Proximity Sensors

1.1 Inductive Sensors

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Choosing the Right Sensor in Five Steps

Selecting the appropriate sensor depends on the application and the material of the object to be detected.

- If the object is metal, we recommend an inductive sensor.
- If the object is plastic, paper or fluid (oil or water-based), granular or powder, we recommend a capacitive sensor.
- If the object contains a magnet, a magnetic field sensor is suitable.

You can find more background information on the physical effect of the different types of proximity sensors at the start of each relevant chapter.

Find the ideal sensor for your application in five steps:

- **Step 1: Housing design**
- **Step 2: Operating distance**
- **Step 3: Mounting conditions**
- **Step 4: Electric data and connections**
- **Step 5: General specification and special features**

### Step 1: Housing design

**Rectangular/cube sensors**

This housing shape features the same mounting hole dimensions that are used for mechanical end position sensors. The limit switch housing style consists of a stable housing base (PBT or metal) that is fastened to the mounting surface for customer wiring. The top component is sealed with a gasket against the housing base. The top component contains the switching amplifier and sensor that can be positioned in five directions, i.e., the active surface can face forward, to the right, left, top, or down.

The cube style family also includes the L series, which is extremely compact and provides quick disconnect and mounting. The active surface can be adjusted in 15° steps on two levels. The connection is via V1 plug connector.

<table>
<thead>
<tr>
<th>Type</th>
<th>Dimensions (front) mm</th>
<th>Settings (head)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limit switch</td>
<td>40 x 40 or 55 x 55</td>
<td>Adjustable by 90°</td>
</tr>
<tr>
<td>Mini limit switch</td>
<td>30 x 30</td>
<td>Adjustable by 90° and in increments of 15°</td>
</tr>
<tr>
<td>L series</td>
<td>40 x 40</td>
<td>Adjustable by 90° and in increments of 15°</td>
</tr>
</tbody>
</table>

**Flat pack (FP)**

Flat pack proximity sensors have a large front area (80 mm x 80 mm) and therefore a long operating distance. They consist of two parts. The base contains the terminal compartment and the top contains the sensor coil system and the electronics, which are encapsulated in casting resin. The top is always made from PBT and the bottom can be either PBT or cast metal. They conform with the mounting hole arrangement (housing design ID80) defined in European standard EN 60947.

**Cylindrical sensors**

This sensor style has the active zone on the front face in an axial direction. Cylindricals are available in diameters of 3 mm (unthreaded) or 4 mm (threaded) up to 30 mm (threaded) or 40 mm smooth (with terminal housing) and provide the user with a wide range of sizes and connection styles.

**Surface mount proximity sensors**

These proximity sensors are mounted to the required surface. Different versions are available with the active zone aligned upwards or forwards. The housing is usually made of PBT.

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Slot-shaped inductive proximity sensors

These sensors have a U-shaped or slot-shaped housing made out of PBT. The electromagnetic AC field is generated between two coils that are positioned opposite each other in the sides of the U. The switching function is triggered when the object (metallic target) enters the area between the coils.

Ring-shaped inductive proximity sensors

These proximity sensors are shaped as a ring to detect metal objects that pass through the loop. The electromagnetic AC field is concentrated inside the ring. The switching function is triggered when a metallic object moves into the ring.

The housing is made of PBT.

Inductive PMI positioning systems

Based on the very precise evaluation of multiple coil systems, the F90, F110, and F112 inductive positioning systems are able to determine exact positions along linear travel ranges. The PMI360D inductive positioning system is optimized for continual angle determination on valve actuators and valves. Inductive positioning systems provide analog output signals relative to position. See the Positioning Systems section.

Step 2: Operating distance

The sensing range is the most important parameter for a proximity sensor and is primarily determined by the sensor diameter (coil or capacitor). The dimensions and material composition of the target as well as the ambient temperature are also influencing factors. For magnetic proximity switches, the alignment and field strength of the magnets are the key criteria to determining the sensing range.

Definition of the operating distance

Standard EN 60947-5-2 defines the sensing range for all types of proximity sensors other than slot and ring-shaped housing designs.

There are two options for actuating a proximity sensor:

- Through an axial approach (head on)
- Through a radial approach (side approach)

The following definitions apply first of all to axial actuation.

Nominal sensing range $s_n$

The nominal sensing range (according to EN 60947-2-5 “Rated Sensing Range”) is a standard value for defining the operating distance. It does not take into account production tolerances or changes through external influences such as voltage and temperature.

Standard measuring plate (target)

The following sensing ranges are determined using a standard target. This target is square with a thickness of 1 mm and is made of steel, e.g., type FE 360 (ST37) with a smooth surface.

Its side lengths are either

- $\frac{1}{3}$ x inner circle diameter of the active area or
- $3 \times s_T$.

The greater value applies in each case. The standard target must be grounded for capacitive proximity sensors.

Example 1:

M18 proximity sensor

5 mm sensing range

3 x operating distance = 15 mm < diameter

Therefore, the actuator dimensions must be 18 x 18 x 1 mm

Example 2:

M18 proximity sensor

8 mm sensing range

3 x operating distance = 24 mm

Therefore, the target dimensions must be 24 x 24 x 1 mm

This standard measuring plate (target) is the optimal actuator for the operation.

A reduction in the dimensions or change in material composition reduces the sensing range.

Actual sensing range $s_r$

The sensing range of an individual proximity sensor measured at ambient temperature of 23 ± 5 °C, at a voltage within the operating voltage range and the defined mounting conditions:

$$0.9 \cdot s_n \leq s_r \leq 1.1 \cdot s_n$$

Usable sensing range $s_u$

The sensing range of an individual proximity sensor, measured at an ambient temperature range between -25 °C and +70 °C, with a supply voltage between 85% and 110% of the rated operational voltage:

$$0.9 \cdot s_u \leq s_u \leq 1.1 \cdot s_r$$
Proximity Sensors

1.1.1 Proximity Sensors, Inductive Sensors, Valve Position Sensors (Accessories)

Since the reduction factor for inductive proximity sensors depends upon the material in question, the shorter the sensing range for the material in question.

Different actuator materials

In addition its dimensions, the material composition of the target is also important. This is described by the reduction factor. The reduction factor specifies by what factor the operating distance reduces based on different materials compared to steel FE 360 (St37) for inductive proximity sensors and against a grounded plate for capacitive proximity sensors. The lower the reduction factor, the shorter the sensing range for the material in question.

Proximity Switches

Introduction

1

Assured sensing range \( s_a \)

Distance from the active area where actuation of the proximity switch is assured under defined conditions:

\[ 0 < s_a \leq 0.81 \cdot s_n \]

Repeatability \( R \)

Repeat accuracy is the change in the actual sensing range \( s_r \), measured over a period of eight hours at a housing temperature of \( 23 \pm 5 \) °C (73 ± 9 °C), any level of relative humidity, and a supply voltage of \( U_0 \leq 5\% \) or any voltage within the rated operational voltage range ±5%:

\[ R \leq 0.1 \cdot s_r \]

Hysteresis \( H \)

Hysteresis is the distance between the switching points when the measuring plate approaches and moves away from the proximity sensor. This value is specified relative to the actual operating distance \( s_r \), measured at an ambient temperature of \( 23 \pm 5 \) °C (73 ± 9 °C), and the rated operational voltage:

\[ H \leq 0.2 \cdot s_r \]

Switched off

A proximity sensor is switched off with certainty when the distance between the target and the active sensor face is at least three times the rated sensing range \( s_n \).

Laterally/radially approaching objects

In addition to an axial approach, target objects can approach a proximity sensor radially, through the active zone. When targets approach radially, a different sensing range is obtained depending on the axial distance. This relationship is described by the response curves shown.

For inductive proximity sensors, the conductivity/permeability ratio of the target is the parameter for the reduction factor. Some typical reduction factor values are provided below:

<table>
<thead>
<tr>
<th>Material</th>
<th>Reduction factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction steel</td>
<td>1</td>
</tr>
<tr>
<td>Stainless steel</td>
<td>0.85</td>
</tr>
<tr>
<td>Aluminum</td>
<td>0.4</td>
</tr>
<tr>
<td>Copper</td>
<td>0.3</td>
</tr>
</tbody>
</table>

Step 3: Mounting conditions

Inductive and capacitive sensors can be flush mounted or non-flush mounted.

Sensors that cannot be flush mounted

Non-flush proximity sensors have the greatest sensing range relative to sensor diameter. The coils used to generate electromagnetic fields in inductive proximity sensors are placed in a ferrite core to produce a directed field. But for non-flush sensors, a portion of this field is radiated laterally. A lateral effect can also be observed in capacitive proximity sensors.

In order to prevent these high-range products from being damped by their environment, a metal-free space must be left around the sensor element. The space must conform to the minimum requirements shown below.

Sensors that can be flush mounted

Flush inductive and capacitive proximity sensors can be installed without leaving a distance between the mounting surface and the sensor face. The advantage is that they are better mechanically protected and less prone to errors than non-flush types. The flush mounting is possible because of the addition of an internal shield designed into the sensor. Flush sensors are generally called flush mountable or embeddable sensors.

Further details on the mounting conditions are included in the technical data for the sensors.

Different target sizes

Inductive sensors are often activated by machine parts. These very rarely have the same size and shape as the standard measuring plate to which the sensor’s technical data applies. The real application sensing range depends on the size of the metal used to attenuate the sensor.

Generally, the sensing range increases only marginally with a larger object surface, but reduces significantly for smaller objects.

If the application target is different in size to the standard measuring plate, it is recommended that you verify the sensing range of the selected sensor.

Different actuator materials

In addition its dimensions, the material composition of the target is also important. This is described by the reduction factor. The reduction factor specifies by what factor the operating distance reduces based on different materials compared to steel FE 360 (St37) for inductive proximity sensors and against a grounded plate for capacitive proximity sensors. The lower the reduction factor, the shorter the sensing range for the material in question.

Since the reduction factor for inductive proximity sensors depends upon the housing and shielding material, this factor vary from type to type. Please use the value in the respective data sheet.
Mutual interference

The minimum distance (F) must be maintained in order to prevent mutual interference between adjacent sensors. Proximity sensors with altered frequencies are available on request in case these distances cause application-related problems. When using alternate frequencies between sensors, they can be mounted adjacent to each other. Contact technical support for application-related assistance.

If the application does not allow a minimum distance to be maintained, flush mount sensors with offset oscillation frequencies are available upon request. These sensors can then be mounted directly beside each other.

Step 4: Electric data and connections

In addition to the sensing range, other important criteria include sensor parameters such as the type and level of supply voltage. An overview of the output circuits for our sensors is included in this catalog beginning with the Sensor Connections/Sensor Outputs section.

In terms of supply voltage, our wide product range includes DC, AC, and AC/DC sensors.

Step 5: General specification

The idle current \( I_0 \) specifies the power consumption of the proximity sensor. It is measured without load. It is also termed supply current.

The operating current \( I_L \) (design operating current \( I_p \) according to EN 60947-5-2) specifies the maximum load current for continuous operation.

The short-time current \( I_K \) is the current that may occur for a short time when switching on, without damaging the proximity sensor. It is also termed surge current.

The residual current \( I_R \) is the current that flows through the load with the proximity sensor open. It is also termed leakage current.

The operating voltage \( U_B \) is indicated by the maximum and minimum values for the supply voltage, i.e., 10...30 VDC. The proximity sensor can be operated safely in this area. The rated voltage is specified for NAMUR proximity sensors.

The voltage drop \( U_d \) is measured across the conducting proximity sensor output.

The switching frequency \( f \) is the maximum number of changes from dampered to non-dampered state in Hertz (Hz), see also the figure in accordance with EN 60947-5-2.

The spacing between targets should be twice the width of the target. The width of the target should be equal to or greater than the diameter of the sensor face. The maximum switching frequency for each sensor is shown in the sensor data sheets.

Measuring vane to determine the maximum switching frequency.

The harmonic voltage, also referred to as ripple or residual ripple, is the AC voltage (peak-to-peak) that is superimposed over the operating voltage and specified as a percentage of the arithmetic average value. Pepperl+Fuchs’ sensors feature max. 10% of the residual ripple and comply with standard DIN EN 60947-5-2.

Permissible interference voltage

Short-term voltage peaks on the supply lines can damage unprotected proximity sensors. Transient protection on all sensors by Pepperl+Fuchs suppresses noise pulses in accordance with EN 60947-5-2.

The time delay before availability \( t_v \) is the time taken until a proximity sensor is ready for operation once the operating voltage has been switched on. Pepperl+Fuchs proximity sensors feature max. 300 ms and comply with EN 60947-5-2.

Switch-on pulse suppression

All proximity sensors are equipped with this feature, which suppresses a fault signal at the output when the operating voltage is switched on during time \( t_v \).

Short-circuit current limitation

With short-circuit current limitation, which is included in most proximity sensors by Pepperl+Fuchs, if the current trip value is exceeded the output is periodically blocked and released again until the short-circuit is fixed (pulsing).

The permissible ambient temperature is the temperature range within which the proximity sensor operates properly. The following apply to the Pepperl+Fuchs standard series:

-25 °C to +70 °C or -11 °F to +158 °F.

Degree of protection

Depending on the requirements, proximity sensors by Pepperl+Fuchs are IP65, IP67, IP68 or IP69K protected, depending on the model selected.

Permissible shock and vibration load

The shock resistance test is carried out at 30 times ground acceleration and 11 ms duration. The vibration resistance test is conducted at a resonance frequency between 10 and 55 Hz and 1 mm amplitude (IEC 60068-2-6).

Permissible tightening torque [Nm] (mounting)

<table>
<thead>
<tr>
<th>Sensor Material</th>
<th>Stainless Steel</th>
<th>Brass</th>
<th>PBT</th>
<th>PPS</th>
</tr>
</thead>
<tbody>
<tr>
<td>M5 x 0.5</td>
<td>3.0</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>M8 x 1</td>
<td>10.0</td>
<td>3.0</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>M12 x 1</td>
<td>15.0</td>
<td>10.0</td>
<td>0.75</td>
<td>-</td>
</tr>
<tr>
<td>M18 x 1</td>
<td>30.0</td>
<td>30.0</td>
<td>1.5</td>
<td>5</td>
</tr>
<tr>
<td>M30 x 1.5</td>
<td>30.0</td>
<td>30.0</td>
<td>3.0</td>
<td>10</td>
</tr>
</tbody>
</table>
Special Sensor Features for Special Applications

Reduction factor 1

Unlike standard inductive sensors, reduction factor 1 sensors have no reduction in sensing distance when detecting nonferrous metal targets. Traditional proximity sensors may incur sensing range reductions between 50 and 70% when detecting metals such as aluminum, brass or copper. Reduction factor 1 sensors allow the user to detect various metals at the same range as a standard ferrous target.

Reduction factor 1 sensors are inductive type sensors, equipped with a special oscillator design enabling the reliable detection of metals at the specified distance, independent of metal characteristics. At the center of the design are two air-core coils, allowing the sensor electronics to adapt to the metal characteristics and trigger the output consistently at the sensor rated distance. This design also guarantees maximum operating distances and material independent detection of all metals.

Benefits:

• Same operating distance for all metals
• Maximum operating distance from 2 mm to 75 mm
• Electric magnetic field immunity
• Weld-spark resistant models available
• Complete portfolio of cylindrical and cubic housing designs

Weld-immune sensors

Sensors are used in some demanding environments—that means strong magnetic fields, showers of sparks and hot, embedding weld slag. Pepperl+Fuchs has worked with manufacturers around the world to provide weld-immune sensors that can consistently perform in unyielding environments. We’re proud to say that we’ve taken durability, resilience and precision to a higher level in weld-cell automation. Designed to be robust and reliable, our family of inductive weld-immune sensors can solve virtually any weld-sensing application.

Sensors with e1 certification

Commercial vehicles represent an important application area for sensor technology. Sensors for diggers, cranes, agricultural machinery, refuse, or fire trucks are some of the many applications for sensor technology. Some applications, such as ships and fork lift trucks, may also require specially adapted products.

For each application, all requirements must all be taken into consideration before applying the components. In addition to the basic sensor function, optimal mechanical integration into the overall system is also required, as well as application-specific sealing of the devices and resistance to temperature and environment influences. In some cases, special connectors usually found in vehicles may be integrated into the sensors.

Furthermore, the pertinent standards for the vehicles must be taken into consideration. This includes stringent EMC requirements, which are required in vehicle or ship-building environments. Over recent years, Pepperl+Fuchs has worked on many customer-specific developments where it has demonstrated its ability to integrate these requirements into sensors, both efficiently and cost effectively for high volumes. Many reputable companies within this sector choose our products.

Due to their robustness, inductive proximity sensors in cylindrical housings are most often specified for this market, but Pepperl+Fuchs also offers inductive sensors for analog position measurement as well as inclination sensors used in the mobile environment.

Pressure-resistant sensors

Pressure-resistant proximity sensors are suitable for use in hydraulic cylinders. They are suitable for operating pressures up to 500 bar and peak pressures up to 800 bar on the active area.

The pressure resistance is achieved by means of a ceramic front face that is an integral part of the stainless steel housing. A groove is also incorporated into the housing (O-ring).
Sensors for Position Feedback to Valve Actuators

Sensors for Box Installation

The term “box solution” refers to the integration of sensor technology into an accessory box that generates the mechanical coupling of the sensors on adjustment drives of different dimensions. This solution was developed to prevent the sensors from being directly exposed to the environment, therefore permitting the use of standard sensors.

Most reputable drive manufacturers offer standard boxes that are fitted with Pepperl+Fuchs sensors, either with or without visual indication.

Features:

- Versatile – the box offers individual connection options
- Reliable – the installation is integrated into the box such that it is resistant to manipulation and prevents dust build-up
- Safe – the box complies with the accident prevention regulations
- Simple – it is mounted using preadjusted sensors
- Compliant – the connection identification of MSR devices complies with standard DIN 45140 T.1 and the mechanical mounting complies with VDI/VDE 3845

Standard sensors

For box installation, Pepperl+Fuchs offers cylindrical standard sensors with short housing lengths up to 40 mm and slot sensors with a slot width of 3.5 mm, along with sensors from the V3 series. These are square-shaped sensors in standard dimensions for mechanical micro switches. Standard DC versions and NAMUR versions are available with an extended temperature range (up to -50 °C to +100 °C).

Position feedback sensors for box installation

The F25 sensor series by Pepperl+Fuchs offers an effective alternative for position feedback on valve actuators.

They combine two coil systems as “double sensors” in one housing, significantly reducing the mounting and maintenance effort.

Backed by decades of experience, Pepperl+Fuchs offers a wide range of sensors and actuators for the F25 Series that are suitable for both the box solution and for direct mounting on the adjustment drive.

Features:

- Double sensor - the sensor has two active zones
- Safe – it is finger safe, in compliance with the accident prevention regulations
- Variable – it can be mounted directly to the drive or the valve, via a bracket or in a box
- Simple – mounting requires no adjustments or additional settings
- Practical – several sensors can be stacked for more than two set points if necessary
Sensors for Direct Mounting

Are you looking for a stable and robust, open-construction position feedback solution that enables the sensor and actuator to be directly mounted? The F31 and F31K series are ideally suited for direct mounting to drives without the need for additional mounting materials. Using just two targets, you can determine the position of all standard drives regardless of their size and make.

Versions without valve connections and versions with one or two valve connections are also available. The valve can be controlled directly via the sensor connection simplifying the mounting effort and reducing cabling costs.

Pepperl+Fuchs also offers an attractive open solution – the F25 sensor series – for position feedback of manually operated ball valves and flaps.

Features:

- **Safe** - the dimensions of the sensor and the distances between sensors and actuators are selected to prevent risk of injury during operation (certified by TÜV)
- **Variable** – the sensors are suitable for all standard drives regardless of size and make
- **Fixed** – the adjustment is retained thanks to mounting holes in the sensor housing for easy sensor replacement
- **Universal** – both left- and right-rotating drives can be read
- **Clear** – the assignment of the actuator to the hole pattern for the drive is clear and the drive position is clearly visible
- **Versatile** – you can choose between a cable connection, plug connection (V1, V16, or V18), and terminals
- **Transparent** – the switching states, supply voltage, and valve control can be displayed clearly using LEDs

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## Proximity Sensors

### Inductive Sensors, cylindrical

#### Model number, inductive standard sensors

<table>
<thead>
<tr>
<th>N</th>
<th>B</th>
<th>B 10</th>
<th>G</th>
<th>M 50</th>
<th>E2</th>
<th>C</th>
<th>V1</th>
</tr>
</thead>
</table>

#### Electrical Output

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A, A0</td>
<td>4-wire, DC, NPN, antivalent</td>
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<tr>
<td>A2</td>
<td>4-wire, DC, NPN, NO</td>
</tr>
<tr>
<td>B3</td>
<td>AS-Interface Spec. 2.0</td>
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<tr>
<td>E3</td>
<td>3-wire, DC, PNP, NC</td>
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<tr>
<td>E4</td>
<td>3-wire, DC, PNP, NO</td>
</tr>
<tr>
<td>E5</td>
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<tr>
<td>N1</td>
<td>NAMUR, NC</td>
</tr>
<tr>
<td>N3</td>
<td>NAMUR, bistable</td>
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<tr>
<td>N4</td>
<td>NAMUR, NO</td>
</tr>
<tr>
<td>U</td>
<td>2-wire, AC/DC, programm. wiring</td>
</tr>
<tr>
<td>U8</td>
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<td>UO</td>
<td>2-wire, AC/DC, NC</td>
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<td>US</td>
<td>2-wire, AC/DC, NO</td>
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<td>Z5</td>
<td>2-wire, DC, NC</td>
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</table>

#### Special Features

- C: Welding field resistant
- DW: Rotation speed monitoring
- D: Pressure-proof
- FE: Iron
- NE/FE: Iron/nonferrous
- P or NFE: Nonferrous
- SN: Safety function
- T: Higher temperatures up to 100 °C
- 150, 200, 250: Maximum applicable temperature

#### Connection Elements

- V1: M12 x 1 device connector for DC proximity switches
- V3: M8 device connector for DC proximity switches
- V5: Faston connector
- V13: M12 x 1 device connector for AC proximity switches
- V16: Rd24 x 1/8 device connector for dual sensors in F31 housing
- V18: M18 x 1 device connector for valve connection (F31 housing)

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1) The switching interval followed by a P (eg. 20P) indicates a selective switching behavior of the sensor. The nominal distance refers to aluminum.
### Technical Data

**General Data**
- **Type of voltage**: DC
- **Operating voltage**: 10 ... 30 V
- **No-load supply current**: ≤ 10 mA
- **Installation**: flush mountable
- **Reverse polarity protection**: ✔
- **Load current**: 0 ... 100 mA
- **Short-circuit protection**: ✔, self-checking
- **Switching state indication LED**: yellow
- **Ambient temperature**: -25 ... 70 °C (-13 ... 158 °F)
- **Protection degree**: IP67
- **Housing material**: Stainless steel 1.4305 / AISI 303

