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Technical Features

- › Two switching outputs, one programmable as IO-Link, and one as a analogue current / voltage output
- › Red/green display for visualisation of the un/acceptable range
- › Rotating body for optimal position of connector
- › Long-term stability thanks to high overload protection
- › Robust design and stainless-steel body for use in harsh industrial environments
- › High vibration and shock resistance
- › UL approval and certification acc. to PED direction

Functional Description

Programmable pressure sensor with a metallic thin film measuring cell for measuring fluid system pressure, e.g. in hydraulic circuits, and indication of reaching the adjusted pressure value. The stainless-steel body is provided with connecting thread G 1/4 with FKM sealing ring. An electric connection is realized by four-pin connector M12 x 1. The 4-digit display and programming buttons are on the top surface. The sensor is suitable for industrial usage thanks to robust design, vibration and shock resistance.

Outputs:

OUT1 (pin 4): switching signal for indication of adjusted value of system pressure or Communication via IO-Link (COM2)

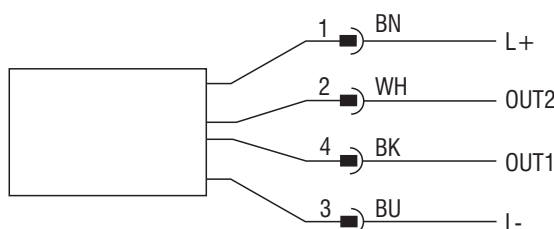
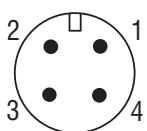
OUT2 (pin 2): switching signal for indication of adjusted value of system pressure or analogue signal 4 ... 20 mA / 0 ... 10 V

Technical Data

| | | |
|---|------------|---|
| Application | | |
| Measuring element | | Metallic thin film measuring cell |
| Application | | For industrial applications |
| Media | | Liquids |
| Medium temperature | °C (°F) | -25 ... +80 (-13 ... +176) |
| Ambient temperature | °C (°F) | -25 ... +80 (-13 ... +176) |
| Storage temperature | °C (°F) | -40 ... +100 (-40 ... +212) |
| Pressure range | bar (PSI) | 800 (11603) |
| Min. bursting pressure | bar (PSI) | 1700 (24660) |
| Vacuum resistance | mbar (PSI) | -1000 (-14.5) |
| Measuring / setting range | | |
| Measuring range | bar (PSI) | 0 ... 400 (0 ... 5800) |
| Set point (SP) | bar (PSI) | 1.5 ... 400 (21.8 ... 5800) |
| Reset point (rP) | bar (PSI) | 1 ... 399.5 (14.5 ... 5790) |
| Analogue start point | bar (PSI) | 0 ... 320 (0 ... 4640) |
| Analogue end point | bar (PSI) | 80 ... 400 (1160 ... 5800) |
| In steps of | bar (PSI) | 0.5 (7.3) |
| Electrical parameters | | |
| Supply voltage | V DC | 18 ... 30 (acc. to EN 50178 SELV/PELV) |
| Current consumption | mA | < 35 |
| Min. insulation resistance | MΩ | 100 (500 V DC) |
| Protection class | | III |
| IP protection | | IP65, IP67 |
| Power-on delay time | s | 0.3 |
| Protection | | Reverse polarity protection, integrated watchdog |
| Outputs | | |
| Switching signal (pin 2, 4) | | PNP / NPN switcher, normally open / closed contacts |
| Max. voltage drop switching output DC | V | 2 |
| Permanent current rating of switching output DC | mA | 250 |
| Switching frequency DC | Hz | < 500 |
| Analogue current output (pin 2) | mA | 4 ... 20 (scalable 1:5) |
| Max. load resistance | Ω | 500 |
| Analogue voltage output (pin 2) | V | 0 ... 10 (scalable 1:5) |
| Min. load resistance | Ω | 2000 |
| Electric protection | | Pulsed short-circuit and overload protection |

