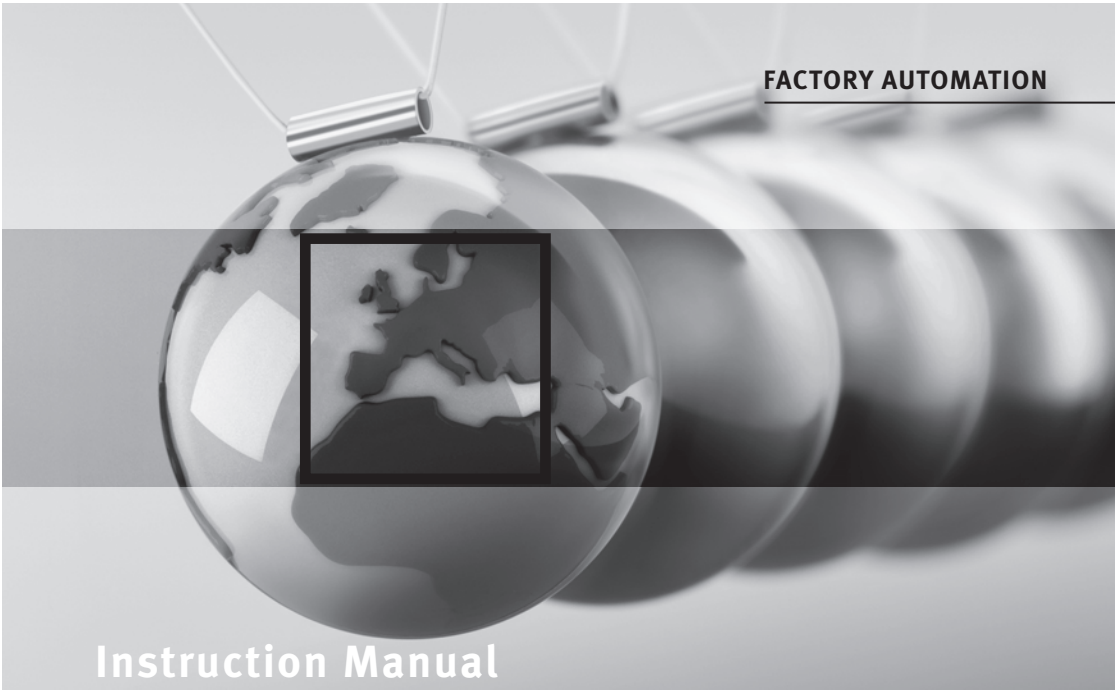

Instruction Manual

NBB20-L2-E2B-C-V1
NBN40-L2-E2B-C-V1
Inductive Sensor

CE

PEPPERL+FUCHS
SENSING YOUR NEEDS

Part. No. 202415 / DOCT-1310 / 05. june 2007

Used symbols

Warning

This symbol warns the user of potential danger. Nonobservance may lead to personal injury or death and/or damage to property.

Attention

This symbol warns the user of potential device failure. Nonobservance may lead to the complete failure of the device or other devices connected.

Note

This symbol calls attention to important notes.r

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Security advice

Warning

This product must not be used in applications, where safety of persons depend on the correct device function.
This product is not a safety device according to EC machinery directive.

Notes

These operating instructions refer to proper and intended use of this product. They must be read and observed by all persons making use of this product. This product is only able to fulfill the tasks for which it is designed if it is used in accordance with specifications of Pepperl+Fuchs.

The warrantee offered by Pepperl+Fuchs for this product is null and void if the product is not used in accordance with the specifications of Pepperl+Fuchs.

Changes to the devices or components and the use of defective or incomplete devices or components are not permitted. Repairs to devices or components may only be performed by Pepperl+Fuchs or authorized work shops. These work shops are responsible for acquiring the latest technical information about Pepperl+Fuchs devices and components.Repair tasks made on the product that are not performed by Pepperl+Fuchs are not subject to influence on the part of Pepperl+Fuchs. Our liability is thus limited to repair tasks that are performed by Pepperl+Fuchs.

The preceding information does not change information regarding warrantee and liability in the terms and conditions of sale and delivery of Pepperl+Fuchs.

This device contains sub-assemblies that are electrostatically sensitive. Only qualified specialists may open the device to perform maintenance and repair tasks. Touching the components without protection involves the risk of dangerous electrostatic discharge, and must be avoided. Destruction of basic components caused by an electrostatic discharge voids the warrantee!

Subject to technical modifications.

Pepperl+Fuchs GmbH in D-68301 Mannheim maintains a quality assurance system certified according to ISO 9001.

CE

ISO**9001**

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1 Sensor description

1.1 Basic features

The main feature of the inductive proximity switch NBB20-/NBN40-L2-E2B-C-V1 is the bistability of the switching output. The standard behaviour of an inductive proximity switch is such that the presence of an activator element (e.g. metal edge) activates the output. As soon as the activator element vacates the sensor detection area, the output returns to a passive state.