**Model Number**

```
<table>
<thead>
<tr>
<th>Model Number</th>
<th>NBB0,6-3M22-E0</th>
<th>NBB0,6-3M22-E2</th>
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```

**Rated operating distance**
- 0.6 mm
- 1 mm

**Output type**
- NPN NC
- NPN NO
- PNP NC
- PNP NO

**Switching frequency**
- 0 ... 700 Hz
- 0 ... 1300 Hz
- 0 ... 1400 Hz

**Connection type**
- cable PUR , 2 m
- cable PVC , 2 m
- Cable connector M8 x 1 , 3-pin with PVC cable 300 mm

**Approvals and Certificates**
- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤36 V

**Dimensions**
- **Length L [mm]**: 22
- **Diameter D [mm]**: 3
- **Cap length l1 [mm]**: 0
- **Connector length lc [mm]**: 0
- **LED position**: Pos. A

### Electrical Connection

![Electrical Connection Diagram](image-url)

Wire colors in accordance with EN 60947-5-2:
- 1: BN (brown)
- 3: BU (blue)
- 4: BK (black)

---

**Properties**

- Ø3 mm housing, smooth barrel
- Up to 1 mm, flush mountable
- DC, 3-wire switching output
- Cable and pigtail versions

---

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Courtesy of Steven Engineering, Inc. - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

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**Proximity Sensors, Inductive Sensors, cylindrical**

Inductive sensor cylindrical, Ø 3 mm
- Ø3 mm housing, smooth barrel
- Up to 1 mm, flush mountable
- DC, 3-wire switching output
- Cable and pigtail versions
### Technical Data

**General Data**
- Rated operating distance: 0.8 mm
- Installation: Rush
- Type of voltage: DC
- Operating voltage: 10 ... 30 V
- Reverse polarity protection: ✔
- Switching frequency: 0 ... 3000 Hz
- Short-circuit protection: ✔
- Switching state indication LED, yellow
- Ambient temperature: -25 ... 70 °C (-13 ... 158 °F)
- Protection degree: IP67
- Housing material: Stainless steel 1.4305 / AISI 303

**Model Number**

<table>
<thead>
<tr>
<th>Model Number</th>
<th>NBB0,8-4M25-E0</th>
<th>NBB0,8-4M25-E1</th>
<th>NBB0,8-4M25-E2</th>
<th>NBB0,8-4M25-E3</th>
<th>NBB0,8-4M25-E0-0,3M-V3</th>
<th>NBB0,8-4M25-E2-0,3M-V3</th>
<th>NBB0,8-4M25-E0-V3</th>
<th>NBB0,8-4M25-E2-V3</th>
<th>NBB1,5-4M25-E0-V3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output type</td>
<td>NPN NO</td>
<td>NPN NO</td>
<td>PNP NO</td>
<td>PNP NO</td>
<td>NPN NO</td>
<td>PNP NO</td>
<td>NPN NO</td>
<td>NPN NO</td>
<td>NPN NO</td>
</tr>
<tr>
<td>No-load supply current</td>
<td>≤ 10 mA</td>
<td>≤ 12 mA</td>
<td>≤ 100 mA</td>
<td>≤ 200 mA</td>
<td>≤ 12 mA</td>
<td>≤ 100 mA</td>
<td>≤ 200 mA</td>
<td>≤ 12 mA</td>
<td>≤ 100 mA</td>
</tr>
<tr>
<td>Load current</td>
<td>0 ... 100 mA</td>
<td>0 ... 200 mA</td>
<td>0 ... 100 mA</td>
<td>0 ... 200 mA</td>
<td>0 ... 100 mA</td>
<td>0 ... 200 mA</td>
<td>0 ... 100 mA</td>
<td>0 ... 200 mA</td>
<td>0 ... 100 mA</td>
</tr>
<tr>
<td>Connection type</td>
<td>Connector M8 x 1, 3-pin</td>
<td>Cable connector M8 x 1, 3-pin with PVC cable 300 mm</td>
<td>Connector M8 x 1, 3-pin</td>
<td>Cable connector M8 x 1, 3-pin with PVC cable 300 mm</td>
<td>Connector M8 x 1, 3-pin</td>
<td>Cable connector M8 x 1, 3-pin with PVC cable 300 mm</td>
<td>Connector M8 x 1, 3-pin</td>
<td>Cable connector M8 x 1, 3-pin with PVC cable 300 mm</td>
<td>Connector M8 x 1, 3-pin</td>
</tr>
</tbody>
</table>

**Dimensions**
- Length L [mm]: 25 / 40 / 45
- Diameter D [mm]: 4 / 4 / 8
- Cap length l1 [mm]: 0 / 0
- Connector length lc [mm]: 0 / 5
- LED position: Pos. A / Pos. B

**Approvals and Certificates**
- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤36 V

**Accessories**
- These and more accessories can be found in chapter 10
- See pages 970 ... for cordsets
- See pages 1066 ... for mounting accessories

**Electrical Connection**

![Electrical Connection Diagram](image)

Wire colors in accordance with EN 60947-5-2:
- 1: BN (brown)
- 3: BU (blue)
- 4: BK (black)
Technical Data

General Data

Installation: flush
Type of voltage: DC
Operating voltage: 10 ... 30 V
No-load supply current: ≤ 10 mA
Reverse polarity protection: ✔
Load current: 0 ... 100 mA
Short-circuit protection: w/ self-checking
Switching state indication: LED, yellow
Ambient temperature: -25 ... 70 °C (-13 ... 158 °F)
Protection degree: IP67
Housing material: Stainless steel 1.4305 / AISI 303

Rated operating distance:

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Rated operating distance</th>
<th>Output type</th>
<th>Switching frequency</th>
<th>Connection type</th>
</tr>
</thead>
<tbody>
<tr>
<td>NBB0.6-4GM22-E0</td>
<td>0.6 mm</td>
<td>NPN NC</td>
<td>0 ... 700 Hz</td>
<td>cable PUR , 2 m</td>
</tr>
<tr>
<td>NBB0.6-4GM22-E2</td>
<td>1 mm</td>
<td>PNP NC</td>
<td>0 ... 1300 Hz</td>
<td>cable connector M8 x 1 , 3-pin with PVC cable 300 mm</td>
</tr>
<tr>
<td>NBB0.6-4GM22-E1</td>
<td>1 mm</td>
<td>NPN NO</td>
<td>0 ... 1400 Hz</td>
<td>Cable connector M8 x 1 , 3-pin with PVC cable 300 mm</td>
</tr>
<tr>
<td>NBB0.6-4GM22-E3</td>
<td>1 mm</td>
<td>PNP NO</td>
<td>0 ... 1400 Hz</td>
<td>Cable connector M8 x 1 , 3-pin with PVC cable 300 mm</td>
</tr>
</tbody>
</table>

Approvals and Certificates

UL approval: cULus Listed, General Purpose
CSA approval: cCSAus Listed, General Purpose
CCC approval: CCC approval / marking not required for sensors rated ≤ 36 V

Dimensions

<table>
<thead>
<tr>
<th>Length L [mm]</th>
<th>Diameter D [mm]</th>
<th>Thread length l_t [mm]</th>
<th>Cap length l_1 [mm]</th>
<th>Connector length l_c [mm]</th>
<th>LED position</th>
</tr>
</thead>
<tbody>
<tr>
<td>22</td>
<td>M4 x 0.5</td>
<td>22</td>
<td>0</td>
<td></td>
<td>Pos. A</td>
</tr>
</tbody>
</table>

Accessories

These and more accessories can be found in chapter 10
See pages from 970 ... for cordsets
See pages 1066 ... for mounting accessories

Electrical Connection

Wire colors in accordance with EN 60947-5-2

1 | BN (brown)
3 | BU (blue)
4 | BK (black)
## Technical Data

### General Data
- **Installation**: flush
- **Type of voltage**: DC
- **Operating voltage**: 10 ... 30 V
- **Reverse polarity protection**: ✔
- **Switching frequency**: 0 ... 3000 Hz
- **Short-circuit protection**: ✔, self-checking
- **Switching state indication**: LED, yellow
- **Ambient temperature**: -25 ... 70 °C (-13 ... 158 °F)
- **Housing material**: Stainless steel 1.4305 / AISI 303
- **Protection degree**: IP67

### Model Number

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Thread Length lt [mm]</th>
<th>Cap Length l1 [mm]</th>
<th>Connector Length lc [mm]</th>
<th>LED Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>NBB0,8-5GM25-E0</td>
<td>25</td>
<td>0</td>
<td>0</td>
<td>Pos. A</td>
</tr>
<tr>
<td>NBB0,8-5GM25-E1</td>
<td>25</td>
<td>0</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>NBB0,8-5GM25-E2</td>
<td>21</td>
<td>0</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>NBB0,8-5GM25-E3</td>
<td>20</td>
<td>0</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

### Rated operating distance

- 0.8 mm
- 1.5 mm

### Output type

- NPN NO
- NPN NC
- PNP NO
- PNP NC

### No-load supply current

- ≤ 10 mA
- ≤ 12 mA
- ≤ 15 mA

### Load current

- 0 ... 100 mA
- 0 ... 200 mA

### Connection type

- Connector M8 x 1, 3-pin
- Cable, PVC, 2 m
- Cable connector M8 x 1, 3-pin with PVC cable 300 mm

### Approvals and Certificates

- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤ 36 V

### Dimensions

<table>
<thead>
<tr>
<th>Length L [mm]</th>
<th>Diameter D [mm]</th>
<th>Thread length lt [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>M5 x 0.5</td>
<td>25</td>
</tr>
<tr>
<td>35</td>
<td>M5 x 0.5 / 8</td>
<td>21</td>
</tr>
<tr>
<td>32</td>
<td></td>
<td>20</td>
</tr>
</tbody>
</table>

### Accessories

These and more accessories can be found in chapter 10. See pages from 970 ... for cordsets, See pages 1066 ... for mounting accessories.

### Electrical Connection

- BF 5
- V3-GM
- V3-WM
- V3-GM-BK2M-PUR-U
- V3-WM-BK2M-PUR-U

Wire colors in accordance with EN 60947-5-2

1. BN (brown)
2. BU (blue)
3. BK (black)
### Technical Data

**General Data**
- Rated operating distance: 1.5 mm
- Installation: flush
- Type of voltage: DC
- Operating voltage: 10 ... 60 V
- No-load supply current: \( \leq 15 \text{ mA} \)
- Reverse polarity protection: ✔
- Load current: 0 ... 100 mA
- Short-circuit protection: ✔, self-checking
- Ambient temperature: -25 ... 70 °C (-13 ... 158 °F)
- Protection degree: IP67

**Model Number**
- For NJ1.5-6.5-40-E0: ✔
- For NJ1.5-6.5-40-E2: ✔
- For NJ1.5-6.5-40-E0-V3: ✔
- For NJ1.5-6.5-40-E2-V3: ✔

**Output type**
- NPN NO
- PNP NO

**Switching frequency**
- 0 ... 2500 Hz
- 0 ... 500 Hz

**Switching state indication**
- LED, yellow

**Connection type**
- Connector M8 x 1, 3-pin
- Cable PUR, 2 m

**Approvals and Certificates**
- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: Certified by China Compulsory Certification (CCC)

**Dimensions**

<table>
<thead>
<tr>
<th></th>
<th>NJ1.5-6.5-40-E0</th>
<th>NJ1.5-6.5-40-E2</th>
<th>NJ1.5-6.5-40-E0-V3</th>
<th>NJ1.5-6.5-40-E2-V3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length L [mm]</td>
<td>40</td>
<td>44</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diameter D [mm]</td>
<td>6.5</td>
<td>6.5 / 8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cap length l₁ [mm]</td>
<td>0</td>
<td>6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connector length l₂ [mm]</td>
<td>0</td>
<td>6</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Accessories**
- These and more accessories can be found in chapter 10
- See pages from 970 ... for cordsets
- See pages 1066 ... for mounting accessories

**Electrical Connection**

1. BN (brown)
2. BU (blue)
3. BK (black)
Inductive sensor cylindrical, Ø 6.5 mm

Technical Data
For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

<table>
<thead>
<tr>
<th>General Data</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated operating distance</td>
<td>1.5 mm</td>
</tr>
<tr>
<td>Installation</td>
<td>flush</td>
</tr>
<tr>
<td>Type of voltage</td>
<td>DC</td>
</tr>
<tr>
<td>Operating voltage</td>
<td>10 ... 30 V</td>
</tr>
<tr>
<td>Reverse polarity protection</td>
<td>✔</td>
</tr>
<tr>
<td>Load current</td>
<td>0 ... 200 mA</td>
</tr>
<tr>
<td>Short-circuit protection</td>
<td>✔</td>
</tr>
<tr>
<td>Switching state indication</td>
<td>LED, yellow</td>
</tr>
<tr>
<td>Housing material</td>
<td>Stainless steel 1.4305 / AISI 303</td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP67</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Model Number</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>NBB1.5-6.5S30-E2-0.3M-V3</td>
<td></td>
</tr>
<tr>
<td>NBB1.5-6.5S16-E2</td>
<td></td>
</tr>
<tr>
<td>NBB1.5-6.5S40-E0</td>
<td></td>
</tr>
<tr>
<td>NBB1.5-6.5S40-E1-V3</td>
<td></td>
</tr>
<tr>
<td>NBB1.5-6.5S40-E2-V3</td>
<td></td>
</tr>
<tr>
<td>NBB1.5-6.5S40-E3-V3</td>
<td></td>
</tr>
<tr>
<td>NBB1.5-6.5S50-E2-V3</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Properties</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø 6.5 mm housing, smooth barrel</td>
<td></td>
</tr>
<tr>
<td>1.5 mm, flush mountable</td>
<td></td>
</tr>
<tr>
<td>DC, 3-wire switching output</td>
<td></td>
</tr>
<tr>
<td>Cable and connector versions</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Additional Products</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>In this series, we offer the following additional products:</td>
<td></td>
</tr>
<tr>
<td>NBB1.5-6.5S30-E2-0.3M-V3</td>
<td></td>
</tr>
<tr>
<td>Technical data like NBB1.5-6.5S20-E2-V3 but:</td>
<td></td>
</tr>
<tr>
<td>Cable connector M8 x 1, 3-pin, PVC 30 cm</td>
<td></td>
</tr>
<tr>
<td>Length L [mm]: 35 mm</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Output type</th>
<th>NPN NO</th>
<th>NPN NC</th>
<th>PNP NO</th>
<th>PNP NC</th>
</tr>
</thead>
<tbody>
<tr>
<td>No-load supply current</td>
<td>≤ 10 mA</td>
<td>≤ 11 mA</td>
<td>≤ 2 mA</td>
<td>≤ 7 mA</td>
</tr>
<tr>
<td>Switching frequency</td>
<td>0 ... 1500 Hz</td>
<td>0 ... 2000 Hz</td>
<td>0 ... 5000 Hz</td>
<td></td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-25 ... 70 °C (-13 ... 158 °F)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connection type</td>
<td>connector (M8 x 1), 3-pin</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>cable PUR, 2 m</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>cable PVC, 2 m</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Approvals and Certificates</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CCC approval / marking not required for sensors rated ≤36 V</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dimensions</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Length L [mm]</td>
<td>16 35 20 40 50</td>
</tr>
<tr>
<td>Diameter D [mm]</td>
<td>6.5 6.5 / 8</td>
</tr>
<tr>
<td>Cap length l₁ [mm]</td>
<td>0</td>
</tr>
<tr>
<td>Connector length l₂ [mm]</td>
<td>0 9 5</td>
</tr>
<tr>
<td>LED position</td>
<td>Pos. C Pos. B</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Note:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>6.5/ X indicated: barrel diameter / connector end diameter (mm)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Accessories</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>These and more accessories can be found in chapter 10</td>
<td></td>
</tr>
<tr>
<td>See pages from 970 ... for cordsets</td>
<td>See pages 1066 ... for mounting accessories</td>
</tr>
<tr>
<td>BF 6.5</td>
<td>Mounting bracket, 6.5 mm</td>
</tr>
<tr>
<td>V3-GM</td>
<td>Female connector, M8, 3-pin, field attachable, straight</td>
</tr>
<tr>
<td>V3-WM</td>
<td>Female connector, M8, 3-pin, field attachable, angled</td>
</tr>
<tr>
<td>V3-GM-BK2M-PUR-U</td>
<td>Female cordset, M8, 3-pin, PUR cable, straight</td>
</tr>
<tr>
<td>V3-WM-BK2M-PUR-U</td>
<td>Female cordset, M8, 3-pin, PUR cable, angled</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Electrical Connection</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>NBB1.5-6.5S35-E0</td>
<td></td>
</tr>
<tr>
<td>NBB1.5-6.5S16-E2</td>
<td></td>
</tr>
<tr>
<td>NBB1.5-6.5S40-E0-V3</td>
<td></td>
</tr>
<tr>
<td>NBB1.5-6.5S40-E1-V3</td>
<td></td>
</tr>
<tr>
<td>NBB1.5-6.5S40-E2-V3</td>
<td></td>
</tr>
<tr>
<td>NBB1.5-6.5S40-E3-V3</td>
<td></td>
</tr>
<tr>
<td>NBB1.5-6.5S50-E2-V3</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Wire colors in accordance with EN 60947-5-2</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>BN (brown)</td>
</tr>
<tr>
<td>3</td>
<td>BU (blue)</td>
</tr>
<tr>
<td>4</td>
<td>BK (black)</td>
</tr>
</tbody>
</table>
Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data
- Rated operating distance: 2 mm
- Installation: flush
- Type of voltage: DC
- No-load supply current: ≤ 15 mA
- Reverse polarity protection: ✔
- Switching frequency: 0 ... 3000 Hz
- Load current: 0 ... 100 mA
- Short-circuit protection: ✔ self-checking
- Switching state indication: LED, yellow
- Ambient temperature: -25 ... 70 °C (-13 ... 158 °F)
- Housing material: brass, nickel-plated
- Protection degree: IP67

Model Number

<table>
<thead>
<tr>
<th>Output type</th>
<th>NPN NO</th>
<th>NPN NC</th>
<th>PNP NO</th>
<th>PNP NC</th>
</tr>
</thead>
<tbody>
<tr>
<td>NBB2-6.5M30-E0</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>NBB2-6.5M30-E2</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>NBB2-6.5M25-E0-V3</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>NBB2-6.5M25-E1-V3</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
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<tr>
<td>NBB2-6.5M25-E2-V3</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>NBB2-6.5M25-E3-V3</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>

Output type
- NPN NO
- NPN NC
- PNP NO
- PNP NC

Operating voltage
- 10 ... 30 V
- 5 ... 30 V

Connection type
- Connector M8 x 1, 3-pin
- Cable PVC, 2 m

Approvals and Certificates
- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤ 36 V

Dimensions
- Length L [mm]: 30, 35
- Diameter D [mm]: 6.5, 6.5 / 8
- Cap length l1 [mm]: 0
- Connector length lc [mm]: 0, 6
- LED position: Pos. C, Pos. B

Note: 6.5’X indicated: barrel diameter / connector end diameter (mm)

Accessories
- These and more accessories can be found in chapter 10
- See pages from 970 ... for cordsets
- See pages 1066 ... for mounting accessories

Electrical Connection

Wire colors in accordance with EN 60947-5-2

1  BN (brown)
3  BU (blue)
4  BK (black)

Properties
- Ø6.5 mm housing, smooth barrel
- 2 mm, flush mountable
- DC, 3-wire switching output
- Cable and connector versions

Model Number

<table>
<thead>
<tr>
<th>Output type</th>
<th>NPN NO</th>
<th>NPN NC</th>
<th>PNP NO</th>
<th>PNP NC</th>
</tr>
</thead>
<tbody>
<tr>
<td>NBB2-6.5M30-E0</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
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<tr>
<td>NBB2-6.5M30-E2</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>NBB2-6.5M25-E0-V3</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>NBB2-6.5M25-E1-V3</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>NBB2-6.5M25-E2-V3</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>NBB2-6.5M25-E3-V3</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>
Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data
Rated operating distance: 3 mm
Installation: quasi-flush
Type of voltage: DC
Operating voltage: 10 ... 30 V DC
No-load supply current: ≤ 15 mA
Reverse polarity protection: ✔
Switching frequency: 0 ... 1500 Hz
Load current: 0 ... 200 mA, above 50 °C: ≤ 150 mA
Ambient temperature: 25 ... 85 °C (13 ... 185 °F)
Housing material: brass, nickel-plated
Protection degree: IP67

Model Number
Output type
NPN NO
NPN NC
PNP NO
PNP NC
Connection type
Connector M12 x 1, 4-pin
Connector M8 x 1, 3-pin
Cable PUR, 2 m

Approvals and Certificates
UL approval
ccc Listed, General Purpose
CCC approval
marking not required for sensors rated ≤ 36 V

Dimensions
Length L [mm] 45 65 60
Diameter D [mm] 6.5 6.5 / 12 6.5 / 8
Cap length l1 [mm] 0
Connector length lc [mm] 0 8 7
LED position Pos. A

Note: 6.5 / X indicated: barrel diameter / connector end diameter (mm)

Properties
Ø6.5 mm housing, smooth barrel
3 mm, quasi-flush mountable
DC, 3-wire switching output
Cable and connector versions

Benefits
Extended sensing range means fewer sensor/target impacts

Electrical Connection

Accessories
These and more accessories can be found in chapter 10
See pages from 970 ... for cordsets
See pages 1066 ... for mounting accessories

Inductive sensor

cylindrical, Ø 6.5 mm

Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data

Rated operating distance 3 mm
Installation non-flush
Type of voltage DC
No-load supply current ≤ 15 mA
Reverse polarity protection ✔
Switching frequency 0 ... 2000 Hz
Load current 0 ... 100 mA
Short-circuit protection ✔, self-checking
Switching state indication LED, yellow
Ambient temperature -25 ... 70 °C (-13 ... 158 °F)
Housing material brass, nickel-plated
Protection degree IP67

Model Number

Output type NPN NO ● NPN NC ● PNP NO ●
Operating voltage 10 ... 30 V ● 5 ... 30 V ●
Connection type Connector M8 x 1, 3-pin ● cable PVC, 2 m ●

Approvals and Certificates

UL approval cULus Listed, General Purpose ● ● ● ● ●
CSA approval cCSAus Listed, General Purpose ● ● ● ● ● ●
CCC approval CCC approval / marking not required for sensors rated ≤36 V ● ● ● ● ●

Dimensions

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Length L [mm]</th>
<th>Diameter D [mm]</th>
<th>Cap length l1 [mm]</th>
<th>Connector length lc [mm]</th>
<th>LED position</th>
</tr>
</thead>
<tbody>
<tr>
<td>NBN3-6,5M25-E0-V3</td>
<td>30</td>
<td>6.5</td>
<td>4</td>
<td></td>
<td>Pos. C</td>
</tr>
<tr>
<td>NBN3-6,5M25-E1-V3</td>
<td>29</td>
<td>6.5 / 8</td>
<td></td>
<td></td>
<td>Pos. B</td>
</tr>
</tbody>
</table>

Note: 6.5 / X indicated: barrel diameter / connector end diameter (mm)

Accessories

These and more accessories can be found in chapter 10
See pages from 970 ... for cordsets
See pages 1066 ... for mounting accessories

BF 6,5
Mounting bracket, 6.5 mm
V3-GM
Female connector, M8, 3-pin, field attachable, straight
V3-WM
Female connector, M8, 3-pin, field attachable, angled
V3-GM-BK2M-PUR-U
Female cordset, M8, 3-pin, PUR cable, straight
V3-WM-BK2M-PUR-U
Female cordset, M8, 3-pin, PUR cable, angled

Properties

- Ø6.5 mm housing, smooth barrel
- 3 mm, non-flush mountable
- DC, 3-wire switching output
- Cable and connector versions

Electrical Connection

Wire colors in accordance with EN 60947-5-2

1 BN (brown)
3 BU (blue)
4 BK (black)
Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data
- Rated operating distance: 6 mm
- Installation: non-flush
- Type of voltage: DC
- Operating voltage: 10 ... 30 V DC
- No-load supply current: ≤ 15 mA
- Reverse polarity protection: ✔
- Switching frequency: 0 ... 750 Hz
- Load current: 0 ... 200 mA, above 50°C ≤ 150 mA
- Short-circuit protection: ✔, self-checking
- Switching state indication: LED, yellow
- Ambient temperature: 25 ... 85 °C (+13 ... 185 °F)
- Housing material: brass, nickel-plated
- Protection degree: IP67

Model Number
- Output type: NPN NO, NPN NC, PNP NO, PNP NC
- Connection type: Connector M12 x 1, 4-pin, Connector M8 x 1, 3-pin, cable PUR, 2 m

Approvals and Certificates
- UL approval: cULus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤ 36 V

Dimensions
- Length L [mm]: 45, 60, 65
- Diameter D [mm]: 6.5, 6.5 / 8, 6.5 / 12
- Cap length l1 [mm]: 4
- Connector length lc [mm]: 0, 6, 8
- LED position: Pos. A
- Note: 6.5/ X indicated: barrel diameter / connector end diameter (mm)

Accessories
- These and more accessories can be found in chapter 10
- See pages from 970 ... for cordsets
- See pages 1066 ... for mounting accessories
- BF 6.5: Mounting bracket, 6.5 mm
- V3-GM: Female connector, M8, 3-pin, field attachable, straight
- V3-WM: Female connector, M8, 3-pin, field attachable, angled
- V1-G: 4-pin, M12 female field-attachable connector, straight
- V1-W: 4-pin, M12 female field-attachable connector, angled
- V3-GM-BK2M-PUR-U: Female cordset, M8, 3-pin, PUR cable, straight
- V3-WM-BK2M-PUR-U: Female cordset, M8, 3-pin, PUR cable, angled
- V1-G-BK2M-PUR-U: Female cordset, M12, 4-pin, PUR cable, straight
- V1-W-BK2M-PUR-U: Female cordset, M12, 4-pin, PUR cable, angled

Electrical Connection
- Wire colors in accordance with EN 60947-5-2
  - 1: BN (brown)
  - 2: WH (white)
  - 3: BU (blue)
  - 4: BK (black)

Properties
- Ø 6.5 mm housing, smooth barrel
- 6 mm, non-flush mountable
- DC, 3-wire switching output
- Cable and connector versions

Benefits
- Extended sensing range means fewer sensor/target impacts
Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data
Rated operating distance 1.5 mm
Installation flush
Type of voltage DC
Operating voltage 5 ... 60 V
Reverse polarity protection ✓ polarity independent
Switching frequency 0 ... 1200 Hz
Load current 2 ... 100 mA
Short-circuit protection ✓ self-checking
Switching state indication LED, yellow
Ambient temperature -25 ... 70 °C (-13 ... 158 °F)
Housing material Stainless steel 1.4305 / AISI 303
Protection degree IP67

Model Number
Output type DC NO DC NC
Connection type Connector M8 x 1, 3-pin cable PUR, 2 m

Approvals and Certificates
UL approval cULus Listed, General Purpose
CSA approval cCSAus Listed, General Purpose
CCC approval Certified by China Compulsory Certification (CCC)

Dimensions
Length L [mm] 40 51
Diameter D [mm] M8 x 1
Thread length l1 [mm] 40 48
Cap length l2 [mm] 0
Connector length l3 [mm] 0 6
LED position Pos. C

Accessories
These and more accessories can be found in chapter 10
See pages from 970 ... for cordsets See pages 1066 ... for mounting accessories
BF 8 Mounting bracket, 8 mm
EXG-08 Quick mounting bracket with stop
V3-GM Female connector, M8, 3-pin, field attachable, straight
V3-GM-BK2M-PUR-U Female cordset, M8, 3-pin, PUR cable, straight
V3-WM-BK2M-PUR-U Female cordset, M8, 3-pin, PUR cable, angled

Electrical Connection

Wire colors in accordance with EN 60947-5-2
1 BN (brown)
3 BU (blue)
4 BK (black)
## Technical Data

For detailed data and product description refer to the data sheets at [www.pepperl-fuchs.us](http://www.pepperl-fuchs.us)

### General Data
- **Rated operating distance**: 2 mm
- **Installation**: non-flush
- **Type of voltage**: DC
- **Operating voltage**: 5 ... 60 V
- **Reverse polarity protection**: ✔, polarity independent
- **Switching frequency**: 0 ... 1200 Hz
- **Load current**: 2 ... 100 mA
- **Short-circuit protection**: ✔, self-checking
- **Switching state indication**: LED, yellow
- **Ambient temperature**: -25 ... 70 °C (-13 ... 158 °F)
- **Housing material**: Stainless steel 1.4305 / AISI 303
- **Protection degree**: IP67

### Electrical Connection

- **Pos. A**: L+, BU, L-
- **Pos. B**: L+, SN, L-
- **Pos. C**: L+, BK, L-

### Model Number

<table>
<thead>
<tr>
<th>Output type</th>
<th>Connection type</th>
<th>Model Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC NO</td>
<td>Connector M8 x 1, 3-pin cable PUR, 2 m</td>
<td>NCN2-8GM40-Z0, NCN2-8GM40-Z1</td>
</tr>
<tr>
<td>DC NC</td>
<td>Connector M8 x 1, 3-pin cable PUR, 2 m</td>
<td>NCN2-8GM50-Z0-V3, NCN2-8GM50-Z1-V3</td>
</tr>
</tbody>
</table>

### Approvals and Certificates

- **UL approval**: cULus Listed, General Purpose
- **CSA approval**: cCSAus Listed, General Purpose
- **CCC approval**: Certified by China Compulsory Certification (CCC)

### Dimensions

<table>
<thead>
<tr>
<th>Length L [mm]</th>
<th>Diameter D [mm]</th>
<th>Thread length l_t [mm]</th>
<th>Cap length l_1 [mm]</th>
<th>Connector length l_c [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>M8 x 1</td>
<td>36</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>51</td>
<td></td>
<td></td>
<td></td>
<td>6</td>
</tr>
</tbody>
</table>

### Accessories

- **BF 8**: Mounting bracket, 8 mm
- **EXO-08**: Quick mounting bracket with stop
- **V3-GM**: Female connector, M8, 3-pin, field attachable, straight
- **V3-WM-BK2M-PUR-U**: Female cordset, M8, 3-pin, PUR cable, angled
- **V3-GM-BK2M-PUR-U**: Female cordset, M8, 3-pin, PUR cable, straight

These and more accessories can be found in chapter 10 See pages from 970 ... for cordsets See pages 1066 ... for mounting accessories

### Properties

- Ø8 mm housing
- 2 mm, non-flush mountable
- DC, 2-wire switching output
- Cable and connector versions

### Wire colors in accordance with EN 60947-6-2

<table>
<thead>
<tr>
<th>Number</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>SN (brown)</td>
</tr>
<tr>
<td>3</td>
<td>BU (blue)</td>
</tr>
<tr>
<td>4</td>
<td>BK (black)</td>
</tr>
</tbody>
</table>
## Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

### General Data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of voltage</td>
<td>DC</td>
</tr>
<tr>
<td>Operating voltage</td>
<td>10 ... 60 V</td>
</tr>
<tr>
<td>No-load supply current</td>
<td>≤ 15 mA</td>
</tr>
<tr>
<td>Reverse polarity protection</td>
<td>✓</td>
</tr>
<tr>
<td>Load current</td>
<td>0 ... 100 mA</td>
</tr>
<tr>
<td>Short-circuit protection</td>
<td>✓, self-checking</td>
</tr>
<tr>
<td>Switching state indication</td>
<td>LED, yellow</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-25 ... 70 °C (-13 ... 158 °F)</td>
</tr>
<tr>
<td>Housing material</td>
<td>Stainless steel 1.4305 / AISI 303</td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP67</td>
</tr>
</tbody>
</table>

### Rated operating distance

- 1.5 mm
- 2 mm

### Model Number

<table>
<thead>
<tr>
<th>Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>NJ1.5-8GM40-E0</td>
<td></td>
</tr>
<tr>
<td>NJ1.5-8GM40-E2</td>
<td></td>
</tr>
<tr>
<td>NJ1.5-8GM40-E0-V1</td>
<td></td>
</tr>
<tr>
<td>NJ1.5-8GM40-E2-V1</td>
<td></td>
</tr>
<tr>
<td>NJ2-8GM40-E0</td>
<td></td>
</tr>
<tr>
<td>NJ2-8GM40-E2</td>
<td></td>
</tr>
<tr>
<td>NJ2-8GM40-E0-V1</td>
<td></td>
</tr>
<tr>
<td>NJ2-8GM40-E2-V1</td>
<td></td>
</tr>
</tbody>
</table>

### Properties

- Ø8 mm housing
- 1.5 mm and 2 mm sensing ranges
- DC, 3-wire switching output
- Cable and connector versions

### Model Number

- NJ1.5-8GM40-E0
- NJ1.5-8GM40-E2
- NJ1.5-8GM40-E0-V1
- NJ1.5-8GM40-E2-V1
- NJ2-8GM40-E0
- NJ2-8GM40-E2
- NJ2-8GM40-E0-V1
- NJ2-8GM40-E2-V1

### Rated operating distance

- 1.5 mm
- 2 mm

### Installation

- Flush
- Non-flush

### Output type

- NPN NO
- PNP NO

### Switching frequency

- 0 ... 400 Hz
- 0 ... 500 Hz
- 0 ... 1500 Hz
- 0 ... 2500 Hz

### Connection type

- Connector M12 x 1, 4-pin
- Cable PUR, 2 m

### Approvals and Certificates

- UL approval  cULus Listed, General Purpose
- CSA approval  cCSAus Listed, General Purpose
- CCC approval Certified by China Compulsory Certification (CCC)

### Dimensions

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length L [mm]</td>
<td>40, 54</td>
</tr>
<tr>
<td>Diameter D [mm]</td>
<td>8 x 1</td>
</tr>
<tr>
<td>Thread length l1 [mm]</td>
<td>40, 36, 36</td>
</tr>
<tr>
<td>Cap length l2 [mm]</td>
<td>0, 4, 4</td>
</tr>
<tr>
<td>Connector length l3 [mm]</td>
<td>0, 40</td>
</tr>
</tbody>
</table>

### Accessories

These and more accessories can be found in chapter 10

<table>
<thead>
<tr>
<th>Accessory Description</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>BF 8 - Mounting bracket, 8 mm</td>
<td>EXG-08</td>
</tr>
<tr>
<td>Quick mounting bracket with stop</td>
<td>V1-G</td>
</tr>
<tr>
<td>4-pin, M12 female field-attachable connector, straight</td>
<td>V1-W</td>
</tr>
<tr>
<td>4-pin, M12 female field-attachable connector, angled</td>
<td>V1-G-BK2M-PUR-U</td>
</tr>
<tr>
<td>Female cordset, M12, 4-pin, PUR cable, straight</td>
<td>V1-W-BK2M-PUR-U</td>
</tr>
</tbody>
</table>

### Electrical Connection

Refer to General Notes Relating to Product Information

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Courtesy of Steven Engineering, Inc. - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

<table>
<thead>
<tr>
<th>Wire colors</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 BN</td>
<td>(brown)</td>
</tr>
<tr>
<td>2 WH</td>
<td>(white)</td>
</tr>
<tr>
<td>3 BU</td>
<td>(blue)</td>
</tr>
<tr>
<td>4 BK</td>
<td>(black)</td>
</tr>
</tbody>
</table>
## Inductive sensor

**Technical Data**

For detailed data and product description refer to the data sheets at [www.pepperl-fuchs.us](http://www.pepperl-fuchs.us).

### General Data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated operating distance</td>
<td>1.5 mm</td>
</tr>
<tr>
<td>Installation</td>
<td>flush</td>
</tr>
<tr>
<td>Type of voltage</td>
<td>DC</td>
</tr>
<tr>
<td>Operating voltage</td>
<td>10 ... 30 V</td>
</tr>
<tr>
<td>Reverse polarity protection</td>
<td>✔</td>
</tr>
<tr>
<td>Short-circuit protection</td>
<td>✔</td>
</tr>
<tr>
<td>Switching state indication</td>
<td>LED, yellow</td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP67</td>
</tr>
</tbody>
</table>

### Model Number

<table>
<thead>
<tr>
<th>Model Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>NBB1.5-8GM16-E0</td>
</tr>
<tr>
<td>NBB1.5-8GM16-E2</td>
</tr>
<tr>
<td>NBB1.5-8GM16-E3</td>
</tr>
<tr>
<td>NBB1.5-8GM60-A0</td>
</tr>
<tr>
<td>NBB1.5-8GM60-A2</td>
</tr>
<tr>
<td>NBB1.5-8GM40-E0-V3</td>
</tr>
<tr>
<td>NBB1.5-8GM40-E2-V3</td>
</tr>
<tr>
<td>NBB1.5-8GM50-A0-V1</td>
</tr>
<tr>
<td>NBB1.5-8GM50-A2-V1</td>
</tr>
</tbody>
</table>

### Output type

- NPN NO/NC
- NPN NO
- PNP NO/NC
- PNP NO
- PNP NC

### No-load supply current

<table>
<thead>
<tr>
<th>Value</th>
</tr>
</thead>
</table>
| ≤ 10 mA
| ≤ 20 mA

### Switching frequency

<table>
<thead>
<tr>
<th>Value</th>
</tr>
</thead>
</table>
| 0 ... 1500 Hz
| 0 ... 6000 Hz

### Load current

<table>
<thead>
<tr>
<th>Value</th>
</tr>
</thead>
</table>
| 0 ... 100 mA
| 0 ... 200 mA

### Ambient temperature

<table>
<thead>
<tr>
<th>Value</th>
</tr>
</thead>
</table>
| -25 ... 70 °C (-13 ... 158 °F)
| -25 ... 85 °C (-13 ... 185 °F)

### Housing material

- Stainless steel 1.4305 / AISI 303
- brass, nickel-plated

### Connection type

- Connector M12 x 1, 4-pin
- Connector M8 x 1, 3-pin
- Cable PVC, 2 m

### Approvals and Certificates

- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤ 36 V

### Dimensions

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length L [mm]</td>
<td>16</td>
</tr>
<tr>
<td>Diameter D [mm]</td>
<td>M8 x 1</td>
</tr>
<tr>
<td>Thread length t [mm]</td>
<td>16</td>
</tr>
<tr>
<td>Cap length l [mm]</td>
<td>0</td>
</tr>
<tr>
<td>Connector length l [mm]</td>
<td>0</td>
</tr>
<tr>
<td>LED position</td>
<td>Pos. C</td>
</tr>
</tbody>
</table>

### Accessories

These and more accessories can be found in chapter 10 See pages from 970 ... for cordsets See pages 1066 ... for mounting accessories

- BF 8
- EXG-08
- V1-G-BK2M-PUR-U
- V3-GM-BK2M-PUR-U

**Electrical Connection**

<table>
<thead>
<tr>
<th>Diagram</th>
</tr>
</thead>
<tbody>
<tr>
<td>NBB1.5-8GM16-E0</td>
</tr>
<tr>
<td>NBB1.5-8GM60-A0</td>
</tr>
<tr>
<td>NBB1.5-8GM40-E0-V3</td>
</tr>
<tr>
<td>NBB1.5-8GM50-A0-V1</td>
</tr>
</tbody>
</table>

Wire colors in accordance with EN 60947-5-2

<table>
<thead>
<tr>
<th>Number</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>BN</td>
</tr>
<tr>
<td>2</td>
<td>WH</td>
</tr>
<tr>
<td>3</td>
<td>BU</td>
</tr>
<tr>
<td>4</td>
<td>BK</td>
</tr>
</tbody>
</table>
## Technical Data

### General Data
- **Installation**: flush
- **Type of voltage**: DC
- **Operating voltage**: 10 ... 30 V
- **Reverse polarity protection**: ✔
- **Load current**: 0 ... 200 mA
- **Short-circuit protection**: ✔
- **Switching state indication**: LED, yellow
- **Housing material**: Stainless steel 1.4305 / AISI 303
- **Protection degree**: IP67

### Model Number

<table>
<thead>
<tr>
<th>Rated operating distance</th>
<th>NBB2-8GS30-E0</th>
<th>NBB2-8GS50-E2</th>
<th>NBB2-8GS40-E1-V3</th>
<th>NBB1,5-8GS40-E2-T-V3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5 mm</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 mm</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Output type</td>
<td>NPN NO</td>
<td>NPN NO</td>
<td>PNP NO</td>
<td>PNP NO</td>
</tr>
<tr>
<td>No-load supply current</td>
<td>≤ 1 mA</td>
<td>≤ 7 mA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Switching frequency</td>
<td>0 ... 600 Hz</td>
<td>0 ... 1500 Hz</td>
<td>0 ... 2000 Hz</td>
<td>0 ... 2500 Hz</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-25 ... 100 °C</td>
<td>-25 ... 85 °C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connection type</td>
<td>Connector M8 x 1, 3-pin</td>
<td>Connector M12 x 1, 4-pin</td>
<td>cable PUR, 2 m</td>
<td></td>
</tr>
</tbody>
</table>

### Approvals and Certificates
- CCC approval / marking not required for sensors rated ≤36 V

### Dimensions

<table>
<thead>
<tr>
<th>Length L [mm]</th>
<th>30</th>
<th>35</th>
<th>35</th>
<th>35</th>
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<th>44</th>
<th>45</th>
<th>45</th>
<th>49</th>
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<tbody>
<tr>
<td>Diameter D [mm]</td>
<td>M8 x 1</td>
<td>8</td>
<td>12</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Thread length l [mm]</td>
<td>30</td>
<td>35</td>
<td>35</td>
<td>35</td>
<td>35</td>
<td>35</td>
<td>34</td>
<td>44</td>
<td>42</td>
<td>42</td>
</tr>
<tr>
<td>Cap length l1 [mm]</td>
<td>0</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Connector length lc [mm]</td>
<td>0</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LED position</td>
<td>Pos C B A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Electrical Connection

- Wire colors in accordance with EN 60947-5-2

### Accessories
- These and more accessories can be found in chapter 10
- See pages from 970 for cordsets
