

# PT400R-2003-IOL-H1141

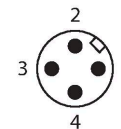
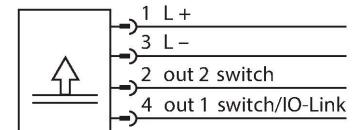
## Pressure Transmitter – IO-Link with Two Switching Outputs



### Features

- Fully welded metal measuring cell
- Pressure range 0...400 bar rel.
- 18...33 V DC
- NO/NC contact, 2 × PNP/NPN outputs, IO-Link
- Process connection 1/4"-18 NPT male thread
- Plug-in device, M12 × 1

### Wiring diagram



### Functional principle

The pressure sensors in the PT...-2000 product series operate with a fully welded metal measuring cell in various pressure ranges of up to -1...1000 bar in 2-, 3- or even 4-wire technology. Depending on the sensor variant, the processed signal is available as an analog output signal (4...20 mA, 0...10 V, 0...5 V, 1...6 V, ratiometric) or as a digital IO-Link process parameter. The IO-Link sensor variants also have two independently configurable switching outputs. In addition to the standard variants, there are special sensors for uses such as ATEX areas or for oxygen applications. A wide range of process connections and electrical connections offer a high degree of flexibility in a wide range of applications.

### Technical data

|   |  |
|---|--|
| Type                                      | PT400R-2003-IOL-H1141                    |
| ID  | 100017825                                |
| Medium temperature                        | -40...+135 °C                            |
| Pressure type                             | Relative pressure                        |
| Pressure range                            | 0...400 bar                              |
|   | 0...5801.51 psi                          |
|   | 0...40 MPa                               |
| Admissible overpressure                   | ≤ 1200 bar                               |
| Burst pressure                            | ≥ 2400 bar                               |
| Response time                             | < 2 ms, typ. 1 ms                        |
| Long-term stability                       | ± 0.25 % FS, according to IEC EN 60770-1 |
| <b>Power supply</b>                       |  |
| Operating voltage $U_B$                   | 18...33 VDC                              |
| 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                           |
| Switching frequency                       | ≤ 100 Hz                                 |
| Switching point distance                  | ≥ 0.5 %                                  |

## Technical data

|   |   |
|---|---|
| Switch point:                                   | (Min. + 0.005 × range)...100 % of full scale  |
| Release point(s)                                | Min. up to (SP - 0.005 × range)   |
| Switching cycles                                | ≥ 100 mil.  |
| Resolution                                      | <± 0.1 % FS   |
| Accuracy LHR                                    | ±0.3 % FS (typical; max. ±0.5 % FS)   |
| <b>IO-Link</b>                                  |   |
| IO-Link specification                           | V 1.1   |
| Transmission physics                            | corresponds to 3-wire physics (PHY2)  |
| Transmission rate                               | COM 2/38.4 kbps   |
| Frame type                                      | 2.2   |
| Programming                                     | FDT/DTM   |
| Programming options                             | Offset; filter; switching points; hysteresis/ filter function, NC/NO; min./max. pressure values, pressure peak counter; operating hours counter |
| <b>Mechanical data</b>                          |   |
| Housing material                                | Stainless-steel/Plastic, 1.4404 (AISI 316L)/polyarylamide 50 % GF UL 94 V-0   |
| Process connection                              | 1/4" NPT-18 male thread   |
| Pressure connection material                    | Stainless steel 1.4404 (AISI 316L)  |
| Material pressure transducer                    | Stainless steel 1.4435 (AISI 316L)  |
| Wrench size pressure connection / coupling nut  | 24  |
| Max. tightening torque of housing nut           | 20 Nm   |
| Electrical connection                           | Connector, M12 × 1  |
| Protection class                                | IP67  |
| <b>Environmental conditions</b>                 |   |
| Ambient temperature                             | -30...+85 °C  |
| Storage temperature                             | -50...+100 °C   |
| Shock resistance                                | 100 g, 11 ms, half sinusoidal curve, all 6 directions, free fall from 1 m onto concrete (6x) acc. to IEC 68-2-27                                |
| Vibration resistance                            | 20 g, 15...2000 Hz, 15...25 Hz with amplitude ± 15 mm, 1 octave/minute in all 3 directions, 50 continuous loads                                 |
| <b>Tests/approvals</b>                          |   |
| UL registration number                          | E302799   |
| <b>Reference conditions acc. to IEC 61298-1</b> |   |
| Temperature                                     | 15...+25 °C   |
| Atmospheric pressure                            | 860...1060 hPa abs.   |