The bistability of the output of the sensor described here causes the state of the output to change every time a new activator element is detected within the sensor detection area. Removing the activator element does not have an effect on the state of the output, however.

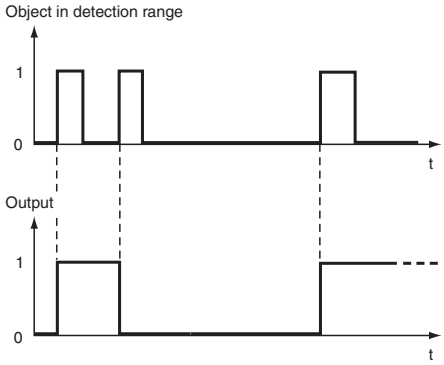

Fig. 1.1: Output behaviour dependent on the presence of an activator element

This output behaviour allows the sensor NBB20-/NBN40-L2-E2B-C-V1 to be used as a direct replacement for an electromechanical cross switch.

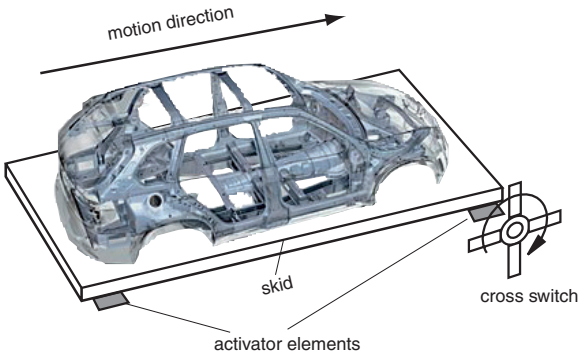

Fig. 1.2: Skid measurement using an electromechanical cross switch

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The respective switching state of the sensor NBB20-/NBN40-L2-E2B-C-V1 is stored nonflush in the sensor at all times so that the last valid output state is made available when the sensor is activated again after disconnection from the power.

The advantages of replacing the electromechanical cross switch with sensor NBB20-/NBN40-L2-E2B-C-V1 are:

- suitable for rapid handling systems
- non-contact, i.e. no mechanical wear
- no moving parts
- unintentional actuation by operating personnel not possible
- maintenance-free
- sensors easy to replace without subsequent readjustment

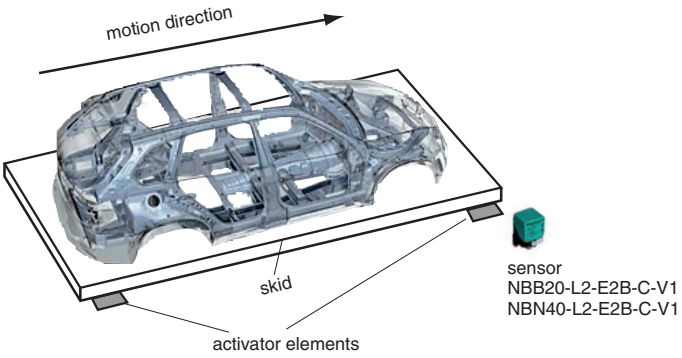

Fig. 1.3: Skid measurement using sensor NBB20-/NBN40-L2-E2B-C-V1

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1.2 PLC input set/reset

The sensor has a function input which offers another way to change the output state of the sensor. When an input signal is created with the potential $+U_B$, the output state of the sensor changes in the same way as when an activator element enters the sensor detection area.The switching state of the sensor can be set or reset specifically via a PLC without requiring a transport process.

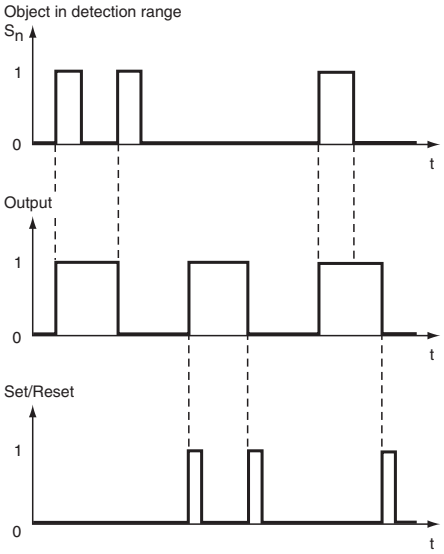

Fig. 1.4: Output behaviour dependent on the presence of an activator element and the activation of the PLC input

1.3 Display LEDs

A total of 4 extremely bright LEDs positioned on the corners allow the operator to visually check that the sensor is functioning correctly (2 green LEDs) and check the current switching state (2 yellow LEDs) from all sides and at a distance from the sensor.