- See pages 1066 for mounting accessories

- BF 8 Mounting bracket, 8 mm
- EXG-08 Quick mounting bracket with stop
- V3-GM-BK2M-PUR-U Female cordset, M8, 3-pin, PUR cable, straight
- V3-GM Female connector, M8, 3-pin, field attachable, straight
- V3-WM Female connector, M8, 3-pin, field attachable, angled

---

**Properties**
- Ø 8 mm housing
- 1.5 mm and 2 mm sensing ranges
- DC, 3-wire switching output
- Cable and connector versions

---

**Electrical Connection**

- Wire colors in accordance with EN 60947-5-2

---

**Refer to General Notes Relating to Product Information**

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Courtesy of Steven Engineering, Inc. - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com
Technical Data

General Data
Rated operating distance 2 mm
Installation flush
Type of voltage DC
Operating voltage 10 ... 30 V
No-load supply current ≤ 15 mA
Reverse polarity protection ✔
Switching frequency 0 ... 1500 Hz
Load current 0 ... 100 mA
Short-circuit protection ✔, self-checking
Switching state indication Multihole-LED, yellow
Ambient temperature -25 ... 70 °C (-13 ... 158 °F)
Housing material Stainless steel 1.4435 / AISI 316L
Protection degree IP67
Connection type M8 x 1 connector, 3-pin

Output type NPN NO PNP NO

Approvals and Certificates
UL approval cULus Listed, General Purpose
CSA approval cCSAus Listed, General Purpose
CCC approval CCC approval / marking not required for sensors rated ≤ 36 V

Dimensions
Length L [mm] 24 29 44
Diameter D [mm] M8 x 1
Thread length l_t [mm] 20 25 40
Cap length l_1 [mm] 0
Connector length l_2 [mm] 6
LED position Pos. B

Accessories
These and more accessories can be found in chapter 10
See pages from 970 ... for cordsets See pages 1066 ... for mounting accessories
BF 8 Mounting bracket, 8 mm
V3-GMV4A-SM-PUR Female cordset, M8, 3-pin, PUR cable, straight
V3-WMV4A-SM-PUR Female cordset, M8, 3-pin, PUR cable, angled

Electrical Connection

![Electrical Connection Diagram]

Wire colors in accordance with EN 60947-5-2
1 BN (brown)
3 BU (blue)
4 BK (black)
Inductive sensor cylindrical, Ø 8 mm

Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data
Rated operating distance 2 mm
Installation flush
Type of voltage DC
No-load supply current ≤ 15 mA
Reverse polarity protection ✔
Load current 0 ... 100 mA
Short-circuit protection ✔
Switching state indication LED, yellow
Housing material brass, nickel-plated
Protection degree IP67

Model Number

<table>
<thead>
<tr>
<th>Output type</th>
<th>NPN</th>
<th>NO</th>
<th>NC</th>
<th>NO/NC</th>
</tr>
</thead>
<tbody>
<tr>
<td>NNP</td>
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<tr>
<td>PNP</td>
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</tr>
<tr>
<td>PNP</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>PNP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Operating voltage 10 ... 30 V DC
Switching frequency 0 ... 1000 Hz
Ambient temperature -25 ... 70 °C (-13 ... 158 °F)
Connection type Connector M12 x 1, 4-pin

<table>
<thead>
<tr>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length L [mm]</td>
</tr>
<tr>
<td>Diameter D [mm]</td>
</tr>
<tr>
<td>Thread length l1 [mm]</td>
</tr>
<tr>
<td>Cap length l2 [mm]</td>
</tr>
<tr>
<td>Connector length l3 [mm]</td>
</tr>
</tbody>
</table>

Note: M8 x 1 / 12 indicated: barrel thread / connector end diameter (mm)

Accessories

These and more accessories can be found in chapter 10
See pages from 970 ... for cordsets
See pages 1066 ... for mounting accessories

V1-G 4-pin, M12 female field-attachable connector, straight
BF 8 Quick mounting bracket, 8 mm
EXG-08 Quick mounting bracket with stop
V3-GM Female connector, M8, 3-pin, field attachable, straight
V3-GM-BK2M-PUR-U Female cordset, M8, 3-pin, PUR cable, straight
V1-G-BK2M-PUR-U Female cordset, M12, 4-pin, PUR cable, straight

Approvals and Certificates

UL approval cULus Listed, General Purpose
CSA approval cCSAus Listed, General Purpose
CCC approval CCC approval / marking not required for sensors rated ≤ 36 V

Additional Products

In this series, we offer the following additional products:
NBB2-8GM30-E2-0,3M-V3
Technical data like NBB2-8GM30-E2 but:
Connection type: cable connector M8 x 1, PVC, 300 mm

Electrical Connection

Refer to General Notes Relating to Product Information
Inductive sensor cylindrical, Ø 8 mm

Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data
- Rated operating distance: 2 mm
- Installation: non-flush
- Type of voltage: DC
- Operating voltage: 10 ... 30 V DC
- No-load supply current: ≤ 20 mA
- Reverse polarity protection: ✔
- Load current: 0 ... 100 mA
- Short-circuit protection: ✔, self-checking
- Switching frequency: 0 ... 1500 Hz
- Switching state indication: LED, yellow
- Ambient temperature: -25 ... 70 °C (-13 ... 158 °F)
- Housing material: brass, nickel-plated
- Protection degree: IP67

Model Number

<table>
<thead>
<tr>
<th>Output type</th>
<th>NPN NO/NC</th>
<th>PNP NO/NC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection type</td>
<td>Connector M12 x 1, 4-pin</td>
<td>cable PVC, 2 m</td>
</tr>
</tbody>
</table>

Approvals and Certificates
- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤ 36 V

Dimensions

<table>
<thead>
<tr>
<th>Length L [mm]</th>
<th>60</th>
<th>64</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diameter D [mm]</td>
<td>M8 x 1</td>
<td>M8 x 1 / 12</td>
</tr>
<tr>
<td>Thread length l₁ [mm]</td>
<td>60</td>
<td>50</td>
</tr>
<tr>
<td>Cap length l₂ [mm]</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Connector length l₃ [mm]</td>
<td>0</td>
<td>6</td>
</tr>
</tbody>
</table>

LED position: Pos. C

Note: M8 x 1 / 12 indicated: barrel thread / connector end diameter (mm)

Accessories

These and more accessories can be found in chapter 10
See pages from 970 ... for cordsets
See pages 1066 ... for mounting accessories

| V1-W | 4-pin, M12 female field-attachable connector, angled |
| BF 8 | Mounting bracket, 8 mm |
| V1 | 4-pin, M12 female-field-attachable connector, straight |
| V1-G-BK2M-PUR-U | Female cordset, M12, 4-pin, PUR cable, straight |
| V1-W-BK2M-PUR-U | Female cordset, M12, 4-pin, PUR cable, angled |

Electrical Connection

Wire colors in accordance with EN 60947-5-2

1: BN (brown)  2: WR (white)  3: BU (blue)  4: BK (black)
Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data
- Rated operating distance: 3 mm
- Installation: non-flush
- Type of voltage: DC
- No-load supply current: ≤ 15 mA
- Reverse polarity protection: ✔
- Load current: 0 ... 100 mA
- Short-circuit protection: ✔, self-checking
- Switching frequency: 0 ... 2000 Hz
- Switching state indication: LED, yellow
- Housing material: brass, nickel-plated
- Protection degree: IP67

Model Number
- Output type: NPN NO, NPN NC, PNP NO, PNP NC
- Operating voltage: 10 ... 30 V
- Connection type: Connector M12 x 1, 4-pin, Connector M8 x 1, 3-pin, cable PVC, 2 m

Accessories
- These and more accessories can be found in chapter 10
- See pages from 970 ... for cordsets
- See pages 1066 ... for mounting accessories

Electrical Connection

Properties
- Ø8 mm housing
- 3 mm, non-flush mountable
- DC, 3-wire switching output
- Cable and connector versions
Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data
- Rated operating distance: 3 mm
- Installation: quasi-flush
- Type of voltage: DC
- Operating voltage: 10 ... 30 V DC
- No-load supply current: ≤ 15 mA
- Reverse polarity protection: ✔
- Load current: 0 ... 200 mA
- Switching frequency: 0 ... 1500 Hz
- Short-circuit protection: ✔, self-checking
- Switching state indication: LED, yellow
- Ambient temperature: -25 ... 85 °C (-13 ... 185 °F)
- Protection degree: IP67
- Housing material: brass, nickel-plated

Model Number

<table>
<thead>
<tr>
<th>Output type</th>
<th>NEB3-8GM45-E0</th>
<th>NEB3-8GM45-E1</th>
<th>NEB3-8GM45-E2</th>
<th>NEB3-8GM45-E3</th>
<th>NEB3-8GM45-E0-V1</th>
<th>NEB3-8GM45-E1-V1</th>
<th>NEB3-8GM45-E2-V1</th>
<th>NEB3-8GM45-E3-V1</th>
<th>NEB3-8GM45-E0-V3</th>
<th>NEB3-8GM45-E1-V3</th>
<th>NEB3-8GM45-E2-V3</th>
<th>NEB3-8GM45-E3-V3</th>
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<tbody>
<tr>
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<td>✔</td>
<td>✔</td>
<td>✔</td>
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<tr>
<td>NPN NC</td>
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<td></td>
<td>✔</td>
<td>✔</td>
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<td>✔</td>
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<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Connection type</td>
<td>Connector M12 x 1, 4-pin</td>
<td>Connector M12 x 1, 4-pin</td>
<td>Connector M8 x 1, 3-pin</td>
<td>Cable PUR, 2 m</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Approvals and Certificates
- UL approval: cULus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤36 V

Dimensions
- Length L [mm]: 45, 60, 66
- Diameter D [mm]: M8 x 1, M8 x 1 / 12
- Thread length l1 [mm]: 45, 44
- Cap length l2 [mm]: 0
- Connector length l3 [mm]: 0, 6, 10
- LED position: Pos. A

Note: M8 x 1 / 12 indicated: barrel thread / connector end diameter (mm)

Accessories
These and more accessories can be found in chapter 10 See pages from 970 ... for cordsets See pages 1066 ... for mounting accessories

BF 8
- Mounting bracket, 8 mm

V1-G
- 4-pin, M12 female field-attachable connector, straight
- Female connector, M8, 3-pin, field attachable, straight

V3-GM
- Female cordset, M8, 3-pin, PUR cable, straight

V1-G-BK2M-PUR-U
- Female field-attachable connector, straight
- Female cordset, M12, 4-pin, PUR cable, straight

V3-WM-BK2M-PUR-U
- Female field-attachable connector, straight
- Female cordset, M12, 4-pin, PUR cable, angled

Electrical Connection

Wire colors in accordance with EN 60947-5-2
1. BN (brown)
2. WH (white)
3. BU (blue)
4. BK (black)
Inductive sensor

cylindrical, Ø 8 mm

### Technical Data
For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

#### General Data
- Rated operating distance: 4 mm
- Installation: quasi-flush
- Type of voltage: DC
- Operating voltage: 10 ... 30 V DC
- No-load supply current: ≤ 10 mA
- Reverse polarity protection: ✔
- Output type: PNP, NO
- Load current: 0 ... 200 mA
- Short-circuit protection: ✔, self-checking
- Switching frequency: 0 ... 500 Hz
- Switching state indication: LED, yellow
- Ambient temperature: -25 ... 70 °C (-13 ... 158 °F)
- Protection degree: IP67
- Housing material: chromium plated brass

#### Model Number

<table>
<thead>
<tr>
<th></th>
<th>NEB4-8GM45-E2</th>
<th>NEB4-8GM50-E2 V3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection type</td>
<td>Connector M8 x 1, 3-pin cable PUR, 2 m</td>
<td></td>
</tr>
</tbody>
</table>

#### Approvals and Certificates
- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤ 36 V

#### Dimensions
- Length L [mm]: 45, 60
- Diameter D [mm]: M8 x 1
- Thread length l1 [mm]: 45
- Cap length l2 [mm]: 0
- Connector length l3 [mm]: 0
- LED position: Pos. A

#### Accessories
These and more accessories can be found in chapter 10
See pages from 970 ... for cordsets
See pages 1066 ... for mounting accessories
- BF 8: Mounting bracket, 8 mm
- V3-GM: Female connector, M8, 3-pin, field attachable, straight
- V3-GM-BK2M-PUR-U: Female cordset, M8, 3-pin, PUR cable, straight
- V3-WM-BK2M-PUR-U: Female cordset, M8, 3-pin, PUR cable, angled

### Properties
- Ø8 mm housing
- 4 mm, quasi-flush mountable
- DC, 3-wire switching output
- Cable and connector versions

### Benefits
- Extended sensing range means fewer sensor/target impacts

### Electrical Connection

#### NEB4-8GM45-E2

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
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<tbody>
<tr>
<td>BN</td>
<td>WH</td>
<td>BU</td>
<td>BK</td>
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<tr>
<td>(brown)</td>
<td>(white)</td>
<td>(blue)</td>
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#### NEB4-8GM50-E2 V3

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<tbody>
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<td>BN</td>
<td>WH</td>
<td>BU</td>
<td>BK</td>
</tr>
<tr>
<td>(brown)</td>
<td>(white)</td>
<td>(blue)</td>
<td>(black)</td>
</tr>
</tbody>
</table>

Wire colors in accordance with EN 60947-5-2

**Refer to General Notes Relating to Product Information**

*Courtesy of Steven Engineering, Inc. - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com*
# Inductive sensor

## Technical Data

### General Data
- **Rated operating distance:** 6 mm
- **Installation:** non-flush
- **Type of voltage:** DC
- **Operating voltage:** 10 ... 30 V DC
- **No-load supply current:** ≤ 15 mA
- **Reverse polarity protection:** ✔
- **Switching frequency:** 0 ... 750 Hz
- **Load current:** 0 ... 200 mA, above 50°C ≤ 150 mA
- **Short-circuit protection:** ✔, self-checking
- **Switching state indication LED, yellow**
- **Ambient temperature:** -25 ... 85 °C (-13 ... 185 °F)
- **Housing material:** brass, nickel-plated
- **Protection degree:** IP67

### Model Number
- **Output type:** NPN NO
- **Output type:** NPN NC
- **Output type:** PNP NO
- **Output type:** PNP NC
- **Connection type:** Connector M8 x 1 , 3-pin
- **Connection type:** cable PUR , 2 m

### Approvals and Certificates
- **UL approval:** cULus Listed, General Purpose
- **CCC approval:** / marking not required for sensors rated ≤36 V

### Dimensions
- **Length L [mm]:** 45 | 60
- **Diameter D [mm]:** M8 x 1
- **Thread length l₁ [mm]:** 44 | 40
- **Cap length l₂ [mm]:** 0 | 6
- **Connector length l₃ [mm]:**

### Accessories
- **These and more accessories can be found in chapter 10**
- **See pages from 970 ... for cordsets**
- **See pages 1066 ... for mounting accessories**

### Electrical Connection

#### Wire colors in accordance with EN 60047-5-2

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

---

**Properties**

- Ø8 mm housing
- 6 mm, non-flush mountable
- DC, 3-wire switching output
- Cable and connector versions

**Benefits**

- Extended sensing range means fewer sensor/target impacts

---

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us
1.1 Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

**General Data**
- **Rated operating distance**: 6 mm
- **Installation**: non-flush
- **Type of voltage**: DC
- **Operating voltage**: 10 ... 30 V DC
- **No-load supply current**: \( \leq 15\) mA
- **Reverse polarity protection**: ✔
- **Switching frequency**: 0 ... 750 Hz
- **Load current**: 0 ... 200 mA, above 50°C \( \leq 150\) mA
- **Short-circuit protection**: ✔, self-checking
- **Ambient temperature**: -25 ... 85 °C (-13 ... 185 °F)
- **Housing material**: brass, nickel-plated
- **Protection degree**: IP67
- **Connection type**: Connector M12 x 1, 4-pin

**Model Number**

<table>
<thead>
<tr>
<th>Model Number</th>
<th>NEN6-8GM45-E0-V1</th>
<th>NEN6-8GM45-E1-V1</th>
<th>NEN6-8GM45-E2-V1</th>
<th>NEN6-8GM45-E3-V1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output type</td>
<td>NPN</td>
<td>NPN NO</td>
<td>NPN NC</td>
<td>PNP</td>
</tr>
<tr>
<td></td>
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<tr>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Dimensions**

<table>
<thead>
<tr>
<th>Measurement</th>
<th>Value [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length L</td>
<td>66</td>
</tr>
<tr>
<td>Diameter D</td>
<td>M8 x 1 / 12</td>
</tr>
<tr>
<td>Thread length ( l_t )</td>
<td>40</td>
</tr>
<tr>
<td>Cap length ( l_c )</td>
<td>4</td>
</tr>
<tr>
<td>Connector length ( l_c )</td>
<td>8</td>
</tr>
<tr>
<td>LED position</td>
<td>Pos. A</td>
</tr>
</tbody>
</table>

**Accessories**

These and more accessories can be found in chapter 10

<table>
<thead>
<tr>
<th>Accessories</th>
<th>See pages from 970 ... for cordsets</th>
<th>See pages 1066 ... for mounting accessories</th>
</tr>
</thead>
<tbody>
<tr>
<td>BF 8</td>
<td>Material 8 mounting bracket, 8 mm</td>
<td>Material 8 mounting bracket, 8 mm</td>
</tr>
<tr>
<td>V1-G</td>
<td>4-pin, M12 female field-attachable connector, straight</td>
<td>4-pin, M12 female field-attachable connector, straight</td>
</tr>
<tr>
<td>V3-GM</td>
<td>Female connector, M8, 3-pin, field-attachable, straight</td>
<td>Female connector, M8, 3-pin, field-attachable, angled</td>
</tr>
<tr>
<td>V1-W</td>
<td>4-pin, M12 female field-attachable connector, angled</td>
<td>4-pin, M12 female field-attachable connector, angled</td>
</tr>
<tr>
<td>V3-WM</td>
<td>Female connector, M8, 3-pin, field-attachable, angled</td>
<td>Female connector, M8, 3-pin, field-attachable, angled</td>
</tr>
<tr>
<td>V1-G-BK2M-PUR-U</td>
<td>Female cordset, M12, 4-pin, PUR cable, straight</td>
<td>Female cordset, M12, 4-pin, PUR cable, straight</td>
</tr>
<tr>
<td>V3-GM-BK2M-PUR-U</td>
<td>Female cordset, M8, 3-pin, PUR cable, straight</td>
<td>Female cordset, M8, 3-pin, PUR cable, straight</td>
</tr>
<tr>
<td>V1-W-BK2M-PUR-U</td>
<td>Female cordset, M12, 4-pin, PUR cable, angled</td>
<td>Female cordset, M12, 4-pin, PUR cable, angled</td>
</tr>
<tr>
<td>V3-WM-BK2M-PUR-U</td>
<td>Female cordset, M8, 3-pin, PUR cable, angled</td>
<td>Female cordset, M8, 3-pin, PUR cable, angled</td>
</tr>
</tbody>
</table>

**Electrical Connection**

Wire colors in accordance with EN 60947-5-2

<table>
<thead>
<tr>
<th>Wire</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>BN (brown)</td>
</tr>
<tr>
<td>2</td>
<td>WH (white)</td>
</tr>
<tr>
<td>3</td>
<td>BU (blue)</td>
</tr>
<tr>
<td>4</td>
<td>BK (black)</td>
</tr>
</tbody>
</table>

Properties

- Ø8 mm housing
- 6 mm, non-flush mountable
- DC, 3-wire switching output
- Connector version

Benefits

- Extended sensing range means fewer sensor/target impacts

Exports to...
Technical Data

General Data
- Rated operating distance: 1.5 mm
- Installation: flush
- Type of voltage: AC
- Operating voltage: 24...264 V AC
- Reverse polarity protection: ✔, polarity independent
- Switching frequency: 0...25 Hz
- Load current: 5...100 mA
- Switching state indication: LED, red
- Ambient temperature: -25...70 °C (-13...158 °F)
- Housing material: Stainless steel 1.4305 / AISI 303
- Protection degree: IP67
- Connection type: cable PVC, 2 m

Properties
- Ø8 mm housing
- 1.5 mm, flush mountable
- AC, 2-wire switching output
- Cable version

Model Number
- Output type: AC NO
- Connection type: cable PVC, 2 m
- Model Numbers: NJ1,5-8GM40-WS
- Approvals and Certificates
  - UL approval: cULus Listed, General Purpose
  - CSA approval: cCSAus Listed, General Purpose

Dimensions
- Length L [mm]: 40
- Diameter D [mm]: M8 x 1
- Thread length l1 [mm]: 30
- Cap length l1 [mm]: 0
- Connector length l2 [mm]: 0
- LED position: Pos. B

Accessories
- These and more accessories can be found in chapter 10
- See pages from 970... for cordsets
- See pages 1066... for mounting accessories
- Accessories: BN L, NBU, GN/YE

Electrical Connection
- NJ1,5-8GM40-WS
- NJ1,5-8GM40-WO
1.1.1 Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

### General Data
- **Installation:** flush
- **Type of voltage:** DC
- **Load current:** 2 ... 100 mA
- **Short-circuit protection:** ✔, self-checking
- **Switching state indication:** LED, yellow
- **Protection degree:** IP67

### Model Number
<table>
<thead>
<tr>
<th>Model Number</th>
<th>US</th>
<th>US</th>
<th>US</th>
<th>US</th>
</tr>
</thead>
<tbody>
<tr>
<td>NBB2-12GM40-Z0</td>
<td>NCB2-12GM40-Z0</td>
<td>NCB4-12GM40-Z0</td>
<td>NCB4-12GM40-Z5</td>
<td>NCB4-12GM40-Z7-V1</td>
</tr>
<tr>
<td>NGB2-12GM40-Z0</td>
<td>NCB2-12GM40-Z0</td>
<td>NCB4-12GM40-Z0</td>
<td>NCB4-12GM40-Z5</td>
<td>NCB4-12GM40-Z7-V1</td>
</tr>
<tr>
<td>NBB2-12GM40-Z0-V1</td>
<td>NCB2-12GM40-Z0-V1</td>
<td>NCB4-12GM40-Z0-V1</td>
<td>NCB4-12GM40-Z5-V1</td>
<td>NCB4-12GM40-Z7-V1</td>
</tr>
<tr>
<td>NCB2-12GM40-Z1-V1</td>
<td>NCB4-12GM40-Z4-V1</td>
<td>NCB4-12GM40-Z5-V1</td>
<td>NCB4-12GM40-Z7-V1</td>
<td>NCB4-12GM40-Z7-V1</td>
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<tr>
<td>NCB2-12GM40-Z0-V1</td>
<td>NCB4-12GM40-Z5-V1</td>
<td>NCB4-12GM40-Z7-V1</td>
<td>NCB4-12GM40-Z7-V1</td>
<td>NCB4-12GM40-Z7-V1</td>
</tr>
<tr>
<td>NCB2-12GM40-Z1-V1</td>
<td>NCB4-12GM40-Z5-V1</td>
<td>NCB4-12GM40-Z7-V1</td>
<td>NCB4-12GM40-Z7-V1</td>
<td>NCB4-12GM40-Z7-V1</td>
</tr>
<tr>
<td>NCB2-12GM40-Z1-V1</td>
<td>NCB4-12GM40-Z5-V1</td>
<td>NCB4-12GM40-Z7-V1</td>
<td>NCB4-12GM40-Z7-V1</td>
<td>NCB4-12GM40-Z7-V1</td>
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<tr>
<td>NCB2-12GM40-Z1-V1</td>
<td>NCB4-12GM40-Z5-V1</td>
<td>NCB4-12GM40-Z7-V1</td>
<td>NCB4-12GM40-Z7-V1</td>
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<td>NCB2-12GM40-Z1-V1</td>
<td>NCB4-12GM40-Z5-V1</td>
<td>NCB4-12GM40-Z7-V1</td>
<td>NCB4-12GM40-Z7-V1</td>
<td>NCB4-12GM40-Z7-V1</td>
</tr>
</tbody>
</table>

### Rated operating distance
- 2 mm
- 4 mm

### Output type
- DC NO
- DC NC

### Operating voltage
- 3.5 ... 30 V
- 5 ... 60 V

### Reverse polarity protection
- ✔, polarity independent
- ✘, no

### Switching frequency
- 0 ... 800 Hz
- 0 ... 1000 Hz

### Pre-fault indication
- LED, red

### Ambient temperature
- °C
- °F

### Housing material
- Stainless steel 1.4305 / AISI 303
- brass, nickel-plated

### Connection type
- Connector M12 x 1, 4-pin
- cable PUR, 2 m
- cable PVC, 2 m

### Approvals and Certificates
- UL approval
- cULus Listed, General Purpose
- CSA approval
- cCSAus Listed, General Purpose
- CCC approval
- Certified by China Compulsory Certification (CCC)

### Dimensions
- Length L [mm]: 40, 35, 55
- Diameter D [mm]: M12 x 1
- Thread length lₜ [mm]: 37, 32, 39
- Cap length l₁ [mm]: 0
- Connector length l₂ [mm]: 0, 6
- LED position: Pos. C

### Accessories
- See pages 970 ... for cordsets
- See pages 1066 ... for mounting accessories

#### Electrical Connection
- Wire colors in accordance with EN 60947-5-2

### Properties
- Ø 12 mm housing
- 2 mm and 4 mm sensing ranges
- DC, 2-wire switching output
- Cable and connector versions
### Technical Data

**General Data**
- Installation: non-flush
- Type of voltage: DC
- Load current: 2 ... 100 mA
- Short-circuit protection: ✔, self-checking
- Ambient temperature: -25 ... 70 °C (-13 ... 158 °F)
- Protection degree: IP67

**Model Number**

<table>
<thead>
<tr>
<th>Model Number</th>
<th>NBN4-12GM40-Z0</th>
<th>NBN4-12GM40-Z0-V1</th>
<th>NBN4-12GM40-Z3-V1</th>
<th>NBN4-12GM40-Z3-V3</th>
<th>NBN4-12GM40-Z3-V5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated operating distance (mm)</td>
<td>4</td>
<td>5</td>
<td>8</td>
<td>8</td>
<td>8</td>
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<tr>
<td>Output type</td>
<td>DC NO</td>
<td>DC, 2-wire switching output</td>
<td>DC, 2-wire switching output</td>
<td>DC, 2-wire switching output</td>
<td>DC, 2-wire switching output</td>
</tr>
<tr>
<td>Operating voltage (V)</td>
<td>3.5 ... 30 V</td>
<td>5 ... 60 V</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reverse polarity protection</td>
<td>✔, polarity independent</td>
<td>✘, no</td>
<td>✔, polarity independent</td>
<td>✔, polarity independent</td>
<td>✔, polarity independent</td>
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<tr>
<td>Switching frequency (Hz)</td>
<td>0 ... 1000 Hz</td>
<td>0 ... 750 Hz</td>
<td>0 ... 800 Hz</td>
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<td></td>
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<tr>
<td>Switching state indication</td>
<td>LED, yellow</td>
<td>Multi-hole LED, yellow</td>
<td>all direction LED, yellow</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-fault indication</td>
<td>LED, red</td>
<td>Multihole-LED, yellow</td>
<td>all direction LED, yellow</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Housing material</td>
<td>Stainless steel 1.4305 / AISI 303</td>
<td>Stainless steel 1.4305 / AISI 303</td>
<td>Stainless steel 1.4305 / AISI 303</td>
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<td></td>
</tr>
<tr>
<td>Connection type</td>
<td>Connector M12 x 1, 4-pin</td>
<td>Connector M12 x 1, 4-pin</td>
<td>Connector M12 x 1, 4-pin</td>
<td></td>
<td></td>
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<tr>
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<td>cCSAus Listed, General Purpose</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Dimensions</td>
<td>Length L [mm]</td>
<td>40</td>
<td>35</td>
<td>55</td>
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<tr>
<td>Diameter D [mm]</td>
<td>M12 x 1</td>
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</tr>
<tr>
<td>Thread length l₁ [mm]</td>
<td>32</td>
<td>27</td>
<td>34</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cap length l₂ [mm]</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connector length l₃ [mm]</td>
<td>0</td>
<td>6</td>
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</tr>
</tbody>
</table>

### Properties

- Ø12 mm housing
- 4 mm and 8 mm sensing ranges
- DC, 2-wire switching output
- Cable and connector versions

### Approvals and Certificates

- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: Certified by China Compulsory Certification (CCC)

### Accessories

These and more accessories can be found in chapter 10. See pages 970 ... for cordsets. See pages 1066 ... for mounting accessories.

- BF 12
- AB-12
- MH01-M12
- V1-G
- V1-G-BK2M-PUR-U

### Electrical Connection

- Wire colors in accordance with EN 60947-5-2
  - 1: BN (brown)
  - 2: WH (white)
  - 3: BU (blue)
  - 4: BK (black)

---

**Inductive sensor**

cylindrical, Ø 12 mm
### Technical Data

**General Data**
- **Type of voltage**: DC
- **Operating voltage**: 10 ... 30 V DC
- **No-load supply current**: ≤ 17 mA
- **Reverse polarity protection**: ✔
- **Load current**: 0 ... 200 mA
- **Short-circuit protection**: ✔, self-checking
- **Switching state indication**: LED, yellow
- **Ambient temperature**: -25 ... 70 °C (-13 ... 158 °F)
- **Housing material**: PBT
- **Protection degree**: IP68 / IP69K
- **Connection type**: cable PVC , 2 m

**Rated operating distance**
- NBB2-12GK50-E0: 2 mm
- NBB2-12GK50-E2: 4 mm
- NBN4-12GK50-E0: 2 mm
- NBN4-12GK50-E2: 4 mm

**Model Number**

<table>
<thead>
<tr>
<th>Model Number</th>
<th>NBB2-12GK50-E0</th>
<th>NBB2-12GK50-E2</th>
<th>NBN4-12GK50-E0</th>
<th>NBN4-12GK50-E2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated operating distance</td>
<td>2 mm</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Installation</td>
<td>flush</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Output type</td>
<td>NPN NO</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>NO</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Switching frequency</td>
<td>0 ... 1200 Hz</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>0 ... 1500 Hz</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td></td>
</tr>
</tbody>
</table>

**Approvals and Certificates**
- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤36 V

**Dimensions**
- **Length L [mm]**: 50
- **Diameter D [mm]**: M12 x 1
- **Thread length l_t [mm]**: 40
- **Cap length l_c [mm]**: 1
- **Connector length l_c [mm]**: 0
- **LED position**: Pos. C

**Accessories**
- These and more accessories can be found in chapter 10

See pages from 970 ... for cordsets
See pages 1066 ... for mounting accessories

**Electrical Connection**

![Electrical Connection Diagram](image)
### Technical Data

**General Data**
- **Type of voltage**: DC
- **Operating voltage**: 10 ... 60 V
- **No-load supply current**: ≤ 15 mA
- **Reverse polarity protection**: ✔
- **Load current**: 0 ... 200 mA
- **Short-circuit protection**: ✔, self-checking
- **Ambient temperature**: -25 ... 70 °C (-13 ... 158 °F)
- **Housing material**: PBT
- **Protection degree**: IP68
- **Connection type**: cable PUR, 2 m

**Model Number**

<table>
<thead>
<tr>
<th>Rated operating distance</th>
<th>Installation</th>
<th>Output type</th>
<th>Switching frequency</th>
<th>Approvals and Certificates</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 mm</td>
<td>flush</td>
<td>NPN NO</td>
<td>0 ... 2000 Hz</td>
<td>cULus Listed, General Purpose</td>
</tr>
<tr>
<td>4 mm</td>
<td>non-flush</td>
<td>NPN NC</td>
<td>0 ... 2000 Hz</td>
<td>cCSAus Listed, General Purpose</td>
</tr>
<tr>
<td>4 mm</td>
<td></td>
<td>PNP NO</td>
<td>0 ... 3000 Hz</td>
<td>Certified by China Compulsory Certification (CCC)</td>
</tr>
<tr>
<td>4 mm</td>
<td></td>
<td>PNP NC</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Dimensions**

<table>
<thead>
<tr>
<th>Length L [mm]</th>
<th>Diameter D [mm]</th>
<th>Thread length t1 [mm]</th>
<th>Cap length l1 [mm]</th>
<th>Connector length l2 [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>M12 x 1</td>
<td>35</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

**Accessories**

- These and more accessories can be found in chapter 10
- BF 12: Mounting bracket, 12 mm
- AB-12: Right angled mounting bracket

### Properties
- **Ø12 mm plastic housing**
- **2 mm and 4 mm sensing ranges**
- **DC, 3-wire switching output**
- **Cable version**

### Electrical Connection

- **BN L+**
- **BN L-**
- **BK**
- **BU**

---

Refer to General Notes Relating to Product Information

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Courtesy of Steven Engineering, Inc. - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com
**Proximity Sensors, Inductive Sensors, cylindrical**

**Technical Data**

For detailed data and product description refer to the data sheets at [www.pepperl-fuchs.us](http://www.pepperl-fuchs.us).

### General Data

- **Rated operating distance**: 2 mm
- **Installation**: flush
- **Type of voltage**: DC
- **Operating voltage**: 10 ... 60 V
- **Reverse polarity protection**: ✔
- **Switching frequency**: 0 ... 3000 Hz
- **Load current**: 0 ... 200 mA
- **Short-circuit protection**: ✔, self-checking
- **Switching state indication**: LED, yellow
- **Ambient temperature**: -25 ... 70 °C (-13 ... 158 °F)
- **Housing material**: Stainless steel 1.4305 / AISI 303
- **Protection degree**: IP67

### Model Number

- **Output type**: NPN NO
- **Connection type**: Connector M12 x 1, 4-pin, cable PUR, 2 m

### Approvals and Certificates

- **UL approval**: cULus Listed, General Purpose
- **CSA approval**: cCSAus Listed, General Purpose
- **CCC approval**: Certified by China Compulsory Certification (CCC)

### Dimensions

- **Length L [mm]**: 40, 50
- **Diameter D [mm]**: M12 x 1
- **Thread length lₜ [mm]**: 40, 50
- **Cap length l₁ [mm]**: 0
- **Connector length l₂ [mm]**: 0
- **LED position**: Pos. A

### Accessories

- **Mounting bracket, 12 mm**: EXG-12
- **Quick mounting bracket with stop**: AB-12
- **Right angled mounting bracket**: MH01-M12
- **4-pin, M12 female field-attachable connector, straight**: V1-G
- **4-pin, M12 female field-attachable connector, angled**: V1-W
- **Female cordset, M12, 4-pin, PUR cable, straight**: V1-G-BK2M-PUR-U
- **Female cordset, M12, 4-pin, PUR cable, angled**: V1-W-BK2M-PUR-U

These and more accessories can be found in chapter 10. See pages from 970 ... for cordsets. See pages 1066 ... for mounting accessories.

### Electrical Connection

Refer to General Notes Relating to Product Information.
# Technical Data

## General Data
- **Rated operating distance**: 2 mm
- **Installation**: flush
- **Type of voltage**: DC
- **Operating voltage**: 10 ... 30 V
- **No-load supply current**: ≤ 15 mA
- **Reverse polarity protection**: ✔
- **Short-circuit protection**: ✔, self-checking
- **Switching state indication LED, yellow**
- **Ambient temperature**: -25 ... 70 °C (-13 ... 158 °F)
- **Housing material**: brass, nickel-plated
- **Protection degree**: IP67

## Model Number

<table>
<thead>
<tr>
<th>Output type</th>
<th>NPN NO</th>
<th>NPN NC</th>
<th>PNP NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switching frequency</td>
<td>0 ... 1000 Hz</td>
<td>0 ... 800 Hz</td>
<td>0 ... 200 mA</td>
</tr>
<tr>
<td>Load current</td>
<td>≤ 15 mA</td>
<td>≤ 15 mA</td>
<td>≤ 15 mA</td>
</tr>
<tr>
<td>Connection type</td>
<td>Connector M12 x 1, 4-pin cable PVC, 2 m</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Approvals and Certificates
- **UL approval**: cULus Listed, General Purpose
- **CSA approval**: cCSAus Listed, General Purpose
- **CCC approval**: CCC approval / marking not required for sensors rated ≤ 36 V

## Dimensions

<table>
<thead>
<tr>
<th>Length L [mm]</th>
<th>30</th>
<th>40</th>
<th>45</th>
<th>50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diameter D [mm]</td>
<td>M12 x 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thread length l₁ [mm]</td>
<td>27</td>
<td>37</td>
<td>30</td>
<td>50</td>
</tr>
<tr>
<td>Cap length l₂ [mm]</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connector length l₃ [mm]</td>
<td>0</td>
<td>6</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## LED position
- **Pos. A**: Yellow
- **Pos. B**: Orange
- **Pos. C**: Red

## Accessories

These and more accessories can be found in chapter 10 See pages from 970 ... for cordsets See pages 1066 ... for mounting accessories

- **BF 12**: Mounting bracket, 12 mm
- **EXG-12**: Quick mounting bracket with stop
- **AB-12**: Right angled mounting bracket
- **MN1-M12**: Mounting bracket M12 - 1/2" rod type
- **V1-G**: 4-pin, M12 female field-attachable connector, straight
- **V1-W**: 4-pin, M12 female field-attachable connector, angled
- **V1-G-SK2M-PUR-U**: Female cordset, M12, 4-pin, PUR cable, straight
- **V1-W-SK2M-PUR-U**: Female cordset, M12, 4-pin, PUR cable, angled

## Electrical Connection

<table>
<thead>
<tr>
<th>NBB2-12GM20-E0</th>
<th>NBB2-12GM20-E2</th>
<th>NBB2-12GM40-E0</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN</td>
<td>BK</td>
<td>L⁺</td>
</tr>
<tr>
<td>BN</td>
<td>WH</td>
<td>L⁻</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NBB2-12GM40-E2-V1</th>
<th>NBB2-12GM40-E1</th>
<th>NBB2-12GM40-E2-V1</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN</td>
<td>BK</td>
<td>L⁺</td>
</tr>
<tr>
<td>BN</td>
<td>WH</td>
<td>L⁻</td>
</tr>
</tbody>
</table>

Wire colors in accordance with EN 60947-5-2

1. BN (brown)
2. WH (white)
3. BU (blue)
4. BK (black)
## Technical Data

### General Data
- **Rated operating distance**: 2 mm
- **Installation**: flush
- **Type of voltage**: DC
- **Operating voltage**: 10 ... 30 V
- **Reverse polarity protection**: ✔
- **Load current**: 0 ... 200 mA
- **Short-circuit protection**: ✔
- **Housing material**: brass, nickel-plated
- **Protection degree**: IP67

### Model Number
- **Output type**: NPN NO/NC
- **No-load supply current**: ≤ 15 mA
- **Switching frequency**: 0 ... 1000 Hz
- **Ambient temperature**: -25 ... 70 °C (-13 ... 158 °F)
- **Connection type**: Connector M12 x 1, 4-pin cable PVC, 2 m

### Approvals and Certificates
- **UL approval**: cULus Listed, General Purpose
- **CSA approval**: cCSAus Listed, General Purpose
- **CCC approval**: CCC approval / marking not required for sensors rated ≤ 36 V

### Dimensions
- **Length L [mm]**: 50, 50, 50, 60, 60, 65, 65, 65, 70, 70, 70
- **Diameter D [mm]**: M12 x 1
- **Thread length lt [mm]**: 50, 50, 50, 60, 65, 50, 50, 50, 40, 70, 70
- **Cap length l1 [mm]**: 0
- **Connector length lc [mm]**: 0, 6, 10, 0
- **LED position**: Pos.: C

### Accessories
- **BF 12**: Mounting bracket, 12 mm
- **EXG-12**: Quick mounting bracket with stop
- **MH01-M12**: Right angled mounting bracket
- **V1-G**: 4-pin, M12 female field-attachable connector, straight
- **V1-W**: 4-pin, M12 female field-attachable connector, angled
- **V1-G-BK2M-PUR-U**: Female cordset, M12, 4-pin, PUR cable, straight
- **V1-W-BK2M-PUR-U**: Female cordset, M12, 4-pin, PUR cable, angled

## Electrical Connection

### Cable and connector versions

