

# Inductive sensor

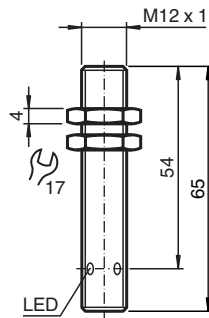
## NBB2-12GM60-E2-V1-M-Y310665



- 2 mm flush
- E1-Type approval
- Extended temperature range
- Extended operating voltage range
- Waterproof, degree of protection IP68



### Dimensions



### Technical Data

General specifications		
Switching function		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		mild steel, e. g. 1.0037, SR235JR (formerly St37-2) 12 mm x 12 mm x 1 mm
Reduction factor $r_{Al}$		0.35
Reduction factor $r_{Cu}$		0.2
Reduction factor $r_{304}$		0.7
Reduction factor $r_{Brass}$		0.4
Output type		3-wire
Nominal ratings		
Installation conditions		
A		0 mm
B		0 mm

Release date: 2022-06-30 Date of issue: 2022-06-30 Filename: 310665\_eng.pdf

Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

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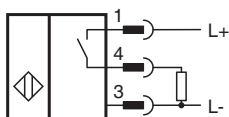
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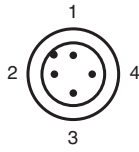
## Technical Data

C		6 mm
F		12 mm
Operating voltage	$U_B$	10 ... 65 V
Switching frequency	f	0 ... 1200 Hz
Hysteresis	H	0.02 ... 0.44
Reverse polarity protection		yes
Short-circuit protection		yes
Overload resistance		yes
Wire breakage protection		yes
Inductive overvoltage protection		yes
Surge suppression		yes
Ripple		10 %
Voltage drop	$U_d$	$\leq 2.5$ V
Repeat accuracy	R	0.1 mm
Operating current	$I_L$	0 ... 300 mA
Off-state current	$I_r$	0.01 mA
No-load supply current	$I_o$	$\leq 10$ mA
Time delay before availability	$t_v$	$\leq 40$ ms
Switching state indicator		Multihole-LED, yellow
<b>Functional safety related parameters</b>		
MTTF <sub>d</sub>		1640 a
Mission Time (T <sub>M</sub> )		20 a
Diagnostic Coverage (DC)		0 %
<b>Compliance with standards and directives</b>		
Standard conformity		
Standards		EN 60947-5-2:2007 EN 60947-5-2/A1:2012 IEC 60947-5-2:2007 IEC 60947-5-2 AMD 1:2012
<b>Approvals and certificates</b>		
UL approval		cULus Listed, General Purpose, Class 2 Power Source
E1 Type approval		10R-04
<b>Ambient conditions</b>		
Ambient temperature		-40 ... 85 °C (-40 ... 185 °F)
Storage temperature		-40 ... 85 °C (-40 ... 185 °F)
<b>Mechanical specifications</b>		
Connection type		Connector plug M12 x 1 , 4-pin
Housing material		brass, nickel-plated
Sensing face		PPS
Degree of protection		IP68
Mass		20 g

## Connection



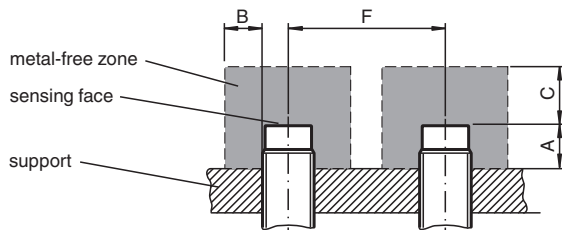
## Connection Assignment



Wire colors in accordance with EN 60947-5-2

1	BN	(brown)
2	WH	(white)
3	BU	(blue)
4	BK	(black)

## Installation



## Mounting

Interference emission and immunity according to Motor Vehicle Directive 10R-04 (E1 type approval)  
 Immunity according to DIN ISO 11452-2: 30 V/m  
 Frequency band of 20 MHz to 2 GHz

Conducted interference according to ISO 7637-2:

Pulse	1	2a	2b	3 a	3b	4
Severity	III	III	III	III	III	III
Failure criterion	C	A	C	A	A	A

EN 61000-4-2 was measured according to the requirements in IEC  
 EN 60947-5-2 (4 kV for metal, 8 kV for plastic)  
 EN 61000-4-3: 30 V/m (80 - 2500 MHz)  
 Severity IV  
 EN 61000-4-4: 2 kV  
 Severity III  
 EN 61000-4-6: 10 V (0.01- 80 MHz)  
 Severity III  
 EN 55011: Class A

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## Accessories

	<b>V1-G-2M-PUR</b>	Female cordset single-ended M12 straight A-coded, 4-pin, PUR cable grey
	<b>V1-W-2M-PUR</b>	Female cordset single-ended M12 angled A-coded, 4-pin, PUR cable grey