# Inductive sensor

NRB4-12GS40-E2-IO-V1

- 4 mm flush
- Reduction factor = 1
- Magnetic field resistant
- 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 sn. In window mode, it signals the detection of an object below the window between operating distance sn and the nearest operating distance. A stability alarm is displayed to the user via a flashing LED and process data.

Dimensions
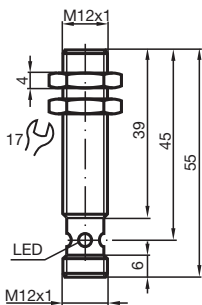
Technical Data

General specifications

Switching function		Normally open/closed (NO/NC) programmable
Output type		PNP
Rated operating distance	s_n	4 mm (factory setting)
Near operating distance		3 mm (can be activated by software)
Installation		flush
Output polarity		DC

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

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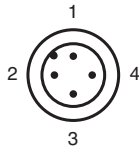fa-info@sg.pepperl-fuchs.com

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Technical Data

Assured operating distance	s_a	0 ... 3.24 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 ... 2000 Hz (switch point mode) 0 ... 125 Hz (window mode, switch point mode with stability alarm)
Hysteresis	H	typ. 3 %
Reverse polarity protection		reverse polarity protected
Short-circuit protection		pulsing
Voltage drop	U_d	≤ 0.5 V
Operating current	I_L	0 ... 200 mA
Off-state current	I_r	0 ... 0.5 mA typ. 60 µA at 25 °C
No-load supply current	I_0	≤ 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		Multihole-LED, yellow
Functional safety related parameters		
$MTTF_d$		362 a
Mission Time (T_M)		20 a
Diagnostic Coverage (DC)		0 %
Interface		
Interface type		IO-Link (via C/Q = pin 4)
IO-Link revision		1.1
Device ID		0x201101 (2101505)
Transfer rate		COM2 (38.4 kBaud)
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
Compliance with standards and directives		
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
Approvals and certificates		
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 ≤36 V
Ambient conditions		
Ambient temperature		-25 ... 70 °C (-13 ... 158 °F)
Storage temperature		-40 ... 85 °C (-40 ... 185 °F)
Mechanical specifications		
Connection type		Connector plug M12 x 1 , 4-pin
Housing material		Stainless steel 1.4305 / AISI 303
Sensing face		PBT

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Technical Data

Degree of protection	IP67
Mass	25 g
Factory settings	
Default setting	operating mode = switch point mode with stability alarm switching function = Normally open (NO) switching distance = 4 mm
General information	
Scope of delivery	2 self locking nuts in scope of delivery

Connection
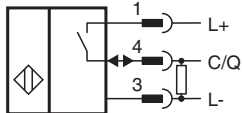
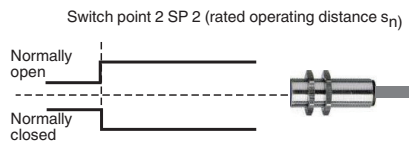## Connection Assignment

Wire colors in accordance with EN 60947-5-2

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

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Function Principle

Switching output modes

Switch point mode at rated operating distance s_n
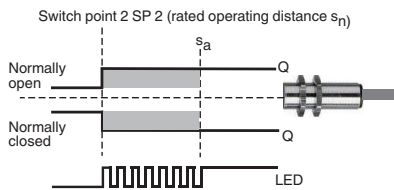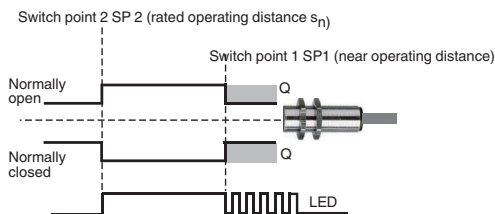
Switch point 2 SP 2 (rated operating distance s_n)

Normally open

Normally closed

Switch point mode with near operating distance

Switch point 1 SP1 (near operating distance)

Normally open

Normally closed

Window mode

Switch point 2 SP 2 (rated operating distance s_n)

Switch point 1 SP1 (near operating distance)

Normally open

Normally closed
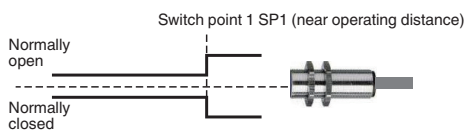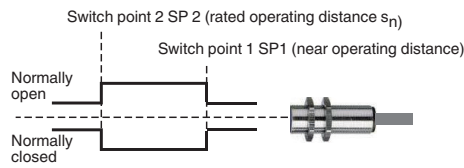
Stability alarm

Switch point mode with stability alarm (factory default)

Switch point 2 SP 2 (rated operating distance s_n)

s_a

Normally open — Q

Normally closed — Q

LED

Window mode with stability alarm

Switch point 2 SP 2 (rated operating distance s_n)

Switch point 1 SP1 (near operating distance)

Normally open — Q

Normally closed — Q

LED

Accessories

	BF 12	Mounting flange, 12 mm
	V1-G-2M-PVC	Female cordset single-ended M12 straight A-coded, 4-pin, PVC cable grey

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Accessories

	V1-W-2M-PVC	Female cordset, M12, 4-pin, PVC cable
	OMT550-R200-2EP-IO-V1	Distance sensor
	ICRL-U-5RJ45-DIN-NT	Ethernet unmanaged switch with 5 RJ45 ports and port alarm
	ICE2-8IOL-G65L-V1D	EtherNet/IP IO-Link master with 8 inputs/outputs
	ICE3-8IOL-G65L-V1D	PROFINET IO IO-Link master with 8 inputs/outputs
	ICE2-8IOL-K45S-RJ45	EtherNet/IP IO-Link master with 8 inputs/outputs, DIN rail, screw terminal
	ICE3-8IOL-K45P-RJ45	PROFINET IO IO-Link master with 8 inputs/outputs, DIN rail, push-in terminals
	ICE3-8IOL-K45S-RJ45	PROFINET IO IO-Link master with 8 inputs/outputs, DIN rail, screw terminal
	IO-Link-Master02-USB	IO-Link master, supply via USB port or separate power supply, LED indicators, M12 plug for sensor connection
	ICE1-8IOL-G30L-V1D	Ethernet IO-Link module with 8 inputs/outputs
	ICE1-8IOL-G60L-V1D	Ethernet IO-Link module with 8 inputs/outputs
	ICE2-8IOL-K45P-RJ45	EtherNet/IP IO-Link master with 8 inputs/outputs, DIN rail, push-in connectors

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