```plaintext
<table>
<thead>
<tr>
<th>NBB2-12GM50-E0</th>
<th>NBB2-12GM50-E2</th>
<th>NBB2-12GM50-A0</th>
<th>NBB2-12GM50-E0-V1</th>
<th>NBB2-12GM50-E0-V2</th>
<th>NBB2-12GM50-E2-V1</th>
<th>NBB2-12GM50-E2-V2</th>
<th>NBB2-12GM50-A0-V1</th>
<th>NBB2-12GM50-A0-V2</th>
<th>NBB2-12GM50-A0-V3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

```

## Additional Products

- **Ø12 mm housing**
- **2 mm, flush mountable**
- **DC, 3-wire and 4-wire switching output**
- **Cable and connector versions**

### Properties
- **BN L+**
- **L-**
- **BK**
- **BU**

### Model Number
- **NBB2-12GM50-E0**
- **NBB2-12GM50-E2**
- **NBB2-12GM50-A0**
- **NBB2-12GM50-E0-V1**
- **NBB2-12GM50-E0-V2**
- **NBB2-12GM50-E2-V1**
- **NBB2-12GM50-E2-V2**
- **NBB2-12GM50-A0-V1**
- **NBB2-12GM50-A0-V2**
- **NBB2-12GM50-A0-V3**

## Accessories

- **These and more accessories can be found in chapter 10**

See pages from 970 ... for cordsets
See pages 1066 ... for mounting accessories

Refer to General Notes Relating to Product Information

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 Courtesy of Steven Engineering, Inc. - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com
**Technical Data**

For detailed data and product description refer to the data sheets at [www.pepperl-fuchs.us](http://www.pepperl-fuchs.us)

### General Data
- **Rated operating distance**: 4 mm
- **Installation**: non-flush
- **Type of voltage**: DC
- **Operating voltage**: 10 ... 60 V
- **No-load supply current**: ≤ 15 mA
- **Reverse polarity protection**: ✓
- **Switching frequency**: 0 ... 2000 Hz
- **Load current**: 0 ... 200 mA
- **Short-circuit protection**: ✓, self-checking
- **Switching state indication**: LED, yellow
- **Ambient temperature**: -25 ... 70 °C (-13 ... 158 °F)

### Housing material
- Stainless steel 1.4305 / AISI 303
- **Protection degree**: IP67

### Model Number

<table>
<thead>
<tr>
<th>Output type</th>
<th>NPN NO</th>
<th>NPN NC</th>
<th>PNP NO</th>
<th>PNP NC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection type</td>
<td>Connector M12 x 1, 4-pin</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>cable PUR, 2 m</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Approvals and Certificates

| UL approval | cULus Listed, General Purpose |
| CSA approval | cCSAus Listed, General Purpose |
| CCC approval | Certified by China Compulsory Certification (CCC) |

### Dimensions

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length L [mm]</td>
<td>40 / 50</td>
</tr>
<tr>
<td>Diameter D [mm]</td>
<td>M12 x 1</td>
</tr>
<tr>
<td>Thread length l_t [mm]</td>
<td>35 / 45</td>
</tr>
<tr>
<td>Cap length l_1 [mm]</td>
<td>5</td>
</tr>
<tr>
<td>Connector length l_c [mm]</td>
<td>0</td>
</tr>
<tr>
<td>LED position</td>
<td>Pos. A</td>
</tr>
</tbody>
</table>

### Accessories

- See pages from 970 ... for cordsets
- See pages 1066 ... for mounting accessories

- **BF 12**: Mounting bracket, 12 mm
- **AB-12**: Right angled mounting bracket
- **MH01-M12**: Mounting bracket M12 - 1/2" rod type
- **V1-G**: 4-pin, M12 female field-attachable connector, straight
- **V1-W**: 4-pin, M12 female field-attachable connector, angled
- **V1-G-BK2M-PUR-U**: Female cordset, M12, 4-pin, PUR cable, straight
- **V1-W-BK2M-PUR-U**: Female cordset, M12, 4-pin, PUR cable, angled

### Electrical Connection

Refer to General Notes Relating to Product Information

- Wire colors in accordance with EN 60947-5-2
  - 1: BN (brown)
  - 2: WH (white)
  - 3: BU (blue)
  - 4: BK (black)
**Technical Data**

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

### General Data
- **Rated operating distance**: 4 mm
- **Installation**: flush
- **Type of voltage**: DC
- **Operating voltage**: 10 ... 30 V
- **Reverse polarity protection**: ✔
- **Short-circuit protection**: ✔, self-checking
- **Switching state indication**: LED, yellow
- **Housing material**: brass, nickel-plated
- **Protection degree**: IP67

### Model Number

<table>
<thead>
<tr>
<th>Model</th>
<th>Output type</th>
<th>NPN NO</th>
<th>PNP NO</th>
<th>PNP NC</th>
</tr>
</thead>
<tbody>
<tr>
<td>NBB4-12GM30-E0-E2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NBB4-12GM30-E0-0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NBB4-12GM30-E2-V1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NBB4-12GM40-E0-2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NBB4-12GM40-E2-V3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NBB4-12GM40-E2-V1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NBB4-12GM40-E3-V1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Electrical Connection

- **Pos. A**: BN (brown)
- **Pos. B**: WH (white)
- **Pos. C**: BU (blue)

### Properties
- Ø12 mm housing
- 4 mm, flush mountable
- DC, 3-wire switching output
- Cable and connector versions

### Benefits
- Extended sensing range means fewer sensor/target impacts

### Additional Products

In this series, we offer the following additional products:

- **NBB4-12GM30-E2-T-V1**
  - Technical data similar to NBB4-12GM30-E2-V1 but:
  - Load current: 0 ... 100 mA
  - Ambient temperature: -25 ... 100 °C (-13 ... 212 °F)
- **NBB4-12GM30-E0-V1**
  - Technical data similar to NBB4-12GM30-E2-V1 but:
  - Output type: NPN, NO
  - No-load supply current: ≤ 7 mA
  - Switching frequency: 0 ... 400 Hz

### Approvals and Certificates

- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤36 V

### Dimensions

<table>
<thead>
<tr>
<th>Model</th>
<th>Length L [mm]</th>
<th>Diameter D [mm]</th>
<th>Thread length l1 [mm]</th>
<th>Cap length l2 [mm]</th>
<th>Connector length l3 [mm]</th>
<th>LED position</th>
<th>Wire colors</th>
</tr>
</thead>
<tbody>
<tr>
<td>NBB4-12GM30-E0-E2</td>
<td>30</td>
<td>M12 x 1</td>
<td>27</td>
<td>0</td>
<td>0</td>
<td>Pos. C</td>
<td></td>
</tr>
<tr>
<td>NBB4-12GM30-E0-E2</td>
<td>40</td>
<td>M12 x 1</td>
<td>37</td>
<td>0</td>
<td>0</td>
<td>Pos. C</td>
<td></td>
</tr>
<tr>
<td>NBB4-12GM30-E2-V1</td>
<td>44</td>
<td>M12 x 1</td>
<td>35</td>
<td>0</td>
<td>0</td>
<td>Pos. C</td>
<td></td>
</tr>
<tr>
<td>NBB4-12GM30-E0-0</td>
<td>45</td>
<td>M12 x 1</td>
<td>30</td>
<td>0</td>
<td>0</td>
<td>Pos. C</td>
<td></td>
</tr>
<tr>
<td>NBB4-12GM40-E0-2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NBB4-12GM40-E2-V3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Accessories

These and more accessories can be found in chapter 10

- **BF 12**: Mounting bracket, 12 mm
- **EXG-12**: Quick mounting bracket with stop
- **AB-12**: Right angled mounting bracket
- **MH01-M12**: Female connector, M8, 3-pin, field-attachable, straight
- **V3-GM**: Female connector, M8, 3-pin, PUR cable, straight
- **V1-G**: Female connector, M8, 3-pin, field-attachable connector, straight
- **V3-GM-BK2M-PUR-U**: Female connector, M8, 3-pin, PUR cable, straight
- **V1-G-BK2M-PUR-U**: Female connector, M8, 3-pin, irradiated PUR cable, straight

Wire colors in accordance with EN 60947-5-2

- Load current: 0 ... 100 mA
- Ambient temperature: -25 ... 100 °C (-13 ... 212 °F)
- Output type: NPN, NO
- No-load supply current: ≤ 7 mA
- Switching frequency: 0 ... 400 Hz
Inductive sensor cylindrical, Ø 12 mm

**Technical Data**

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

### General Data
- **Rated operating distance**: 4 mm
- **Installation**: Flush
- **Type of voltage**: DC
- **Operating voltage**: 10 ... 30 V
- **No-load supply current**: ≤ 15 mA
- **Reverse polarity protection**: ✔
- **Switching frequency**: 0 ... 800 Hz
- **Load current**: 0 ... 200 mA
- **Short-circuit protection**: ✔, self-checking
- **Switching state indication LED, yellow**
- **Protection degree**: IP67

### Model Number

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>NBB4-12GM50-E0-V1</td>
<td>NBB4-12GM50-E1-V1</td>
</tr>
<tr>
<td>NBB4-12GM50-E2-V1</td>
<td>NBB4-12GM50-E3-V1</td>
</tr>
<tr>
<td>NBB4-12GM50-E0</td>
<td>NBB4-12GM50-E2</td>
</tr>
<tr>
<td>NBB4-12GM50-E1</td>
<td>NBB4-12GM50-E3</td>
</tr>
<tr>
<td>NBB4-12GM50-E2-V1</td>
<td>NBB4-12GM50-E3-V1</td>
</tr>
<tr>
<td>NCB4-12GM50-E2-V1</td>
<td></td>
</tr>
</tbody>
</table>

### Output type
- NPN NO
- NPN NC
- PNP NO
- PNP NC

### Ambient temperature
- -25 ... 70 °C (-13 ... 158 °F)
- -40 ... 70 °C (-40 ... 158 °F)

### Housing material
- Stainless steel 1.4305 / AISI 303
- Brass, nickel-plated

### Connection type
- Connector M12 x 1, 4-pin
- Cable PVC, 2 m

### Approvals and Certificates
- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤ 36 V

### Dimensions
- **Length L [mm]**: 50, 65
- **Diameter D [mm]**: M12 x 1
- **Thread length l [mm]**: 47, 49
- **Cap length l1 [mm]**: 0
- **Connector length lc [mm]**: 0, 6
- **LED position**: Pos. C

### Accessories
- These and more accessories can be found in chapter 10
- See pages from 970 ... for cordsets
- See pages 1066 ... for mounting accessories

**Electrical Connection**

- Wire colors in accordance with EN 60947-5-2
- 1: BN (brown)
- 2: WH (white)
- 3: BU (blue)
- 4: BK (black)
Inductive sensor

cylindrical, Ø 12 mm

Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data
Rated operating distance 4 mm
Installation flush
Type of voltage DC
Operating voltage 10 ... 30 V
No-load supply current ≤ 20 mA
Reverse polarity protection ✔
Switching frequency 0 ... 1500 Hz
Load current 0 ... 200 mA
Short-circuit protection ✔, self-checking
Switching state indication LED, yellow
Ambient temperature -25 ... 70 °C (-13 ... 158 °F)
Housing material brass, nickel-plated
Protection degree IP67

Model Number

Output type NPN NO/NC
Connection type Connector M12 x 1, 4-pin
cable PVC, 2 m

Approvals and Certificates
UL approval cULus Listed, General Purpose
CSA approval cCSAus Listed, General Purpose
CCC approval ✔
CCC approval / marking not required for sensors rated ≤36 V

Dimensions
Length L [mm] 50 65
Diameter D [mm] M12 x 1
Thread length l1 [mm] 47 49
Cap length l2 [mm] 0 6
Connector length lc [mm] 0 6

LED position Pos. C

Accessories
These and more accessories can be found in chapter 10
See pages from 970 ... for cordsets
See pages 1066 ... for mounting accessories

BF 12
EXG-12
AB-12
MB01-M12
V1-G
V1-W
V1-G-BK2M-PUR-U
V1-W-BK2M-PUR-U

Electrical Connection

Wire colors in accordance with EN 60947-5-2
1 BN (brown)
2 WH (white)
3 BU (blue)
4 BK (black)
### Technical Data

**General Data**
- Rated operating distance: 4 mm
- Installation: non-flush
- Type of voltage: DC
- Operating voltage: 10 ... 30 V
- Reverse polarity protection: ✅
- Short-circuit protection: ✅
- Switching state indication: LED, yellow
- Ambient temperature: -25 ... 70 °C (-13 ... 158 °F)
- Housing material: brass, nickel-plated
- Protection degree: IP67

**Model Number**

<table>
<thead>
<tr>
<th>Output type</th>
<th>NPN NO</th>
<th>NPN NC</th>
<th>PNP NO</th>
<th>PNP NC</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>No-load supply current</strong></td>
<td>≤ 15 mA</td>
<td>≤ 17 mA</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Switching frequency</strong></td>
<td>0 ... 1200 Hz</td>
<td>0 ... 800 Hz</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Load current</strong></td>
<td>0 ... 100 mA</td>
<td>0 ... 200 mA</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Approval and Certificates**

- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤36 V

**Dimensions**

<table>
<thead>
<tr>
<th>Length L [mm]</th>
<th>40</th>
<th>50</th>
<th>65</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diameter D [mm]</td>
<td>12</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Thread length l_t [mm]</td>
<td>32</td>
<td>42</td>
<td>45</td>
</tr>
<tr>
<td>Cap length l_1 [mm]</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Connector length l_c [mm]</td>
<td>0</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>LED position</td>
<td>Pos. C</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Accessories**

- BF 12: Mounting bracket, 12 mm
- AB-12: Right angled mounting bracket
- MN01-M12: Mounting bracket M12 - 1/2" rod type
- V1-G: 4-pin, M12 female field-attachable connector, straight
- V1-W: 4-pin, M12 female field-attachable connector, angled
- V1-W-BK2M-PUR-U: Female cordset, M12, 4-pin, PUR cable, straight, angled
- V1-G-BK2M-PUR-U: Female cordset, M12, 4-pin, PUR cable

**Additional Products**

In this series, we offer the following additional products:

- NBN4-12GM40-E2-T-V1: Technical data like NBN4-12GM40-E2-V1 but:
  - Switching frequency: 0 ... 800 Hz
  - Ambient temperature: -25 ... 100 °C (-13 ... 212 °F)
- NBN4-12GM50-E2-T-V1: Technical data like NBN4-12GM60-E2-T-V1 but:
  - Length L [mm]: 65 mm

**Properties**

- Ø12 mm housing
- 4 mm, non-flush mountable
- DC, 3-wire switching output
- Cable and connector versions

**Electrical Connection**

Wire colors in accordance with EN 60947-5-2:

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

Refer to General Notes Relating to Product Information.
### Technical Data

**General Data**
- Rated operating distance: 4 mm
- Installation: non-flush
- Type of voltage: DC
- Operating voltage: 10 ... 30 V
- Reverse polarity protection: ✔
- Load current: 0 ... 200 mA
- Short-circuit protection: ✔, self-checking
- Swiching state indication LED, yellow
- Ambient temperature: -25 ... 70 °C (-13 ... 158 °F)
- Housing material: brass, nickel-plated
- Protection degree: IP67

**Model Number**

<table>
<thead>
<tr>
<th>Output type</th>
<th>NPN NO/NC</th>
<th>PNP NO/NC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Load current</td>
<td>&lt; 15 mA</td>
<td>10 ... 20 mA</td>
</tr>
<tr>
<td>Switching frequency</td>
<td>0 ... 1000 Hz</td>
<td>0 ... 1200 Hz</td>
</tr>
<tr>
<td>No-load supply current</td>
<td>≤ 3 mA</td>
<td>≤ 15 mA</td>
</tr>
<tr>
<td>Connection type</td>
<td>Connector M12 x 1, 4-pin cable PVC, 2 m</td>
<td></td>
</tr>
</tbody>
</table>

**Approvals and Certificates**
- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤ 36 V

**Dimensions**

| Length L [mm] | 60 | 50 | 70 |
| Diameter D [mm] | M12 x 1 |
| Thread length l_t [mm] | 55 | 30 | 65 |
| Cap length l_1 [mm] | 5 |
| Connector length l_c [mm] | 0 | 6 | 0 |

**Accessories**

- BF 12: Mounting bracket, 12 mm
- AB-12: Right angled mounting bracket
- MH01-M12: Mounting bracket M12 - 1/2" rod type
- V1-G: 4-pin, M12 female field-attachable connector, straight
- V1-W: 4-pin, M12 female field-attachable connector, angled
- V1-G-BK2M-PUR-U: Female cordset, M12, 4-pin, PUR cable, straight
- V1-W-BK2M-PUR-U: Female cordset, M12, 4-pin, PUR cable, angled

**Electrical Connection**

Wire colors in accordance with EN 60947-5-2

<table>
<thead>
<tr>
<th>Wire Color</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>BN (brown)</td>
</tr>
<tr>
<td>2</td>
<td>WH (white)</td>
</tr>
<tr>
<td>3</td>
<td>BU (blue)</td>
</tr>
<tr>
<td>4</td>
<td>BK (black)</td>
</tr>
</tbody>
</table>

**Properties**

- Ø 12 mm housing
- 4 mm, non-flush mountable
- DC, 4-wire switching outputs
- Cable and connector versions
Inductive sensor cylindrical, Ø 12 mm

Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data

Rated operating distance 6 mm
Installation quasi-flush
Type of voltage DC
Operating voltage 10 ... 30 V DC
No-load supply current ≤ 15 mA
Reverse polarity protection ✔
Switching frequency 0 ... 800 Hz
Load current 0 ... 200 mA, above 70°C ≤ 150 mA
Short-circuit protection ✔, self-checking
Switching state indication LED, yellow
Ambient temperature 25 ... 85 °C (13 ... 185 °F)
Housing material brass, nickel-plated
Protection degree IP67

Model Number

<table>
<thead>
<tr>
<th>Output type</th>
<th>NPN NO</th>
<th>NPN NC</th>
<th>PNP NO</th>
<th>PNP NC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection type</td>
<td>Connector M12 x 1, 4-pin</td>
<td>cable PUR , 2 m</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Approvals and Certificates

UL approval cULus Listed, General Purpose
CCC approval CCC approval / marking not required for sensors rated ≤ 36 V

Dimensions

| Length L [mm] | 50 | 60 |
| Diameter D [mm] | M12 x 1 |
| Thread length l1 [mm] | 49 | 40 |
| Cap length l1 [mm] | 0 | 0 |
| LED position | Pos. A |

Accessories

These and more accessories can be found in chapter 10
See pages from 570 for cordsets
See pages 1066 ... for mounting accessories

BF 12 Mounting bracket, 12 mm
AB-12 Right angled mounting bracket
MH01-M12 Mounting bracket M12 - 1/2" rod type
V1-G 4-pin, M12 female field-attachable connector, straight
V1-W 4-pin, M12 female field-attachable connector, angled
V1-WBK2M-PUR-U Female cordset, M12, 4-pin, PUR cable, straight
V1-WBK2M-PUR-U Female cordset, M12, 4-pin, PUR cable, angled

Electrical Connection

Wire colors in accordance with EN 60947-5-2
1 (brown) 2 WH (white) 3 BU (blue) 4 BK (black)
**Technical Data**

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

<table>
<thead>
<tr>
<th>General Data</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated operating distance</td>
<td>7 mm</td>
<td></td>
</tr>
<tr>
<td>Installation</td>
<td>non-flush</td>
<td></td>
</tr>
<tr>
<td>Type of voltage</td>
<td>DC</td>
<td></td>
</tr>
<tr>
<td>Operating voltage</td>
<td>10 ... 30 V</td>
<td></td>
</tr>
<tr>
<td>No-load supply current</td>
<td>≤ 15 mA</td>
<td></td>
</tr>
<tr>
<td>Reverse polarity protection</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Switching frequency</td>
<td>0 ... 300 Hz</td>
<td></td>
</tr>
<tr>
<td>Load current</td>
<td>0 ... 100 mA</td>
<td></td>
</tr>
<tr>
<td>Short-circuit protection</td>
<td>✔, self-checking</td>
<td></td>
</tr>
<tr>
<td>Switching state indication</td>
<td>all direction LED, yellow</td>
<td></td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-25 ... 70 °C (-13 ... 158 °F)</td>
<td></td>
</tr>
<tr>
<td>Housing material</td>
<td>brass, nickel-plated</td>
<td></td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP67</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Model Number</th>
<th>NBN7-12GM35-E2</th>
<th>NBN7-12GM35-E2-V1</th>
<th>NBN7-12GM35-E3-V1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output type</td>
<td>PNP NO</td>
<td>PNP NO</td>
<td>PNP NC</td>
</tr>
<tr>
<td>Connection type</td>
<td>Connector M12 x 1, 4-pin cable PVC, 2 m</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Approvals and Certificates</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>UL approval</td>
<td>cULus Listed, General Purpose</td>
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</tr>
<tr>
<td>CSA approval</td>
<td>cCSAus Listed, General Purpose</td>
<td></td>
</tr>
<tr>
<td>CCC approval</td>
<td>CCC approval / marking not required for sensors rated ≤36 V</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dimensions</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Length L [mm]</td>
<td>35</td>
<td>50</td>
</tr>
<tr>
<td>Diameter D [mm]</td>
<td></td>
<td>M12 x 1</td>
</tr>
<tr>
<td>Thread length l₁ [mm]</td>
<td>27</td>
<td>30</td>
</tr>
<tr>
<td>Cap length l₂ [mm]</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Connector length l₃ [mm]</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>LED position</td>
<td>Pos. C</td>
<td>Pos. B</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Accessories</th>
<th>These and more accessories can be found in chapter 10 See pages from 970 ... for cordsets See pages 1066 ... for mounting accessories</th>
</tr>
</thead>
<tbody>
<tr>
<td>BF 12</td>
<td>Mounting bracket 12 mm</td>
</tr>
<tr>
<td>AB-12</td>
<td>Right angled mounting bracket</td>
</tr>
<tr>
<td>MH01-M12</td>
<td>Mounting bracket M12 - 1/2&quot; rod type</td>
</tr>
<tr>
<td>V1-W</td>
<td>4-pin, M12 female field-attachable connector, angled</td>
</tr>
<tr>
<td>V1-G-BK2M-PUR-U</td>
<td>Female cordset, M12, 4-pin, PUR cable, straight</td>
</tr>
<tr>
<td>V1-W-BK2M-PUR-U</td>
<td>Female cordset, M12, 4-pin, PUR cable, angled</td>
</tr>
</tbody>
</table>

**Properties**

- Ø12 mm housing
- 7 mm, non-flush mountable
- DC, 3-wire switching output
- Cable and connector versions

**Benefits**

- Extended sensing range means fewer sensor/target impacts

**Electrical Connection**

Wire colors in accordance with EN 60947-5-2

1. BN (brown)  
2. WH (white)  
3. BU (blue)  
4. BK (black)
### Technical Data

For detailed data and product description refer to the data sheets at [www.pepperl-fuchs.com](http://www.pepperl-fuchs.com).

#### General Data
- **Rated operating distance**: 8 mm
- **Type of voltage**: DC
- **Operating voltage**: 10 ... 30 V
- **No-load supply current**: ≤ 16 mA
- **Reverse polarity protection**: ✔
- **Switching frequency**: 0 ... 1500 Hz
- **Load current**: 0 ... 200 mA
- **Short-circuit protection**: ✔, self-checking
- **Switching state indication LED**: yellow
- **Housing material**: brass, nickel-plated
- **Protection degree**: IP67

#### Model Number

<table>
<thead>
<tr>
<th>Output type</th>
<th>NPN NO/NC</th>
<th>NPN NO</th>
<th>PNP NO/NC</th>
<th>PNP NO</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NBN8-12GM50-E0</strong></td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
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</tr>
<tr>
<td><strong>NBN8-12GM50-A0</strong></td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td><strong>NBN8-12GM50-A2</strong></td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td><strong>NBN8-12GM50-E2</strong></td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td><strong>NBN8-12GM50-E0-V1</strong></td>
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<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td><strong>NBN8-12GM50-A0-V1</strong></td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
<tr>
<td><strong>NBN8-12GM50-A2-V1</strong></td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
<td>✔️</td>
</tr>
</tbody>
</table>

#### Dimensions

| Length L [mm] | 50 | 65 |
| Diameter D [mm] | M12 x 1 |
| Thread length l₁ [mm] | 39 | 41 |
| Cap length l₂ [mm] | 8 |
| Connector length l₃ [mm] | 0 | 6 |
| LED position | Pos. C |

### Accessories

These and more accessories can be found in chapter 10. See pages from 970 ... for cordsets, see pages 1066 ... for mounting accessories.
- **BF 12**: Mounting bracket, 12 mm
- **AB-12**: Right angled mounting bracket
- **MH01-M12**: Mounting bracket M12 - 1/2" rod type
- **V1-W**: 4-pin, M12 female field-attachable connector, angled
- **V1-G-BK2M-PUR-U**: Female cordset, M12, 4-pin, PUR cable, straight
- **V1-W-BK2M-PUR-U**: Female cordset, M12, 4-pin, PUR cable, angled

### Electrical Connection

- **Wire colors in accordance with EN 60947-5-2**
  - 1: SN (brown)
  - 2: WH (white)
  - 3: BU (blue)
  - 4: BK (black)
1.1 Technical Data

General Data
Rated operating distance 10 mm
Installation non-flush
Type of voltage DC
Operating voltage 10 ... 30 V DC
No-load supply current ≤ 15 mA
Reverse polarity protection ✔
Switching frequency 0 ... 600 Hz
Load current 0 ... 200 mA, above 70°C ≤ 150 mA
Short-circuit protection ✔, self-checking
Switching state indication LED, yellow
Ambient temperature -25 ... 85 °C (-13 ... 185 °F)
Housing material brass, nickel-plated
Protection degree IP67

Output type
NPN NO
NPN NC
PNP NO
PNP NC

Connection type
Connector M12 x 1, 4-pin
cable PUR, 2 m

Model Number

<table>
<thead>
<tr>
<th>Output Type</th>
<th>NEN10-12GM50-E0</th>
<th>NEN10-12GM50-E1</th>
<th>NEN10-12GM50-E2</th>
<th>NEN10-12GM50-E3</th>
<th>NEN10-12GM50-E0-V1</th>
<th>NEN10-12GM50-E1-V1</th>
<th>NEN10-12GM50-E2-V1</th>
<th>NEN10-12GM50-E3-V1</th>
</tr>
</thead>
<tbody>
<tr>
<td>NPN NO</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
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<td>✔</td>
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<tr>
<td>PNP NO</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PNP NC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Dimensions
Length L [mm] 50 60
Diameter D [mm] M12 x 1
Thread length l_t [mm] 44 34
Cap length l_c [mm] 5,7
Connector length l_c [mm] 0 6

Accessories
These and more accessories can be found in chapter 10
See pages from 970 ... for cordsets
See pages 1066 ... for mounting accessories

<table>
<thead>
<tr>
<th>Mounting Bracket</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Right angled</td>
<td>BF 12</td>
</tr>
<tr>
<td>Rod type</td>
<td>MH01-M12</td>
</tr>
<tr>
<td>Female field-attachable connector, straight</td>
<td>V1-G</td>
</tr>
<tr>
<td>Female field-attachable connector, angled</td>
<td>V1-W</td>
</tr>
<tr>
<td>Female cordset, M12, 4-pin, PUR cable, straight</td>
<td>V1-G-BK2M-PUR-U</td>
</tr>
<tr>
<td>Female cordset, M12, 4-pin, PUR cable, angled</td>
<td>V1-W-BK2M-PUR-U</td>
</tr>
</tbody>
</table>

Electrical Connection

Wire colors in accordance with EN 60947-5-2

<table>
<thead>
<tr>
<th>Wire Color</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>(brown)</td>
<td>BN</td>
</tr>
<tr>
<td>(white)</td>
<td>WH</td>
</tr>
<tr>
<td>(blue)</td>
<td>BU</td>
</tr>
<tr>
<td>(black)</td>
<td>BK</td>
</tr>
</tbody>
</table>

Properties
- Ø12 mm housing
- 10 mm, non-flush mountable
- DC, 3-wire switching output
- Cable and connector versions

Benefits
- Extended sensing range means fewer sensor/target impacts
Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data
Type of voltage: AC
Operating voltage: 20 ... 253 V
Reverse polarity protection: UV, polarity independent
Switching frequency: 0 ... 20 Hz
Load current: 5 ... 200 mA
Switching state indication: LED, yellow
Ambient temperature: -25 ... 70 °C (-13 ... 158 °F)
Housing material: Stainless steel 1.4305 / AISI 303
Protection degree: IP67

Model Number
NJ2-12GM50-WS
NJ2-12GM50-WO
NJ4-12GM50-WS
NJ4-12GM50-WO
NJ2-12GM50-WS-V12
NJ4-12GM50-WS-V12
NJ4-12GM50-WO
NJ2-12GM50-WO

Rated operating distance
2 mm
4 mm

Installation
flush
non-flush

Output type
AC NO
AC NC

Connection type
Connector 1/2"-20 UN , 3-pin
cable PVC , 2 m

Approvals and Certificates
UL approval: cULus Listed, General Purpose
CSA approval: cCSAus Listed, General Purpose
CCC approval: Certified by China Compulsory Certification (CCC)

Dimensions
Length L [mm]
50
60
Diameter D [mm]
M12 x 1
Thread length l_t [mm]
50
45
60
55
Cap length l_1 [mm]
0
5
0
5
Connector length l_c [mm]
0
LED position
Pos. A

Accessories
These and more accessories can be found in chapter 10
See pages from 970 ... for cordsets
See pages 1066 ... for mounting accessories

BF 12
Mounting bracket, 12 mm
EXG-12
Quick mounting bracket with stop
AB-12
Right angled mounting bracket
MH01-M12
Mounting bracket M12 - 1/2” rod type

Electrical Connection

Wire colors
1 ON (green)
2 RD/BK (red/black)
3 RD/WH (red/white)
<table>
<thead>
<tr>
<th>Properties</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø12 mm housing</td>
<td></td>
</tr>
<tr>
<td>2 mm and 4 mm sensing ranges</td>
<td></td>
</tr>
<tr>
<td>AC, 2-wire switching output</td>
<td></td>
</tr>
<tr>
<td>Cable and connector versions</td>
<td></td>
</tr>
</tbody>
</table>

### Technical Data

#### General Data
- **Type of voltage**: AC
- **Operating voltage**: 20 ... 150 V
- **Reverse polarity protection**: ✔ polarity independent
- **Switching frequency**: 0 ... 25 Hz
- **Load current**: 5 ... 200 mA
- **Operating voltage display**: LED, green
- **Switching state indication**: LED, yellow
- **Ambient temperature**: -25 ... 70 °C (-13 ... 158 °F)
- **Housing material**: brass, nickel-plated
- **Protection degree**: IP67

#### Model Number

<table>
<thead>
<tr>
<th>Model Number</th>
<th>NBB2-12GM60-WS</th>
<th>NBN4-12GM60-WS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NBB2-12GM60-WO</td>
<td>NBN4-12GM60-WO</td>
</tr>
<tr>
<td></td>
<td>NBB2-12GM60-WS</td>
<td>NBN4-12GM60-WS</td>
</tr>
<tr>
<td></td>
<td>NBB2-12GM60-WO-V12</td>
<td>NBN4-12GM60-WS-V12</td>
</tr>
<tr>
<td></td>
<td>NBB2-12GM60-WS-V12</td>
<td>NBN4-12GM60-WS-V12</td>
</tr>
</tbody>
</table>

#### Rated operating distance
- 2 mm
- 4 mm

#### Installation
- flush
- non-flush

#### Output type
- AC NO
- AC NC

#### Connection type
- Connector 1/2"-20 UN, 3-pin
cable PVC, 2 m

#### Approvals and Certificates
- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: Certified by China Compulsory Certification

#### Dimensions
- **Length L [mm]**: 60, 70
- **Diameter D [mm]**: M12 x 1
- **Thread length l1 [mm]**: 60, 55, 50
- **Cap length l2 [mm]**: 0, 5, 0, 5
- **Connector length l3 [mm]**: 0, 15, 12
- **LED position**: Pos. A

#### Accessories
- These and more accessories can be found in chapter 10
See pages from 970 ... for cordsets
See pages 1066 ... for mounting accessories
- EXG-12: Quick mounting bracket with step
- AB-12: Right angled mounting bracket
- MH01-M12: Mounting bracket M12 - 1/2" rod type

#### Electrical Connection

![Electrical Connection Diagram]

**Wire colors**
- 1: GN (green)
- 2: RD/BK (red/black)
- 3: RD/WH (red/white)
Inductive sensor cylindrical, Ø 12 mm

Technical Data
For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data
- Output type: AC/DC NO
- Type of voltage: AC/DC
- Operating voltage: 20 ... 250 V AC/20 ... 300 V DC
- Reverse polarity protection: ✓ polarity independent
- Switching frequency: 30 Hz
- Load current: 8 ... 200 mA AC/DC
- Short-circuit protection: ✓
- Operating voltage display: LED, green
- Switching state indication: LED, yellow
- Ambient temperature: -25 ... 70 °C (-13 ... 158 °F)
- Housing material: brass, nickel-plated
- Protection degree: IP67

Model Number
<table>
<thead>
<tr>
<th>NBB4-12GM75-US</th>
<th>NBN8-12GM75-US</th>
<th>NBB4-12GM65-US-V12</th>
<th>NBN8-12GM65-US-V12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated operating distance</td>
<td>4 mm</td>
<td>8 mm</td>
<td>4 mm</td>
</tr>
<tr>
<td>Installation</td>
<td>flush</td>
<td>non-flush</td>
<td>flush</td>
</tr>
<tr>
<td>Connection type</td>
<td>Connector 1/2”-20 UN, 3-pin</td>
<td>cable PUR, 2 m</td>
<td>Connector 1/2”-20 UN, 3-pin</td>
</tr>
</tbody>
</table>

Approvals and Certificates
- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: Certified by China Compulsory Certification (CCC)

Dimensions
| Length L [mm] | 75 | 82 |
| Diameter D [mm] | M12 x 1 |
| Thread length lT [mm] | 72 | 64 | 64 | 64 |
| Cap length lC [mm] | 0 | 8 | 65 | 64 |
| Connector length lL [mm] | 0 | 8 | 8 | 8 |
| LED position | Pos. B |

Accessories
- These and more accessories can be found in chapter 10
- See pages from 970 ... for cordsets
- See pages 1066 ... for mounting accessories

Properties
- Ø12 mm housing
- 4 mm and 8 mm sensing ranges
- AC/DC, 2-wire switching output
- Cable and connector versions

Benefits
- Extended sensing range means fewer sensor/target impacts

Electrical Connection

Wire colors
1 | GN (green) | 2 | RD/BK (red/black) | 3 | RD/WH (red/white)
Inductive analog sensor cylindrical, Ø 12 mm

Technical Data
For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data
- Measurement range: 0 ... 6 mm
- Installation: quasi-flush
- Type of voltage: DC
- No-load supply current: ≤ 10 mA
- Reverse polarity protection: ✔
- Limit frequency (3dB): 1000 Hz
- Short-circuit protection: ✔
- Adjustment tolerance zero point: ≤ ± 10 % of full-scale value
- Ambient temperature: -25 ... 70 °C (-13 ... 158 °F)
- Housing material: chromium plated brass
- Protection degree: IP67
- Connection type: Connector M12 x 1, 4-pin

Model Number
IA6-12GM35-U-V1
IA6-12GM50-IU-V1

Output type
- analog voltage output
- analog, current or voltage output

Operating voltage
- 10 ... 30 V
- 15 ... 30 V, residual ripple 20 % U_B

Output type
- 0 ... 5 V
- 0 ... 10 V / 4 ... 20 mA

Load resistor
- ≥ 500 Ω
- voltage output: ≥ 500 Ω
- current output: ≤ 500 Ω

Approvals and Certificates
- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤36 V

Dimensions
- Length L [mm]: 45, 60
- Diameter D [mm]: M12 x 1
- Thread length t₁ [mm]: 29, 44
- Cap length l₂ [mm]: 0
- Connector length l₃ [mm]: 8
- LED position: 45, 60

Accessories
These and more accessories can be found in chapter 10
See pages from 970 ... for cordsets
See pages 1066 ... for mounting accessories

BF 12
Mounting bracket, 12 mm

AB-12
Right angled mounting bracket

MH01-M12
Mounting bracket M12 - 1/2" rod type

V1-W
4-pin, M12 female field-attachable connector, angled

V1-G-BK2M-PUR-U
Female cordset, M12, 4-pin, PUR cable, straight

V1-W-BK2M-PUR-U
Female cordset, M12, 4-pin, PUR cable, angled

Electrical Connection

Wire colors in accordance with EN 60071-5-2
- 1: BN (brown)
- 2: WH (white)
- 3: BU (blue)
- 4: BK (black)
**Technical Data**

For detailed data and product description refer to the data sheets at [www.pepperl-fuchs.us](http://www.pepperl-fuchs.us)

### General Data

- **Rated operating distance**: 5 mm
- **Installation**: flush
- **Type of voltage**: DC
- **Operating voltage**: 5 ... 60 V
- **Reverse polarity protection**: ✔, polarity independent
- **Load current**: 2 ... 100 mA
- **Short-circuit protection**: ✔, self-checking
- **Switching state indicator LED**: yellow
- **Protection degree**: IP67

### Model Number

<table>
<thead>
<tr>
<th>Model</th>
<th>NBB5-18GM40-Z0-V1</th>
<th>NCB5-18GM40-Z0-V1</th>
<th>NBB5-18GM40-Z1-V1</th>
<th>NCB5-18GM40-Z1-V1</th>
<th>NCB5-18GM40-Z3-V1</th>
<th>NBB5-18GM40-Z3-V1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output type</td>
<td>DC NO</td>
<td>DC NO</td>
<td>DC NO</td>
<td>DC NO</td>
<td>DC NO</td>
<td>DC NO</td>
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<tr>
<td>Switching frequency</td>
<td>0 ... 350 Hz</td>
<td>0 ... 350 Hz</td>
<td>0 ... 350 Hz</td>
<td>0 ... 350 Hz</td>
<td>0 ... 350 Hz</td>
<td>0 ... 350 Hz</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-25 ... 70 °C (-13 ... 158 °F)</td>
<td>-25 ... 70 °C (-13 ... 158 °F)</td>
<td>-25 ... 70 °C (-13 ... 158 °F)</td>
<td>-25 ... 70 °C (-13 ... 158 °F)</td>
<td>-25 ... 70 °C (-13 ... 158 °F)</td>
<td>-25 ... 70 °C (-13 ... 158 °F)</td>
</tr>
<tr>
<td>Housing material</td>
<td>Stainless steel 1.4305 / AISI 303</td>
<td>Stainless steel 1.4305 / AISI 303</td>
<td>Stainless steel 1.4305 / AISI 303</td>
<td>Stainless steel 1.4305 / AISI 303</td>
<td>Stainless steel 1.4305 / AISI 303</td>
<td>Stainless steel 1.4305 / AISI 303</td>
</tr>
<tr>
<td>Connection type</td>
<td>Connector M12 x 1 , 4-pin</td>
<td>Connector M12 x 1 , 4-pin</td>
<td>Connector M12 x 1 , 4-pin</td>
<td>Connector M12 x 1 , 4-pin</td>
<td>Connector M12 x 1 , 4-pin</td>
<td>Connector M12 x 1 , 4-pin</td>
</tr>
<tr>
<td>Length L [mm]</td>
<td>40</td>
<td>55</td>
<td>40</td>
<td>55</td>
<td>40</td>
<td>55</td>
</tr>
<tr>
<td>Diameter D [mm]</td>
<td>M18 x 1</td>
<td>M18 x 1</td>
<td>M18 x 1</td>
<td>M18 x 1</td>
<td>M18 x 1</td>
<td>M18 x 1</td>
</tr>
<tr>
<td>Cap length l1 [mm]</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Connector length l2 [mm]</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>15</td>
</tr>
</tbody>
</table>

### Approvals and Certificates

- **UL approval**: ULUs Listed, General Purpose
- **CSA approval**: cCSAus Listed, General Purpose
- **CCC approval**: Certified by China Compulsory Certification (CCC)

### Dimensions

| Length L [mm] | 40 | 55 |
| Diameter D [mm] | M18 x 1 |
| Thread length l1 [mm] | 37 | 40 |
| Cap length l1 [mm] | 0 |
| Connector length l2 [mm] | 15 |
| LED position | Pos. C |

### Accessories

These and more accessories can be found in chapter 10 See pages from 970 ... for cordsets See pages 1066 ... for mounting accessories

- **BF 18**: Mounting bracket, 18 mm
- **EXG-18**: Quick mounting bracket with stop
- **AB-18**: Right angled mounting bracket
- **MHO1-M18**: Mounting bracket M18 - 1/2“ rod type
- **V1-G**: 4-pin, M12 female field-attachable connector, straight
- **V1-W**: 4-pin, M12 female field-attachable connector, angled
- **V1-W-BK2M-PUR-U**: Female cordset, M12, 4-pin, PUR cable, angled
- **V1-G-BK2M-PUR-U**: Female cordset, M12, 4-pin, PUR cable, straight

### Electrical Connection

Refer to General Notes Relating to Product Information

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- **USA**: +1 330 486-0001
- **Singapore**: +65 6779 9091

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- CE
- UL
- CSA
- CCC

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**Technical Data**

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

<table>
<thead>
<tr>
<th>General Data</th>
<th>NCB8-18GM50-Z4</th>
<th>NCB8-18GM50-Z5</th>
<th>NCB8-18GM50-Z4-V1</th>
<th>NCB8-18GM50-Z5-V1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated operating distance (mm)</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Installation</td>
<td>flush</td>
<td>flush</td>
<td>flush</td>
<td>flush</td>
</tr>
<tr>
<td>Type of voltage</td>
<td>DC</td>
<td>DC</td>
<td>DC</td>
<td>DC</td>
</tr>
<tr>
<td>Operating voltage</td>
<td>3.5 ... 30 V</td>
<td>3.5 ... 30 V</td>
<td>3.5 ... 30 V</td>
<td>3.5 ... 30 V</td>
</tr>
<tr>
<td>Reverse polarity protection</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Switching frequency</td>
<td>0 ... 1000 Hz</td>
<td>0 ... 1000 Hz</td>
<td>0 ... 1000 Hz</td>
<td>0 ... 1000 Hz</td>
</tr>
<tr>
<td>Load current</td>
<td>2 ... 100 mA</td>
<td>2 ... 100 mA</td>
<td>2 ... 100 mA</td>
<td>2 ... 100 mA</td>
</tr>
<tr>
<td>Short-circuit protection</td>
<td>✔, self-checking</td>
<td>✔, self-checking</td>
<td>✔, self-checking</td>
<td>✔, self-checking</td>
</tr>
<tr>
<td>Switching state indication</td>
<td>LED, yellow</td>
<td>LED, yellow</td>
<td>LED, yellow</td>
<td>LED, yellow</td>
</tr>
<tr>
<td>Housing material</td>
<td>brass, nickel-plated</td>
<td>brass, nickel-plated</td>
<td>brass, nickel-plated</td>
<td>brass, nickel-plated</td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP67</td>
<td>IP67</td>
<td>IP67</td>
<td>IP67</td>
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**Model Number**

<table>
<thead>
<tr>
<th>Output type</th>
<th>NCB8-18GM50-Z4</th>
<th>NCB8-18GM50-Z5</th>
<th>NCB8-18GM50-Z4-V1</th>
<th>NCB8-18GM50-Z5-V1</th>
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</thead>
<tbody>
<tr>
<td>DC NO</td>
<td>✔</td>
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<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>DC NC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Pre-fault indication**

| LED, red            | ✔                   | ✔                   | ✔                   | ✔                   |

**Ambient temperature**

-25 ... 70 °C (-13 ... 158 °F)  
-40 ... 70 °C (-40 ... 158 °F)

**Connection type**

Connector M12 x 1, 4-pin  
cable PVC, 2 m

**Approvals and Certificates**

| UL approval          | cULus Listed, General Purpose | ✔                   | ✔                   | ✔                   |
| CSA approval         | cCSAus Listed, General Purpose |                     |                     |                     |
| CCC approval         | CCC approval / marking not required for sensors rated ≤36 V |                     |                     |                     |

**Dimensions**

Size L [mm]  48  65  48  65  48  65  48  65

Diameter D [mm]  M18 x 1  M18 x 1  M18 x 1  M18 x 1  M18 x 1  M18 x 1  M18 x 1  M18 x 1

Thread length l₁ [mm]  45  50  45  50  45  50  45  50

Cap length l₂ [mm]  0  15  0  15  0  15  0  15

Connector length l₃ [mm]  0  15  0  15  0  15  0  15

**LED position**

Pos. C

**Accessories**

These and more accessories can be found in chapter 10

<table>
<thead>
<tr>
<th>Accessory</th>
<th>Description</th>
<th>See pages from 970 for cordsets</th>
<th>See pages 1066 ... for mounting accessories</th>
</tr>
</thead>
<tbody>
<tr>
<td>BF 18</td>
<td>Mounting bracket, 18 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EXKG-18</td>
<td>Quick mounting bracket with stop</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AB-18</td>
<td>Right angled mounting bracket</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MH01-M18</td>
<td>Mounting bracket M18 - 1/2&quot; rod type</td>
<td></td>
<td></td>
</tr>
<tr>
<td>V1-G</td>
<td>4-pin, M12 female field-attachable connector, straight</td>
<td></td>
<td></td>
</tr>
<tr>
<td>V1-W</td>
<td>4-pin, M12 female field-attachable connector, angled</td>
<td></td>
<td></td>
</tr>
<tr>
<td>V1-G:8K2M-PUR-U</td>
<td>Female cordset, M12, 4-pin, PUR cable, straight</td>
<td></td>
<td></td>
</tr>
<tr>
<td>V1-W:8K2M-PUR-U</td>
<td>Female cordset, M12, 4-pin, PUR cable, angled</td>
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<td></td>
</tr>
</tbody>
</table>

**Electrical Connection**

Refer to General Notes Relating to Product Information

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Inductive sensor

cylindrical, Ø 18 mm

Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data

<table>
<thead>
<tr>
<th>Rated operating distance</th>
<th>8 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installation</td>
<td>non-flush</td>
</tr>
<tr>
<td>Type of voltage</td>
<td>DC</td>
</tr>
<tr>
<td>Operating voltage</td>
<td>5 ... 60 V</td>
</tr>
<tr>
<td>Reverse polarity protection</td>
<td>✓, polarity independent</td>
</tr>
<tr>
<td>Load current</td>
<td>2 ... 100 mA</td>
</tr>
<tr>
<td>Short-circuit protection</td>
<td>✓, self-checking</td>
</tr>
<tr>
<td>Switching state indication</td>
<td>LED, yellow</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-25 ... 70 °C (-13 ... 158 °F)</td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP67</td>
</tr>
</tbody>
</table>

Model Number

<table>
<thead>
<tr>
<th>Output type</th>
<th>DC NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC NC</td>
<td>✔</td>
</tr>
<tr>
<td>Switching frequency</td>
<td>0 ... 300 Hz</td>
</tr>
<tr>
<td>0 ... 450 Hz</td>
<td>✔</td>
</tr>
<tr>
<td>0 ... 500 Hz</td>
<td>✔</td>
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<tr>
<td>Housing material</td>
<td></td>
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<tr>
<td>Stainless steel 1.4305 / AISI 303</td>
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</tr>
<tr>
<td>brass, nickel-plated</td>
<td></td>
</tr>
<tr>
<td>Connection type</td>
<td></td>
</tr>
<tr>
<td>Connector M12 x 1, 4-pin</td>
<td></td>
</tr>
<tr>
<td>cable PUR , 2 m</td>
<td></td>
</tr>
<tr>
<td>cable PVC , 2 m</td>
<td></td>
</tr>
</tbody>
</table>

Approvals and Certificates

<table>
<thead>
<tr>
<th>UL approval</th>
<th>cULus Listed, General Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSA approval</td>
<td>cCSAus Listed, General Purpose</td>
</tr>
<tr>
<td>CCC approval</td>
<td>Certified by China Compulsory Certification (CCC)</td>
</tr>
</tbody>
</table>

Dimensions

| Length L [mm] | 40 |
| Diameter D [mm] | M16 x 1 |
| Thread length l1 [mm] | 37 |
| Cap length l2 [mm] | 10 |
| Connector length l3 [mm] | 0 |
| LED position | Pos. C |

Accessories

These and more accessories can be found in chapter 10
See pages from 970 ... for cordsets
See pages 1066 ... for mounting accessories

BF 18-F 
Mounting bracket with stop, 18 mm

BF 18 
Mounting bracket, 18 mm

AB-18 
Right angled mounting bracket

MH01-M18 
Mounting bracket M18 - 1/2" rod type

V1-G 
4-pin, M12 female field-attachable connector, straight

V1-W 
4-pin, M12 female field-attachable connector, angled

V1-W-BK2M-PUR-U 
Female cordset, M12, 4-pin, PUR cable, angled

V1-G-BK2M-PUR-U 
Female cordset, M12, 4-pin, PUR cable, straight

Electrical Connection

Wire colors in accordance with EN 60947-6-2

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

Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data
- Rated operating distance: 12 mm
- Installation: non-flush
- Type of voltage: DC
