

# Inductive sensor

## NRN10-12GM40-E2-IO-C



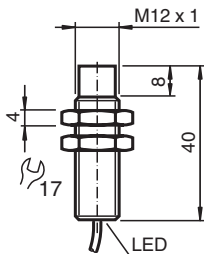
- 10 mm non-flush
- Reduction factor = 1
- Magnetic field resistant
- Weld Immune
- IO-Link interface for service and process data
- Switch point mode or window mode can be set
- Switching function, stability alarm and pulse extension can be set



### Function

Reduction factor 1 sensors reliably detect different metals with the same switch state. The integrated IO-Link interface enables clear identification of the sensor and diagnosis of the sensor condition. When using the sensor, parameters and operating modes can be optimally configured specifically for the intended application. In addition to setting the switching function and a pulse extension, the user can select either switch point mode or window mode in combination with a stability alarm. In switch point mode, the stability alarm signals the detection of an object in the area between the assured operating distance and operating distance  $s_n$ . In window mode, it signals the detection of an object below the window between operating distance  $s_n$  and the nearest operating distance. A stability alarm is displayed to the user via a flashing LED and process data.

### Dimensions



### Technical Data

General specifications		
Switching function		Normally open/closed (NO/NC) programmable
Output type		PNP
Rated operating distance	$s_n$	10 mm (factory setting)
Near operating distance		8 mm (can be activated by software)
Installation		non-flush
Output polarity		DC
Assured operating distance	$s_a$	0 ... 8.1 mm
Reduction factor $r_{Al}$		1
Reduction factor $r_{Cu}$		1
Reduction factor $r_{304}$		1
Reduction factor $r_{St37}$		1
Output type		3-wire
Nominal ratings		
Operating voltage	$U_B$	10 ... 30 V DC
Switching frequency	$f$	0 ... 1300 Hz (switch point mode) 0 ... 80 Hz (window mode, switch point mode with stability alarm)

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

## Technical Data

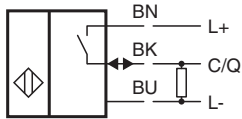
Hysteresis	H	typ. 3 %
Reverse polarity protection		reverse polarity protected
Short-circuit protection		pulsing
Voltage drop	$U_d$	$\leq 0.5$ V
Operating current	$I_L$	0 ... 200 mA
Off-state current	$I_r$	0 ... 0.5 mA typ. 60 $\mu$ A at 25 °C
No-load supply current	$I_o$	$\leq 15$ mA
Time delay before availability	$t_v$	max. 150 ms
Constant magnetic field	B	200 mT
Alternating magnetic field	B	200 mT
Status indicator		LED yellow
<b>Functional safety related parameters</b>		
MTTF <sub>d</sub>		362 a
Mission Time (T <sub>M</sub> )		20 a
Diagnostic Coverage (DC)		0 %
<b>Interface</b>		
Interface type		IO-Link ( via C/Q )
IO-Link revision		1.1
Device ID		0x201114 (2101524)
Transfer rate		COM2 (38.4 kBit/s)
Min. cycle time		2.3 ms
Process data width		Process data input (control system side): 2 Bit Process data output (control system side): none
SIO mode support		yes
Compatible master port type		A
<b>Compliance with standards and directives</b>		
Standard conformity		
Standards		EN IEC 60947-5-2
<b>Approvals and certificates</b>		
Protection class		II
Rated insulation voltage	$U_i$	60 V
Rated impulse withstand voltage	$U_{imp}$	800 V
UL approval		cULus Listed, General Purpose Class 2 power source
CCC approval		CCC approval / marking not required for products rated $\leq 36$ V
<b>Ambient conditions</b>		
Ambient temperature		-25 ... 70 °C (-13 ... 158 °F)
Storage temperature		-40 ... 85 °C (-40 ... 185 °F)
<b>Mechanical specifications</b>		
Connection type		cable PUR , 2 m
Core cross section		0.34 mm <sup>2</sup>
Housing material		Brass, PTFE coated
Sensing face		PPS
Degree of protection		IP67
Cable		
Cable diameter		4.3 mm $\pm$ 0.1 mm
Bending radius		> 10 x cable diameter
Mass		78 g
Dimensions		
Length		40 mm
Diameter		12 mm
<b>Factory settings</b>		

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## Technical Data

Default setting	operating mode = switch point mode with stability alarm switching function = Normally open (NO) switching distance = 10 mm
<b>General information</b>	
Scope of delivery	2 self locking nuts in scope of delivery

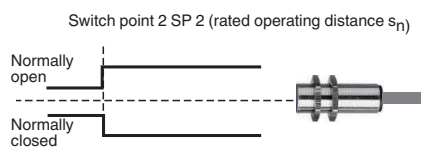
## Connection



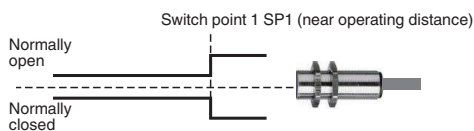
## Function Principle

### Switching output modes

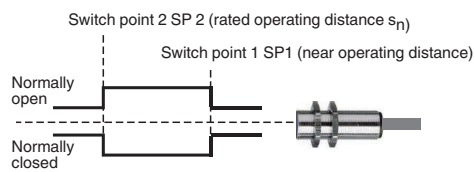
#### Switch point mode at rated operating distance $s_n$



#### Switch point mode with near operating distance



#### Window mode

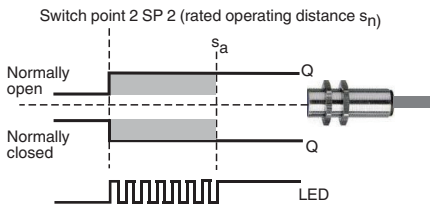


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**Function Principle**

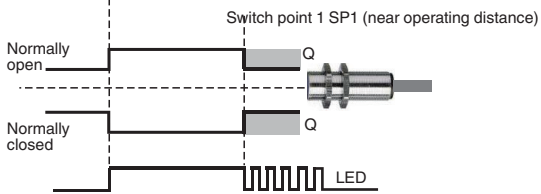
**Stability alarm**

Switch point mode with stability alarm (factory default)



**Window mode with stability alarm**

Switch point 2 SP 2 (rated operating distance  $s_n$ )



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