1.4 "Enhanced immunity" version

The inductive proximity switch NBB20-/NBN40-L2-E2B-C-V1 is largely immune to external magnetic fields generated by nearby electrical welding equipment.

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2 Technical data

2.1 Electrical and mechanical data

	NBB20-L2-E2B-C-V1	NBN40-L2-E2B-C-V1
GENERAL DATA		
Switching element function	PNP, normally closed	
Sensing range s_n	20 mm	40 mm
Mounting	flush	nonflush
Output polarity	DC	
Guaranteed switching distance s_a	0 to 16.2 mm	0 to 32.4 mm
Reduction factor r_{Al}	0.33	0.31
Reduction factor r_{Cu}	0.31	0.3
Reduction factor r_{V2A}	0.74	0.74
Reduction factor r_{Ms}	0.41	0.31
Characteristic data		
Operating voltage U_B	10 ... 30 V	
Switching frequency f	0 ... 50 Hz	
Hysteresis H	typ. 5 %	
Reverse polarity protection	protected	
Short circuit protection	pulsing	
Voltage drop U_d	≤ 3 V	
Rated value data		
Operating current I_L	0 ... 200 mA	
Residual current I_r	0 ... 1 mA	
No-load current I_0	≤ 25 mA	
Operating voltage indicator	LED, green	
Switching state indicator	LED, yellow	
Conformity with standards		
Standards	IEC / EN 60947-5-2:2004	
Ambient conditions		
Ambient temperature	-25 ... 85 °C (248 ... 358 K)	
Storage temperature	-25 ... 85 °C (248 ... 358 K)	
Mechanical data		
Connection type	V1 connector plug	
Housing material	PA 6 Grivory GVN-35H	
Front end	PA 6 Grivory GVN-35H	
Protection class	IP69K	

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2.2 Electrical connection

E2B

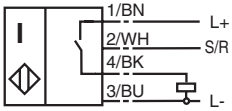

Fig. 2.1: Electrical connection NBB20-/NBN40-L2-E2B-C-V1

2.3 Dimensions

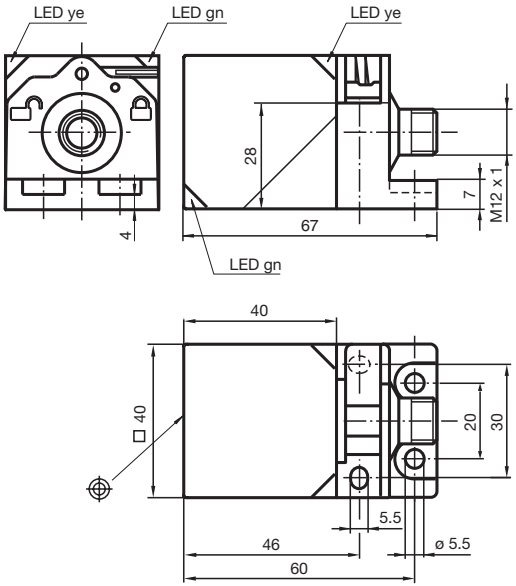

Fig. 2.2: Dimensions NBB20-/NBN40-L2-E2B-C-V1

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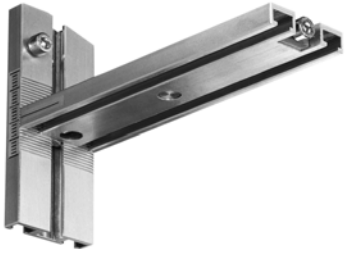
3 Accessories

3.1 Mounting aid MHW 01

Mounting aid MHW 01 is suitable for attaching sensor NBB20-/NBN40-L2-E2B-C-V1.



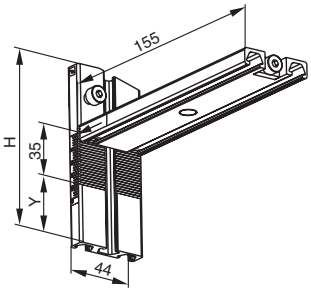


Fig. 3.1: Dimensions MHW 01

3.2 Cable sockets

Our 4-pole cable sockets are suitable for the electrical connection of sensor NBB20-/NBN40-L2-E2B-C-V1 and are available in different lengths with various covering materials.

Straight version:

- V1-G-2M-PVC
- V1-G-3M-PVC
- V1-G-5M-PVC
- V1-G-10M-PVC
- V1-G-2M-PUR
- V1-G-3M-PUR
- V1-G-5M-PUR
- V1-G-10M-PUR

Angled version:

- V1-G-2M-PVC
- V1-G-3M-PVC
- V1-G-5M-PVC
- V1-G-10M-PVC
- V1-G-2M-PUR
- V1-G-3M-PUR
- V1-G-5M-PUR
- V1-G-10M-PUR

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4 Notes

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