- Operating voltage: 3.5 ... 30 V
- Reverse polarity protection: no
- Switching frequency: 0 ... 1000 Hz
- Load current: 2 ... 100 mA
- Short-circuit protection: self-checking
- Switching state indication: LED, yellow
- Ambient temperature: -25 ... 70 °C (-13 ... 158 °F)
- Housing material: brass, nickel-plated
- Protection degree: IP67

Model Number

<table>
<thead>
<tr>
<th>Output type</th>
<th>DC NO</th>
<th>DC NC</th>
<th>DC NC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-fault indication</td>
<td>LED, red</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Connection type</td>
<td>Connector M12 x 1, 4-pin</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td></td>
<td>cable PVC, 2 m</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>

Approvals and Certificates
- UL approval cULus Listed, General Purpose
- CSA approval cCSAus Listed, General Purpose
- CCC approval / marking not required for sensors rated \( \leq 36 \) V

Dimensions
- Length L [mm]: 48
- Diameter D [mm]: M18 x 1
- Thread length \( l_t \) [mm]: 35
- Cap length l1 [mm]: 10
- Connector length \( l_c \) [mm]: 15
- LED position: Pos. C

Accessories
- These and more accessories can be found in chapter 10
- See pages from 970 ... for cordsets
- See pages 1066 ... for mounting accessories

Electrical Connection

Refer to General Notes Relating to Product Information

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Inductive Sensors, cylindrical Ø 18 mm

Properties
- Ø18 mm housing
- 12 mm, non-flush mountable
- DC, 2-wire switching output
- Cable and connector versions

Benefits
- Extended sensing range means fewer sensor/target impacts

Additional Products
In this series, we offer the following additional products:
- NCN12-18GM50-Z7-V1
  Technical data like NCN12-18GM50-Z5-V1 but:
  different wiring diagram, see Electrical Connection

Accessories
- These and more accessories can be found in chapter 10
- See pages from 970 ... for cordsets
- See pages 1066 ... for mounting accessories

Electrical Connection

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Inductive sensor

cylindrical, Ø 18 mm

### Technical Data

For detailed data and product description refer to the data sheet at www.pepperl-fuchs.us

<table>
<thead>
<tr>
<th>General Data</th>
<th>NJ5-18GK50-A2</th>
<th>NJ8-18GK50-E0</th>
<th>NJ8-18GK50-E2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of voltage</td>
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<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Operating voltage</td>
<td>10 ... 60 V</td>
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<td>✔</td>
</tr>
<tr>
<td>No-load supply current</td>
<td>≤ 10 mA</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Reverse polarity protection</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Load current</td>
<td>0 ... 200 mA</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Short-circuit protection</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-25 ... 70 °C (-13 ... 158 °F)</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Housing material</td>
<td>PBT</td>
<td>✔</td>
<td>✔</td>
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<tr>
<td>Protection degree</td>
<td>IP68</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Connection type</td>
<td>cable PVC , 2 m</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>

### Properties

- Ø18 mm housing
- 5 mm and 8 mm sensing ranges
- DC, 3-wire and 4-wire switching output
- Cable version

### Electrical Connection

- NJ5-18GK50-A2
- NJ8-18GK50-E0
- NJ8-18GK50-E2

### Model Number

<table>
<thead>
<tr>
<th>Rated operating distance</th>
<th>Installation</th>
<th>Output type</th>
<th>Switching frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 mm</td>
<td>8 mm</td>
<td>flush</td>
<td>0 ... 1000 Hz</td>
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<tr>
<td>8 mm</td>
<td></td>
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<td>0 ... 500 Hz</td>
</tr>
<tr>
<td>8 mm</td>
<td></td>
<td>PNP</td>
<td>0 ... 650 Hz</td>
</tr>
</tbody>
</table>

### Approvals and Certificates

- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: Certified by China Compulsory Certification (CCC)

### Dimensions

<table>
<thead>
<tr>
<th>Length L [mm]</th>
<th>Diameter D [mm]</th>
<th>Thread length l1 [mm]</th>
<th>Cap length l2 [mm]</th>
<th>Connector length l3 [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>M18 x 1</td>
<td>50</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

### Accessories

- BF 18: Mounting bracket, 13 mm
- AB-18: Right angled mounting bracket
- MH01-M18: Mounting bracket M18 - 1/2" rod type

These and more accessories can be found in chapter 10.

See pages from 970 ... for cordsets
See pages 1066 ... for mounting accessories

### Additional Products

In this series, we offer the following additional products:

- NJ5-18GK50-A2
- Technical data like NJ5-18GK50-E0 but:
  - Output type: PNP, NO/NC
  - No-load supply current: ≤ 15 mA
  - Switching frequency: 0 ... 500 Hz
  - Load current: 0 ... 400 mA
  - Switching state indication: LED, yellow
  - Protection degree: IP67
Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data
- Type of voltage: DC
- Operating voltage: 10 ... 30 V
- Load current: 0 ... 200 mA
- Reverse polarity protection: ✔
- Short-circuit protection: ✔, self-checking
- Switching state indication: LED, yellow
- Ambient temperature: -25 ... 70 °C (-13 ... 158 °F)
- Housing material: PBT
- Connection type: cable PVC , 2 m

Model Number

<table>
<thead>
<tr>
<th>Model Number</th>
<th>NBB5-18GK50-E0</th>
<th>NBB5-18GK50-E2</th>
<th>NBB8-18GK50-A2</th>
<th>NBB8-18GK50-E0</th>
<th>NBB8-18GK50-E2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated operating distance</td>
<td>5 mm</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Installation</td>
<td>flush</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Output type</td>
<td>NPN NO</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>No-load supply current</td>
<td>&lt; 15 mA</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Switching frequency</td>
<td>0 ... 1000 Hz</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP68 / IP69K</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>

Approvals and Certificates

- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤36 V

Dimensions

| Length L [mm] | 52 | 53 | 52 |
| Diameter D [mm] | M18 x 1 |
| Thread length l_t [mm] | 49 |
| Cap length l_1 [mm] | 1 |
| Connector length l_c [mm] | 0 |
| LED position | Pos. C |

Accessories

These and more accessories can be found in chapter 10

- BF 18: Mounting bracket, 18 mm
- AB-18: Right angled mounting bracket
- MN01-M18: Mounting bracket M18 - 1/2" rod type

Electrical Connection

Refer to General Notes Relating to Product Information

Proximit Sensors, Inductive Sensors, cylindrical

Inductive sensor cylindrical, Ø 18 mm
Inductive sensor
cylindrical, Ø 18 mm

Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data
- Type of voltage: DC
- Operating voltage: 10 ... 60 V
- Reverse polarity protection: ✔
- Short-circuit protection: ✔, self-checking
- Ambient temperature: -25 ... 70 °C (-13 ... 158 °F)
- Switching state indication: LED, yellow
- Housing material: Stainless steel 1.4305 / AISI 303
- Protection degree: IP67

Model Number

<table>
<thead>
<tr>
<th>Rated operating distance</th>
<th>Installation</th>
<th>Output type</th>
<th>No-load supply current</th>
<th>Switching frequency</th>
<th>Load current</th>
<th>Connection type</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 mm</td>
<td>flush</td>
<td>NPN NO</td>
<td>≤ 15 mA</td>
<td>0 ... 500 Hz</td>
<td>0 ... 200 mA</td>
<td>Connector M12 x 1, 4-pin</td>
</tr>
<tr>
<td>8 mm</td>
<td>non-flush</td>
<td>NPN NC</td>
<td>≤ 9 mA</td>
<td>0 ... 1000 Hz</td>
<td>0 ... 400 mA</td>
<td>cable PVC, 2 m</td>
</tr>
</tbody>
</table>

Approvals and Certificates

- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: Certified by China Compulsory Certification (CCC)

Dimensions

<table>
<thead>
<tr>
<th>Length L [mm]</th>
<th>50</th>
<th>60</th>
<th>65</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diameter D [mm]</td>
<td>M18 x 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thread length lₜ [mm]</td>
<td>50</td>
<td>50</td>
<td>47</td>
</tr>
<tr>
<td>Cap length l₁ [mm]</td>
<td>0</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Connector length l_c [mm]</td>
<td>0</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>LED position</td>
<td>Pos. A</td>
<td>A</td>
<td>A</td>
</tr>
</tbody>
</table>

Accessories

These and more accessories can be found in chapter 10
See pages from 970 ... for cordsets
See pages 1066 ... for mounting accessories

- BF 18: Mounting bracket, 18 mm
- EXG-18: Quick mounting bracket with stop
- AB-18: Right angled mounting bracket
- MH01-M18: Mounting bracket M18 - 1/2" rod type
- V1-G: 4-pin, M12 female field-attachable connector, straight
- V1-W: 4-pin, M12 female field-attachable connector, angled
- V1-G-BK2M-PUR-U: Female cordset, M12, 4-pin, PUR cable, straight
- V1-W-BK2M-PUR-U: Female cordset, M12, 4-pin, PUR cable, angled

Electrical Connection

- Wire colors in accordance with EN 60947-5-2
  1. BN (brown)
  2. WH (white)
  3. BU (blue)
  4. BK (black)
**Technical Data**

For detailed data and product description refer to the data sheets at [www.pepperl-fuchs.us](http://www.pepperl-fuchs.us)

### General Data
- **Rated operating distance**: 5 mm
- **Installation**: flush
- **Type of voltage**: DC
- **Operating voltage**: 10 ... 30 V
- **Reverse polarity protection**: ✔, self-checking
- **Switching state indication**: LED, yellow
- **Housing material**: brass, nickel-plated
- **Protection degree**: IP67

### Model Number

<table>
<thead>
<tr>
<th>Output type</th>
<th>NPN NO</th>
<th>NPN NC</th>
<th>PNP NO</th>
<th>PNP NC</th>
</tr>
</thead>
<tbody>
<tr>
<td>NBB5-18GM40-E2</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>NBB5-18GM40-E0-V1</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>NBB5-18GM20-E2-V1</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>

### Output type

- NPN NO
- NPN NC
- PNP NO
- PNP NC

### No-load supply current

- ≤ 15 mA
- ≤ 20 mA

### Switching frequency

- 0 ... 800 Hz
- 0 ... 1000 Hz

### Load current

- 0 ... 100 mA
- 0 ... 200 mA

### Ambient temperature

- -25 ... 70 °C (-13 ... 158 °F)
- -40 ... 70 °C (-40 ... 158 °F)

### Connection type

- Connector M12 x 1, 4-pin cable PVC, 2 m

### Approvals and Certificates

- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤36 V

### Dimensions

<table>
<thead>
<tr>
<th>Length L [mm]</th>
<th>20</th>
<th>40</th>
<th>40</th>
<th>35</th>
<th>50</th>
<th>50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diameter D [mm]</td>
<td>M18 x 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thread length lₙ [mm]</td>
<td>17</td>
<td>37</td>
<td>37</td>
<td>20</td>
<td>39</td>
<td>39</td>
</tr>
<tr>
<td>Cap length l₁ [mm]</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connector length l₂ [mm]</td>
<td>0</td>
<td>15</td>
<td>11</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LED position</td>
<td>Pos. C</td>
<td>Pos. A</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Accessories

These and more accessories can be found in chapter 10

- BF 18: Mounting bracket, 18 mm
- BF 18-F: Mounting bracket with stop, 18 mm
- EXG-18: Quick mounting bracket with stop
- AB-18: Right angled mounting bracket
- MN01-18: Mounting bracket M18 - 1/2" rod type
- V1-W: 4-pin, M12 female field-attachable connector, angled
- V1-G: 4-pin, M12 female field-attachable connector, straight
- V1-G-BK2M-PUR-U: Female cordset, M12, 4-pin, PUR cable, straight
- V1-W-BK2M-PUR-U: Female cordset, M12, 4-pin, PUR cable, angled

### Electrical Connection

Refer to General Notes Relating to Product Information

Wire colors in accordance with EN 60947-5-2

1. BN (brown)
2. WH (white)
3. BU (blue)
4. BK (black)
### Technical Data

For detailed data and product description refer to the data sheets at [www.pepperl-fuchs.us](http://www.pepperl-fuchs.us).

#### General Data

- **Rated operating distance**: 5 mm
- **Installation**: flush
- **Type of voltage**: DC
- **Operating voltage**: 10 ... 30 V
- **No-load supply current**: ≤ 20 mA
- **Reverse polarity protection**: ✔
- **Switching frequency**: 0 ... 800 Hz
- **Load current**: 0 ... 200 mA
- **Short-circuit protection**: ✔, self-checking
- **Switching state indication LED**: yellow
- **Housing material**: brass, nickel-plated
- **Protection degree**: IP67

#### Model Number

- **Output type**: NPN
- **Ambient temperature**: -25 ... 70 °C (-13 ... 158 °F)
- **Connection type**: Connector M12 x 1, 4-pin, cable PVC, 2 m

#### Properties

- Ø18 mm housing
- 5 mm, flush mountable
- DC, 3-wire and 4-wire switching output
- Cable and connector versions

#### Additional Products

In this series, we offer the following additional products:
- **NBB5-18GM50-E2-T-V1**: Technical data like NBB5-18GM50-E2-V1 but: Ambient temperature: -25 ... 100 °C (-13 ... 212 °F)
- **Connection type**: Connector M12 x 1, 3-pin

#### Approvals and Certificates

- **Protection class**: II
- **UL approval**: cULus Listed, General Purpose
- **CSA approval**: cCSAus Listed, General Purpose
- **CCC approval**: CCC approval / marking not required for sensors rated ≤36 V

#### Dimensions

- **Length L [mm]**: 50, 60, 65, 70
- **Diameter D [mm]**: M18 x 1
- **Thread length l1 [mm]**: 47, 60, 50, 60
- **Cap length l2 [mm]**: 0
- **Connector length lc [mm]**: 0
- **LED position**: Pos. C

#### Accessories

- **These and more accessories can be found in chapter 10**
- **See pages from 970 ... for cordsets**
- **See pages 1066 ... for mounting accessories**

- **EXG-18**: Quick mounting bracket with stop
- **BF 18**: Mounting bracket, 18 mm
- **AB-18**: Right angled mounting bracket
- **MH01-M18**: Mounting bracket M18 - 1/2" rod type
- **V1-G**: 4-pin, M12 female field-attachable connector, straight
- **V1-W**: 4-pin, M12 female field-attachable connector, angled
- **V1-G-BK2M-PUR-U**: Female cordset, M12, 4-pin, PUR cable, straight
- **V1-W-BK2M-PUR-U**: Female cordset, M12, 4-pin, PUR cable, angled

### Electrical Connection

![Electrical Connection Diagram](image-url)
Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data
Rated operating distance
Installation
Type of voltage
Operating voltage
Reverse polarity protection
Switching frequency
Short-circuit protection
Switching state indication
Housing material
Protection degree

<table>
<thead>
<tr>
<th>Output type</th>
<th>NPN NO/NC</th>
<th>NPN NO</th>
<th>PNP NO/NC</th>
<th>PNP NO</th>
<th>PNP NC</th>
</tr>
</thead>
<tbody>
<tr>
<td>No-load supply current</td>
<td>≤ 15 mA</td>
<td></td>
<td>≤ 25 mA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Load current</td>
<td>0 ... 100 mA</td>
<td>0 ... 200 mA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-25 ... 70 °C (-13 ... 158 °F)</td>
<td>-40 ... 70 °C (-40 ... 158 °F)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connection type</td>
<td>Connector M12 x 1 , 4-pin</td>
<td>cable PVC , 2 m</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Model Number

| Model Number | NBB8-18GM50-E0 | NBB8-18GM50-E2 | NBB8-18GM50-E2-V1 | NBB8-18GM50-E2-V1 | NBB8-18GM50-E2-V1 | NBB8-18GM50-E2-V1 |

Properties

- Ø18 mm housing
- 8 mm, flush mountable
- DC, 3-wire and 4-wire switching output
- Cable and connector versions

Benefits

- Extended sensing range means fewer sensor/target impacts

Additional Products

In this series, we offer the following additional products:

- NCB8-18GM50-E2-V1
  Technical data like NBB8-18GM50-E2-V1 but:
  Housing material: Stainless steel 1.4305 / AISI 303
- NBB8-18GM70-E2-V94
  Technical data like NBB8-18GM30-E2 but:
  Connection type: Connector 7/8"-16 UN , 4-pin

Electrical Connection

<table>
<thead>
<tr>
<th>Electrical Connection</th>
<th>NBB8-18GM30-E2</th>
<th>NBB8-18GM50-A0</th>
<th>NBB8-18GM50-E0</th>
<th>NBB8-18GM50-E2-V1</th>
<th>NBB8-18GM50-E2-V1</th>
<th>NBB8-18GM50-E2-V1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NBB8-18GM50-E2</td>
<td>NBB8-18GM50-E2</td>
<td>NBB8-18GM50-E0</td>
<td>NBB8-18GM50-E2-V1</td>
<td>NBB8-18GM50-E2-V1</td>
<td>NBB8-18GM50-E2-V1</td>
</tr>
<tr>
<td></td>
<td>NBB8-18GM60-A0</td>
<td>NBB8-18GM60-A0</td>
<td>NBB8-18GM60-A2</td>
<td>NBB8-18GM60-A0-V1</td>
<td>NBB8-18GM60-A0-V1</td>
<td>NBB8-18GM60-A0-V1</td>
</tr>
</tbody>
</table>

Approvals and Certificates

- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤36 V

Dimensions

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Length L [mm]</th>
<th>Diameter D [mm]</th>
<th>Thread length l₁ [mm]</th>
<th>Cap length l₂ [mm]</th>
<th>Connector length l₃ [mm]</th>
<th>LED position</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>30</td>
<td>50</td>
<td>45</td>
<td>65</td>
<td>70</td>
<td>Pos. C</td>
</tr>
<tr>
<td></td>
<td>40</td>
<td>50</td>
<td>45</td>
<td>65</td>
<td>70</td>
<td>Pos. C</td>
</tr>
</tbody>
</table>

Accessories

These and more accessories can be found in chapter 10
See pages from 970 ... for cordsets
See pages 1056 ... for mounting accessories

- BF 18-F
  Mounting bracket with stop, 18 mm
- BF 18
  Mounting bracket, 18 mm
- EXG-18
  Quick mounting bracket with stop
- AS-18
  Right angled mounting bracket
- MH01-M18
  Mounting bracket M18 - 1/2" rod type
- V1-G
  4-pin, M12 female field-attachable connector, straight
- V1-W
  4-pin, M12 female field-attachable connector, angled
- V1-G-BK2M-PUR-U
  Female cordset, M12, 4-pin, PUR cable, straight
- V1-W-BK2M-PUR-U
  Female cordset, M12, 4-pin, PUR cable, angled

Inductive sensor cylindrical, Ø 18 mm
## Inductive sensor

### cylindrical, Ø 18 mm

#### Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

<table>
<thead>
<tr>
<th>General Data</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated operating distance</td>
<td>8 mm</td>
</tr>
<tr>
<td>Installation</td>
<td>non-flush</td>
</tr>
<tr>
<td>Type of voltage</td>
<td>DC</td>
</tr>
<tr>
<td>Operating voltage</td>
<td>10 ... 30 V</td>
</tr>
<tr>
<td>Reverse polarity protection</td>
<td>✔</td>
</tr>
<tr>
<td>Load current</td>
<td>0 ... 200 mA</td>
</tr>
<tr>
<td>Short-circuit protection</td>
<td>✔</td>
</tr>
<tr>
<td>Housing material</td>
<td>brass, nickel-plated</td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP67</td>
</tr>
</tbody>
</table>

#### Model Number

<table>
<thead>
<tr>
<th>Output type</th>
<th>NPN NO/NC</th>
<th>NPN NO</th>
<th>PNP NO/NC</th>
<th>PNP NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>No-load supply current</td>
<td>≤ 18 mA</td>
<td>≥ 20 mA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Switching frequency</td>
<td>0 ... 500 Hz</td>
<td>0 ... 700 Hz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-25 ... 70 °C (-13 ... 158 °F)</td>
<td>-40 ... 70 °C (-40 ... 158 °F)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connection type</td>
<td>Connector M12 x 1, 4-pin</td>
<td>cable PVC, 2 m</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Dimensions

<table>
<thead>
<tr>
<th>Length L [mm]</th>
<th>50</th>
<th>50</th>
<th>60</th>
<th>60</th>
<th>65</th>
<th>65</th>
<th>65</th>
<th>70</th>
<th>70</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diameter D [mm]</td>
<td>37</td>
<td>37</td>
<td>50</td>
<td>50</td>
<td>40</td>
<td>40</td>
<td>50</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Cap length l₁ [mm]</td>
<td>0</td>
<td>15</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connector length l₂ [mm]</td>
<td>C</td>
<td>A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Accessories

These and more accessories can be found in chapter 10. See pages from 970 ... for cordsets. See pages 1066 ... for mounting accessories.

- BF 18: Mounting bracket, 18 mm
- AB-18: Right angled mounting bracket
- M100-M18: Mounting bracket M18 - 1/2" rod type
- V1-G: 4-pin, M12 female field-attachable connector, straight
- V1-W: 4-pin, M12 female field-attachable connector, angled
- V1-G: Female cordset, M12, 4-pin, PUR cable, straight
- V1-W: Female cordset, M12, 4-pin, PUR cable, angled

#### Electrical Connection

Wire colors in accordance with EN 60947-5-2

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

General Data
Rated operating distance 12 mm
Installation non-flush
Type of voltage DC
Operating voltage 10...30 V
Reverse polarity protection ✔, self-checking
Short-circuit protection ✔, self-checking
Switching state indication LED, yellow
Ambient temperature -25 ... 70 °C (-13 ... 158 °F)
Housing material brass, nickel-plated
Protection degree IP67

Properties
n Ø18 mm housing
n 12 mm, non-flush mountable
n DC, 3-wire and 4-wire switching output
n Cable and connector versions

Benefits
n Extended sensing range means fewer sensor/target impacts

Electrical Connection

Model Number

<table>
<thead>
<tr>
<th>Output type</th>
<th>NPN NO/NC</th>
<th>NPN NO</th>
<th>PNP NO/NC</th>
<th>PNP NO</th>
<th>PNP NC</th>
</tr>
</thead>
<tbody>
<tr>
<td>No-load supply current</td>
<td>≤ 10 mA</td>
<td>✔</td>
<td>✔</td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤ 12 mA</td>
<td>✔</td>
<td></td>
<td>✔</td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤ 20 mA</td>
<td></td>
<td></td>
<td></td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Switching frequency</td>
<td>0...1000 Hz</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>0...200 Hz</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0...300 Hz</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Load current</td>
<td>0...100 mA</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0...200 mA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connection type</td>
<td>Connector M12 x 1, 4-pin</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>cable PVC, 2 m</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Approvals and Certificates

UL approval cULus Listed, General Purpose
CSA approval cCSAus Listed, General Purpose
CCC approval CCC approval / marking not required for sensors rated ≤36 V

Dimensions

| Length L [mm] | 35.5 | 50 | 65 |
| Diameter D [mm] | M18 x 1 |
| Thread length l1 [mm] | 22.5 | 37 | 25 | 40 |
| Cap length l2 [mm] | 10 |
| Connector length l3 [mm] | 0 | 15 |
| LED position | Pos. C |

Accessories

These and more accessories can be found in chapter 10
See pages from 970 ... for cordsets See pages 1066 ... for mounting accessories

- BF 18
- BF 18-F
- AB-18
- MH01-M18
- V1-G
- V1-G-BK2M-PUR-U

NBN12-18GM50-E0 NBN12-18GM50-A0 NBN12-18GM50-E2 V1 NBN12-18GM50-E0-V1 NBN12-18GM50-A0-V1

BN L+ L- BK BU BN L+ L- BK BU BN L+ L- BK BU BN L+ L- BK BU BN L+ L- BK BU

1 (brown) 2 (white) 3 (blue) 4 (black)

Wire colors in accordance with EN 60947-5-2

Electrical Connection

Refer to General Notes Relating to Product Information

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Proximity Sensors, Inductive Sensors, cylindrical, Ø 18 mm

Inductive Sensors, cylindrical, Ø 18 mm

Inductive Sensors, cylindrical, Ø 18 mm

Inductive Sensors, cylindrical, Ø 18 mm
### Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

#### General Data

- **Rated operating distance**: 12 mm
- **Type of voltage**: DC
- **Operating voltage**: 10 ... 30 V
- **No-load supply current**: ≤ 10 mA
- **Reverse polarity protection**: ✔
- **Switching frequency**: 0 ... 500 Hz
- **Load current**: 0 ... 200 mA
- **Short-circuit protection**: ✔, self-checking
- **Switching state indication**: LED, yellow
- **Ambient temperature**: -25 ... 70 °C (-13 ... 158 °F)
- **Protection degree**: IP67

#### Model Number

<table>
<thead>
<tr>
<th>Installation</th>
<th>NEB12-18GM50-E2</th>
<th>NEB12-18GM50-E2-V1</th>
<th>NEB12-18GM50-E3-V1</th>
<th>NEB12-18GM50-E-V1</th>
</tr>
</thead>
<tbody>
<tr>
<td>flush</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>quasi-flush</td>
<td>✔</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

#### Output type

- NPN NO
- PNP NC
- PNP NC
- PNP NC

#### Housing material

- chromium plated brass
- brass, nickel-plated

#### Connection type

- Connector M12 x 1, 4-pin, cable PUR, 2 m

#### Approvals and Certificates

- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤ 36 V

#### Dimensions

<table>
<thead>
<tr>
<th>Length L [mm]</th>
<th>53</th>
<th>69</th>
<th>63.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diameter D [mm]</td>
<td>M18 x 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thread length l1 [mm]</td>
<td>53</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cap length l2 [mm]</td>
<td>53</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connector length l3 [mm]</td>
<td>40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LED position</td>
<td>Pos.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>C</td>
<td>C</td>
</tr>
</tbody>
</table>

#### Accessories

These and more accessories can be found in chapter 10

<table>
<thead>
<tr>
<th>BF 18</th>
<th>Mounting bracket, 18 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB-18</td>
<td>Right angled mounting bracket</td>
</tr>
<tr>
<td>MH01-M18</td>
<td>Mounting bracket M18 - 1/2&quot; rod type</td>
</tr>
<tr>
<td>V1-G</td>
<td>4-pin, M12 female field-attachable connector, straight</td>
</tr>
<tr>
<td>V1-W</td>
<td>4-pin, M12 female field-attachable connector, angled</td>
</tr>
<tr>
<td>V1-G-BK2M-PUR-U</td>
<td>Female cordset, M12, 4-pin, PUR cable, straight</td>
</tr>
<tr>
<td>V1-W-BK2M-PUR-U</td>
<td>Female cordset, M12, 4-pin, PUR cable, angled</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Wire colors in accordance with EN 60947-5-2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>4</td>
</tr>
</tbody>
</table>

---

### Properties

- Ø18 mm housing
- 12 mm sensing range
- DC, 3-wire switching output
- Cable and connector versions

### Benefits

- Extended sensing range means fewer sensor/target impacts

### Electrical Connection

![Electrical Connection Diagram]
Inductive sensor cylindrical, Ø 18 mm

**Technical Data**
For detailed data and product description refer to the data sheets at [www.pepperl-fuchs.us](http://www.pepperl-fuchs.us)

### General Data
- **Rated operating distance**: 20 mm
- **Installation**: non-flush
- **Type of voltage**: DC
- **Operating voltage**: 10 ... 30 V
- **No-load supply current**: ≤ 10 mA
- **Reverse polarity protection**: ✔
- **Switching frequency**: 0 ... 200 Hz
- **Load current**: 0 ... 200 mA
- **Short-circuit protection**: ✔, self-checking
- **Switching state indication**: LED, yellow
- **Ambient temperature**: -25 ... 70 °C (-13 ... 158 °F)
- **Housing material**: brass, nickel-plated
- **Protection degree**: IP67
- **Connection type**: Connector M12 x 1, 4-pin

#### Model Number
- NEN20-18GM50-E2-V1
- NEN20-18GM50-E3-V1

#### Output type
- PNP [NO] ✔
- PNP [NC] [●]

#### Approvals and Certificates
- CCC approval

#### Dimensions
- **Length L [mm]**: 69
- **Diameter D [mm]**: M18 x 1
- **Thread length l_t [mm]**: 43
- **Cap length l_1 [mm]**: 10
- **Connector length l_c [mm]**: 14
- **LED position**: Pos. C

### Properties
- Ø18 mm housing
- 20 mm, non-flush mountable
- DC, 3-wire switching output
- Connector version

### Benefits
- Extended sensing range means fewer sensor/target impacts

### Accessories
- These and more accessories can be found in chapter 10
- See pages from 970 ... for cordsets
- See pages 1066 ... for mounting accessories
- BF 18: Mounting bracket, 18 mm
- AB-18: Right angled mounting bracket
- MH01-M18: Mounting bracket M18 - 1/2" rod type
- V1-G: 4-pin, M12 female field-attachable connector, straight
- V1-W: 4-pin, M12 female field-attachable connector, angled
- V1-G-BK2M-PUR-U: Female cordset, M12, 4-pin, PUR cable, straight
- V1-W-BK2M-PUR-U: Female cordset, M12, 4-pin, PUR cable, angled

### Electrical Connection

#### Wire colors in accordance with EN 60947-5-2
- 1: BN (brown)
- 2: WH (white)
- 3: BU (blue)
- 4: BK (black)
Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data

- **Type of voltage**: AC
- **Operating voltage**: 20 ... 253 V
- **Reverse polarity protection**: \(\lor\), polarity independent
- **Switching frequency**: 0 ... 20 Hz
- **Load current**: 5 ... 200 mA
- **Operating voltage display LED**: green
- **Switching state indication LED**: yellow
- **Ambient temperature**: -25 ... 70 °C (-13 ... 158 °F)
- **Protection degree**: IP67

Model Number

- **Rated operating distance**: 5 mm, 8 mm
- **Installation**: flush, non-flush
- **Output type**: AC NO, AC NC
- **Housing material**: Stainless steel 1.4305 / AISI 303, brass, nickel-plated
- **Connection type**: Connector 1/2"-20 UN, 3-pin, Connector 7/8"-16 UN, 3-pin, cable PVC, 2 m

Approvals and Certificates

- **UL approval**: cULus Listed, General Purpose
- **CSA approval**: cCSAus Listed, General Purpose
- **CCC approval**: Certified by China Compulsory Certification (CCC)

Dimensions

- **Length L [mm]**: 60, 70, 80, 70, 60, 70
- **Diameter D [mm]**: M18 x 1
- **Thread length lt [mm]**: 60, 50, 40, 50
- **Cap length l1 [mm]**: 0, 10, 0, 10
- **Connector length lc [mm]**: 0, 10, 20, 10, 15
- **LED position Pos. A**: C, B

Accessories

- **These and more accessories can be found in chapter 10**: See pages from 970 ... for cordsets, See pages 1066 ... for mounting accessories

- **BF 18**: Mounting bracket, 18 mm
- **EXG-18**: Quick mounting bracket with stop
- **AB-18**: Right angled mounting bracket
- **MH01-M18**: Mounting bracket M18 - 1/2" rod type

Electrical Connection

- **BNB8-18GM60-WS**
- **BNB5-18GM60-WS**
- **BNB8-18GM60-VO**
- **BNB5-18GM60-VO**
- **BNB8-18GM80-WS-V93**
- **BNB5-18GM80-WS-V93**
- **BNB8-18GM80-VO-V93**
- **BNB5-18GM80-VO-V93**

<table>
<thead>
<tr>
<th>NBB8-18GM60-WS-V12</th>
<th>NBB5-18GM60-VO-V12</th>
<th>NBN8-18GM60-WS-V12</th>
<th>NBN5-18GM60-VO-V12</th>
</tr>
</thead>
<tbody>
<tr>
<td>NBB8-18GM60-V93</td>
<td>NBB5-18GM60-V93</td>
<td>NBN8-18GM60-V93</td>
<td>NBN5-18GM60-V93</td>
</tr>
</tbody>
</table>

Refer to General Notes Relating to Product Information


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Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data

<table>
<thead>
<tr>
<th>Output type</th>
<th>AC</th>
<th>NO</th>
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<tbody>
<tr>
<td>Type of voltage</td>
<td>AC</td>
<td></td>
</tr>
<tr>
<td>Operating voltage</td>
<td>20 ... 250 V</td>
<td></td>
</tr>
<tr>
<td>No-load supply current</td>
<td>≤ 1.5 mA</td>
<td></td>
</tr>
<tr>
<td>Switching frequency</td>
<td>0 ... 25 Hz</td>
<td></td>
</tr>
<tr>
<td>Load current</td>
<td>5 ... 200 mA</td>
<td></td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-25 ... 70 °C (-13 ... 158 °F)</td>
<td></td>
</tr>
<tr>
<td>Housing material</td>
<td>PBT</td>
<td></td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP68</td>
<td></td>
</tr>
<tr>
<td>Connector type</td>
<td>cable PVC , 2 m</td>
<td></td>
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Model Number

<table>
<thead>
<tr>
<th></th>
<th>NBB5-18GK-WS</th>
<th>NB8-18GK-WS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated operating distance</td>
<td>5 mm</td>
<td>8 mm</td>
</tr>
<tr>
<td>Installation</td>
<td>flush</td>
<td>non-flush</td>
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</tbody>
</table>

Approvals and Certificates

| UL approval  | cULus Listed, General Purpose |  |
| CSA approval | cCSAus Listed, General Purpose |  |
| CCC approval  | Certified by China Compulsory Certification (CCC) |  |

Dimensions

<table>
<thead>
<tr>
<th></th>
<th>NBB5-18GK-WS</th>
<th>NB8-18GK-WS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length L [mm]</td>
<td>79</td>
<td>80</td>
</tr>
<tr>
<td>Diameter D [mm]</td>
<td>M18 x 1</td>
<td></td>
</tr>
<tr>
<td>Thread length l1 [mm]</td>
<td>61</td>
<td>60</td>
</tr>
<tr>
<td>Cap length l2 [mm]</td>
<td>0</td>
<td>0.5</td>
</tr>
<tr>
<td>Connector length l3 [mm]</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>LED position</td>
<td>-</td>
<td></td>
</tr>
</tbody>
</table>

Accessories

These and more accessories can be found in chapter 10

| BF 18 | Mounting bracket, 18 mm |
| A8-18 | Right angled mounting bracket |
| MH01-M18 | Mounting bracket M18 - 1/2” rod type |

Electrical Connection

<table>
<thead>
<tr>
<th></th>
<th>NBB5-18GK-WS</th>
<th>NB8-18GK-WS</th>
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</thead>
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<td></td>
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</tbody>
</table>

Related Information

Refer to General Notes Relating to Product Information

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www.pepperl-fuchs.com - fa-info@de.pepperl-fuchs.com - fa-info@us.pepperl-fuchs.com - fa-info@sg.pepperl-fuchs.com


Courtesy of Steven Engineering, Inc. - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com
### Technical Data

**General Data**
- **Output type**: AC/DC NO
- **Type of voltage**: AC/DC
- **Operating voltage**: 20 ... 250 V AC/20 ... 300 V DC
- **Reverse polarity protection**: ✔, polarity independent
- **Switching frequency**: 30 Hz
- **Load current**: 4 ... 300 mA AC/DC
- **Short-circuit protection**: ✔
- **Operating voltage display**: LED, green
- **Switching state indication**: LED, yellow
- **Ambient temperature**: -25 ... 70 °C (-13 ... 158 °F)
- **Housing material**: brass, nickel-plated
- **Protection degree**: IP67

**Model Number**

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Rated operating distance</td>
<td>15 mm</td>
<td>8 mm</td>
<td>15 mm</td>
<td>8 mm</td>
<td>15 mm</td>
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<td>flush</td>
<td>non-flush</td>
<td>flush</td>
<td>non-flush</td>
<td>flush</td>
<td>non-flush</td>
</tr>
<tr>
<td>Connection type</td>
<td>Connector 1/2”-20 UN, 3-pin</td>
<td>Connector 7/8”-16 UN, 3-pin</td>
<td>cable PUR, 2 m</td>
<td>Connector 1/2”-20 UN, 3-pin</td>
<td>Connector 7/8”-16 UN, 3-pin</td>
<td>cable PUR, 2 m</td>
</tr>
</tbody>
</table>

**Approvals and Certificates**
- **UL approval**: cULus Listed, General Purpose
- **CSA approval**: cCSAus Listed, General Purpose
- **CCC approval**: Certified by China Compulsory Certification (CCC)

**Dimensions**

<table>
<thead>
<tr>
<th>Length L [mm]</th>
<th>63</th>
<th>70</th>
<th>75</th>
<th>70</th>
<th>75</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diameter D [mm]</td>
<td>M18 x 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thread length t [mm]</td>
<td>62</td>
<td>52</td>
<td>60</td>
<td>55</td>
<td>50</td>
</tr>
<tr>
<td>Cap length l1 [mm]</td>
<td>0</td>
<td>10</td>
<td>0</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>Connector length l2 [mm]</td>
<td>0</td>
<td>10</td>
<td>20</td>
<td>10</td>
<td>20</td>
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<tr>
<td>LED position Pos. A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Accessories**

- **Mouting bracket, 13 mm**: BF 18
- **Mounting bracket with stop**: EXG-18
- **Right angled mounting bracket**: AB-18
- **Mounting bracket M18 - 1/2” rod type**: MH01-M18

These and more accessories can be found in chapter 10. See pages from 970 ... for cordsets. See pages 1066 ... for mounting accessories.

### Electrical Connection

![Diagram of electrical connection](attachment:diagram.png)

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>V12</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>V93</td>
</tr>
<tr>
<td>V12</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>V93</td>
</tr>
</tbody>
</table>

**Properties**
- Ø18 mm housing
- 8 mm and 15 mm sensing ranges
- AC/DC, 2-wire switching output
- Cable and connector versions

**Benefits**
- Extended sensing range means fewer sensor/target impacts
### Inductive analog sensor
cylindrical, Ø 18 mm

#### Technical Data
For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

<table>
<thead>
<tr>
<th>General Data</th>
<th>NBB5-18GM60-I</th>
<th>NBB5-18GM60-V1</th>
<th>NBB5-18GM60-I3-V1</th>
<th>NBB5-18GM60-I3-V1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measurement range</td>
<td>1 ... 5 mm</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Installation</td>
<td>flush</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Output type</td>
<td>Analog current output</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type of voltage</td>
<td>DC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating voltage</td>
<td>10 ... 30 V</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No-load supply current</td>
<td>≤ 12 mA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Linearity error</td>
<td>≤ ± 4 % of full-scale value</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Load resistor</td>
<td>≤ 1000 Ω</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjustment tolerance zero</td>
<td>≤ ± 10 % of full-scale value</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-25 ... 70 °C (-13 ... 158 °F)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Housing material</td>
<td>brass, nickel-plated</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP67</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Model Number
- NBB5-18GM60-I
- NBB5-18GM60-V1
- NBB5-18GM60-I3-V1
- NBB5-18GM60-I3-V1

#### Output type
- 0 ... 20 mA
- 4 ... 20 mA

#### Slope of output characteristic
- 4 mA / mm
- 5 mA / mm

#### Connection type
- Connector M12 x 1, 4 pin
cable PVC, 2 m

#### Approvals and Certificates
- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤36 V

#### Dimensions
- Length L [mm]: 60, 70
- Diameter D [mm]: M18 x 1
- Thread length l_t [mm]: 57, 60
- Cap length l_1 [mm]: 0
- Connector length l_c [mm]: 0, 10
- LED position: Pos. C, Pos. B

#### Accessories
These and more accessories can be found in chapter 10
See pages from 970 ... for cordsets
See pages 1066 ... for mounting accessories
- BF 18: Mounting bracket, 18 mm
- AB-18: Right angled mounting bracket
- MH01-M18: Mounting bracket M18 - 1/2" rod type
- V1-G: 4-pin, M12 female field-attachable connector, straight
- V1-W: 4-pin, M12 female field-attachable connector, angled
- V1-G-BK2M-PUR-U: Female cordset, M12, 4-pin, PUR cable, straight
- V1-W-BK2M-PUR-U: Female cordset, M12, 4-pin, PUR cable, angled

#### Properties
- Ø 18 mm housing
- Up to 5 mm sensing ranges
- DC, 3-wire analog output
- Cable and connector versions

#### Electrical Connection
- Wire colors in accordance with EN 60947-5-2
  1. BN (brown)
  2. WH (white)
  3. BU (blue)
  4. BK (black)
### Technical Data

**General Data**
- Rated operating distance: 10 mm
- Installation: flush
- Type of voltage: DC
- Operating voltage: 5 ... 60 V
- Reverse polarity protection: ✔, polarity independent
- Switching frequency: 0 ... 150 Hz
- Load current: 2 ... 100 mA
- Short-circuit protection: ✔, self-checking
- Switching state indication: LED, yellow
- Protection degree: IP67

**Model Number**

<table>
<thead>
<tr>
<th>Output type</th>
<th>DC</th>
<th>NO</th>
<th>DC</th>
<th>NC</th>
</tr>
</thead>
<tbody>
<tr>
<td>NBB10-30GM40-Z0</td>
<td>✔</td>
<td></td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>NCB10-30GM40-Z0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NBB10-30GM40-Z1</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NCB10-30GM40-Z1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NBB10-30GM40-Z0-V1</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NCB10-30GM40-Z0-V1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NBB10-30GM40-Z3-V1</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NCB10-30GM40-Z3-V1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NBB10-30GM40-Z1-V1</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NCB10-30GM40-Z1-V1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Properties**
- Ø30 mm housing
- 10 mm, flush mountable
- DC, 2-wire switching output
- Cable and connector versions

**Dimensions**
- Length L [mm]: 40
- Diameter D [mm]: M30 x 1.5
- Thread length t1 [mm]: 37
- Cap length l1 [mm]: 0
- Connector length l2 [mm]: 0
- LED position: Pos. C

**Accessories**

### Electrical Connection

Refer to General Notes Relating to Product Information

Copyright Pepperl+Fuchs

Sensing Your Needs


Courtesy of Steven Engineering, Inc. - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com
Inductive Sensor cylindrical, Ø 30 mm

**Technical Data**

**General Data**
- Rated operating distance: 15 mm
- Installation: non-flush
- Type of voltage: DC
- Operating voltage: 5 ... 60 V
- Reverse polarity protection: ✔, polarity independent
- Load current: 2 ... 100 mA
- Short-circuit protection: ✔, self-checking
- Switching state indication: LED, yellow
- Protection degree: IP67

**Model Number**

<table>
<thead>
<tr>
<th>Model Number</th>
<th>NBN15-30GM40-Z0</th>
<th>NBN15-30GM40-Z0-V1</th>
<th>NBN15-30GM40-Z3-V1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Output type**
- DC NO
- DC NC

**Switching frequency**
- 0 ... 100 Hz
- 0 ... 150 Hz

**Ambient temperature**
- -25 ... 70 °C (-13 ... 158 °F)
- -40 ... 70 °C (-40 ... 158 °F)

**Housing material**
- Stainless steel 1.4305 / AISI 303
- Brass, nickel-plated

**Approvals and Certificates**
- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: Certified by China Compulsory Certification (CCC)

**Dimensions**
- Length L [mm]: 40, 55
- Diameter D [mm]: M30 x 1.5
- Thread length l1 [mm]: 19, 22
- Cap length l2 [mm]: 0, 18
- LED position: Pos. C

**Accessories**
- These and more accessories can be found in chapter 10
- See pages from 970 ... for cordsets
- See pages 1066 ... for mounting accessories

**Electrical Connection**

- Wire colors in accordance with EN 60947-5-2
  - 1: BN (brown)
  - 2: WH (white)
  - 3: BU (blue)
  - 4: BK (black)

Refer to General Notes Relating to Product Information

Copyright Pepperl+Fuchs


Courtesy of Steven Engineering, Inc. - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com
Inductive sensor
cylindrical, Ø 30 mm

Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

<table>
<thead>
<tr>
<th>General Data</th>
<th>DC NO</th>
<th>DC NC</th>
<th>reverse polarity-conductive</th>
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<tbody>
<tr>
<td>Rated operating distance</td>
<td>15 mm</td>
<td>15 mm</td>
<td>15 mm</td>
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<tr>
<td>Installation</td>
<td>flush</td>
<td>flush</td>
<td>flush</td>
</tr>
<tr>
<td>Type of voltage</td>
<td>DC</td>
<td>DC</td>
<td>DC</td>
</tr>
<tr>
<td>Operating voltage</td>
<td>3.5 ... 30 V</td>
<td>3.5 ... 30 V</td>
<td>3.5 ... 30 V</td>
</tr>
<tr>
<td>Switching frequency</td>
<td>500 Hz</td>
<td>500 Hz</td>
<td>500 Hz</td>
</tr>
<tr>
<td>Load current</td>
<td>2 ... 100 mA</td>
<td>2 ... 100 mA</td>
<td>2 ... 100 mA</td>
</tr>
<tr>
<td>Short-circuit protection</td>
<td>✔, self-checking</td>
<td>✔, self-checking</td>
<td>✔, self-checking</td>
</tr>
<tr>
<td>Switching state indication</td>
<td>LED, yellow</td>
<td>LED, yellow</td>
<td>LED, yellow</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-25 ... 70 °C (-13 ... 158 °F)</td>
<td>-25 ... 70 °C (-13 ... 158 °F)</td>
<td>-25 ... 70 °C (-13 ... 158 °F)</td>
</tr>
<tr>
<td>Housing material</td>
<td>brass, nickel-plated</td>
<td>brass, nickel-plated</td>
<td>brass, nickel-plated</td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP67</td>
