

Inductive sensor

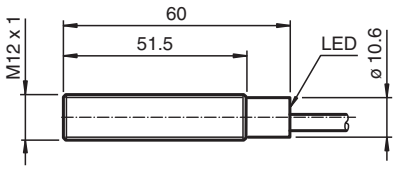
NSB2-12GH50-2E2-M1-S2D2

- 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
- E1-Type approval
- Extended temperature range -40 ... +85 °C
- 10 V DC ... 30 V DC supply voltage
- Max. altitude 5000 m

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) 12 mm x 12 mm x 1 mm
Reduction factor r_{Al}		0.6
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	10 ... 30 V
Rated operating voltage	U_e	12 ... 24 V

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Technical Data

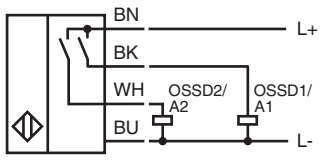
Switching frequency	f	0 ... 30 Hz
Hysteresis	H	typ. 5%
Reverse polarity protection		reverse polarity protected
Short-circuit protection		pulsing
Overload resistance		yes
Voltage drop	U_d	≤ 3 V at I_L (sum of all outputs) max. 50 mA
Rated insulation voltage	U_{BIS}	30 V
Operating current	I_L	1 ... 30 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}	3 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 IEC 62061:2021 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
E1 Type approval		10R-06
Ambient conditions		
Ambient temperature		-40 ... 85 °C (-40 ... 185 °F)
Storage temperature		-40 ... 85 °C (-40 ... 185 °F)
Altitude		≤ 5000 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		4.8 mm ± 0.15 mm
Bending radius		> 10 x cable diameter
Material		PUR
Color		black
Number of cores		4
Core cross section		0.5 mm^2
Length	L	2 m

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Mass		91 g
Dimensions		
Length		60 mm
Diameter		12 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.

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