## Technical data

|                              |  |
|------------------------------|--|
| Humidity                     | 45...75 % rel.                             |
| Auxiliary power              | 24 VDC                                     |
| <b>Temperature behaviour</b> |  |
| MTTF                         | 1200 years acc. to SN 29500 (Ed. 99) 40 °C |

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| Pressure type                             | Relative pressure                            |
| Pressure range                            | 0...400 bar                                  |
|   | 0...5801.51 psi                              |
|   | 0...40 MPa                                   |
| Admissible overpressure                   | ≤ 1200 bar                                   |
| Burst pressure                            | ≥ 2400 bar                                   |
| Response time                             | < 2 ms, typ. 1 ms                            |
| Long-term stability                       | 0.25 % FS, according to IEC EN 60770-1       |
| <b>Power supply</b>                       |  |
| Operating voltage $U_b$                   | 18...33 VDC                                  |
|   | In IO-Link mode                              |
|   | 9...33 VDC                                   |
|   | In SIO mode                                  |
| Short-circuit/reverse polarity protection | yes / yes                                    |
| Protection class                          | IP67   |
| Insulation class                          | III  |
| Insulation voltage                        | 750 VDC                                      |
| <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                               |
| Switching current                         | ≤ 100 mA                                     |
| Switching frequency                       | ≤ 100 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 × range)              |
| Switching cycles                          | ≥ 100 mil.                                   |

## Technical data

|   |   |
|---|---|
| Switch point SP1                                | Factory setting: 50 % of measuring range end value  |
| Release point rP1                               | Factory setting: 25 % of measuring range end value  |
| Switching point SP2                             | Factory setting: 60 % of measuring range end value  |
| Release point rP2                               | Factory setting: 30 % of measuring range end value  |
| Resolution                                      | <± 0.1 % FS   |
| Accuracy LHR                                    | ±0.3 % FS (typical; max. ±0.5 % FS)   |
| <b>IO-Link</b>                                  |   |
| IO-Link specification                           | V 1.1   |
| Programming                                     | FDT/DTM   |
| Transmission physics                            | corresponds to 3-wire physics (PHY2)  |
| Transmission rate                               | COM 2/38.4 kbps   |
| Frame type                                      | 2.2   |
| <b>Temperature behaviour</b>                    |   |
| Medium temperature                              | -40...+135 °C   |
| Temperature coefficient                         | ± 0.2 % of full scale/10 K  |
| <b>Environmental conditions</b>                 |   |
| Ambient temperature                             | -30...+85 °C  |
| Storage temperature                             | -50...+100 °C   |
| Vibration resistance                            | 20 g, 15...2000 Hz, 15...25 Hz with amplitude ± 15 mm, 1 octave/minute in all 3 directions, 50 continuous loads, acc. to IEC 68-2-6 |
| Shock resistance                                | 100 g, 11 ms, half sinusoidal curve, all 6 directions, free fall from 1 m onto concrete (6x) acc. to IEC 68-2-27                    |
| <b>Mechanical data</b>                          |   |
| Housing material                                | Stainless-steel/Plastic, 1.4404 (AISI 316L)/polyarylamide 50 % GF UL 94 V-0   |
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| Process connection                              | 1/4" NPT-18 male thread   |
| Wrench size pressure connection / coupling nut  | 24  |
| Electrical connection                           | Connector, M12 × 1  |
| Max. tightening torque of housing nut           | 20 Nm   |
| <b>Reference conditions acc. to IEC 61298-1</b> |   |
| Temperature                                     | 15...+25 °C   |

## Technical data

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|------------------------|--|
| Atmospheric pressure   | 860...1060 hPa abs.  |
| Humidity               | 45...75 % rel.   |
| Auxiliary power        | 24 VDC   |
| Programming options    | Offset; filter; switching points; hysteresis/<br>filter function, NC/NO; min./max. pressure<br>values, pressure peak counter; operating<br>hours counter |
| <b>Tests/approvals</b> |  |
| Approvals              | cULus  |
| UL registration number | E302799  |
| MTTF                   | 1200 years acc. to SN 29500 (Ed. 99) 40<br>°C  |