<td>IP67</td>
<td>IP67</td>
</tr>
</tbody>
</table>

Model Number

NCB15-30GM50-Z4
NCB15-30GM50-Z5
NCB15-30GM50-Z4-V1
NCB15-30GM50-Z5-V1

Output type

DC NO
DC NC
reverse polarity-conductive

DC NO
DC NC
reverse polarity-conductive

Connection type

Connector M12 x 1, 4-pin
cable PVC, 2 m
cable PVC, 2 m

UL approval
cULus Listed, General Purpose

CSA approval
cCSAus Listed, General Purpose

CCC approval
CCC approval / marking not required for sensors rated ≤36 V

Approvals and Certificates

Dimensions

Length L [mm] 50 65
Diameter D [mm] 30 x 1.5
Thread length l_t [mm] 47 50
Cap length l_1 [mm] 0
Connector length l_c [mm] 0 15
LED position Pos. C

Accessories

These and more accessories can be found in chapter 10
See pages from 970 ... for cordsets
See pages 1066 ... for mounting accessories

Additional Products

In this series, we offer the following additional products:
NCB15-30GM50-Z-V1
Technical data like NCB15-30GM50-Z-V1 but different wiring diagram, see Electrical Connection

Properties

Ø30 mm housing
15 mm, flush mountable
DC, 2-wire switching output
Cable and connector versions

Benefits

Extended sensing range means fewer sensor/target impacts

Electrical Connection

BN L+
L-BU
L-4
1 L+
L-2
BN L+
L-BU
WH
BU
BK
1 2 3 4

Wire colors in accordance with EN 60947-5-2

(white)
(brown)
(blue)
(black)
Inductive sensor cylindrical, Ø 30 mm

Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data
Rated operating distance 25 mm
Installation non-flush
Type of voltage DC
Operating voltage 3.5 ... 30 V
Switching frequency 500 Hz
Load current 2 ... 100 mA
Short-circuit protection ✔, self-checking
Switching state indication LED, yellow
Ambient temperature -25 ... 70 °C (-13 ... 158 °F)
Housing material brass, nickel-plated
Protection degree IP67

Model Number

Output type DC NO
DC NC
Reverse polarity protection ✔, reverse polarity conductive
✔, polarity independent
Connection type Connector M12 x 1, 4-pin
Cable PVC, 2 m

Accessories

These and more accessories can be found in chapter 10
See pages from 970 ... for cordsets
See pages 1066 ... for mounting accessories

Electrical Connection

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

Properties
☐ Ø30 mm housing
☐ 25 mm, non-flush mountable
☐ DC, 2-wire switching output
☐ Cable and connector versions

Benefits
☐ Extended sensing range means fewer sensor/target impacts
Inductive sensor

cylindrical, Ø 30 mm

Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data
Rated operating distance 10 mm
Installation flush
Type of voltage DC
Reverse polarity protection ✓
Load current 0 ... 200 mA
Short-circuit protection ✓, self-checking
Switching state indication LED, yellow
Protection degree IP67

Model Number

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Output type</th>
<th>Operating voltage</th>
<th>Load current</th>
<th>Switching frequency</th>
<th>Ambient temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>NBJ10-30GM50-E2</td>
<td>NPN NO</td>
<td>10 ... 30 V</td>
<td>≤ 10 mA</td>
<td>0 ... 600 Hz</td>
<td>-25 ... 150 °C (-13 ... 212 °F)</td>
</tr>
<tr>
<td>NBJ10-30GM50-E2-T</td>
<td>PNP NO</td>
<td>10 ... 60 V</td>
<td>≤ 20 mA</td>
<td>0 ... 200 Hz</td>
<td>-40 ... 100 °C (-40 ... 212 °F)</td>
</tr>
<tr>
<td>NBJ10-30GM50-E2-V1</td>
<td>PNP NC</td>
<td>0 ... 300 Hz</td>
<td>0 ... 300 mA</td>
<td>-25 ... 70 °C (-13 ... 158 °F)</td>
<td></td>
</tr>
<tr>
<td>NBJ10-30GM50-E2-V1</td>
<td>Stainless steel 1.4305 / AISI 303</td>
<td>-40 ... 70 °C (-40 ... 158 °F)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Approvals and Certificates

UL approval cULus Listed, General Purpose
CSA approval cCSAus Listed, General Purpose
CCC approval Certified by China Compulsory Certification (CCC)
CCC approval / marking not required for sensors rated ≤ 36 V

Dimensions

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>L [mm]</td>
<td>50</td>
</tr>
<tr>
<td>D [mm]</td>
<td>30</td>
</tr>
<tr>
<td>t [mm]</td>
<td>50</td>
</tr>
<tr>
<td>l1 [mm]</td>
<td>0</td>
</tr>
<tr>
<td>l2 [mm]</td>
<td>0</td>
</tr>
<tr>
<td>Pos. A</td>
<td>15</td>
</tr>
</tbody>
</table>

Accessories

These and more accessories can be found in chapter 10
See pages from 970 ... for cordsets
See pages 1066 ... for mounting accessories

Electrical Connection

Refer to General Notes Relating to Product Information

Proximity Sensors, Inductive Sensors, cylindrical
Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data
- Rated operating distance: 10 mm
- Installation: flush
- Type of voltage: DC
- Reverse polarity protection: ✔
- Short-circuit protection: ✔, self-checking
- Switching state indication LED, yellow
- Protection degree: IP67

Model Number

<table>
<thead>
<tr>
<th>Output type</th>
<th>NPN</th>
<th>NO/NC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Operating voltage</th>
<th>10 ... 30 V</th>
<th>0 ... 200 Hz</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>No-load supply current</th>
<th>≤ 20 mA</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Switching frequency</th>
<th>0 ... 200 Hz</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Load current</th>
<th>0 ... 200 mA</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Ambient temperature</th>
<th>-25 ... 70 °C (-13 ... 158 °F)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Housing material</th>
<th>Stainless steel 1.4305 / AISI 303, brass, nickel-plated</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Connection type</th>
<th>Connector M12 x 1, 4-pin cable PVC, 2 m</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Model Number</th>
<th>NBB10-30GM50-A2</th>
<th>NBB10-30GM60-A0</th>
<th>NBB10-30GM60-A2-V1</th>
<th>NBB10-30GM60-A0-V1</th>
</tr>
</thead>
</table>

Approvals and Certificates

- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤36 V

Dimensions

<table>
<thead>
<tr>
<th>Length L [mm]</th>
<th>50</th>
<th>60</th>
<th>65</th>
<th>70</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diameter D [mm]</td>
<td>M30 x 1.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thread length l_t [mm]</td>
<td>47 60 50 60</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cap length l_c [mm]</td>
<td>0 10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connector length l_c [mm]</td>
<td>0 15 10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LED position</td>
<td>Pos. B C A</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Accessories

- More accessories can be found in chapter 10
- See pages from 970 ... for cordsets
- See pages 1066 ... for mounting accessories

Electrical Connection

Wire colors in accordance with EN 60947-5-2

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

**General Data**
- Rated operating distance: 10 mm
- Installation: flush
- Type of voltage: DC
- Operating voltage: 10 ... 30 V
- No-load supply current: ≤ 20 mA
- Reverse polarity protection: ✔
- Load current: 0 ... 200 mA
- Short-circuit protection: ✔, self-checking
- Housing material: PBT

**Model Number**

<table>
<thead>
<tr>
<th>Output type</th>
<th>NPN</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switching frequency</td>
<td>0 ... 200 Hz</td>
<td>✔</td>
</tr>
<tr>
<td></td>
<td>0 ... 300 Hz</td>
<td>✔</td>
</tr>
</tbody>
</table>

**Switching state indication**
- LED, yellow
- Ambient temperature: -25 to 100 °C (-13 to 212 °F)
- Protection degree: IP66
- Connection type: cable PUR, 2 m

**Approvals and Certificates**
- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤36 V

**Dimensions**
- Length L [mm]: 80
- Diameter D [mm]: M30 x 1.5
- Thread length l [mm]: 60
- Cap length l [mm]: 48
- Connector length L [mm]: 2 m
- LED position: - Pos. C

**Accessories**
- These and more accessories can be found in chapter 10
- See pages from 970 ... for cordsets
- See pages 1066 ... for mounting accessories

**Electrical Connection**

<table>
<thead>
<tr>
<th>NJ10-30GK-E-T</th>
<th>NJ10-30GK-E2-T</th>
<th>NBB10-30GK50-E0</th>
<th>NBB10-30GK50-E2</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN</td>
<td>BK</td>
<td>L+</td>
<td>L-</td>
</tr>
<tr>
<td>BN</td>
<td>L-</td>
<td>BK</td>
<td>EN</td>
</tr>
<tr>
<td>WH</td>
<td>BU</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Properties**
- Ø30 mm housing
- 10 mm, flush mountable
- DC, 3-wire switching output
- Cable version

**Additional Products**
In this series, we offer the following additional products:
- NJ10-30GK50-A2
  - Technical data like NBB10-30GK50-E2 but:
    - Output type: PNP, NO/NC
    - Operating voltage: 10 ... 30 V
    - No-load supply current: ≤ 9 mA
    - Switching frequency: 0 ... 500 Hz
    - Load current: 0 ... 400 mA

**Approvals and Certificates**
- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤36 V

**Dimensions**
- Length L [mm]: 80
- Diameter D [mm]: M30 x 1.5
- Thread length l [mm]: 60
- Cap length l [mm]: 48
- Connector length L [mm]: 2 m
- LED position: - Pos. C

**Accessories**
- These and more accessories can be found in chapter 10
- See pages from 970 ... for cordsets
- See pages 1066 ... for mounting accessories

**Electrical Connection**

<table>
<thead>
<tr>
<th>NJ10-30GK-E-T</th>
<th>NJ10-30GK-E2-T</th>
<th>NBB10-30GK50-E0</th>
<th>NBB10-30GK50-E2</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN</td>
<td>BK</td>
<td>L+</td>
<td>L-</td>
</tr>
<tr>
<td>BN</td>
<td>L-</td>
<td>BK</td>
<td>EN</td>
</tr>
<tr>
<td>WH</td>
<td>BU</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Properties**
- Ø30 mm housing
- 10 mm, flush mountable
- DC, 3-wire switching output
- Cable version

**Additional Products**
In this series, we offer the following additional products:
- NJ10-30GK50-A2
  - Technical data like NBB10-30GK50-E2 but:
    - Output type: PNP, NO/NC
    - Operating voltage: 10 ... 30 V
    - No-load supply current: ≤ 9 mA
    - Switching frequency: 0 ... 500 Hz
    - Load current: 0 ... 400 mA

**Approvals and Certificates**
- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤36 V

**Dimensions**
- Length L [mm]: 80
- Diameter D [mm]: M30 x 1.5
- Thread length l [mm]: 60
- Cap length l [mm]: 48
- Connector length L [mm]: 2 m
- LED position: - Pos. C

**Accessories**
- These and more accessories can be found in chapter 10
- See pages from 970 ... for cordsets
- See pages 1066 ... for mounting accessories

**Electrical Connection**

<table>
<thead>
<tr>
<th>NJ10-30GK-E-T</th>
<th>NJ10-30GK-E2-T</th>
<th>NBB10-30GK50-E0</th>
<th>NBB10-30GK50-E2</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN</td>
<td>BK</td>
<td>L+</td>
<td>L-</td>
</tr>
<tr>
<td>BN</td>
<td>L-</td>
<td>BK</td>
<td>EN</td>
</tr>
<tr>
<td>WH</td>
<td>BU</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Technical Data**

For detailed data and product description refer to the data sheets at [www.pepperl-fuchs.us](http://www.pepperl-fuchs.us)

**General Data**
- Rated operating distance: 10 mm
- Installation: flush
- Type of voltage: DC
- Operating voltage: 10 ... 30 V
- No-load supply current: ≤ 20 mA
- Reverse polarity protection: ✔
- Switching frequency: 0 ... 300 Hz
- Load current: 0 ... 200 mA
- Short-circuit protection: ✔, self-checking
- Switching state indication: LED, yellow
- Ambient temperature: -25 ... 70 °C (-13 ... 158 °F)
- Housing material: PBT
- Protection degree: IP67
- Connection type: terminal compartment

**Model Number**

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Output type</th>
</tr>
</thead>
<tbody>
<tr>
<td>NJ10-30GKK-A2</td>
<td>NPN NO/NC</td>
</tr>
<tr>
<td></td>
<td>PNP NO/NC</td>
</tr>
</tbody>
</table>

**Approvals and Certificates**
- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤ 36 V

**Dimensions**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length L [mm]</td>
<td>115</td>
</tr>
<tr>
<td>Diameter D [mm]</td>
<td>M30 x 1.5 (max. housing diameter: 40 mm)</td>
</tr>
<tr>
<td>Thread length l1 [mm]</td>
<td>58</td>
</tr>
<tr>
<td>Cap length l2 [mm]</td>
<td>2</td>
</tr>
<tr>
<td>Connector length l3 [mm]</td>
<td>0</td>
</tr>
</tbody>
</table>

**Accessories**

These and more accessories can be found in chapter 10:
- BF 30: Mounting bracket, 30 mm
- AB-30: Right angled mounting bracket
- MH01-M30: Mounting bracket M30 - 1/2" rod type

**Electrical Connection**

![Connection Diagram](attachment:connection_diagram.png)
Inductive sensor cylindrical, Ø 30 mm

Technical Data

General Data
- Rated operating distance: 15 mm
- Installation: flush
- Type of voltage: DC
- Operating voltage: 10 ... 30 V
- No-load supply current: ≤ 15 mA
- Reverse polarity protection: ✔
- Switching frequency: 0 ... 200 Hz
- Short-circuit protection: ✔, self-checking
- Switching state indication: LED, yellow
- Housing material: brass, nickel-plated
- Protection degree: IP67

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

Model Number

Output type
<table>
<thead>
<tr>
<th>NPN</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>PNP</td>
<td>NO</td>
</tr>
<tr>
<td>PNP</td>
<td>NC</td>
</tr>
</tbody>
</table>

Load current
- 0 ... 100 mA
- 0 ... 200 mA

Ambient temperature
- -25 ... 70 °C (-13 ... 158 °F)
- -40 ... 70 °C (-40 ... 158 °F)

Connection type
- Connector M12 x 1, 4-pin cable PVC, 2 m

Approvals and Certificates
- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤36 V

Dimensions
- Length L [mm]: 30, 50, 45, 65
- Diameter D [mm]: M30 x 1.5
- Thread length l1 [mm]: 27, 47, 30, 50
- Cap length l2 [mm]: 0
- Connector length lc [mm]: 0
- LED position: Pos. C

Accessories
- These and more accessories can be found in chapter 10
- See pages from 970 ... for cordsets
- See pages 1066 ... for mounting accessories

Electrical Connection

Wire colors in accordance with EN 60947-5-2
1  BN (brown)
2  WH (white)
3  BU (blue)
4  BK (black)

Properties
- Ø30 mm housing
- 15 mm, flush mountable
- DC, 3-wire switching output
- Cable and connector versions

Benefits
- Extended sensing range means fewer sensor/target impacts

Refer to General Notes Relating to Product Information

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**Technical Data**

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

<table>
<thead>
<tr>
<th>General Data</th>
<th>NBB15-30GM60-A0</th>
<th>NBB15-30GM60-A2</th>
<th>NBB15-30GM60-A0-V1</th>
<th>NBB15-30GM60-A2-V1</th>
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<tbody>
<tr>
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<td>15 mm</td>
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<tr>
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<td>Operating voltage</td>
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<td>No-load supply current</td>
<td>25 mA</td>
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<tr>
<td>Reverse polarity protection</td>
<td>✔</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Switching frequency</td>
<td>0 ... 200 Hz</td>
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<td></td>
</tr>
<tr>
<td>Load current</td>
<td>0 ... 200 mA</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Short-circuit protection</td>
<td>✔, self-checking</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Switching state indication LED</td>
<td>yellow</td>
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<tr>
<td>Housing material</td>
<td>brass, nickel-plated</td>
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<tr>
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**Model Number**

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<th>NPN NO/NC</th>
<th>PNP NO/NC</th>
<th>PNP NO/NC</th>
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<td>-40 ... 70 °C (-40 ... 158 °F)</td>
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<td>Connection type</td>
<td>Connector M12 x 1, 4-pin cable PVC, 2 m</td>
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**Approvals and Certificates**

- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤36 V

**Dimensions**

<table>
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<th>Length L [mm]</th>
<th>60</th>
<th>70</th>
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<td>Diameter D [mm]</td>
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<tr>
<td>Thread length l1 [mm]</td>
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<td>60</td>
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<td>Cap length l2 [mm]</td>
<td>0</td>
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<tr>
<td>Connector length l3 [mm]</td>
<td>0</td>
<td>10</td>
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<td>LED position</td>
<td>Pos. C</td>
<td>Pos. A</td>
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</table>

<table>
<thead>
<tr>
<th>Accessories</th>
</tr>
</thead>
<tbody>
<tr>
<td>BF 30</td>
</tr>
<tr>
<td>EXG-30</td>
</tr>
<tr>
<td>AB-30</td>
</tr>
<tr>
<td>MH01/M30</td>
</tr>
<tr>
<td>V1-G</td>
</tr>
<tr>
<td>V1-W</td>
</tr>
<tr>
<td>V1-G-BK2M-PUR-U</td>
</tr>
<tr>
<td>V1-W-BK2M-PUR-U</td>
</tr>
</tbody>
</table>

**Electrical Connection**

Refer to General Notes Relating to Product Information

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Courtesy of Steven Engineering, Inc. - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com
### Technical Data
For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

#### General Data
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
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<td>15 mm</td>
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<tr>
<td>Installation</td>
<td>non-flush</td>
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<tr>
<td>Type of voltage</td>
<td>DC</td>
</tr>
<tr>
<td>Operating voltage</td>
<td>10 ... 30 V</td>
</tr>
<tr>
<td>Reverse polarity protection</td>
<td>✔</td>
</tr>
<tr>
<td>Switching frequency</td>
<td>0 ... 200 Hz</td>
</tr>
<tr>
<td>Load current</td>
<td>0 ... 200 mA</td>
</tr>
<tr>
<td>Short-circuit protection</td>
<td>✔, self-checking</td>
</tr>
<tr>
<td>Switching state indication</td>
<td>LED, yellow</td>
</tr>
<tr>
<td>Housing material</td>
<td>brass, nickel-plated</td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP67</td>
</tr>
</tbody>
</table>

#### Model Number

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Description</th>
<th>Connector</th>
<th>Cable</th>
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<tbody>
<tr>
<td>NBN15-30GM50-E0</td>
<td></td>
<td>M12 x 1, 4-pin</td>
<td>PVC, 2 m</td>
</tr>
<tr>
<td>NBN15-30GM50-E2</td>
<td></td>
<td>M12 x 1, 4-pin</td>
<td>PVC, 2 m</td>
</tr>
<tr>
<td>NBN15-30GM50-E0-V1</td>
<td></td>
<td>M12 x 1, 4-pin</td>
<td>PVC, 2 m</td>
</tr>
<tr>
<td>NBN15-30GM50-E2-V1</td>
<td></td>
<td>M12 x 1, 4-pin</td>
<td>PVC, 2 m</td>
</tr>
</tbody>
</table>

#### Approvals and Certificates

- **UL approval**
  - cULus Listed, General Purpose
- **CSA approval**
  - cCSAus Listed, General Purpose
- **CCC approval**
  - CCC approval / marking not required for sensors rated ≤36 V

#### Dimensions

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
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</thead>
<tbody>
<tr>
<td>Length L [mm]</td>
<td>50, 65</td>
</tr>
<tr>
<td>Diameter D [mm]</td>
<td>M30 x 1.5</td>
</tr>
<tr>
<td>Thread length l₁ [mm]</td>
<td>32</td>
</tr>
<tr>
<td>Cap length l₂ [mm]</td>
<td>18</td>
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<tr>
<td>Connector length l₃ [mm]</td>
<td>0, 15</td>
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</tbody>
</table>

#### Accessories

<table>
<thead>
<tr>
<th>Accessory</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BF 30</td>
<td>Mounting bracket, 30 mm</td>
</tr>
<tr>
<td>AB-30</td>
<td>Right angled mounting bracket</td>
</tr>
<tr>
<td>MH01-M30</td>
<td>Mounting bracket M30 - 1/2” rod type</td>
</tr>
<tr>
<td>V1-G</td>
<td>4-pin, M12 female field-attachable connector, straight</td>
</tr>
<tr>
<td>V1-W</td>
<td>4-pin, M12 female field-attachable connector, angled</td>
</tr>
<tr>
<td>V1-G-BK2M-PUR-U</td>
<td>Female cordset, M12, 4-pin, PUR cable, straight</td>
</tr>
<tr>
<td>V1-W-BK2M-PUR-U</td>
<td>Female cordset, M12, 4-pin, PUR cable, angled</td>
</tr>
</tbody>
</table>

#### Electrical Connection

<table>
<thead>
<tr>
<th>Diagram</th>
<th>Connector Type</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Diagram" /></td>
<td>NBN15-30GM50-E0-V1</td>
</tr>
<tr>
<td><img src="image2.png" alt="Diagram" /></td>
<td>NBN15-30GM50-E2-V1</td>
</tr>
</tbody>
</table>

Wire colors in accordance with EN 60947-5-2

1. BN (brown)
2. WH (white)
3. BU (blue)
4. BK (black)
Proximity Sensors, Inductive Sensors, cylindrical Ø 30 mm

### General Data
- Rated operating distance: 15 mm
- Installation: non-flush
- Type of voltage: DC
- Reverse polarity protection: ✔
- Short-circuit protection: ✔, self-checking
- Switching state indication LED, yellow
- Ambient temperature: -25 ... 70 °C (-13 ... 158 °F)
- Protection degree: IP67

### Model Number
- Output type: NPN NO/NC
- Operating voltage: 10 ... 30 V
- No-load supply current: ≤ 15 mA
- Switching frequency: 0 ... 200 Hz
- Load current: 0 ... 200 mA
- Housing material: Stainless steel 1.4305 / AISI 303
- Connection type: Connector M12 x 1, 4-pin, cable PVC, 2 m

### Approvals and Certificates
- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤36 V

### Dimensions
- Length L [mm]: 50, 60, 65, 70
- Diameter D [mm]: M30 x 1.5
- Thread length l_t [mm]: 32, 42, 32, 42
- Cap length l_1 [mm]: 18
- Connector length l_c [mm]: 0, 15, 10
- LED position: Pos. B, C, A

### Accessories
- BF 30: Mounting bracket, 30 mm
- AB-30: Right angled mounting bracket
- M30-M30: Mounting bracket M30 - 1/2" rod type
- V1-G: 4-pin, M12 female field-attachable connector, straight
- V1-W: 4-pin, M12 female field-attachable connector, angled
- V1-G-BK2M-PUR-U: Female cordset, M12, 4-pin, PUR cable, straight
- V1-W-BK2M-PUR-U: Female cordset, M12, 4-pin, PUR cable, angled

### Electrical Connection
- Wire colors in accordance with EN 60947-5-2
- 1: BN (brown)
- 2: WH (white)
- 3: BU (blue)
- 4: BK (black)
Inductive sensor cylindrical, Ø 30 mm

Technical Data
For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data
Rated operating distance 15 mm
Installation non-flush
Type of voltage DC
Operating voltage 10 ... 30 V
Reverse polarity protection ✓
Load current 0 ... 200 mA
Short-circuit protection ✓, self-checking
Housing material PBT

Model Number
Output type NPN NO
No-load supply current ≤ 15 mA
Switching frequency 0 ... 200 Hz
Switching state indication LED, yellow
Ambient temperature -25 ... 100 °C (-13 ... 212 °F)
Protection degree IP68 / IP69K
Connection type cable PUR, 2 m

Approvals and Certificates
UL approval cULus Listed, General Purpose
CSA approval cCSAus Listed, General Purpose
CCC approval CCC approval / marking not required for sensors rated ≤ 36 V

Dimensions
Length L [mm] 80 52
Diameter D [mm] M30 x 1.5
Thread length lT [mm] 59 48
Cap length l1 [mm] 0
LED position - Pos. C

Accessories
These and more accessories can be found in chapter 10
See pages from 970 ... for cordsets See pages 1066 ... for mounting accessories

Electrical Connection
NJ15-30GK-E-T
NBN15-30GK50-E0
NBN15-30GK50-E2
NJ15-30GK-E2-T
NJ15-30GK50-A2

Properties
- Ø30 mm housing
- 15 mm, non-flush mountable
- DC, 3-wire switching output
- Cable version

Additional Products
In this series, we offer the following additional products:
NJ15-30GK50-A2
Technical data like NBN15-30GK50-E2 but:
Output type: PNP, NO/NC
Operating voltage: 10 ... 60 V
No-load supply current: ≤ 9 mA
Switching frequency: 0 ... 500 Hz
Load current: 0 ... 400 mA
**Technical Data**

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

**General Data**

- Rated operating distance: 15 mm
- Type of voltage: DC
- Operating voltage: 10 ... 30 V
- No-load supply current: ≤ 20 mA
- Switching frequency: 0 ... 300 Hz
- Load current: 0 ... 200 mA
- Short-circuit protection: ✔
- Switching state indication: LED, yellow
- Ambient temperature: -25 ... 70 °C (-13 ... 158 °F)
- Housing material: PBT
- Protection degree: IP67
- Connection type: terminal compartment

**Rated operating distance**: 15 mm

**Installation**: non-flush

**Type of voltage**: DC

**Operating voltage**: 10 ... 30 V

**No-load supply current**: ≤ 20 mA

**Switching frequency**: 0 ... 300 Hz

**Load current**: 0 ... 200 mA

**Short-circuit protection**: ✔

**Switching state indication**: LED, yellow

**Ambient temperature**: -25 ... 70 °C (-13 ... 158 °F)

**Housing material**: PBT

**Protection degree**: IP67

**Connection type**: terminal compartment

**Model Number**

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Output type</th>
<th>NJ15-30GKK-A</th>
<th>NJ15-30GKK-A2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NPN NO/NC</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td></td>
<td>PNP NO/NC</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>

**Approvals and Certificates**

- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤ 36 V

**Dimensions**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length L [mm]</td>
<td>115</td>
</tr>
<tr>
<td>Diameter D [mm]</td>
<td>M30 x 1.5</td>
</tr>
<tr>
<td>(max. housing diameter: 40 mm)</td>
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</tr>
<tr>
<td>Thread length l1 [mm]</td>
<td>58</td>
</tr>
<tr>
<td>Cap length l2 [mm]</td>
<td>2</td>
</tr>
<tr>
<td>Connector length l3 [mm]</td>
<td>0</td>
</tr>
</tbody>
</table>

**Accessories**

- These and more accessories can be found in chapter 10
- See pages from 970 ... for cordsets
- See pages 1066 ... for mounting accessories

**Mounting Bracket**

- BF 30: Mounting bracket, 30 mm
- AB-30: Right angled mounting bracket
- MH01-M30: Mounting bracket M30 - 1/2" rod type

---

**Properties**

- Ø30 mm housing
- 15 mm, non-flush mountable
- DC, 4-wire switching output
- Terminal compartment

---

**Electrical Connection**

NJ15-30GKK-A

NJ15-30GKK-A2

---
Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

<table>
<thead>
<tr>
<th>General Data</th>
<th>NEB22-30GM60-E0</th>
<th>NEB22-30GM60-E2</th>
<th>NEB22-30GM60-E0-V1</th>
<th>NEB22-30GM60-E2-V1</th>
<th>NEB22-30GM60-E3-V1</th>
<th>NEB22-30GM60-E2-V2</th>
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<td>Type of voltage</td>
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<td></td>
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<tr>
<td>Operating voltage</td>
<td>10 ... 30 V</td>
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<tr>
<td>No-load supply current</td>
<td>≤ 10 mA</td>
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<td>Reverse polarity protection</td>
<td>✔</td>
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<td>-25 ... 70 °C (-13 ... 158 °F)</td>
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<td>Cable and connector versions</td>
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<tr>
<td>Dimensions</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Length L [mm]</td>
<td>60</td>
<td>73.5</td>
<td></td>
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<tr>
<td>Diameter D [mm]</td>
<td></td>
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<td></td>
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<tr>
<td>Thread length l1 [mm]</td>
<td>60</td>
<td>52.5</td>
<td>61.5</td>
<td>61.5</td>
<td>61.5</td>
<td>61.5</td>
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<tr>
<td>Cap length l2 [mm]</td>
<td>0</td>
<td>13.5</td>
<td>12.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connector length l3 [mm]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LED position</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>A</td>
<td>A</td>
<td>C</td>
</tr>
<tr>
<td>Electrical Connection</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wire colors in accordance with EN 60947-5-2</td>
<td>1 (brown)</td>
<td>2 (white)</td>
<td>3 (blue)</td>
<td>4 (black)</td>
<td>1 (brown)</td>
<td>2 (white)</td>
</tr>
</tbody>
</table>

Properties

- Ø30 mm housing
- 22 mm, quasi-flush mountable
- DC, 3-wire switching output
- Cable and connector versions

Benefits

- Extended sensing range means fewer sensor/target impacts

Model Number

- NEB22-30GM60-E0
- NEB22-30GM60-E2
- NEB22-30GM60-E0-V1
- NEB22-30GM60-E2-V1
- NEB22-30GM60-E3-V1
- NEB22-30GM60-E2-V2

Approvals and Certificates

- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤36 V

Dimensions

- Length L [mm]: 60, 73.5
- Diameter D [mm]:
- Thread length l1 [mm]: 60, 52.5, 61.5
- Cap length l2 [mm]: 0, 13.5, 12.5
- Connector length l3 [mm]:
- LED position: C, C, C, A, C

Accessories

- These and more accessories can be found in chapter 10
- See pages from 970 ... for cordsets
- See pages 1066 ... for mounting accessories

- BF 30: Mounting bracket, Ø30 mm
- AB-30: Right angled mounting bracket
- MH01-M30: Mounting bracket M30 - 1/2" rod type
- V1-G: 4-pin, M12 female field-attachable connector, straight
- V1-W: 4-pin, M12 female field-attachable connector, angled
- V1-G-BK2M-PUR-U: Female cordset, M12, 4-pin, PUR cable, straight
- V1-W-BK2M-PUR-U: Female cordset, M12, 4-pin, PUR cable, angled

Electrical Connection

- Wire colors in accordance with EN 60947-5-2
  - 1: (brown)
  - 2: (white)
  - 3: (blue)
  - 4: (black)
Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data
- Installation: non-flush
- Type of voltage: DC
- Operating voltage: 10 ... 30 V
- Reverse polarity protection: ✔
- Short-circuit protection: ✔, self-checking
- Switching state indication LED, yellow
- Housing material: brass, nickel-plated
- Protection degree: IP67

Model Number

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
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<th></th>
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</thead>
<tbody>
<tr>
<td>Rated operating distance</td>
<td>22 mm</td>
<td>25 mm</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
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<tr>
<td>Output type</td>
<td>NPN NO</td>
<td>PNP NO</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>No-load supply current</td>
<td>≤ 10 mA</td>
<td>≤ 12 mA</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Switching frequency</td>
<td>0 ... 200 Hz</td>
<td>0 ... 80 Hz</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
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<tr>
<td>Load current</td>
<td>0 ... 100 mA</td>
<td>0 ... 200 mA</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
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<tr>
<td>Ambient temperature</td>
<td>-25 ... 70 °C (-13 ... 158 °F)</td>
<td>-40 ... 70 °C (-40 ... 158 °F)</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
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<tr>
<td>Connection type</td>
<td>Connector M12 x 1, 4-pin cable PVC, 2 m</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>

Dimensions

| Length L [mm] | 35 | 50 | 50 | 50 | 65 | 65 |
| Diameter D [mm] | M30 x 1.5 |
| Thread length l1 [mm] | 15 | 32 | 32 | 17 | 32 | 32 |
| Cap length l2 [mm] | 18 |
| Connector length l3 [mm] | 0 | 15 |
| LED position | Pos. C |

Accessories

These and more accessories can be found in chapter 10
- BF 30: Mounting bracket, 30 mm
- AB-30: Right angled mounting bracket
- MH01-M30: Mounting bracket M30 - 1/2" rod type
- V1-G: 4-pin, M12 female field-attachable connector, straight
- V1-W: 4-pin, M12 female field-attachable connector, angled
- V1-G-BK2M-PUR-U: Female cordset, M12, 4-pin, PUR cable, straight
- V1-W-BK2M-PUR-U: Female cordset, M12, 4-pin, PUR cable, angled

Electrical Connection
Inductive sensor cylindrical, Ø 30 mm

**Technical Data**
For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

**General Data**
- Rated operating distance: 40 mm
- Installation: non-flush
- Type of voltage: DC
- Operating voltage: 10 ... 30 V
- No-load supply current: ≤ 10 mA
- Reverse polarity protection: ✔
- Switching frequency: 0 ... 100 Hz
- Load current: 0 ... 200 mA
- Short-circuit protection: ✔, self-checking
- Switching state indication LED, yellow
- Ambient temperature: -25 ... 70 °C (-13 ... 158 °F)
- Housing material: chromium plated brass
- Protection degree: IP67

**Model Number**

<table>
<thead>
<tr>
<th>Model Number</th>
<th>NEN40-30GM60-E0</th>
<th>NEN40-30GM60-E2</th>
<th>NEN40-30GM60-E0-V1</th>
<th>NEN40-30GM60-E2-V1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output type</td>
<td>NPN</td>
<td>NO</td>
<td>PNP, NO</td>
<td>PNP, NO</td>
</tr>
<tr>
<td>Connection type</td>
<td>Connector M12 x 1 , 4-pin</td>
<td>cable PVC , 2 m</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Dimensions**
- Length L [mm]: 60
- Diameter D [mm]: 73.5
- Thread length l₁ [mm]: 50
- Cap length l₂ [mm]: 10
- Connector length l₃ [mm]: 0
- LED position: C C C A A

**Accessories**
These and more accessories can be found in chapter 10 See pages from 970 ... for cordsets See pages 1066 ... for mounting accessories

- BF 30: Mounting bracket, 30 mm
- AB-30: Right angled mounting bracket
- MH01-M30: Mounting bracket M30 - 1/2" rod type
- V1-G: 4-pin, M12 female field-attachable connector, straight
- V1-W: 4-pin, M12 female field-attachable connector, angled
- V1-G-BK2M-PUR-U: Female cordset, M12, 4-pin, PUR cable, straight
- V1-W-BK2M-PUR-U: Female cordset, M12, 4-pin, PUR cable, angled

**Properties**
- Ø30 mm housing
- 40 mm, non-flush mountable
- DC, 3-wire switching output
- Cable and connector versions

**Benefits**
- Extended sensing range means fewer sensor/target impacts

**Electrical Connection**

- NEN40-30GM60-E0
- NEN40-30GM60-E2
- NEN40-30GM60-E2-V1
- NEN40-30GM60-E0-V1

Wire colors in accordance with EN 60947-5-2

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

For detailed data and product description refer to the data sheets at [www.pepperl-fuchs.us](http://www.pepperl-fuchs.us)

### General Data
- **Rated operating distance**: 10 mm
- **Installation**: flush
- **Type of voltage**: AC
- **Operating voltage**: 20 ... 250 V
- **Switching frequency**: 0 ... 25 Hz
- **Load current**: 5 ... 200 mA
- **Ambient temperature**: -25 ... 70 °C (-13 ... 158 °F)
- **Housing material**: PBT
- **Protection degree**: IP68
- **Connection type**: cable PVC, 2 m

### Model Number
<table>
<thead>
<tr>
<th>NBB10-30GK-WS</th>
<th>NBB10-30GK-WO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output type</td>
<td>AC NO</td>
</tr>
</tbody>
</table>

### Approvals and Certificates
- **UL approval**: cULus Listed, General Purpose
- **CSA approval**: cCSAus Listed, General Purpose
- **CCC approval**: Certified by China Compulsory Certification (CCC)

### Dimensions
| Length L [mm] | 80 |
| Diameter D [mm] | M30 x 1.5 |
| Thread length l_t [mm] | 60 |
| Cap length l_c [mm] | 0 |
| Connector length l_c [mm] | 0 |

### Accessories
- These and more accessories can be found in chapter 10
- See pages from 970 ... for cordsets
- See pages 1066 ... for mounting accessories
- **BF 30**: Mounting bracket, 30 mm
- **AB-30**: Right angled mounting bracket

### Electrical Connection

![Electrical Connection Diagram](image-url)
Inductive sensor  

**Technical Data**

For detailed data and product description refer to the data sheets at [www.pepperl-fuchs.us](http://www.pepperl-fuchs.us)

### General Data

- **Type of voltage**: AC
- **Operating voltage**: 20 ... 253 V
- **Reverse polarity protection**: polarity independent
- **Switching frequency**: 0 ... 20 Hz
- **Load current**: 5 ... 200 mA
- **Operating voltage display LED**: green
- **Switching state indication LED**: yellow
- **Ambient temperature**: -25 ... 70 °C (-13 ... 158 °F)
- **Housing material**: brass, nickel-plated
- **Protection degree**: IP67

### Model Number

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated operating distance</td>
<td>10 mm</td>
<td>15 mm</td>
<td>10 mm</td>
<td>15 mm</td>
</tr>
<tr>
<td>Installation</td>
<td>flush</td>
<td>quasi-flush</td>
<td>flush</td>
<td>quasi-flush</td>
</tr>
<tr>
<td>Output type</td>
<td>AC NO</td>
<td>AC NO</td>
<td>AC NO</td>
<td>AC NO</td>
</tr>
<tr>
<td>Connection type</td>
<td>Connector 1/2&quot;-20 UN , 3-pin</td>
<td>Connector 1/2&quot;-20 UN , 3-pin</td>
<td>Connector 7/8&quot;-16 UN , 3-pin</td>
<td>Connector 7/8&quot;-16 UN , 3-pin</td>
</tr>
<tr>
<td>Connector length lc [mm]</td>
<td>0</td>
<td>10</td>
<td>0</td>
<td>10</td>
</tr>
</tbody>
</table>

### Dimensions

- **Length L [mm]** 50 | 60 | 65
- **Diameter D [mm]** M30 x 1.5
- **Thread length l1 [mm]** 47 | 50
- **Cap length l2 [mm]** 0
- **Connector length lc [mm]** 0 | 10 | 15

### Approvals and Certificates

- **UL approval**: cULus Listed, General Purpose
- **CSA approval**: cCSAus Listed, General Purpose
- **CCC approval**: Certified by China Compulsory Certification (CCC)

### Accessories

- **BF 30**: Mounting bracket, 30 mm
- **EXG-30**: Quick mounting bracket with stop
- **AB-30**: Right angled mounting bracket
- **MH01-M30**: Mounting bracket M30 - 1/2" rod type

### Properties

- Ø30 mm housing
- 10 mm and 15 mm sensing ranges
- AC, 2-wire switching output
- Cable and connector versions

### Electrical Connection

For electrical connections, see data sheets at [www.pepperl-fuchs.us](http://www.pepperl-fuchs.us)
### Technical Data

**General Data**
- **Installation**: Flush
- **Type of voltage**: AC
- **Operating voltage**: 20 ... 250 V
- **No-load supply current**: ≤ 1.7 mA
- **Switching frequency**: 0 ... 20 Hz
- **Load current**: 1.5 ... 200 mA
- **Ambient temperature**: -25 ... 70 °C (-13 ... 158 °F)
- **Housing material**: PBT
- **Protection degree**: IP67
- **Connection type**: terminal compartment

**Model Number**

<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated operating distance</td>
<td>10 mm</td>
<td>●●●●</td>
<td>15 mm</td>
<td>●●●●</td>
</tr>
<tr>
<td>Output type</td>
<td>AC NO</td>
<td>● ●</td>
<td>AC NC</td>
<td>● ●</td>
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</table>

**Approvals and Certificates**
- **UL approval**: cULus Listed, General Purpose
- **CSA approval**: cCSAus Listed, General Purpose
- **CCC approval**: Certified by China Compulsory Certification (CCC)

**Dimensions**
- **Length L [mm]**: 115
- **Diameter D [mm]**: M30 x 1.5 (max. housing diameter: 40 mm)
- **Thread length lt [mm]**: 58
- **Cap length l1 [mm]**: 2
- **Connector length lc [mm]**: 0

---

### Properties

- Ø30 mm housing
- 10 mm and 15 mm sensing ranges
- AC, 2-wire switching output
- Terminal compartment

### Electrical Connection

![Electrical Connection Diagram](image-url)
Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data
- Rated operating distance: 15 mm
- Installation: flush
- Output type: AC/DC NO
- Type of voltage: UC
- Operating voltage: 20 ... 250 V AC/20 ... 300 V DC
- Reverse polarity protection: ✔ polarity independent
- Switching frequency: 30 Hz
- Load current: 4 ... 500 mA AC/DC
- Short-circuit protection: ✔
- Operating voltage display: LED, green
- Switching state indication: LED, yellow
- Ambient temperature: -25 ... 70 °C (-13 ... 158 °F)
- Housing material: brass, nickel-plated
- Protection degree: IP67

Model Number
- Connection type:
  - Connector 1/2"-20 UN, 3-pin
  - Connector 7/8"-16 UN, 3-pin
  - Cable PUR, 2 m

Apoyhos and Certificates
- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: Certified by China Compulsory Certification (CCC)

Dimensions
- Length L [mm]: 51, 60, 65
- Diameter D [mm]: M30 x 1.5
- Thread length t1 [mm]: 50
- Cap length l1 [mm]: 0
- Connector length l2 [mm]: 10, 15
- LED position: Pos. B

Accessories
- These and more accessories can be found in chapter 10
  - Mounting bracket, 30 mm: BF 30
  - Quick mounting bracket with stop: EXG-30
  - Right angled mounting bracket: AB-30
  - Mounting bracket M30 - 1/2" rod type: MH01-M30

Electrical Connection

Wire colors

<table>
<thead>
<tr>
<th>Wire color</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>GN (green)</td>
</tr>
<tr>
<td>2</td>
<td>RD (red)</td>
</tr>
<tr>
<td>3</td>
<td>WH (white)</td>
</tr>
</tbody>
</table>

Connection type:
- Connector 1/2"-20 UN, 3-pin
- Connector 7/8"-16 UN, 3-pin
- Cable PUR, 2 m
Proximity Sensors, Inductive Sensors, cylindrical

1.1 Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.com

General Data
- Rated operating distance: 25 mm
- Installation: non-flush
- Output type: AC/DC NO
- Type of voltage: UC
- Operating voltage: 20 ... 250 V AC/20 ... 300 V DC
- Reverse polarity protection: ✔, polarity independent
- Switching frequency: 30 Hz
- Load current: 4 ... 500 mA AC/DC
- Short-circuit protection: ✔
- Operating voltage display: LED, green
- Switching state indication: LED, yellow
- Ambient temperature: -25 ... 70 °C (-13 ... 158 °F)
- Housing material: brass, nickel-plated
- Protection degree: IP67

Model Number
- NBN25-30GM50-US
- NBN25-30GM50-US-V12
- NBN25-30GM50-US-V93

Connection type
- Connector 1/2"-20 UN, 3-pin
- Connector 7/8"-16 UN, 3-pin
- cable PUR, 2 m

Approvals and Certificates
- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: Certified by China Compulsory Certification (CCC)

Dimensions
- Length L [mm]: 51, 60, 65
- Diameter D [mm]: M30 x 1.5
- Thread length l_t [mm]: 32
- Cap length l_1 [mm]: 18
- Connector length l_c [mm]: 0, 10, 15
- LED position: Pos. B

Accessories
- These and more accessories can be found in chapter 10
- See pages from 970 ... for cordsets
- See pages 1066 ... for mounting accessories

Benefits
- Extended sensing range means fewer sensor/target impacts

Properties
- Ø30 mm housing
- 25 mm, non-flush mountable
- AC/DC, 2-wire switching output
- Cable and connector versions

Electrical Connection

Wire colors
- 1: GN (green)
- 2: RD/BK (red/black)
- 3: RD/WH (red/white)

Wire colors
- 1: GN (green)
- 2: BK (black)
- 3: WH (white)
**Technical Data**

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

- **General Data**
  - Output type: SPDT Relay
  - No-load supply current: ≤50 mA
  - Reverse polarity protection: 
  - Switching frequency: 5 Hz
  - Load current: 6 A max.
  - Ambient temperature: -40 ... 70 °C (-40 ... 158 °F)
  - Housing material: PBT
  - Protection degree: IP68

- **Model Number**
  - Rated operating distance: 10 mm
  - Installation: flush
  - Type of voltage: DC
  - Operating voltage: 10 ... 30 V DC
  - Switching state indication: LED, yellow
  - Connection type: 1-meter cable, PVC heavy jacket, 5-conductor, #18 AWG

- **Dimensions**
  - Length L [mm]: 60
  - Diameter D [mm]: M30 x 1.5
  - Thread length l₁ [mm]: 60
  - Cap length l₂ [mm]: 0
  - Connector length l₃ [mm]: 0
  - LED position: Pos. C

- **Accessories**
  - BF 30-F: Mounting bracket with stop, 30 mm
  - BF 30: Mounting bracket, 30 mm
  - BF 5-30: Universal mounting bracket for cylindrical sensors with a diameter of 5 ... 30 mm
  - AB-30: Right angled mounting bracket

Refer to General Notes Relating to Product Information

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www.pepperl-fuchs.com

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Technical Data

General Data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
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<tbody>
<tr>
<td>Output type</td>
<td>Analog current output</td>
</tr>
<tr>
<td>Type of voltage</td>
<td>DC</td>
</tr>
<tr>
<td>Operating voltage</td>
<td>15 ... 30 V</td>
</tr>
<tr>
<td>No-load supply current</td>
<td>≤ 10 mA</td>
</tr>
<tr>
<td>Output type</td>
<td>0 ... 20 mA</td>
</tr>
<tr>
