

# Inductive sensor

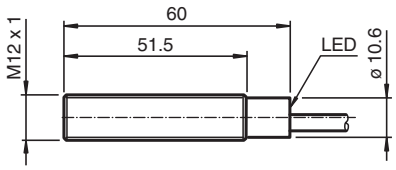
## NSB2-12GM50-2E2-PUR-S2D2

- No unusable area
- 2 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

## 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 | $s_n$ | 2 mm |
| Installation | | flush |
| Output polarity | | DC |
| Assured operating distance | $s_a$ | 0 ... 1.62 mm |
| Actuating element | | Reference target according EN IEC 60947-5-2 (FE360 - ST37K)<br>12 mm x 12 mm x 1 mm |
| Reduction factor $r_{Al}$ | | 0.6 |

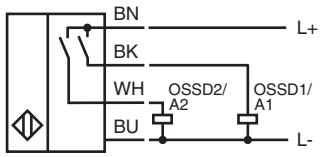
Release date: 2020-04-01 Date of issue: 2020-04-01 Filename: 304276-000004_eng.pdf

## Technical Data

| | | |
|---|---|---|
| Reduction factor $r_{Cu}$ | | 0.45 |
| Reduction factor $r_{304}$ | | 0.9 |
| Reduction factor $r_{Brass}$ | | 0.6 |
| Output type | | 4-wire |
| **Nominal ratings** | | |
| Operating voltage | $U_B$ | 18 ... 30 V |
| Rated operating voltage | $U_e$ | 24 V |
| 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 |
| 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 | $S_{ar}$ | 3 mm |
| **Compliance with standards and directives** | | |
| Standard conformity | | |
| Standards | | EN IEC 60947-5-2:2007<br>EN IEC 60947-5-3:2013<br>EN ISO 13849-1:2015<br>EN IEC 61508: 2010<br>EN 62061:2005+AC:2010+A1:2013+A2:2015<br>EN ISO 61131-2-2007 type 1, 2, 3 |
| **Approvals and certificates** | | |
| UL approval | | cULus Listed, General Purpose, Class 2 Power Source |
| 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 PUR , 2 m |
| Core cross-section | | 0.34 $mm^2$ |
| Housing material | | brass, nickel-plated |
| Sensing face | | PBT |
| Degree of protection | | IP68 / IP69 |
| Mass | | 77 g |
| **General information** | | |
| Scope of delivery | | 2 self locking nuts in scope of delivery |

Release date: 2020-04-01 Date of issue: 2020-04-01 Filename: 304276-000004_eng.pdf

## Connection




## Accessories

| | | |
|---|---|---|
|  | **BF 12** | Mounting flange, 12 mm |

Release date: 2020-04-01 Date of issue: 2020-04-01 Filename: 304276-000004_eng.pdf