

# PS510-40V-08-2UPN8-H1141

## Pressure Sensor – Relative Pressure: -1...40 Bar



### Technical data

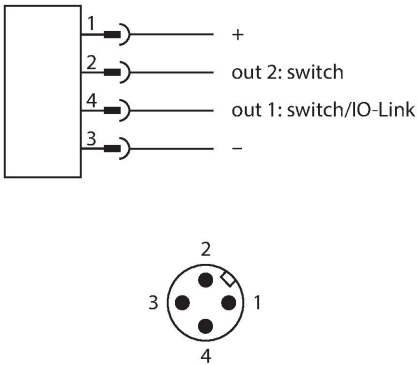
|                                           |                                      |
|-------------------------------------------|--------------------------------------|
| Type                                      | PS510-40V-08-2UPN8-H1141             |
| ID                                        | 100001710                            |
| Medium temperature                        | -40...+80 °C                         |
| Application area                          | Liquids and gases                    |
| Pressure range                            |                                      |
| Pressure type                             | Relative pressure                    |
| Pressure range                            | -1...40 bar                          |
|                                           | -14.5...580.15 psi                   |
|                                           | -0.1...4 MPa                         |
| Admissible overpressure                   | ≤ 200 bar                            |
| Burst pressure                            | ≥ 1000 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 $U_B$                   | 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 -1...40 bar relative
- 18...33 VDC
- NO/NC contact, PNP/NPN output, IO-Link SSP4.1.1
- Process connection G1/2" male thread (manometer)
- 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 1/2" male thread DIN 3852-E (manometer)                                                                            |
| Wrench size pressure connection / coupling nut | 27                                                                                                                   |
| 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                                                                                       |

## Technical data

|     |                                                                                                                                                                                             |
|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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 61000-4-6 HF cable bound: 10 V<br>EN 61000-6-2 0.5 kV, 42 $\Omega$<br>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 $TK_s$      | $\pm 0.11$ % of full scale/10 K           |
| Temperature coefficient zero point $TK_0$ | $\pm 0.11$ % of full scale/10 K           |
| MTTF                                      | 110 years acc. to SN 29500 (Ed. 99) 40 °C |
| Included in delivery                      | FKM flat seal, 1 piece                    |

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 |
|-------------|-----------|

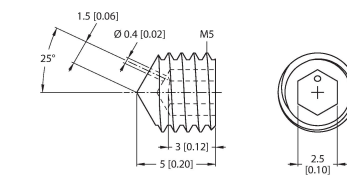


Mounting bracket; variable wrench size 24–30 mm; removable labeling plate 20 × 9 mm

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        |                                                                  |
|------------------------------------------------------------------------------------------------------|--------|-----------|------------------------------------------------------------------|
|  <p>mm [inch]</p> | 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 |