<td>Linearity error</td>
<td>≤ ±10 % of full-scale value</td>
</tr>
<tr>
<td>Load resistor</td>
<td>≤ 500 Ω</td>
</tr>
<tr>
<td>Adjustment tolerance zero point</td>
<td>≤ ±10 % of full-scale value</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-10 ... 70 °C (14 ... 158 °F)</td>
</tr>
<tr>
<td>Housing material</td>
<td>brass, nickel-plated</td>
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<tr>
<td>Protection degree</td>
<td>IP67</td>
</tr>
<tr>
<td>Connection type</td>
<td>cable PVC, 2 m</td>
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</table>

Model Number

<table>
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<th>IA8-30GM-I3</th>
<th>IA15-30GM-I3</th>
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<tr>
<td>Measurement range</td>
<td>3 ... 8 mm</td>
<td>5 ... 15 mm</td>
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<tr>
<td>Installation</td>
<td>Rush</td>
<td>non-flush</td>
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Approvals and Certificates

<table>
<thead>
<tr>
<th>Approval</th>
<th>Description</th>
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<tbody>
<tr>
<td>UL approval</td>
<td>cULus Listed, General Purpose</td>
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<tr>
<td>CSA approval</td>
<td>cCSAus Listed, General Purpose</td>
</tr>
<tr>
<td>CCC approval</td>
<td>CCC approval / marking not required for sensors rated ≤36 V</td>
</tr>
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</table>

Dimensions

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length L [mm]</td>
<td>60</td>
</tr>
<tr>
<td>Diameter D [mm]</td>
<td>M30 x 1.5</td>
</tr>
<tr>
<td>Thread length l1 [mm]</td>
<td>60</td>
</tr>
<tr>
<td>Cap length l2 [mm]</td>
<td>0</td>
</tr>
<tr>
<td>Connector length l3 [mm]</td>
<td>42</td>
</tr>
<tr>
<td>LED position</td>
<td>0</td>
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</tbody>
</table>

Accessories

These and more accessories can be found in chapter 10
See pages from 970 ... for cordsets
See pages 1066 ... for mounting accessories

<table>
<thead>
<tr>
<th>Accessory</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BF 30</td>
<td>Mounting bracket, 30 mm</td>
</tr>
<tr>
<td>AB-30</td>
<td>Right angled mounting bracket</td>
</tr>
<tr>
<td>DAS-IU-C</td>
<td>Digital display unit</td>
</tr>
</tbody>
</table>

Electrical Connection

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us
## Technical Data

For detailed data and product description refer to the data sheets at [www.pepperl-fuchs.us](http://www.pepperl-fuchs.us).

### General Data
- **Output type**: PNP NO
- **Type of voltage**: DC
- **Operating voltage**: 10 ... 30 V
- **No-load supply current**: ≤ 15 mA
- **Reverse polarity protection**: ✔
- **Load current**: 0 ... 100 mA
- **Short-circuit protection**: ✔
- **Switching state indication**: Multihole-LED, yellow
- **Ambient temperature**: -25 ... 70 °C (-13 ... 158 °F)
- **Housing material**: Stainless steel 1.4305 / AISI 303
- **Protection degree**: IP67
- **Connection type**: Connector M8 x 1, 3-pin

### Model Number

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Rated operating distance</th>
<th>Installation</th>
<th>Switching frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>NRB2-6.5S50-E2-V3</td>
<td>2 mm</td>
<td>flush</td>
<td>0 ... 1000 Hz</td>
</tr>
<tr>
<td>NRN6-6.5S50-E2-V3</td>
<td>6 mm</td>
<td>flush</td>
<td>0 ... 400 Hz</td>
</tr>
</tbody>
</table>

### Dimensions

- **Length L [mm]**: 59
- **Diameter D [mm]**: 6.5 / 8
- **Cap length l1 [mm]**: 0 / 5
- **Connector length lc [mm]**: 6
- **LED position**: Pos. C

**Note**: 6.5 / 8 indicated: barrel diameter / connector end diameter (mm)

### Properties

- Ø6.5 mm smooth barrel
- 2 mm and 6 mm sensing ranges
- DC, 3-wire switching output
- Connector version

### Benefits

- Same sensing range for all metals

### Approvals and Certificates

- **UL approval**: cULus Listed, General Purpose
- **CSA approval**: cCSAus Listed, General Purpose
- **CCC approval**: CCC approval / marking not required for sensors rated ≤36 V

### Accessories

These and more accessories can be found in chapter 10. See pages from 970 ... for cordsets. See pages 1066 ... for mounting accessories.

- **BF 6.5**: Mounting bracket, 6.5 mm
- **V3-WM**: Female connector, M8, 3-pin, field attachable, angled
- **V3-GM**: Female connector, M8, 3-pin, field attachable, straight
- **V3-WM-BK2M-PUR-U**: Female cordset, M8, 3-pin, PUR cable, angled
- **V3-GM-BK2M-PUR-U**: Female cordset, M8, 3-pin, PUR cable, straight

### Electrical Connection

[Diagram of electrical connection]

Wire colors in accordance with EN 60947-5-2

<table>
<thead>
<tr>
<th>Pos.</th>
<th>Wire Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>BN (brown)</td>
</tr>
<tr>
<td>3</td>
<td>BU (blue)</td>
</tr>
<tr>
<td>4</td>
<td>BK (black)</td>
</tr>
</tbody>
</table>
Inductive sensor cylindrical, Ø 8 mm with reduction factor 1

Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data

<table>
<thead>
<tr>
<th>Output type</th>
<th>PNP</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of voltage</td>
<td>DC</td>
<td></td>
</tr>
<tr>
<td>Operating voltage</td>
<td>10 ... 30 V</td>
<td></td>
</tr>
<tr>
<td>No-load supply current</td>
<td>≤ 15 mA</td>
<td></td>
</tr>
<tr>
<td>Reverse polarity protection</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Load current</td>
<td>0 ... 100 mA</td>
<td></td>
</tr>
<tr>
<td>Short-circuit protection</td>
<td>v‘, self checking</td>
<td></td>
</tr>
<tr>
<td>Switching state indication</td>
<td>Multihole-LED, yellow</td>
<td></td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-25 ... 70 °C (-13 ... 158 °F)</td>
<td></td>
</tr>
<tr>
<td>Housing material</td>
<td>Stainless steel 1.4305 / AISI 303</td>
<td></td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP67</td>
<td></td>
</tr>
</tbody>
</table>

Model Number

<table>
<thead>
<tr>
<th>NRB2-8GS40-E2-V1</th>
<th>NRB2-8GS50-E2-V3</th>
<th>NRB3-8GS4AE2-V1</th>
<th>NRB3-8GS5AE2-V3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated operating distance (mm)</td>
<td>2</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Installation</td>
<td>flush</td>
<td>non-flush</td>
<td></td>
</tr>
<tr>
<td>Switching frequency</td>
<td>0 ... 1000 Hz</td>
<td>0 ... 400 Hz</td>
<td></td>
</tr>
<tr>
<td>Connection type</td>
<td>Connector M12 x 1 , 4-pin</td>
<td>Connector M8 x 1 , 3-pin</td>
<td></td>
</tr>
</tbody>
</table>

Approvals and Certificates

<table>
<thead>
<tr>
<th>UL approval</th>
<th>cULus Listed, General Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSA approval</td>
<td>cCSAus Listed, General Purpose</td>
</tr>
<tr>
<td>CCC approval</td>
<td>CCC approval / marking not required for sensors rated ≤ 36 V</td>
</tr>
</tbody>
</table>

Dimensions

| Length L [mm] | 59 | 65 |
| Diameter D [mm] | M8 x 1 | M8 x 1 / 12 |
| Thread length l1 [mm] | 50 | 45 | 40 | 35 |
| Cap length l2 [mm] | 0 | 5 | 0 | 5 |
| Connector length lc [mm] | 6 |

Note: M8 x 1 / 12 indicated: barrel thread / connector end diameter (mm)

Accessories

These and more accessories can be found in chapter 10
See pages from 970 ... for cordsets
See pages 1066 ... for mounting accessories

BF 8 Mounting bracket, 8 mm
V1-G 4-pin, M12 female field-attachable connector, straight
V1-W 4-pin, M12 female field-attachable connector, angled
V3-GM Female connector, M8, 3-pin, field attachable, straight
V3-WM-BK2M-PUR-U Female cordset, M8, 3-pin, PUR cable, angled
V3-WM-BK2M-PUR-BK2M-PUR-U Female cordset, M8, 3-pin, PUR cable, straight

Electrical Connection

Wire colors in accordance with EN 60947-5-2

Wire colors in accordance with EN 60947-5-2

1  BN (brown)
3  BU (blue)
4  BK (black)
Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data

<table>
<thead>
<tr>
<th>Type of voltage</th>
<th>DC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating voltage</td>
<td>10 ... 30 V</td>
</tr>
<tr>
<td>Load current</td>
<td>0 ... 200 mA</td>
</tr>
<tr>
<td>Reverse polarity protection</td>
<td>✔</td>
</tr>
<tr>
<td>Short-circuit protection</td>
<td>✔, self checking</td>
</tr>
<tr>
<td>Switching state indication</td>
<td>Multihole-LED, yellow</td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP67</td>
</tr>
<tr>
<td>Connection type</td>
<td>Connector M12 x 1, 4-pin</td>
</tr>
</tbody>
</table>

Model Number

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>NRB4-12GM40-E2-V1</td>
<td></td>
</tr>
<tr>
<td>NRB4-12GS40-E2-V1</td>
<td></td>
</tr>
<tr>
<td>NRB4-12GS40-A2-V1</td>
<td></td>
</tr>
<tr>
<td>NRB10-12GM40-E2-V1</td>
<td></td>
</tr>
<tr>
<td>NRB10-12GS40-E2-V1</td>
<td></td>
</tr>
<tr>
<td>NRB10-12GS40-A2-V1</td>
<td></td>
</tr>
<tr>
<td>NRB4-12GS40-A2-V1</td>
<td></td>
</tr>
<tr>
<td>NRB10-12GS40-A2-V1</td>
<td></td>
</tr>
</tbody>
</table>

Rated operating distance

<table>
<thead>
<tr>
<th>Distance</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 mm</td>
<td></td>
</tr>
<tr>
<td>10 mm</td>
<td></td>
</tr>
</tbody>
</table>

Installation

<table>
<thead>
<tr>
<th>Type</th>
<th>Flush</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installation type</td>
<td>flush</td>
</tr>
</tbody>
</table>

Output type

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PNP</td>
<td>NO/NC</td>
</tr>
<tr>
<td>PNP</td>
<td>NO</td>
</tr>
</tbody>
</table>

No-load supply current

<table>
<thead>
<tr>
<th>Current</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 13 mA</td>
<td></td>
</tr>
<tr>
<td>≤ 15 mA</td>
<td></td>
</tr>
</tbody>
</table>

Switching frequency

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 ... 1000 Hz</td>
<td></td>
</tr>
<tr>
<td>0 ... 2000 Hz</td>
<td></td>
</tr>
</tbody>
</table>

Ambient temperature

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>-25 ... 70 °C</td>
<td>(-13 ... 158 °F)</td>
</tr>
<tr>
<td>-25 ... 85 °C</td>
<td>(-13 ... 185 °F)</td>
</tr>
</tbody>
</table>

Housing material

<table>
<thead>
<tr>
<th>Material</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stainless steel 1.4305 / AISI 303</td>
<td>brass, nickel-plated</td>
</tr>
</tbody>
</table>

Approvals and Certificates

<table>
<thead>
<tr>
<th>Approval</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>UL approval</td>
<td>cULus Listed, General Purpose</td>
</tr>
<tr>
<td>CSA approval</td>
<td>cCSAus Listed, General Purpose</td>
</tr>
<tr>
<td>CCC approval</td>
<td>CCC approval / marking not required for sensors rated ≤ 36 V</td>
</tr>
</tbody>
</table>

Dimensions

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length L [mm]</td>
<td>55</td>
</tr>
<tr>
<td>Diameter D [mm]</td>
<td>M12 x 1</td>
</tr>
<tr>
<td>Thread length lt [mm]</td>
<td>39</td>
</tr>
<tr>
<td>Cap length l1 [mm]</td>
<td>0</td>
</tr>
<tr>
<td>Connector length lc [mm]</td>
<td>15</td>
</tr>
<tr>
<td>LED position</td>
<td>Pos. C</td>
</tr>
</tbody>
</table>

Accessories

<table>
<thead>
<tr>
<th>Accessory</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BF 12</td>
<td>Mounting bracket, 12 mm</td>
</tr>
<tr>
<td>AB-12</td>
<td>Right angled mounting bracket</td>
</tr>
<tr>
<td>MH01-M12</td>
<td>Mounting aid for M12 threaded sensors</td>
</tr>
<tr>
<td>V1-G</td>
<td>4-pin, M12 female field-attachable connector, straight</td>
</tr>
<tr>
<td>V1-W</td>
<td>4-pin, M12 female field-attachable connector, angled</td>
</tr>
<tr>
<td>V1-G-BK2M-PUR-U</td>
<td>Female cordset, M12, 4-pin, PUR cable, straight</td>
</tr>
<tr>
<td>V1-W-BK2M-PUR-U</td>
<td>Female cordset, M12, 4-pin, PUR cable, angled</td>
</tr>
</tbody>
</table>

Electrical Connection

<table>
<thead>
<tr>
<th>Wire</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>L+</td>
<td>BN (brown)</td>
</tr>
<tr>
<td>L-</td>
<td>WH (white)</td>
</tr>
<tr>
<td>4</td>
<td>BU (blue)</td>
</tr>
<tr>
<td>3</td>
<td>BK (black)</td>
</tr>
</tbody>
</table>

NOTE: Wire colors in accordance with EN 60947-5-2.
Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data
- Type of voltage: DC
- Operating voltage: 10 ... 30 V
- Reverse polarity protection: ✔
- Short-circuit protection: ✔, self checking
- Switching state indication: Multihole-LED, yellow
- Ambient temperature: -25 ... 70 °C (-13 ... 158 °F)
- Housing material: Stainless steel 1.4305 / AISI 303
- Protection degree: IP67
- Connection type: Connector M12 x 1, 4-pin

Model Number

<table>
<thead>
<tr>
<th>NRB8-18GS40-E2-V1</th>
<th>NRB8-18GS50-E2-V1</th>
<th>NRB12-18GS40-E2-V1</th>
<th>NRB15-18GS40-E2-V1</th>
<th>NRB15-18GS50-E2-V1</th>
<th>NRB8-18GS50-E2-V1</th>
<th>NRB8-18GM50-E2-V1</th>
<th>NRB12-18GS40-E3-V1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated operating distance</td>
<td>8 mm</td>
<td>12 mm</td>
<td>15 mm</td>
<td>12 mm</td>
<td>15 mm</td>
<td>12 mm</td>
<td>15 mm</td>
</tr>
<tr>
<td>Installation</td>
<td>Flush</td>
<td>non-flush</td>
<td>quasi-flush</td>
<td>Flush</td>
<td>non-flush</td>
<td>quasi-flush</td>
<td>Flush</td>
</tr>
<tr>
<td>Output type</td>
<td>PNP</td>
<td>NO</td>
<td>PNP</td>
<td>NO</td>
<td>PNP</td>
<td>NO</td>
<td>PNP</td>
</tr>
<tr>
<td>No-load supply current</td>
<td>≤ 15 mA</td>
<td>≤ 28 mA</td>
<td>≤ 15 mA</td>
<td>≤ 28 mA</td>
<td>≤ 15 mA</td>
<td>≤ 28 mA</td>
<td>≤ 15 mA</td>
</tr>
<tr>
<td>Switching frequency</td>
<td>0 ... 500 Hz</td>
<td>0 ... 600 Hz</td>
<td>0 ... 500 Hz</td>
<td>0 ... 600 Hz</td>
<td>0 ... 500 Hz</td>
<td>0 ... 600 Hz</td>
<td>0 ... 500 Hz</td>
</tr>
<tr>
<td>Load current</td>
<td>0 ... 100 mA</td>
<td>0 ... 200 mA</td>
<td>0 ... 100 mA</td>
<td>0 ... 200 mA</td>
<td>0 ... 100 mA</td>
<td>0 ... 200 mA</td>
<td>0 ... 100 mA</td>
</tr>
</tbody>
</table>

Approvals and Certificates
- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤36 V

Dimensions
- Length L [mm]: 55, 65, 55, 65, 65
- Diameter D [mm]: M18 x 1
- Thread length l1 [mm]: 40, 50, 40, 30, 40, 40
- Cap length l2 [mm]: 0, 10
- Connector length lc [mm]: 15
- LED position: Pos. C

Accessories
These and more accessories can be found in chapter 10 See pages from 970 ... for cordsets See pages 1066 ... for mounting accessories
- BF 18: Mounting bracket, 18 mm
- AB-18: Right angled mounting bracket
- MH01-M18: Mounting aid for M18 threaded sensors
- V1-G: 4-pin, M12 female field-attachable connector, straight
- V1-W: 4-pin, M12 female field-attachable connector, angled
- V1-G-BK2M-PUR-U: Female cordset, M12, 4-pin, PUR cable, straight
- V1-W-BK2M-PUR-U: Female cordset, M12, 4-pin, PUR cable, angled

Electrical Connection

Wire colors in accordance with EN 60947-5-2
1. BN (brown)
2. WH (white)
3. BU (blue)
4. BK (black)
## Inductive sensor

### cylindrical, Ø 30 mm with reduction factor 1

### Technical Data

<table>
<thead>
<tr>
<th>General Data</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of voltage</td>
<td>DC</td>
</tr>
<tr>
<td>Operating voltage</td>
<td>10 ... 30 V</td>
</tr>
<tr>
<td>No-load supply current</td>
<td>≤ 15 mA</td>
</tr>
<tr>
<td>Reverse polarity protection</td>
<td>✔ self checking</td>
</tr>
<tr>
<td>Load current</td>
<td>0 ... 200 mA</td>
</tr>
<tr>
<td>Short-circuit protection</td>
<td>✔</td>
</tr>
<tr>
<td>Switching state indication</td>
<td>Multihole-LED, yellow</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-25 ... 70 °C (-13 ... 158 °F)</td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP67</td>
</tr>
<tr>
<td>Connection type</td>
<td>Connector M12 x 1, 4-pin</td>
</tr>
</tbody>
</table>

### Model Number

- **NRB15-30GM50-E2-V1**
- **NRB15-30GS50-E2-V1**
- **NRN30-30GM50-E2-V1**
- **NRN30-30GS50-E2-V1**
- **NRB15-30GS50-E3-V1**
- **NRN30-30GS50-E3-V1**

### Rated operating distance

- **15 mm**
- **30 mm**

### Installation

- **flush**
- **non-flush**

### Output type

- **PNP NO**
- **PNP NC**

### Switching frequency

- **0 ... 300 Hz**
- **0 ... 750 Hz**

### Housing material

- **stainless steel 1.4301**
- **Stainless steel 1.4305 / AISI 303**
- **brass, nickel-plated**

### Approvals and Certificates

- **UL approval**
- **CSA approval**
- **CCC approval** / marking not required for sensors rated ≤36 V

### Dimensions

- **Length L [mm]**: 65
- **Diameter D [mm]**: M30 x 1.5
- **Thread length l1 [mm]**: 50
- **Cap length l2 [mm]**: 18
- **Connector length lc [mm]**: 15
- **LED position**: Pos. C

### Accessories

- **BF 30**: Mounting bracket, 30 mm
- **AB-30**: Right angled mounting bracket
- **MH01-M30**: Mounting aid for M30 threaded sensors
- **V1-G**: 4-pin, M12 female field-attachable connector, straight
- **V1-W**: 4-pin, M12 female field-attachable connector, angled
- **V1-W-BK2M-PUR-U**: Female cordset, M12, 4-pin, PUR cable, angled
- **V1-G-BK2M-PUR-U**: Female cordset, M12, 4-pin, PUR cable, straight

### Electrical Connection

![Electrical Connection Diagram](image)

Wire colors in accordance with EN 60947-5-2

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

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data
- Rated operating distance: 3 mm
- Installation: flush
- Operating voltage: 10 ... 30 V DC
- No-load supply current: ≤ 10 mA
- Reverse polarity protection: ✔
- Switching frequency: 0 ... 360 Hz
- Load current: ≤ 100 mA
- Short-circuit protection: ✔, self checking
- Sensing face: Stainless steel 1.4305 / AISI 303
- Protection degree: IP67

Properties
- Ø8 mm housing with stainless steel barrel and sensing face
- 3 mm extended sensing range
- DC, 3-wire switching output
- Cable, LED pigtailed connector and integral connector versions
- Wear-proof housing outlasts plastic-face sensors by 20X
- Extended sensing range means fewer sensor/target impacts
- Reduced maintenance and troubleshooting increases machine uptime
- Pigtails feature integral power and output LEDs

Benefits
- General Data
  - Rated operating distance: 3 mm
  - Installation: flush
  - Operating voltage: 10 ... 30 V DC
  - No-load supply current: ≤ 10 mA
  - Reverse polarity protection: ✔
  - Switching frequency: 0 ... 360 Hz
  - Load current: ≤ 100 mA
  - Short-circuit protection: ✔, self checking
  - Sensing face: Stainless steel 1.4305 / AISI 303
  - Protection degree: IP67

Model Number
- Output type
  - NPN NO
  - PNP NO
- Switching state indication
  - LED, red
  - Dual LED, yellow (switching state) green (power)
- Ambient temperature
  - -25 ... 75 °C (-13 ... 167 °F)
  - 0 ... 75 °C (32 ... 167 °F)
- Connection type
  - Connector M12 x 1 , 4-pin
  - Connector M8 x 1 , 3-pin
  - Cable PUR , 2 m
  - Cable connector M12 x 1 , PUR 150 mm
  - Cable connector M8 x 1 , PUR 150 mm

Approvals and Certificates
- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤36 V

Dimensions
- Length L [mm]: 35, 50
- Diameter D [mm]: M8 x 1
- Thread length l1 [mm]: 25
- l2 [mm]: 0
- Connector length lc [mm]: 0
- LED position
  - Pos.: CA

Accessories
- These and more accessories can be found in chapter 10
- See pages from 970 ... for cordsets
- See pages 1066 ... for mounting accessories
- Wire colors in accordance with EN 60947-5-2

Electrical Connection
Inductive sensor

**Technical Data**

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

### General Data
- **Rated operating distance**: 1.5 mm
- **Installation**: flush
- **Target**: ferrous
- **Operating voltage**: 10 ... 30 V DC
- **Reverse polarity protection**: ✔
- **Switching state indication**: LED, red
- **Switching frequency**: 80 Hz
- **Load current**: ≤ 100 mA
- **Short-circuit protection**: ✔
- **Housing material**: Stainless steel 1.4305 / AISI 303
- **Sensing face**: Stainless steel 1.4305 / AISI 303
- **Protection degree**: IP67

### Model Number

<table>
<thead>
<tr>
<th></th>
<th>NMB1-1.5-8GM35-E0-FE</th>
<th>NMB1-1.5-8GM35-E2-FE</th>
<th>NMB1-1.5-8GM50-E0-FE</th>
<th>NMB1-1.5-8GM50-E2-FE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Rated voltage</strong></td>
<td>10 ... 30 V DC</td>
<td>10 ... 30 V DC</td>
<td>10 ... 30 V DC</td>
<td>10 ... 30 V DC</td>
</tr>
<tr>
<td><strong>Output type</strong></td>
<td>NPN NO</td>
<td>NPN NO</td>
<td>NPN NO</td>
<td>NPN NO</td>
</tr>
<tr>
<td><strong>Ambient temperature</strong></td>
<td>-25 ... 70 °C (-13 ... 158 °F)</td>
<td>-25 ... 70 °C (-13 ... 158 °F)</td>
<td>-25 ... 70 °C (-13 ... 158 °F)</td>
<td>-25 ... 70 °C (-13 ... 158 °F)</td>
</tr>
<tr>
<td><strong>Connection type</strong></td>
<td>cable PUR, 2 m</td>
<td>cable PUR, 2 m</td>
<td>Cable connector M12 x 1, 3-pin with PUR cable 150 mm</td>
<td>Cable connector M12 x 1, 3-pin with PUR cable 150 mm</td>
</tr>
<tr>
<td><strong>Dimensions</strong></td>
<td>Length L [mm]</td>
<td>35</td>
<td>52</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td>Diameter D [mm]</td>
<td>M8 x 1</td>
<td>25</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>Thread length l1 [mm]</td>
<td>12</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Connector length l2 [mm]</td>
<td>0</td>
<td>12</td>
<td>10</td>
</tr>
</tbody>
</table>

### Outputs

- NPN NO
- PNP NO

### Accessories

These and more accessories can be found in chapter 10

**V1-G-BKM-PUR-U**
- Female cordset, M12, 4-pin, PUR cable, straight

**V3-GM-BKM-PUR-U**
- Female cordset, M12, 4-pin, PUR cable, angled

**V1-W-BKM-PUR-U**
- Female cordset, M12, 4-pin, PUR cable, straight

**V3-WM-BKM-PUR-U**
- Female cordset, M12, 4-pin, PUR cable, angled

### Electrical Connection

- Wire colors in accordance with EN 60947-5-2

- 1 L+
- 3 L-

- 1 BN
- 3 BU
- 4 BK
1.1 Technical Data

General Data
- Rated operating distance: 1.5 mm
- Installation: flush
- Target: ferrous
- Operating voltage: 10 ... 30 V DC
- Reverse polarity protection: ✔
- Switching state indication: LED, red
- Switching frequency: 80 Hz
- Load current: ≤ 100 mA
- Short-circuit protection: ✔
- Ambient temperature: -25 ... 70 °C (-13 ... 158 °F)
- Sensing face: Stainless steel 1.4305 / AISI 303
- Protection degree: IP67

Model Number

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Output type</th>
<th>Connection type</th>
</tr>
</thead>
<tbody>
<tr>
<td>NMB1.5-5GM50-E2-FE-V3</td>
<td>NPN NO</td>
<td>Connector M12 x 1, 4-pin</td>
</tr>
<tr>
<td>NMB1.5-5GM50-E2-FE-V1</td>
<td>PNP NO</td>
<td>Connector M8 x 1, 3-pin</td>
</tr>
</tbody>
</table>

Properties
- Ø8 mm housing with stainless steel barrel and sensing face
- 1.5 mm sensing range
- DC, 3-wire switching output
- Connector version

Benefits
- Wear-proof housing outlasts plastic-face sensors by 20X
- Reduced maintenance and troubleshooting increases machine uptime
- 100% embeddable in steel

Model Number

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Output type</th>
<th>Connection type</th>
</tr>
</thead>
<tbody>
<tr>
<td>NMB1.5-5GM50-E2-FE-V3</td>
<td>NPN NO</td>
<td>Connector M12 x 1, 4-pin</td>
</tr>
<tr>
<td>NMB1.5-5GM50-E2-FE-V1</td>
<td>PNP NO</td>
<td>Connector M8 x 1, 3-pin</td>
</tr>
</tbody>
</table>

Approvals and Certificates
- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤36 V

Dimensions

<table>
<thead>
<tr>
<th>Length L [mm]</th>
<th>Diameter D [mm]</th>
<th>Thread length l1 [mm]</th>
<th>Connector length l2 [mm]</th>
<th>LED position</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>M8 x 1</td>
<td>25</td>
<td>25</td>
<td>Pos. B</td>
</tr>
<tr>
<td>65</td>
<td></td>
<td>40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>50</td>
<td></td>
<td>25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>65</td>
<td></td>
<td>40</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Accessories

- These and more accessories can be found in chapter 10
- See pages from 970 ... for cordsets
- See pages 1066 ... for mounting accessories

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>V1-G-BK2M-PUR-U</td>
<td>Female cordset, M12, 4-pin, PUR cable, straight</td>
</tr>
<tr>
<td>V2-GM-BK2M-PUR-U</td>
<td>Female cordset, M8, 3-pin, PUR cable, straight</td>
</tr>
<tr>
<td>V1-W-BK2M-PUR-U</td>
<td>Female cordset, M12, 4-pin, PUR cable, angled</td>
</tr>
<tr>
<td>V2-WM-BK2M-PUR-U</td>
<td>Female cordset, M8, 3-pin, PUR cable, angled</td>
</tr>
</tbody>
</table>

Electrical Connection

Wire colors in accordance with EN 60947-5-2

1. BN (brown)
2. WH (white)
3. BU (blue)
4. BK (black)
**Inductive sensor**

**Technical Data**

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

### General Data

<table>
<thead>
<tr>
<th>Specification</th>
<th>NMB2-12GM75-Z3-FE-V1</th>
<th>NMB2-12GM75-Z0-FE-V1</th>
<th>NMB5-12GM65-Z9-V1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating voltage</td>
<td>6 ... 30 V DC</td>
<td>6 ... 30 V DC</td>
<td>6 ... 30 V DC</td>
</tr>
<tr>
<td>Reverse polarity protection</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Switching state indication</td>
<td>LED, yellow</td>
<td>LED, yellow</td>
<td>LED, yellow</td>
</tr>
<tr>
<td>Housing material</td>
<td>Stainless steel 1.4305 / AISI 303</td>
<td>Stainless steel 1.4305 / AISI 303</td>
<td>Stainless steel 1.4305 / AISI 303</td>
</tr>
<tr>
<td>Sensing face</td>
<td>Stainless steel 1.4305 / AISI 303</td>
<td>Stainless steel 1.4305 / AISI 303</td>
<td>Stainless steel 1.4305 / AISI 303</td>
</tr>
<tr>
<td>Connection type</td>
<td>Connector M12 x 1 , 4-pin</td>
<td>Connector M12 x 1 , 4-pin</td>
<td>Connector M12 x 1 , 4-pin</td>
</tr>
</tbody>
</table>

### Model Number

<table>
<thead>
<tr>
<th>Model Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>NMB2-12GM75-Z0-FE-V1</td>
</tr>
<tr>
<td>NMB2-12GM75-Z3-FE-V1</td>
</tr>
<tr>
<td>NMB5-12GM65-Z9-V1</td>
</tr>
</tbody>
</table>

### Rated operating distance

<table>
<thead>
<tr>
<th>Distance</th>
<th>NMB2-12GM75-Z3-FE-V1</th>
<th>NMB2-12GM75-Z0-FE-V1</th>
<th>NMB5-12GM65-Z9-V1</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 mm</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>5 mm</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

### Installation

<table>
<thead>
<tr>
<th>Type</th>
<th>NMB2-12GM75-Z3-FE-V1</th>
<th>NMB2-12GM75-Z0-FE-V1</th>
<th>NMB5-12GM65-Z9-V1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flush</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

### Target

<table>
<thead>
<tr>
<th>Material</th>
<th>NMB2-12GM75-Z3-FE-V1</th>
<th>NMB2-12GM75-Z0-FE-V1</th>
<th>NMB5-12GM65-Z9-V1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ferrous</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Ferrous and non-ferrous</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

### Output type

<table>
<thead>
<tr>
<th>Type</th>
<th>NMB2-12GM75-Z3-FE-V1</th>
<th>NMB2-12GM75-Z0-FE-V1</th>
<th>NMB5-12GM65-Z9-V1</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC NO</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>PNP NO</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

### Output current

<table>
<thead>
<tr>
<th>Current</th>
<th>NMB2-12GM75-Z3-FE-V1</th>
<th>NMB2-12GM75-Z0-FE-V1</th>
<th>NMB5-12GM65-Z9-V1</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 ... 100 mA</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>2 ... 200 mA</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

### Short-circuit protection

<table>
<thead>
<tr>
<th>Protection</th>
<th>NMB2-12GM75-Z3-FE-V1</th>
<th>NMB2-12GM75-Z0-FE-V1</th>
<th>NMB5-12GM65-Z9-V1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self checking</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

### Ambient temperature

<table>
<thead>
<tr>
<th>Temperature</th>
<th>NMB2-12GM75-Z3-FE-V1</th>
<th>NMB2-12GM75-Z0-FE-V1</th>
<th>NMB5-12GM65-Z9-V1</th>
</tr>
</thead>
<tbody>
<tr>
<td>-25 °C</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>-25 ... 70 °C</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>-40 °C</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>-40 ... 70 °C</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

### Approvals and Certificates

<table>
<thead>
<tr>
<th>Approval</th>
<th>NMB2-12GM75-Z3-FE-V1</th>
<th>NMB2-12GM75-Z0-FE-V1</th>
<th>NMB5-12GM65-Z9-V1</th>
</tr>
</thead>
<tbody>
<tr>
<td>UL approval</td>
<td>cULus Listed, General Purpose</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>CSA approval</td>
<td>cCSAus Listed, General Purpose</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

### Dimensions

<table>
<thead>
<tr>
<th>Specification</th>
<th>NMB2-12GM75-Z3-FE-V1</th>
<th>NMB2-12GM75-Z0-FE-V1</th>
<th>NMB5-12GM65-Z9-V1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length L [mm]</td>
<td>75</td>
<td>65</td>
<td></td>
</tr>
<tr>
<td>Diameter D [mm]</td>
<td>M12 x 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thread length l₁ [mm]</td>
<td>52</td>
<td>42</td>
<td></td>
</tr>
<tr>
<td>l₂ [mm]</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connector length l₃ [mm]</td>
<td>21</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>LED position</td>
<td>Pos. B</td>
<td>Pos. C</td>
<td></td>
</tr>
</tbody>
</table>

### Accessories

These and more accessories can be found in chapter 10

- **AB-12**
  - Right angled mounting bracket
- **V1-G-BK2M-PUR-U**
  - Female cordset, M12, 4-pin, PUR cable, straight
- **V1-W-BK2M-PUR-U**
  - Female cordset, M12, 4-pin, PUR cable, angled

**Electrical Connection**

- **NMB2-12GM75-Z0-FE-V1**
- **NMB2-12GM75-Z3-FE-V1**
- **NMB5-12GM65-Z9-V1**

Wire colors in accordance with EN 60947-5-2

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

Refer to General Notes Relating to Product Information

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www.pepperl-fuchs.com fa-info@us.pepperl-fuchs.com fa-info@de.pepperl-fuchs.com fa-info@sg.pepperl-fuchs.com

Courtesy of Steven Engineering, Inc. - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com
Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data
Rated operating distance 5 mm
Installation flush
Target ferrous and non-ferrous
Operating voltage 10 ... 30 V DC
No-load supply current ≤ 10 mA
Reverse polarity protection ✔
Switching frequency 0 ... 360 Hz
Load current ≤ 200 mA
Short-circuit protection ✔, self checking
Operating voltage display LED, green
Switching state indication LED, yellow
Ambient temperature -25 ... 70 °C (-13 ... 158 °F)
Housing material Stainless steel 1.4305 / AISI 303
Sensing face Stainless steel 1.4305 / AISI 303

Model Number

<table>
<thead>
<tr>
<th>Output type</th>
<th>NPN NO</th>
<th>NPN NC</th>
<th>PNP NO</th>
<th>PNP NC</th>
</tr>
</thead>
<tbody>
<tr>
<td>NMB5-12GM55-E0</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>NMB5-12GM55-E2</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>NMB5-12GM65-E0-V1</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>NMB5-12GM65-E2-V1</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>NMB5-12GM65-E3-V1</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>

Dimensions
Length L [mm] 55 65
Diameter D [mm] M12 x 1
Thread length l, [mm] 45 42
l1 [mm] 2
Connector length l, [mm] 0 15
LED position Pos. C

Accessories
These and more accessories can be found in chapter 10
See pages from 970 ... for cordsets
See pages 1066 ... for mounting accessories

AB-12 Right angled mounting bracket
V1-G-BK2M-PUR-U Female cordset, M12, 4-pin, PUR cable, straight
V1-W-BK2M-PUR-U Female cordset, M12, 4-pin, PUR cable, angled

Electrical Connection

Wire colors in accordance with EN 60947-5-2
1 BN (brown)
2 WH (white)
3 BU (blue)
4 BK (black)
## Technical Data

For detailed data and product description refer to the data sheets at [www.pepperl-fuchs.us](http://www.pepperl-fuchs.us).

### General Data
- **Rated operating distance**: 2 mm
- **Installation**: flush
- **Operating voltage**: 10 ... 30 V DC
- **Reverse polarity protection**: ✔
- **Load current**: ≤ 200 mA
- **Short-circuit protection**: ✔, self checking
- **Operating voltage display**: LED, green
- **Switching state indication LED**: LED, yellow
- **Ambient temperature**: -40 ... 70 °C (-40 ... 158 °F)
- **Housing material**: Stainless steel 1.4305 / AISI 303
- **Sensing face**: Stainless steel 1.4305 / AISI 303

### Model Number

<table>
<thead>
<tr>
<th>Target</th>
<th>Output type</th>
<th>Switching frequency</th>
<th>Protection degree</th>
<th>Connection type</th>
</tr>
</thead>
<tbody>
<tr>
<td>ferrous</td>
<td>NPN NO</td>
<td>0 ... 100 Hz</td>
<td>IP67 / IP68 / IP69K - cordset dependent according to cable Standard</td>
<td>2 m PUR cable</td>
</tr>
<tr>
<td>non-ferrous</td>
<td>PNP NO</td>
<td>0 ... 15 Hz</td>
<td>IP69K</td>
<td>Connector M12 x 1, 4-pin</td>
</tr>
</tbody>
</table>

### Dimensions

<table>
<thead>
<tr>
<th>Length L [mm]</th>
<th>Diameter D [mm]</th>
<th>Thread length l1 [mm]</th>
<th>Connector length l2 [mm]</th>
<th>LED position</th>
</tr>
</thead>
<tbody>
<tr>
<td>55</td>
<td>M12 x 1</td>
<td>45</td>
<td>8</td>
<td>Pos. B</td>
</tr>
<tr>
<td>65</td>
<td></td>
<td>44</td>
<td>20</td>
<td>Pos. C</td>
</tr>
</tbody>
</table>

### Accessories

These and more accessories can be found in chapter 10. See pages from 570 ... for cordsets. See pages 1066 ... for mounting accessories.

- **AB-12**: Right angled mounting bracket
- **V1-G-BK2M-PUR-U**: Female cordset, M12, 4-pin, PUR cable, straight
- **V1-W-BK2M-PUR-U**: Female cordset, M12, 4-pin, PUR cable, angled

### Electrical Connection

Wire colors in accordance with EN 60947-5-2:

- **BN** (brown)
- **WH** (white)
- **BU** (blue)
- **BK** (black)

Refer to General Notes Relating to Product Information.

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Proximity Sensors, Inductive Sensors, cylindrical

---

**Properties**

- Ø12 mm housing
- 2 mm sensing range
- DC, 3-wire switching output
- Cable and connector versions

**Benefits**

- Wear-proof housing outlasts plastic-face sensors by 20X
- Reduced maintenance and troubleshooting increases machine uptime
- NFE series for full-range detection of non-ferrous metals

---

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### Technical Data

<table>
<thead>
<tr>
<th>General Data</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated operating distance</td>
<td>2 mm</td>
<td></td>
</tr>
<tr>
<td>Installation</td>
<td>flush</td>
<td></td>
</tr>
<tr>
<td>Target</td>
<td>ferrous</td>
<td></td>
</tr>
<tr>
<td>Operating voltage</td>
<td>20 ... 300 V DC</td>
<td>20 ... 250 V AC</td>
</tr>
<tr>
<td>Output type</td>
<td>AC/DC NO</td>
<td></td>
</tr>
<tr>
<td>Reverse polarity protection</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Switching frequency</td>
<td>30 Hz</td>
<td></td>
</tr>
<tr>
<td>Load current</td>
<td>8 ... 200 mA</td>
<td></td>
</tr>
<tr>
<td>Short-circuit protection</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Power indication</td>
<td>LED, green</td>
<td></td>
</tr>
<tr>
<td>Switching state indication</td>
<td>LED, yellow</td>
<td></td>
</tr>
<tr>
<td>short circuit / overload indication</td>
<td>LED green / yellow alternating</td>
<td></td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-25 ... 70 °C (-13 ... 158 °F)</td>
<td></td>
</tr>
<tr>
<td>Housing material</td>
<td>Stainless steel 1.4305 / AISI 303</td>
<td></td>
</tr>
<tr>
<td>Sensing face</td>
<td>Stainless steel 1.4305 / AISI 303</td>
<td></td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP67</td>
<td></td>
</tr>
</tbody>
</table>

### Properties

- Ø12 mm housing with stainless steel barrel and sensing face
- 2 mm sensing range
- AC/DC, 2-wire switching output
- Cable and connector versions

### Benefits

- Compatible with 120 and 220 VAC supplies
- Wear-proof housing outlasts plastic-face sensors by 20X
- *Reduced maintenance and troubleshooting increases machine uptime

### Model Number

- NMB2-12GM80-US-FE
- NMB2-12GM85-US-FE-V12

### Connection type

- Connector 1/2"-20 UN , 3-pin
- Cable PUR , 2 m

### Approvals and Certificates

- UL approval cULus Listed, General Purpose
- CSA approval cCSAus Listed, General Purpose
- CCC approval Certified by China Compulsory Certification (CCC)

### Dimensions

| Length L [mm] | 80 | 85 |
| Diameter D [mm] | M12 x 1 |
| Thread length l1 [mm] | 70 | 67 |
| Connector length l2 [mm] | 2 |
| LED position | Pos. A |

### Accessories

- These and more accessories can be found in chapter 10
- See pages from 970 ... for cordsets
- See pages 1066 ... for mounting accessories

#### AB-12
- Female cordset, 1/2" - 20 UNF, 3-pin, PVC cable, straight

#### V12G-YE2M-PVC
- Right angled mounting bracket

#### V12G-YE5M-PVC
- Female cordset, 1/2" - 20 UNF, 3-pin, PVC cable, angled

### Wire colors

- 1: GN (green)
- 2: RD/BK (red/black)
- 3: RD/WH (red/white)
Proximity Sensors, Inductive Sensors, cylindrical

Ø 18 mm, Pile Driver series

Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data

Rated operating distance 5 mm
Installation flush
Output type DC, 2-wire switching output
Operating voltage 6 ... 30 V DC
Reverse polarity protection ✔
Load current 2 ... 100 mA
Switching state indication LED, yellow
Ambient temperature -40 ... 70 °C (-40 ... 158 °F)
Housing material Stainless steel 1.4305 / AISI 303
Sensing face Stainless steel 1.4305 / AISI 303
Protection degree IP67 / IP69K - cordset dependent according to cable Standard
Connection type Connector M12 x 1, 4-pin

Model Number

<table>
<thead>
<tr>
<th>Model Number</th>
<th>NMB5-18GM65-Z0-NFE-V1</th>
<th>NMB5-18GM65-Z0-20-FE-V1</th>
<th>NMB5-18GM65-Z3-FE-V1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target</td>
<td>ferrous</td>
<td>non-ferrous</td>
<td>non-ferrous</td>
</tr>
<tr>
<td>Switching frequency</td>
<td>15 Hz</td>
<td></td>
<td>30 Hz</td>
</tr>
</tbody>
</table>

Approvals and Certificates

UL approval cULus Listed, General Purpose
CSA approval cCSAus Listed, General Purpose
CCC approval CCC approval / marking not required for sensors rated ≤36 V

Dimensions

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>NMB5-18GM65-Z0-NFE-V1</th>
<th>NMB5-18GM65-Z0-20-FE-V1</th>
<th>NMB5-18GM65-Z3-FE-V1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length L [mm]</td>
<td>65</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diameter D [mm]</td>
<td>M18 x 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thread length l1 [mm]</td>
<td>40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>l1 [mm]</td>
<td>2.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connector length lC [mm]</td>
<td>15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LED position</td>
<td>Pos. C</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Accessories

These and more accessories can be found in chapter 10 See pages from 970 ... for cordsets See pages 1066 ... for mounting accessories

AB-18 Right angled mounting bracket
V1-W-BK2M-PUR-U Female cordset, M12, 4-pin, PUR cable, angled
V1-G-BK2M-PUR-U Female cordset, M12, 4-pin, PUR cable, straight

Electrical Connection

Wire colors in accordance with EN 60947-5-2

1  BN (brown)
2  WH (white)
3  BU (blue)
4  BK (black)
**Inductive Sensors, cylindrical**

**Technical Data**

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

<table>
<thead>
<tr>
<th>Model Number</th>
<th>NMB10-18GM65-Z4-V1</th>
<th>NMB10-18GM65-Z9-V1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated operating distance</td>
<td>10 mm</td>
<td></td>
</tr>
<tr>
<td>Installation</td>
<td>Flush</td>
<td></td>
</tr>
<tr>
<td>Target</td>
<td>Ferrous and non-ferrous</td>
<td></td>
</tr>
<tr>
<td>Output type</td>
<td>DC NO</td>
<td></td>
</tr>
<tr>
<td>Operating voltage</td>
<td>6 ... 30 V DC</td>
<td></td>
</tr>
<tr>
<td>Reverse polarity protection</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Switching frequency</td>
<td>200 Hz</td>
<td></td>
</tr>
<tr>
<td>Load current</td>
<td>2 ... 200 mA</td>
<td></td>
</tr>
<tr>
<td>Short-circuit protection</td>
<td>✓, self checking</td>
<td></td>
</tr>
<tr>
<td>Switching state indication</td>
<td>LED, yellow</td>
<td></td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-25 ... 70 °C (-13 ... 158 °F)</td>
<td></td>
</tr>
<tr>
<td>Housing material</td>
<td>Stainless steel 1.4305 / AISI 303</td>
<td></td>
</tr>
<tr>
<td>Sensing face</td>
<td>Stainless steel 1.4305 / AISI 303</td>
<td></td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP67 / IP68 / IP69k - cordset dependent according to cable Standard</td>
<td></td>
</tr>
<tr>
<td>Connection type</td>
<td>Connector M12 x 1 , 4-pin</td>
<td></td>
</tr>
</tbody>
</table>

**Properties**

- Ø18 mm housing with stainless steel barrel and sensing face
- 10 mm extended sensing range
- DC, 2-wire switching output
- Connector version

**Benefits**

- Wear-proof housing outlasts plastic-face sensors by 20X
- Extended sensing range means fewer sensor/target impacts
- Reduced maintenance and troubleshooting increases machine uptime

**Electrical Connection**

- Wire colors in accordance with EN 60947-5-2
  - 1: BN (brown)
  - 2: WH (white)
  - 3: BU (blue)
  - 4: BK (black)

**NMB10-18GM65-Z4-V1**

**NMB10-18GM65-Z9-V1**

**Accessories**

These and more accessories can be found in chapter 10

See pages from 970 ... for cordsets
See pages 1066 ... for mounting accessories

- AB-18
- V1-G-BK2M-PUR-U
- V1-W-BK2M-PUR-U

Female cordset, M12, 4-pin, PUR cable, straight
Female cordset, M12, 4-pin, PUR cable, angled
**Technical Data**

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

### General Data
- Rated operating distance: 10 mm
- Installation: flush
- Target: ferrous and non-ferrous
- Operating voltage: 10 – 30 V DC
- No-load supply current: ≤ 10 mA
- Reverse polarity protection: ✔
- Switching frequency: 0 – 240 Hz
- Load current: ≤ 200 mA
- Short-circuit protection: ✔, self checking
- Ambient temperature: -25 ... 70 °C (-13 ... 158 °F)
- Housing material: Stainless steel 1.4305 / AISI 303
- Sensing face: Stainless steel 1.4305 / AISI 303

### Model Number

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Output type</th>
<th>Operating voltage display</th>
<th>Switching state indication</th>
<th>Protection degree</th>
<th>Connection type</th>
</tr>
</thead>
<tbody>
<tr>
<td>NMB10-18GM55-E0</td>
<td>NPN NO</td>
<td>LED, green</td>
<td>LED, yellow</td>
<td>IP67 / IP68 / IP69K - cordset dependent according to cable Standard</td>
<td>Connector 7/8&quot;-16 UN , 4-pin</td>
</tr>
<tr>
<td>NMB10-18GM55-E2</td>
<td>PNP NO</td>
<td>PNP NC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NMB10-18GM65-E0-V1</td>
<td>PNP NC</td>
<td>PNP NC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NMB10-18GM65-E2-V1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NMB10-18GM65-E3-V1</td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>NMB10-18GM70-E2-V94</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Dimensions
- Length L [mm]: 55, 65, 70
- Diameter D [mm]: M18 x 1
- Thread length l1 [mm]: 44, 40, 38.5
- Connector length lt [mm]: 2.5
- Connector length l1 [mm]: 0, 15, 21
- LED position: Pos.: C, A

### Approvals and Certificates
- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤ 36 V

### Electrical Connection

Wire colors in accordance with EN 60947-5-2

<table>
<thead>
<tr>
<th>Wire Colors</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>BN (brown)</td>
<td>1</td>
<td>WH (white)</td>
<td>BU (blue)</td>
<td>BK (black)</td>
</tr>
<tr>
<td>BK (black)</td>
<td>2</td>
<td>WH (white)</td>
<td>RD (red)</td>
<td>GR (green)</td>
</tr>
<tr>
<td>WH (white)</td>
<td>3</td>
<td>RD (red)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BU (blue)</td>
<td>4</td>
<td>GR (green)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Accessories

These and more accessories can be found in chapter 10 See pages from 570 ... for cordsets See pages 1066 ... for mounting accessories

