



1) Sealing ring



Basic features

| | |
|---|---|
| Application | Position monitoring in short stroke hydraulic cylinders |
| Approval/Conformity | CE UKCA cULus WEEE |
| Basic standard | IEC 60947-5-2, IEC 60947-5-7 |
| Measuring principle | Ultrasound |
| Operating mode | SIO Mode IO-Link Mode |
| Secondary features for condition monitoring | Internal temperature monitoring |
| Series | BFD |

Display/Operation

| | |
|--------------------|----------------------|
| Display | 1x tricoloured - LED |
| Function indicator | yes |

Electrical connection

| | |
|-------------------------------------|----------------------------------|
| Bending radius min., fixed cable | 12 mm |
| Bending radius min., flexible cable | 12 mm |
| Cable diameter D | 3.4 mm ±0.1 mm |
| Cable length L | 0.3 m |
| Conductor cross-section | 0.14 mm ² |
| Connection | M8x1-Male, 4-pin, A-coded |
| Connection type | Cable with connector, 0.3 m, TPU |
| Number of conductors | 4 |
| Polarity reversal protected | yes |
| Short-circuit protection | yes |

Electrical data

| | |
|------------------------------------|-------------|
| Current draw max. | 130 mA |
| Load resistance RL max. (Analog I) | 500 ohms |
| Load resistance RL min. (Analog V) | 2 kOhm |
| No-load current Io max. at Ue | 25 mA |
| Operating voltage Ub | 10...30 VDC |
| Rated insulation voltage Ui | 24 V DC |
| Rated operating voltage Ue DC | 24 V |
| Ready delay tv max. | 0.2 s |
| Ripple max. (% of Ue) | 10 % |
| Ultrasonic Frequency | 2000 kHz |

Environmental conditions

| | |
|-------------------------|------------------------|
| Ambient temperature | 0...85 °C |
| EN 60068-2-27, Shock | 30 g, 11 ms |
| EN 60068-2-6, Vibration | 30 g, 10...2000 Hz |
| IP rating | IP67 |
| Relative humidity | ≤ 90 %, non-condensing |
| Storage temperature | -20...85 °C |

Functional safety

| | |
|--------------|-------|
| MTTF (40 °C) | 308 a |
|--------------|-------|

Interface

| | |
|-------------------------|--|
| Analog output | Analog, voltage/Analog, current selectable 4...20 mA/0...10 V |
| Baud rate | COM3 (230,4 kBaud) |
| Interface | IO-Link 1.1 |
| Process data IN | 6 bytes |
| Process data OUT | 0 bytes |
| Process data cycle min. | 1.4 ms |
| Switching output | Pin 2: PNP/NPN/push-pull NO/NC Pin 4: Push-pull NO/NC |

Material

| | |
|------------------------|-------------------------------|
| Gasket, material | NBR |
| Housing material | 1.4104 stainless steel PBT |
| Material jacket | TPU |
| Sealing ring, standard | DIN 3869-18-NBR |

Mechanical data

| | |
|------------------------|----------------------|
| Burst pressure | 455 bar |
| Dimension | Ø 30 x 30.9 mm |
| Mounting connection | M18x1 |
| Pressure rating max. | 350 bar |
| Pressure rating, note | oil pressure rated |
| Sealing ring, size | 20.9 x 15.7 x 1.5 mm |
| Size | Screw design |
| Tightening torque max. | 62 Nm |
| Tightening torque min. | 58 Nm |
| Weight | 77 g |

Range/Distance

| | |
|------------------------|--------------------------------------|
| Measuring range | 0...80 mm |
| Measuring rate max. | 500 Hz (digital) 1000 Hz (analog) |
| Non-linearity max. | ±250 µm |
| Repeat accuracy | ± 50 µm |
| Resolution | ≤ 12 bits |
| Resolution analog | 12 Bit |
| Resolution digital | 1 µm |
| Temperature drift max. | 5 % |

Remarks

For reliable operation, the sensor must have direct contact with the fluid.
 Ensure that the hydraulic circuit is free of air before operating the measuring system.
 For safe and reliable operation, prepare the mechanical connection of the hydraulic cylinder according to the instructions.
 The sensor is functional again after the overload has been eliminated.
 For additional information, refer to user's guide.
 For more information about MTTF and B10d see MTTF / B10d Certificate

Indication of the MTTF- / B10d value does not represent a binding composition and/or life expectancy assurance; these are simply experiential values with no warranty implications. These declared values also do not extend the expiration period for defect claims or affect it in any way.

Connector Drawings



Wiring Diagrams (Schematic)

