV                                            | EN 61000-4-2 ESD:4 kV CD / 8 kV AD                                                                                   |

Technical data

EN 61000-4-3 HF radiated: 15 V/m  
EN 61000-4-4 Burst: 2 kV  
EN 61000-4-6 HF cable bound: 10 V  
EN 61000-6-2 0.5 kV, 42 Ω  
EN 61326-2-3

| Tests/approvals                                    |                                                             |
|----------------------------------------------------|-------------------------------------------------------------|
| Approvals                                          | CE<br>Metrological certification (RUS)<br>cULus             |
| UL registration number                             | E183243                                                     |
| Reference conditions acc. to IEC 61298-1           |                                                             |
| Temperature                                        | -40...+85 °C                                                |
| Atmospheric pressure                               | 689...1300 hPa abs.                                         |
| Humidity                                           | 10...95 % rel.                                              |
| Auxiliary power                                    | 24 VDC                                                      |
| Displays/Operating elements                        |                                                             |
| Display                                            | 4-digit 12-segment display, rotatable by 180°, red or green |
| Switching state                                    | 2 × LEDs, Yellow                                            |
| Unit display                                       | 5 x LEDs green (bar, psi, kPa, MPa, misc)                   |
| Temperature behaviour                              |                                                             |
| Temperature coefficient range TK <sub>s</sub>      | ± 0.11 % of full scale/10 K                                 |
| Temperature coefficient zero point TK <sub>0</sub> | ± 0.11 % of full scale/10 K                                 |
| MTTF                                               | 110 years acc. to SN 29500 (Ed. 99) 40 °C                   |

IO-Link process data image

|          |                               |                               |             |    |    |    |    |    |                        |    |    |    |    |    |    |    |
|----------|-------------------------------|-------------------------------|-------------|----|----|----|----|----|------------------------|----|----|----|----|----|----|----|
| Bit      | 0                             | 1                             | 2           | 3  | 4  | 5  | 6  | 7  | 8                      | 9  | 10 | 11 | 12 | 13 | 14 | 15 |
| Byte n   | Switching<br>(physical OUT 1) | Switching<br>(physical OUT 2) | Fault state |    |    |    |    |    | 8-bit scale (pressure) |    |    |    |    |    |    |    |
| Bit      | 16                            | 17                            | 18          | 19 | 20 | 21 | 22 | 23 | 24                     | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
| Byte n+1 | 16-bit process value          |                               |             |    |    |    |    |    |                        |    |    |    |    |    |    |    |

Accessories

|             |           |
|-------------|-----------|
| FAM-30-PA66 | 100018384 |
|-------------|-----------|

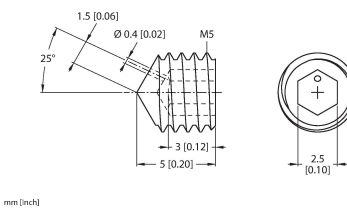


Mounting bracket; variable wrench size 24–30 mm; removable labeling plate 20 × 9 mm

Accessories

| Dimension drawing                                                                   | Type                  | ID      |                                                                                                                                                             |
|-------------------------------------------------------------------------------------|-----------------------|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
|   | WKC4.4T-2-RSC4.4T/TXL | 6625640 | Extension cable, M12 female connector, angled, 4-pin to M12 male connector, straight, 4-pin, cable length: 2 m, jacket material: PUR, black; cULus approval |
|  | WKC4.4T-2/TXL         | 6625515 | Connection cable, M12 female connector, angled, 4-pin, cable length: 2 m, jacket material: PUR, black; cULus approval                                       |

Accessories

| Dimension drawing                                                                   | Type   | ID        |                                                                  |
|-------------------------------------------------------------------------------------|--------|-----------|------------------------------------------------------------------|
|  | PAM-P3 | 100004416 | Damping element, protects the measuring cell from pressure peaks |

| Dimension drawing | Type           | ID      |                                         |
|-------------------|----------------|---------|-----------------------------------------|
|                   | USB-2-IOL-0002 | 6825482 | IO-Link Master with integrated USB port |

