

Inductive sensor

NSB10-30GH50-2E2-S2D2



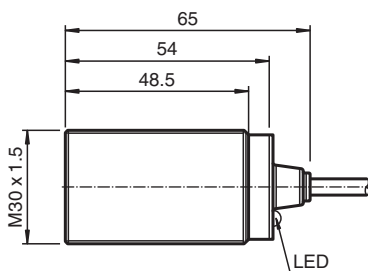
- No unusable area
- 10 mm flush
- Use of standard metallic actuating surfaces
- Applications up to Cat. 2, PLd/SIL 2 possible (can be used redundantly up to Cat. 3, PLe/SIL 3)
- LED for switching state and fault indication
- Safety outputs OSSD
- TÜV certified
- high-grade steel housing V4A/316L



Function

The inductive safety sensors are TÜV-certified in accordance with the EU Machinery Directive, Performance Level PLd, Category 2, and SIL2. They are used to safeguard machines and plant components, as well as for reliable position detection in this environment. With their OSSD interface for reliable, redundant shutdown of electronic outputs, they enable easy connection to a safety PLC or fail-safe control interfaces. They can also be operated as standard sensors. The sensors reliably detect standard metal objects in front of the sensor face without coding or similar; there is no blind zone. High characteristic safety values allow longer testing intervals than comparable solutions with a microcontroller. 2 sensors can be connected with 2-channel redundancy and allow PLe as a Category 3 solution.

Dimensions



Technical Data

| General specifications | | |
|------------------------------|-------|---|
| Switching function | | 2 x normally open (NO) |
| Output type | | PNP |
| Rated operating distance | s_n | 10 mm |
| Installation | | flush |
| Output polarity | | DC |
| Assured operating distance | s_a | 0 ... 8.1 mm |
| Actuating element | | Reference target according EN IEC 60947-5-2 (FE360 - ST37K) 30 mm x 30 mm x 1 mm |
| Reduction factor r_{Al} | | 0.5 |
| Reduction factor r_{Cu} | | 0.45 |
| Reduction factor r_{304} | | 0.8 |
| Reduction factor r_{Brass} | | 0.55 |
| Output type | | 4-wire |
| Nominal ratings | | |
| Operating voltage | U_B | 18 ... 30 V |
| Rated operating voltage | U_e | 24 V |

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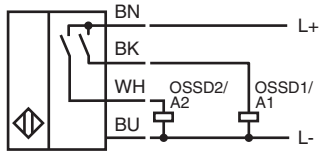
Technical Data

| | | |
|---|-----------|--|
| Switching frequency | f | 0 ... 30 Hz |
| Hysteresis | H | typ. 5% |
| Reverse polarity protection | | reverse polarity protected |
| Short-circuit protection | | pulsing |
| Overload resistance | | yes |
| Voltage drop | U_d | ≤ 3 V at I_L (sum of all outputs) max. 50 mA |
| Rated insulation voltage | U_{BIS} | 30 V |
| Operating current | I_L | 1 ... 30 mA per output |
| Off-state current | I_r | 0 ... 0.5 mA |
| No-load supply current | I_0 | ≤ 15 mA |
| Time delay before availability | t_v | ≤ 300 ms |
| Switching state indicator | | LED, yellow |
| Error indicator | | LED, red |
| Functional safety related parameters | | |
| Safety Integrity Level (SIL) | | SIL 2 |
| Performance level (PL) | | PL d |
| Category | | Cat. 2 |
| MTTF _d | | > 7500 a |
| Mission Time (T _M) | | 20 a |
| Diagnostic Coverage (DC) | | min. 60 % |
| Assured release distance of a PDDb | S_{ar} | 15 mm |
| Compliance with standards and directives | | |
| Standard conformity | | |
| Standards | | EN IEC 60947-5-2:2007 EN IEC 60947-5-3:2013 EN ISO 13849-1:2015 EN IEC 61508:2010 EN 62061:2005+AC:2010+A1:2013+A2:2015 compatible with EN ISO 61131-2:2007 Typ 1, 2, 3 |
| Approvals and certificates | | |
| UL approval | | cULus Listed Load Type: General Purpose Circuitry: Class 2 Power Source Enclosure Type Rating: Type 1 Supply/Switching Voltage: 24 V DC Output Switching Current: 2 x 30 mA |
| CCC approval | | CCC approval / marking not required for products rated ≤ 36 V |
| Ambient conditions | | |
| Ambient temperature | | -25 ... 70 °C (-13 ... 158 °F) |
| Storage temperature | | -40 ... 85 °C (-40 ... 185 °F) |
| Altitude | | ≤ 2000 m above MSL |
| Mechanical specifications | | |
| Connection type | | cable |
| Housing material | | Stainless steel 1.4404 / AISI 316L |
| Sensing face | | PBT |
| Degree of protection | | IP68 / IP69 |
| Cable | | |
| Wire end ferrules | | yes |
| Cable diameter | | 4.3 mm \pm 0.1 mm |
| Bending radius | | > 15 x cable diameter |
| Material | | PVC |
| Color | | black |
| Number of cores | | 4 |
| Core cross section | | 0.34 mm ² |
| Length | L | 2 m |
| Mass | | 160 g |

Technical Data

| | |
|----------------------------|----------------------|
| Dimensions | |
| Length | 65 mm |
| Diameter | 30 mm |
| General information | |
| Scope of delivery | Supplied with 2 nuts |

Connection Assignment



Commissioning

Note for Setting the Safety Control

The sensor has a self-monitoring function for the outputs. Therefore, to avoid any malfunctions of the sensor, deactivate all test pulses of the connected safety controller to the sensor.