| | | |
|--------------------------------------|-------------|---|
| Accuracy / deviations | | |
| Switch point accuracy | % | < ± 0.4 (of the span); turn down 1:1 |
| Repeatability | % | < ± 0.1 (of the span); with temperature fluctuations < 10 K; turn down 1:1 |
| Characteristics deviation | % | < ± 0.25 (of the span) Best fit straight line (BFSL) < ± 0.5 (of the span) Limit value setting (LS) |
| Hysteresis deviation | % | < ± 0.1 (of the span) |
| Long-term stability | % | < ± 0.05 (of the span) per 6 months; turn down 1:1 |
| Temperature coefficient zero point | % | 0.2 (of the span / 10 K) in the range -25 ... +80 °C (-13 ... +176 °F) |
| Temperature coefficient span | % | 0.2 (of the span / 10 K) in the range -25 ... +80 °C (-13 ... +176 °F) |
| Response times | | |
| Response times | ms | < 1.5 |
| Delay time programmable dS, dr | s | 0 ... 50 |
| Damping for the switching output dAP | s | 0 ... 4 |
| Damping for the analogue output dAA | s | 0 ... 4 |
| Max. response time analogue output | ms | 3 |
| Software /programming | | |
| Parameter setting options | | Switching mode: hysteresis / windows; contacts normally open / closed; switch-on / switch-off delay; damping; display unit, current / voltage analogue output |
| Interfaces | | |
| Communication interface (pin 4) | | IO-Link |
| Transmission type | | COM2 |
| IO-Link revision | | 1.1 |
| SDCI standard | | IEC 61131-9 |
| IO-Link device ID | | 459 d /00 01 cb h |
| Profiles | | Smart Sensor: Process Data Variable, Device Identification, Device Diagnosis |
| SIO mode | | yes |
| Required master port type | | A |
| Process data analogue | | 1 |
| Process data binary | | 2 |
| Min. process cycle time | ms | 2.3 |
| Tests / approvals | | |
| EMC | | DIN EN 61000-6-2, DIN EN 61000-6-3 |
| Shock resistance | | DIN EN 60068-2-27 50 g (11 ms) |
| Vibration resistance | | DIN EN 60068-2-6 20 g (10 ...2000 Hz) |
| MTTF | years | 129 |
| UL approval | | Approval No. J014 |
| Pressure Equipment Directive | | Sound Engineering Practice; can be used for group 2 fluids; group 1 fluids on request |
| Mechanical parameters | | |
| Weight | kg (lbs) | 0,26 (0.57) |
| Materials | | Stainless steel 1.4542 (17-4 PH / 630) and 1.4404 (316L); PBT+PC-GF30; PBT-GF20;PC |
| Materials (wetted parts) | | Stainless steel 1.4542 (17-4 PH / 630) |
| Min. pressure cycles | | 100 million |
| Tightening torque | Nm (lbf.ft) | 25 ... 35 (18.4 ... 25.8) (depends on lubrication, seal and pressure rating) |
| Circuit connection | | External thread G 1/4 (DIN EN ISO 1179-2); Internal thread M5 for restrictor |
| Sealing ring | | FKM (DIN 3869) |
| Display, operating elements | | |
| Display unit | | 3x LED, green (bar, PSI, MPa) |
| Display switching status | | 2x LED yellow |
| Measured values | | Alphanumeric display, red / green, 4-digit |
| Electrical connection | | |
| Connector | | 4-pin; M12 x 1, contacts gold-plated |

4-pin connector
M12 x 1



Output OUT1: switching output

Output OUT2: switching output
analogue output

Core colours:
1 - BN = brown
2 - WH = white
3 - BU = blue
4 - BK = black

TSE3-D - 400 - 2 - 1 - 1

**Electronic pressure switch /
sensor with two outputs**

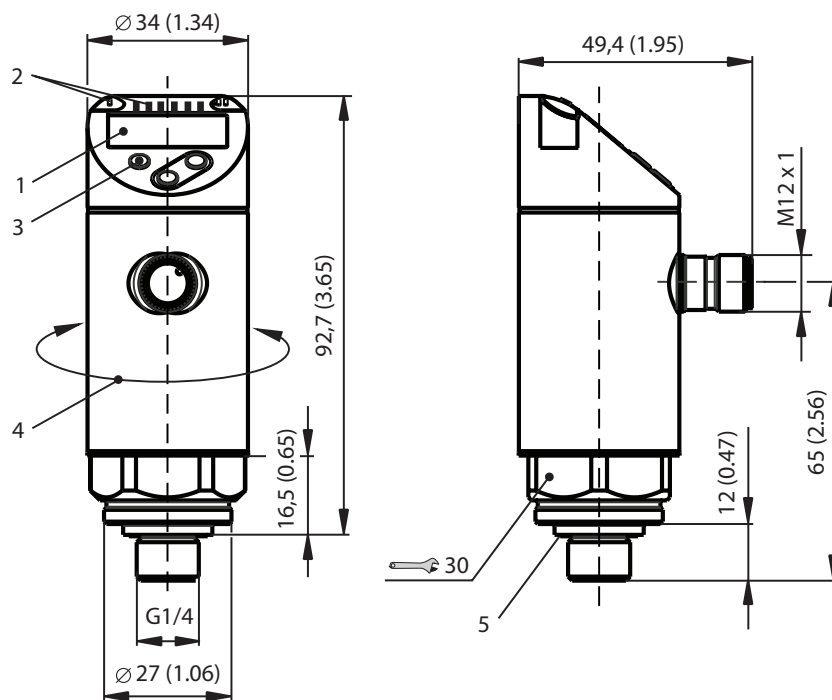
Setting / measuring range
0 - 400 bar (0 - 5800 PSI)

Number of output signals
switching output or IO-Link connection
switching or analogue output

Electrical connection
4 pin connector M12 x 1

Connection to the circuit
external thread G 1/4

TSE3-D



- 1 – alphanumeric display 4-digit red/green
- 2 – LEDs Display unit / switching status
- 3 – programming button
- 4 - upper part of the housing can be rotated 345°
- 5 - Sealing

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