- AB-18 Right angled mounting bracket
- V1-G-BK2M-PUR-U Female cordset, M12, 4-pin, PUR cable, straight
- V1-W-BK2M-PUR-U Female cordset, M12, 4-pin, PUR cable, angled
- V94-W-YE2M-ST00W Female cordset, 7/8" - 16 UNF, 4-pin, PVC cable, angled
Inductive Sensor Ø18 mm, Pile Driver series

Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data
- Rated operating distance: 5 mm
- Installation: flush
- Operating voltage: 10 ... 30 V DC
- Reverse polarity protection: ✔
- Short-circuit protection: ✔
- Power indication LED, green
- Switching state indication LED, yellow
- Ambient temperature: -40 ... 70 °C (-40 ... 158 °F)
- Housing material: Stainless steel 1.4305 / AISI 303
- Sensing face: Stainless steel 1.4305 / AISI 303

Model Number

<table>
<thead>
<tr>
<th>Target</th>
<th>Non-Ferrous</th>
<th>Ferrous</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output type</td>
<td>NPN NO</td>
<td>PNP NO</td>
</tr>
<tr>
<td></td>
<td>PNP NC</td>
<td></td>
</tr>
<tr>
<td>Switching frequency</td>
<td>0 ... 15 Hz</td>
<td>0 ... 30 Hz</td>
</tr>
<tr>
<td>Load current</td>
<td>≤ 100 mA</td>
<td>≤ 200 mA</td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP67 / IP68 / IP69K - cordset dependent according to cable Standard</td>
<td></td>
</tr>
<tr>
<td>Connection type</td>
<td>2 m PUR cable</td>
<td>7/8&quot;-16 UN, 4-pin</td>
</tr>
<tr>
<td></td>
<td>Connector M12 x 1, 4-pin</td>
<td></td>
</tr>
</tbody>
</table>

Dimensions

| Length L [mm] | 55 | 65 | 70 |
| Diameter D [mm] | M18 x 1 |
| Thread length \( l_t \) [mm] | 44 | 40 | 38.5 |
| Connector length \( l_c \) [mm] | 2.5 |
| LED position | Pos.: |

Accessories

These and more accessories can be found in chapter 10 See pages from 970 ... for cordsets See pages 1066 ... for mounting accessories

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>AB-18</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V1-G-BK2M-PUR-U</td>
<td>Female cordset, M12, 4-pin, PUR cable, straight</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V1-W-BK2M-PUR-U</td>
<td>Female cordset, M12, 4-pin, PUR cable, angled</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V94-G-YE2M-STOO</td>
<td>Female cordset, 7/8&quot; - 16 UNF, 4-pin, PVC cable, straight</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V94-W-YE2M-STOO</td>
<td>Female cordset, 7/8&quot; - 16 UNF, 4-pin, PVC cable, angled</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Electrical Connection

Refer to General Notes Relating to Product Information

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**Technical Data**

For detailed data and product description refer to the data sheets at [www.pepperl-fuchs.us](http://www.pepperl-fuchs.us)

**General Data**
- Rated operating distance: 5 mm
- Installation: flush
- Target: ferrous
- Operating voltage: 
  - DC: 20 ... 300 V
  - AC: 20 ... 250 V
- Output type: AC/DC
- Reverse polarity protection: ✔
- Switching frequency: 15 Hz
- Load current: 8 ... 200 mA
- Short-circuit protection: ✔
- Power indication LED, green
- Switching state indication LED, yellow
- Short circuit / overload indication LED green / yellow alternating
- Ambient temperature: -25 ... 70 °C (-13 ... 158 °F)
- Housing material: Stainless steel 1.4305 / AISI 303
- Sensing face: Stainless steel 1.4305 / AISI 303
- Protection degree: IP67

**Model Number**

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Connection type</th>
</tr>
</thead>
<tbody>
<tr>
<td>NMB5-18GM80-US-FE</td>
<td>Connector 1/2&quot;-20 UN , 3-pin</td>
</tr>
<tr>
<td>NMB5-18GM85-US-FE-V12</td>
<td>Connector 7/8&quot;-16 UN , 3-pin</td>
</tr>
<tr>
<td>NMB5-18GM85-US-FE-V93</td>
<td>cable PUR , 2 m</td>
</tr>
</tbody>
</table>

**Approvals and Certificates**
- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: Certified by China Compulsory Certification (CCC)

**Dimensions**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length L [mm]</td>
<td>80</td>
</tr>
<tr>
<td>Diameter D [mm]</td>
<td>M18 x 1</td>
</tr>
<tr>
<td>Thread length l₁ [mm]</td>
<td>72.5</td>
</tr>
<tr>
<td>Connector length l₂ [mm]</td>
<td>5</td>
</tr>
<tr>
<td>LED position</td>
<td>Pos. C</td>
</tr>
</tbody>
</table>

**Accessories**

These and more accessories can be found in chapter 10

<table>
<thead>
<tr>
<th>Accessory</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AB-18</td>
<td>Right angled mounting bracket</td>
</tr>
<tr>
<td>V12-G-YE2M-PUR-H/S</td>
<td>Female cordset, 1/2&quot; - 20 UNF, 3-pin, irradiated PUR cable, straight</td>
</tr>
<tr>
<td>V93-G-YE2M-STOW</td>
<td>Female cordset, 7/8&quot; - 16 UNF, 3-pin, PUR cable, straight</td>
</tr>
</tbody>
</table>

**Electrical Connection**

![Diagram of electrical connection](image)

**Wire colors**

- **V12**
  - 1: GN (green)
  - 2: RD/WH (red/white)
  - 3: RK/BK (red/black)

- **V93**
  - 1: GN (green)
  - 2: BK (black)
  - 3: WH (white)
Inductive sensor Ø 30 mm, Pile Driver series

Technical Data
For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data
Installation flush
Output type DC NO
Operating voltage 6 ... 30 V DC
Reverse polarity protection ✔
Load current 2 ... 100 mA
Switching state indication LED, yellow
Housing material Stainless steel 1.4305 / AISI 303
Sensing face Stainless steel 1.4305 / AISI 303
Protection degree IP67 / IP68 / IP69K - cordset dependent according to cable Standard
Connection type Connector M12 x 1, 4-pin

Model Number
<table>
<thead>
<tr>
<th>Model Number</th>
<th>NMB8-30GM65-Z0-FE-V1</th>
<th>NMB15-30GM65-Z4-V1</th>
<th>NMB15-30GM65-Z9-V1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Properties
- Ø30 mm housing with stainless steel barrel and sensing face
- 8 mm and 15 mm extended sensing ranges
- DC, 2-wire switching output
- Connector version

Benefits
- Wear-proof housing outlasts plastic-face sensors by 20X
- Extended sensing range means fewer sensor/target impacts
- Reduced maintenance and troubleshooting increases machine uptime

Electrical Connection

Accessories
These and more accessories can be found in chapter 10
See pages from 970 ... for cordsets See pages 1066 ... for mounting accessories

AB-30
Right angled mounting bracket
AB-30-L3M-C
Right angle mounting bracket for "Cube" (L2M) housing retrofits
V1-W-BK2M-PUR-U
Female cordset, M12, 4-pin, PUR cable, angled
V1-G-BK2M-PUR-U
Female cordset, M12, 4-pin, PUR cable, straight

Wire colors in accordance with EN 60947-5-2
1) BN (brown)
2) WH (white)
3) BU (blue)
4) BK (black)
# Technical Data

## General Data
- **Rated operating distance**: 15 mm
- **Installation**: flush
- **Target**: ferrous and non-ferrous
- **Operating voltage**: 10 ... 30 V DC
- **No-load supply current**: ≤ 10 mA
- **Reverse polarity protection**: ✔
- **Switching frequency**: 0 ... 150 Hz
- **Load current**: ≤ 200 mA
- **Short-circuit protection**: ✔, self checking
- **Operating voltage display LED**: green
- **Switching state indication LED**: yellow
- **Ambient temperature**: -25 ... 70 °C (-13 ... 158 °F)
- **Housing material**: Stainless steel 1.4305 / AISI 303
- **Sensing face**: Stainless steel 1.4305 / AISI 303

## Properties
- Ø30 mm housing with stainless steel barrel and sensing face
- 15 mm extended sensing range
- DC, 3-wire switching output
- Cable and connector versions

## Benefits
- Wear-proof housing outlasts plastic-face sensors by 20X
- Extended sensing range means fewer sensor/target impacts
- Reduced maintenance and troubleshooting increases machine uptime

## Model Number
- **Output type**: NPN, NO
- **Protection degree**: IP67 / IP68 / IP69K - cordset dependent according to cable Standard
- **Connection type**: Connector M12 x 1, 4-pin, cable PUR, 2 m

## Approvals and Certificates
- **UL approval**: cULus Listed, General Purpose
- **CSA approval**: cCSAus Listed, General Purpose
- **CCC approval**: CCC approval / marking not required for sensors rated ≤ 36 V

## Dimensions
| Length L [mm] | 55 | 65 |
| Thread length l1 [mm] | 42 | 37 |
| Connector length l2 [mm] | 0 | 15 |
| LED position | Pos. C |

## Accessories
- **These and more accessories can be found in chapter 10**
- **See pages from 970 ... for cordsets**
- **See pages 1066 ... for mounting accessories**

### Electrical Connection
- NMB15-30GM55-ED
- NMB15-30GM55-E0
- NMB15-30GM55-E2
- Wire colors in accordance with EN 60947-5-2

### Model Numbers
- NMB15-30GM55-E0
- NMB15-30GM55-E2
- NMB15-30GM65-E0-V1
- NMB15-30GM65-E2-V1

### Output Types
- NPN NO
- PNP NO

### Connection Types
- Connector M12 x 1, 4-pin, cable PUR, 2 m

### Protection Degrees
- IP67 / IP68 / IP69K - cordset dependent according to cable Standard

### Approvals and Certificates
- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤ 36 V

### Dimensions
- Length L [mm]: 55, 65
- Thread length l1 [mm]: 42, 37
- Connector length l2 [mm]: 0, 15
- LED position: Pos. C

### Accessories
- **These and more accessories can be found in chapter 10**
- **See pages from 970 ... for cordsets**
- **See pages 1066 ... for mounting accessories**
**PROXIMITY SENSORS, INDUCTIVE SENSORS, CYLINDRICAL**

1.1

**Technical Data**

For detailed data and product description refer to the data sheets at [www.pepperl-fuchs.us](http://www.pepperl-fuchs.us).

**General Data**
- Rated operating distance: 8 mm
- Installation: flush
- Operating voltage: 10 … 30 V DC
- Reverse polarity protection: ✔
- Switching frequency: 0 … 10 Hz
- Load current: ≤ 200 mA
- Short-circuit protection: ✔
- Power indication: LED green
- Switching state indication: LED yellow
- Ambient temperature: -40 … 70 °C (-40 … 158 °F)
- Housing material: Stainless steel 1.4305 / AISI 303
- Sensing face: Stainless steel 1.4305 / AISI 303

**Model Number**

<table>
<thead>
<tr>
<th>NMB8-30GM55-E0-FE</th>
<th>NMB8-30GM55-E2-FE</th>
</tr>
</thead>
<tbody>
<tr>
<td>NMB8-30GM65-E0-FE</td>
<td>NMB8-30GM65-E2-FE</td>
</tr>
<tr>
<td>NMB8-30GM65-E2-NFE-V1</td>
<td></td>
</tr>
</tbody>
</table>

**Properties**

- Ø30 mm housing with stainless steel barrel and sensing face
- 8 mm sensing range
- DC, 3-wire switching output
- Cable and connector versions

**Benefits**

- Wear-proof housing outlasts plastic-face sensors by 20X
- Reduced maintenance and troubleshooting increases machine uptime
- NFE series for full-range detection of non-ferrous metals

**Electrical Connection**

Wire colors in accordance with EN 60947-5-2

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

**Dimensions**

| Length L [mm] | 55 | 65 |
| Diameter D [mm] | M30 x 1.5 |
| Thread length l1 [mm] | 42 | 37 |
| Connector length l2 [mm] | 0 | 15 |

**Accessories**

These and more accessories can be found in chapter 10 See pages from 970 … for cordsets. See pages 1066 … for mounting accessories.

- AB-30: Right angled mounting bracket
- AB-30-L3M-C: Right angle mounting bracket for "Cube" (L2M) housing retrofits
- V1-W-BK2M-PUR-U: Female cordset, M12, 4-pin, PUR cable, angled
- V1-G-BK2M-PUR-U: Female cordset, M12, 4-pin, PUR cable, straight

**Approvals and Certificates**

- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤36 V

**Targets**

- Ferrous
- Non-ferrous

**Output Type**

- NPN NO
- PNP NO
- IP67 / IP68 / IP69K - cordset dependent according to cable standard
- Connector M12 x 1, 4-pin, cable PUR, 2 m

**Connection Type**

- Connector M12 x 1, 4-pin, cable PUR, 2 m

**Protection Degree**

- IP69K

**Accessories**

These and more accessories can be found in chapter 10

- See pages from 970 … for cordsets
- See pages 1066 … for mounting accessories
**Technical Data**

**General Data**
- Rated operating distance: 8 mm
- Installation: flush
- Target: ferrous
- Operating voltage: 20 ... 300 V DC
  20 ... 250 V AC
- Output type: AC/DC, NO
- Reverse polarity protection: polarity independent
- Switching frequency: 10 Hz
- Load current: 8 ... 200 mA
- Short-circuit protection: LED, green
- Power indication: LED, green
- Switching state indication: LED, yellow
- Short circuit / overload indication: LED green / yellow alternating
- Ambient temperature: -25 ... 70 °C (-13 ... 158 °F)
- Housing material: Stainless steel 1.4305 / AISI 303
- Sensing face: Stainless steel 1.4305 / AISI 303
- Protection degree: IP67

**Model Number**
- NMB8-30GMB8-US-FE
- NMB8-30GMB8-US-FE-V12
- NMB8-30GMB8-US-FE-V93

**Connection type**
- Connector 1/2"-20 UN , 3-pin
- Connector 7/8"-16 UN , 3-pin
- Cable PVC , 2 m

**Approvals and Certificates**
- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: Certified by China Compulsory Certification (CCC)

**Dimensions**
- Length L [mm]: 80, 90
- Diameter D [mm]: M30 x 1.5
- Thread length l₁ [mm]: 67.5, 63.5
- Connector length l₂ [mm]: 2.5
- LED position: Pos. C, Pos. A

**Accessories**
- These and more accessories can be found in chapter 10
- See pages from 570 ... for cordsets
- See pages 1066 ... for mounting accessories

**Electrical Connection**

**References**
- Refer to General Notes Relating to Product Information
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**Properties**
- Ø30 mm housing with stainless steel barrel and sensing face
- 8 mm sensing range
- AC/DC, 2-wire switching output
- Cable and connector versions

**Benefits**
- Compatible with 120 and 220 VAC supplies
- Wear-proof housing outlasts plastic-face sensors by 20X
- Reduced maintenance and troubleshooting increases machine uptime

---

**Inductive sensor Ø 30 mm, Pile Driver series**
## Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

<table>
<thead>
<tr>
<th>Property</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model Number</td>
<td>NMB1,5-8GM23-Z0-C-FE-850MM-V1</td>
</tr>
<tr>
<td></td>
<td>NMB1,5-8GM23-Z3-C-FE-850MM-V1</td>
</tr>
<tr>
<td>Rated operating distance</td>
<td>1.5 mm</td>
</tr>
<tr>
<td>Installation</td>
<td>flush</td>
</tr>
<tr>
<td>Switching element function</td>
<td>DC</td>
</tr>
<tr>
<td>Operating voltage</td>
<td>6 ... 30 V DC</td>
</tr>
<tr>
<td>Reverse polarity protection</td>
<td>✔</td>
</tr>
<tr>
<td>Switching frequency</td>
<td>0 ... 5 Hz</td>
</tr>
<tr>
<td>Load current</td>
<td>2 ... 100 mA</td>
</tr>
<tr>
<td>Short-circuit protection</td>
<td>✔</td>
</tr>
<tr>
<td>Mag. Field strength, AC fields</td>
<td>250 mT</td>
</tr>
<tr>
<td>Mag. Field strength, DC fields</td>
<td>250 mT</td>
</tr>
<tr>
<td>Indication of the switching state</td>
<td>LED, red</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-25 ... 70 °C (-13 ... 158 °F)</td>
</tr>
<tr>
<td>Housing material</td>
<td>PTFE coated - Stainless steel 1.4305 / AISI 303</td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP67</td>
</tr>
<tr>
<td>Connection type</td>
<td>Cable connector M12 x 1 , 4-pin with TPE Cable, 850 mm</td>
</tr>
</tbody>
</table>

### Properties

- Miniature 08 mm x 23 mm head
- 1.5 mm sensing range
- DC, 2-wire switching output
- Stainless steel barrel and sensing face with spatter immune coating
- Pigtailed connector version

### Benefits

- Miniature design excellent for small parts welding
- Wear-proof housing outlasts plastic-face sensors by 20X
- Immune to electromagnetic weld fields
- Reduced maintenance and troubleshooting increases machine uptime

### Approvals and Certificates

- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤36 V

### Dimensions

- Amplifier length L [mm]: 40
- Amplifier diameter D [mm]: 12
- Amplifier thread length l1 [mm]: 28
- Head length L2 [mm]: 23
- Head diameter D1 [mm]: M8 x 1
- Head thread length l2 [mm]: 15
- Connector area l3 [mm]: 0
- LED position: Pos. C

### Accessories

These and more accessories can be found in chapter 10

- V1-G-OR2M-POC

#### Note:

Devices with an …-FE in the model number are suitable only in combination with ferrous targets.

### Electrical Connection

<table>
<thead>
<tr>
<th>Wire Color</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>BN (brown)</td>
<td>1</td>
</tr>
<tr>
<td>WH (white)</td>
<td>2</td>
</tr>
<tr>
<td>BU (blue)</td>
<td>3</td>
</tr>
<tr>
<td>BK (black)</td>
<td>4</td>
</tr>
</tbody>
</table>

Wire colors in accordance with EN 60947-5-2

---

**Inductive sensor Ø 8 mm, weld immune Pile Driver**

Refer to General Notes Relating to Product Information

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Inductive sensor

Ø 8 mm, weld immune Pile Driver

Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
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<tbody>
<tr>
<td>Metal face</td>
<td>✔</td>
</tr>
<tr>
<td>Rated operating distance</td>
<td>1.5 mm</td>
</tr>
<tr>
<td>Installation</td>
<td>Flush</td>
</tr>
<tr>
<td>Operating voltage</td>
<td>10 ... 30 V DC</td>
</tr>
<tr>
<td>Reverse polarity protection</td>
<td>✔</td>
</tr>
<tr>
<td>Load current</td>
<td>≤ 100 mA</td>
</tr>
<tr>
<td>Switching frequency</td>
<td>0 ... 5 Hz</td>
</tr>
<tr>
<td>Short-circuit protection</td>
<td>✔</td>
</tr>
<tr>
<td>Mag. Field strength, AC fields</td>
<td>250 mT</td>
</tr>
<tr>
<td>Mag. Field strength, DC fields</td>
<td>250 mT</td>
</tr>
<tr>
<td>Switching state indication</td>
<td>LED, red</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-25 ... 75 °C</td>
</tr>
<tr>
<td>Housing material</td>
<td>Stainless steel 1.4305 / AISI 303, black PTFE coated</td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP67</td>
</tr>
</tbody>
</table>

Model Number

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>NMB1.5-8GM35-E2-C-FE-V1</td>
<td>N8 GM35 E2 C FE V1</td>
</tr>
<tr>
<td>NMB1.5-8GM50-E2-C-FE-V1</td>
<td>N8 GM50 E2 C FE V1</td>
</tr>
<tr>
<td>NMB1.5-8GM35-E2-C-150M-V3</td>
<td>N8 GM35 E2 C 150M V3</td>
</tr>
<tr>
<td>NMB1.5-8GM50-E0-C-FE-V1</td>
<td>N8 GM50 E0 C FE V1</td>
</tr>
<tr>
<td>NMB1.5-8GM50-E2-C-FE-V1</td>
<td>N8 GM50 E2 C FE V1</td>
</tr>
</tbody>
</table>

Output type

- NPN NO
- PNP NO

Connection type

- Connector M12 x 1, 4-pin
- Cable connector M12 x 1, 3-pin with PVC
  - Cable, 150 mm
- Cable connector M8 x 1, 3-pin with PVC
  - Cable, 150 mm

Approvals and Certificates

- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤ 36 V

Dimensions

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length L [mm]</td>
<td>35</td>
</tr>
<tr>
<td>Diameter D [mm]</td>
<td>M8 x 1</td>
</tr>
<tr>
<td>Thread length l1 [mm]</td>
<td>25</td>
</tr>
<tr>
<td>Cap length l2 [mm]</td>
<td>0</td>
</tr>
<tr>
<td>Connector length l3 [mm]</td>
<td>6</td>
</tr>
<tr>
<td>LED position</td>
<td>Pos. C</td>
</tr>
</tbody>
</table>

Properties

- Ø8 mm housing
- 1.5 mm sensing range
- DC, 3-wire switching output
- Stainless steel barrel and sensing face with spatter immune coating
- Connector and pigtailed connector versions

Benefits

- Miniature design excellent for small parts welding
- Wear-proof housing outlasts plastic-face sensors by 20X
- Immune to electromagnetic weld fields
- Reduced maintenance and troubleshooting increases machine uptime

Electrical Connection

Wire colors in accordance with EN 60947-5-2

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

See pages from 970 ... for cordsets
See pages 1066 ... for mounting accessories

Accessories

These and more accessories can be found in chapter 10

V3-GM-ORSM-POC
- Female cordset, M8, 3-pin, TPE cable, welding-bead resistant, straight
V1-G-OR2M-POC
- Female cordset, M12, 4-pin, TPE cable, welding-bead resistant, straight
V3-WM-ORSM-POC
- Female cordset, M8, 3-pin, TPE cable, welding-bead resistant, angled
Technical Data
For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data
- Metal face ✔
- Rated operating distance 3 mm
- Installation Flush
- Output type PNP NO contact
- Operating voltage 10 ... 30 V DC
- Reverse polarity protection ✔
- Switching frequency 0 ... 5 Hz
- Load current 0 ... 100 mA
- Short-circuit protection ✔, self checking
- Mag. Field strength, AC fields 250 mT
- Mag. Field strength, DC fields 250 mT
- Switching state indication LED, red
- Ambient temperature -25 ... 75 °C (-13 ... 167 °F)
- Housing material PTFE coated - Stainless steel 1.4305 / AISI 303
- Protection degree IP67

Model Number
- NMB3-8GM35-E2-C-V1
- NMB3-8GM50-E2-C-V1

Connection type
- Connector M12 x 1, 4-pin
- Cable connector M12 x 1, PVC cable jacket: 150 mm
- Cable connector M8 x 1, PVC cable jacket: 150 mm

Approvals and Certificates
- UL approval cULus Listed, General Purpose
- CSA approval cCSAus Listed, General Purpose
- CCC approval CCC approval / marking not required for sensors rated ≤36 V

Dimensions
- Length L [mm] 35 50
- Diameter D [mm] M8 x 1 M8 x 1 / 12
- Thread length l1 [mm] 25
- Cap length l2 [mm] 0
- Connector length l3 [mm] 6
- LED position Pos. C Pos. B

Accessories
- These and more accessories can be found in chapter 10
- V3-GM-OR5M-POC Female cordset, M8, 3-pin, TPE cable, welding-bead resistant, straight
- V1-G-OR2M-POC Female cordset, M12, 4-pin, TPE cable, welding-bead resistant, straight

Properties
- Ø8 mm housing
- 3 mm extended sensing range
- DC, 3-wire switching output
- Stainless steel barrel and sensing face with spatter immune coating
- Connector and pigtailed connector versions

Benefits
- Miniature design excellent for small parts welding
- Wear-proof housing outlasts plastic-face sensors by 20X
- Immune to electromagnetic weld fields
- Reduced maintenance and troubleshooting increases machine uptime

Electrical Connection

Wire colors in accordance with EN 60947-5-2
1 BN (brown) 2 WH (white) 3 BU (blue) 4 BK (black)
Inductive sensor

Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

<table>
<thead>
<tr>
<th>General Data</th>
<th>NBR1.5-8GM30-2E-C-V1</th>
<th>NBR1.5-8GM40-2E-C-V1</th>
<th>NBR2-8GM40-2E-C-V1</th>
<th>NBN3-8GM30-2E-C-V1</th>
<th>NRN6-8GM40-E2-C-V1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output type</td>
<td>PNP</td>
<td>NO</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type of voltage</td>
<td>DC</td>
<td>DC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating voltage</td>
<td>10 ... 30 V DC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reverse polarity</td>
<td>true</td>
<td>true</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Load current</td>
<td>0 ... 100 mA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Short-circuit</td>
<td>true, self checking</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Housing material</td>
<td>Brass, PTFE coated</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP67</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connection type</td>
<td>Connector M12 x 1, 4-pin</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Properties

- Ø8 mm housing
- Up to 6 mm sensing ranges
- DC, 3-wire switching output
- Connector version

Benefits

- Specially optimized for welding applications
- Weld slag resistance coated housing
- Reduction factor 1 (NRB/NRN type), all metal sensing at same distance

Additional Products

In this series, we offer the following additional products:

- NBB1.5-8GM40-E2-C-V3
- NBN3-8GM30-E2-C-V1
- NRB2-8GM40-E2-C-V1
- NRN6-8GM40-E2-C-V1

These and more accessories can be found in chapter 10. See pages from 1066 ... for mounting accessories.

Accessories

- EXG-08: Quick mounting bracket, 8 mm
- V1-G-OR2M-POC: Female cordset, M12, 4-pin, TPE cable, welding-bead resistant, straight
- V1-W-OR2M-POC: Female cordset, M12, 4-pin, TPE cable, welding-bead resistant, angled

Electrical Connection

- NBB1.5-8GM40-E2-C-V1
- NBB1.5-8GM30-E2-C-V1
- NBB1.5-8GM40-E2-C-V3
- NBN3-8GM30-E2-C-V1
- NRN2-8GM40-E2-C-V1
- NRN6-8GM40-E2-C-V1

Wire colors in accordance with EN 60947-5-2:

1. BN (brown)
2. WH (white)
3. BU (blue)
4. BK (black)
**Technical Data**

**General Data**
- Metal face: ✔
- Rated operating distance: 2 mm
- Installation: Flush
- Output type: DC, NO
- Operating voltage: 6 ... 30 V DC
- Reverse polarity protection: ✔
- Switching frequency: 0 ... 5 Hz
- Load current: 2 ... 100 mA
- Mag. Field strength, AC fields: 250 mT
- Mag. Field strength, DC fields: 250 mT
- Ambient temperature: -25 ... 70 °C (-13 ... 158 °F)

**Model Number**
- NMB2-12GM00-Z0-C-FC-300MM-V1
- NMB2-12GM40-Z0-C-FC-300MM-V1
- NMB2-12GM75-Z0-C-FC-01

**Swing state indication**
- LED, red
- Multihole-LED, yellow

**Connection type**
- 300 mm POC cable with 3-pin, M12 x 1 connector
- Connector M12 x 1, 4-pin

**Approvals and Certificates**
- UL approval: cULus Listed, General Purpose
- CSAapproval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤36 V

**Dimensions**
- Length L [mm]: 40, 75
- Diameter D [mm]: M12 x 1
- Thread length l1 [mm]: 28, 52
- Cap length l2 [mm]: 0, 2
- Connector length l3 [mm]: 0, 15
- LED position: Pos. C

**Accessories**
- These and more accessories can be found in chapter 10
- See pages from 970 ... for cordsets
- See pages 1066 ... for mounting accessories

**Electrical Connection**
- Right angled mounting bracket
- Mounting bracket M12 - 1/2" rod type
- Female cordset, M12, 4-pin, TPE cable, welding-bead resistant, straight

**Properties**
- Ø12 mm housing
- 2 mm sensing range
- Ferrous targets
- DC, 2-wire switching output
- Stainless steel barrel and sensing face w/spatter immune coating
- Connector and pigtailed connector versions

**Benefits**
- Short barrel design excellent for compact welding areas
- Wear-proof housing outlasts plastic-face sensors by 20X
- Immune to electromagnetic weld fields
- Reduced maintenance and troubleshooting increases machine uptime

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Refer to General Notes Relating to Product Information

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Technical Data
For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data
- metal face
- Installation: flush
- Output type: PNP NO
- Operating voltage: 10 ... 30 V DC
- Reverse polarity protection
- Switching frequency: 0 ... 5 Hz
- Load current: 0 ... 200 mA
- Short-circuit protection: self checking
- Mag. Field strength, AC fields: 250 mT
- Mag. Field strength, DC fields: 250 mT
- Operating voltage display: LED, green
- Switching state indication: Multihole-LED, yellow
- Ambient temperature: -25 ... 70 °C (-13 ... 158 °F)
- Housing material: PTFE coated - Stainless steel 1.4305 / AISI 303
- Protection degree: IP67 / IP68 / IP69K - cordset dependent according to cable Standard
- Connection type: Connector M12 x 1, 4-pin

Properties
- Ø12 mm housing
- 2 mm and 5 mm sensing ranges
- DC, 3-wire switching output
- Stainless steel barrel and sensing face w/spatter immune coating
- Connector versions

Benefits
- Extended sensing range means fewer sensor-target impacts
- Wear-proof housing outlasts plastic-face sensors by 20X
- Immune to electromagnetic weld fields
- Reduced maintenance and troubleshooting increases machine uptime

Model Number
- Note: Devices with an ...-FE in the model number are suitable only in combination with ferrous targets.
- Rated operating distance: 2 mm, 5 mm

Approvals and Certificates
- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤ 36 V

Dimensions
- Length L [mm]: 65
- Diameter D [mm]: M12 x 1
- Thread length l1 [mm]: 42
- Cap length l2 [mm]: 2
- Connector length l3 [mm]: 15, 19
- LED position: Pos. C

Accessories
- These and more accessories can be found in chapter 10

Electrical Connection
- Wire colors in accordance with EN 60947-5-2

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

### General Data
- **Output type**: PNP
- **Type of voltage**: DC
- **Operating voltage**: 10 ... 30 V DC
- **Reverse polarity protection**: ✔
- **Load current**: 0 ... 200 mA
- **Short-circuit protection**: ✔, self checking
- **Mag. Field strength, AC fields**: 200 mT
- **Mag. Field strength, DC fields**: 200 mT
- **Switching state indication**: LED, yellow
- **Housing material**: Brass, PTFE coated
- **Protection degree**: IP67
- **Connection type**: Connector M12 x 1, 4-pin

### Model Number

<table>
<thead>
<tr>
<th>Reduction factor 1</th>
<th>10 mm</th>
<th>2 mm</th>
<th>3 mm</th>
<th>4 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated operating distance</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>

### Dimensions

| Length L [mm] | 60 | 65 |
| Thread length I₁ [mm] | 45 | 49 |
| Cap length I₂ [mm] | 0 |
| Connector length l₁ [mm] | 15 |

### Electrical Connection

- NBN4-12GM50-E0-C-V1
- NBB2-12GM50-E0-C-V1

### Properties

- Ø12 mm housing
- Up to 10 mm sensing ranges
- DC, 3-wire switching output
- Connector version

### Benefits

- Specially optimized for welding applications
- Weld slag resistance coated housing
- Reduction factor 1 (NRB/NRN type), all metal sensing at same distance

### Additional Products

In this series, we offer the following additional products:

- NBB2-12GM50-E0-C-V1
- Technical data like NBB2-12GM50-E2-C-V1 but: Output type: NPN, NO

### Model Number

- NRB2-12GM45-E2-C-V1
- NBB2-12GM50-E2-C-V1
- NBB2-12GM50-E2-C3-V1
- NRB3-12GM50-E2-C-V1
- NRB4-12GM40-E2-C-V1
- NRN10-12GM40-E2-C-V1

### Approvals and Certificates

- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval / marking not required for sensors rated ≤ 36 V

### Accessories

These and more accessories can be found in chapter 10

- BF 12
- EXG-12
- AB-12
- MN01-M12
- V1-G-OR2M-POC
- V1-W-OR2M-POC

Wire colors in accordance with EN 60947-5-2

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

Technical Data

NMB2-12GM85-US-C-FE-V12

- **Model Number**: NMB2-12GM85-US-C-FE-V12
- **Metal face**: ✓
- **Rated operating distance**: 2 mm
- **Installation**: Rush
- **Operating voltage**: 20 ... 300 V DC
- **20 ... 250 V AC
- **Output type**: AC/DC, NO
- **Reverse polarity protection**: ✓, polarity independent
- **Switching frequency**: 0 ... 30 Hz
- **Load current**: 8 ... 200 mA
- **Short-circuit protection**: ✓, self checking
- **Mag. Field strength, AC fields**: 250 mT
- **Mag. Field strength, DC fields**: 250 mT
- **Operating voltage display**: LED, green
- **Switching state indication**: LED, yellow
- **Ambient temperature**: -25 ... 70 °C (-13 ... 158 °F)
- **Housing material**: PTFE coated - Stainless steel 1.4305 / AISI 303
- **Protection degree**: IP67 / IP68 / IP69K - cordset dependent according to cable Standard
- **Connection type**: Connector 1/2"-20 UN , 3-pin

**Properties**

- Ø12 mm housing
- 2 mm sensing range
- Ferrous targets
- AC/DC, 2-wire switching output
- Stainless steel barrel and sensing face w/spatter immune coating
- Connector version

**Benefits**

- Wear-proof housing outlasts plastic-face sensors by 20X
- Immune to electromagnetic weld fields
- Reduced maintenance and troubleshooting increases machine uptime

**Electrical Connection**

NMB2-12GM85-US-C-FE-V12

- **Wire colors**:
  - 1: 0N (green)
  - 2: RD/BLK (red/black)
  - 3: RD/WH (red/white)

**Accessories**

These and more accessories can be found in chapter 10

- **AB-12**: Right angled mounting bracket
- **MH01-M12**: Mounting bracket M12 - 1/2" rod type
- **V12-G-YE2M-PVC**: Female cordset, 1/2" - 20 UNF, 3-pin, PVC cable, straight
- **V12-W-YE5M-PVC**: Female cordset, 1/2" - 20 UNF, 3-pin, PVC cable, angled

**Note**: Devices with an -FE in the model number are suitable only in combination with ferrous targets.
Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

Model Number

<table>
<thead>
<tr>
<th>Model Number</th>
<th>NMB5-18GM55-Z0-C-FE-300MM-V1</th>
<th>NMB5-18GM55-Z3-C-FE-300MM-V1</th>
</tr>
</thead>
<tbody>
<tr>
<td>metal face</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Rated operating distance</td>
<td>5 mm</td>
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<tr>
<td>Installation</td>
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</tr>
<tr>
<td>Output type</td>
<td>DC</td>
<td>NO</td>
</tr>
<tr>
<td>Operating voltage</td>
<td>6 ... 30 V DC</td>
<td></td>
</tr>
<tr>
<td>Reverse polarity protection</td>
<td>✓</td>
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</tr>
<tr>
<td>Switching frequency</td>
<td>0 ... 5 Hz</td>
<td></td>
</tr>
<tr>
<td>Load current</td>
<td>2 ... 100 mA</td>
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<td>Mag. Field strength, AC fields</td>
<td>250 mT</td>
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<tr>
<td>Mag. Field strength, DC fields</td>
<td>250 mT</td>
<td></td>
</tr>
<tr>
<td>Switching state indication</td>
<td>LED, red</td>
<td></td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-25 ... 70 °C (-13 ... 158 °F)</td>
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</tr>
<tr>
<td>Housing material</td>
<td>PTFE coated - Stainless steel 1.4305 / AISI 303</td>
<td></td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP67 / IP68 / IP69K - cordset dependent according to cable Standard</td>
<td></td>
</tr>
<tr>
<td>Connection type</td>
<td>300 mm POC cable with 3-pin , M12 x 1 connector</td>
<td></td>
</tr>
</tbody>
</table>

Properties

- Ø18 mm housing
- 5 mm sensing range
- Ferrous targets
- DC, 2-wire switching output
- Stainless steel barrel and sensing face w/spatter immune coating
- Pigtailed connector version with burn-proof POC cable jacket

Benefits

- Pigtailed design excellent for compact welding areas
- Wear-proof housing outlasts plastic-face sensors by 20X
- Immune to electromagnetic weld fields
- Reduced maintenance and troubleshooting increases machine uptime

Electrical Connection

- Wire colors in accordance with EN 60947-5-2
  - 1 BN (brown)
  - 3 BU (blue)
  - 4 BK (black)

Accessories

These and more accessories can be found in chapter 10
See pages from 970 ... for cordsets
See pages 1046 ... for mounting accessories

- AB-18 Right angled mounting bracket
- MH01-M18 Mounting bracket M18 - 1/2" rod type
- V1-G-OR2M-POC Female cordset, M12, 4-pin, TPE cable, welding-bead resistant, straight

Note: Devices with an ...-FE in the model number are suitable only in combination with ferrous targets.
Inductive sensor Ø 18 mm, weld immune Pile Driver

Technical Data

General Data
- Metal face
- Installation: flush
- Output type: PNP NO
- Operating voltage: 10 ... 30 V DC
- Reverse polarity protection
- Switching frequency: 0 ... 5 Hz
- Load current: 0 ... 200 mA
- Short-circuit protection: self checking
- Mag. Field strength, AC fields: 250 mT
- Mag. Field strength, DC fields: 250 mT
- Operating voltage display: LED, green
- Switching state indication: Multi-hole LED, yellow
- Ambient temperature: -25 ... 70 °C (-13 ... 158 °F)
- Housing material: PTFE coated - Stainless steel 1.4305 / AISI 303
- Protection degree: IP67 / IP68 / IP69K - cordset dependent according to cable Standard
- Connector type: Connector M12 x 1, 4-pin

Model Number
- Note: Devices with an ...-FE in the model number are suitable only in combination with ferrous targets.
- Rated operating distance: 10 mm (5 mm)

Approvals and Certificates
- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤36 V

Dimensions
- Length L [mm]: 65
- Diameter D [mm]: M18 x 1
- Thread length l_t [mm]: 39.5
- Cap length l_c [mm]: 2.5
- Connector length l_l [mm]: 15
- LED position: Pos. C

Accessories
- These and more accessories can be found in chapter 10
- See pages from 970 ... for cordsets
- See pages 1066 ... for mounting accessories
- AB-18: Right angled mounting bracket
- MN01-M18: Mounting bracket M18 - 1/2” rod type
- V1-G-OR2M-POC: Female cordset, M12, 4-pin, TPE cable, welding-bead resistant, straight

Electrical Connection

Wire colors in accordance with EN 60947-5-2
1. BN (brown)
2. WH (white)
3. BU (blue)
4. BK (black)

Properties
- Ø18 mm housing
- 5 mm and 10 mm sensing ranges
- DC, 3-wire switching output
- Stainless steel barrel and sensing face w/spatter immune coating
- Connector version

Benefits
- Wear-proof housing outlasts plastic-face sensors by 20X
- Immune to electromagnetic weld fields
- Reduced maintenance and troubleshooting increases machine uptime

Refer to General Notes Relating to Product Information
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Proximity Sensors, Inductive Sensors, Cylindrical
## Technical Data
For detailed data and product description refer to the data sheets at [www.pepperl-fuchs.us](http://www.pepperl-fuchs.us)

### General Data
- **Output type**: PNP NO
- **Type of voltage**: DC
- **Operating voltage**: 10 ... 30 V DC
- **Reverse polarity protection**: ✔
- **Load current**: 0 ... 200 mA
- **Short-circuit protection**: ✔, self checking
- **Mag. Field strength, AC fields**: 150 mT
- **Switching state indication**: Multihole-LED, yellow
- **Ambient temperature**: -25 ... 70 °C (-13 ... 158 °F)
- **Housing material**: Brass, PTFE coated
- **Protection degree**: IP67
- **Connection type**: Connector M12 x 1, 4-pin

### Model Number
<table>
<thead>
<tr>
<th>Model Number</th>
<th>NBB5-18GM50-E2-C-V1</th>
<th>NBB5-18GM50-E2-C3-V1</th>
<th>NBN8-18GM50-E2-C-V1</th>
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<tbody>
<tr>
<td>Rated operating distance</td>
<td>5 mm</td>
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<td></td>
</tr>
<tr>
<td>8 mm</td>
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<td>non-flush</td>
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<tr>
<td>Switching frequency</td>
<td>0 ... 500 Hz</td>
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<tr>
<td>0 ... 800 Hz</td>
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<tr>
<td>Operating voltage display</td>
<td>LED, green</td>
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<td></td>
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<td>Approvals and Certificates</td>
<td>cULus Listed, General Purpose</td>
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<td>CSA approval</td>
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</tr>
<tr>
<td>CCC approval</td>
<td>CCC approval / marking not required for sensors rated ≤36 V</td>
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<td></td>
</tr>
</tbody>
</table>

### Dimensions
- **Length L [mm]**: 65
- **Diameter D [mm]**: M18 x 1
- **Thread length l₁ [mm]**: 50
- **Cap length l₂ [mm]**: 0
- **Connector length l₃ [mm]**: 15
- **LED position**: Pos. C

### Accessories
These and more accessories can be found in chapter 10
See pages from 970 ... for cordsets
See pages 1056 ... for mounting accessories

| BF 18 | Mounting bracket, 18 mm |
| EXG-18 | Quick mounting bracket with stop |
| AB-18 | Right angled mounting bracket |
| MH01-M18 | Mounting bracket M18 - 1/2" rod type |
| V1-G | 4-pin, M12 female field-attachable connector, straight |
| V1-W | 4-pin, M12 female field-attachable connector, angled |
| V1-G-OR2M-POC | Female cordset, M12, 4-pin, TPE cable, welding-bead resistant, straight |
| V1-W-OR2M-POC | Female cordset, M12, 4-pin, TPE cable, welding-bead resistant, angled |

### Electrical Connection
NBB5-18GM50-E2-C-V1
NBB5-18GM50-E2-C-V1
NBN8-18GM50-E2-C-V1

Wire colors in accordance with EN 60947-5-2
| 1 | BN (brown) |
| 2 | V (white) |
| 3 | BU (blue) |
| 4 | BK (black) |
1.1.1 Technical Data

**General Data**
- Reduction factor 1
- Output type: PNP NO
- Type of voltage: DC
- Operating voltage: 10 ... 30 V DC
- Reverse polarity protection
- Switching frequency: 0 ... 600 Hz
- Load current: 0 ... 200 mA
- Short-circuit protection: ✔
- Mag. Field strength, AC fields: 200 mT
- Mag. Field strength, DC fields: 200 mT
- Switching state indication: Multihole-LED, yellow
- Ambient temperature: -25 ... 70 °C (-13 ... 158 °F)
- Housing material: Brass, PTFE coated
- Protection degree: IP67
- Connection type: Connector M12 x 1 , 4-pin

**Model Number**

<table>
<thead>
<tr>
<th>Model Number</th>
<th>NRB5-18GM40-E2-C-V1</th>
<th>NRB5-18GM50-E2-C-V1</th>
<th>NRB6-18GM40-E2-C-V1</th>
<th>NRB6-18GM50-E2-C-V1</th>
<th>NRB8-18GM40-E2-C-V1</th>
<th>NRB8-18GM50-E2-C-V1</th>
<th>NRB8-18GM50-E2-C-V1</th>
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<td>Rated operating distance</td>
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<td>Installation</td>
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**Dimensions**

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Length L [mm]</th>
<th>Diameter D [mm]</th>
<th>Thread length l₁ [mm]</th>
<th>Cap length l₂ [mm]</th>
<th>Connector length l₃ [mm]</th>
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<td>50</td>
<td>10</td>
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</table>

**Accessories**

- BF 18: Mounting bracket, 18 mm
- AB-18: Right angled mounting bracket
- MH01-M18: Mounting bracket M18 - 1/2" rod type
- V1-G: 4-pin, M12 female field-attachable connector, straight
- V1-W: 4-pin, M12 female field-attachable connector, angled
- V1-G-OR2M-FOC: Female cordset, M12, 4-pin, TPE cable, welding-bead resistant, straight
- V1-W-OR2M-FOC: Female cordset, M12, 4-pin, TPE cable, welding-bead resistant, angled

**Electrical Connection**

Wire colors in accordance with EN 60947-5-2:
- 1: **BN** (brown)
- 2: **WH** (white)
- 3: **BU** (blue)
- 4: **BK** (black)
Technical Data

For detailed data and product description refer to the data sheets at [www.pepperl-fuchs.us](http://www.pepperl-fuchs.us)

<table>
<thead>
<tr>
<th>General Data</th>
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<tbody>
<tr>
<td>metal face</td>
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<tr>
<td>Rated operating distance</td>
<td>5 mm</td>
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<tr>
<td>Operation voltage</td>
<td>20 ... 300 V DC</td>
</tr>
<tr>
<td>Output type</td>
<td>AC/DC NO</td>
</tr>
<tr>
<td>Reverse polarity protection</td>
<td>✔</td>
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<tr>
<td>Switching frequency</td>
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<tr>
<td>Load current</td>
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<td>Short-circuit protection</td>
<td>✔, self checking</td>
</tr>
<tr>
<td>Mag. Field strength, AC fields</td>
<td>250 mT</td>
</tr>
<tr>
<td>Mag. Field strength, DC fields</td>
<td>250 mT</td>
</tr>
<tr>
<td>Operating voltage display</td>
<td>LED, green</td>
</tr>
<tr>
<td>Switching state indication</td>
<td>LED, yellow</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-25 ... 70 °C (-13 ... 158 °F)</td>
</tr>
<tr>
<td>Housing material</td>
<td>PTFE coated - Stainless steel 1.4305 / AISI 303</td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP67 / IP68 / IP69K - cordset dependent according to cable Standard</td>
</tr>
</tbody>
</table>

Model Number

- NMB5-18GMB8-US-C-FE-V12
- NMB5-18GMB8-US-C-FE-V93

Note: Devices with an -FE in the model number are suitable only in combination with ferrous targets.

Connection type
- Connector 1/2”-20 UN, 3-pin
- Connector 7/8”-16 UN, 3-pin

Properties
- Ø18 mm housing
- 5 mm sensing range
- Ferrous targets
- AC/DC, 2-wire switching output
- Stainless steel barrel and sensing face w/spatter immune coating
- Connector version

Benefits
- Wear-proof housing outlasts plastic-face sensors by 20X
- Immune to electromagnetic weld fields
- Reduced maintenance and troubleshooting increases machine uptime

Approvals and Certificates
- UL approval, cULus Listed, General Purpose
- CSA approval, cCSAus Listed, General Purpose
- CCC approval, Certified by China Compulsory Certification (CCC)

Dimensions
- Length L [mm]: 90
- Diameter D [mm]: M18 x 1
- Thread length l₁ [mm]: 67.5
- Cap length l₂ [mm]: 2.5
- Connector length l₃ [mm]: 13
- LED position: Pos. A

Accessories
These and more accessories can be found in chapter 10
- AB-18: Right angled mounting bracket
- MH01-M18: Mouting bracket M18 - 1/2” rod type
- V93-G-YE2M-STOOW: Female cordset, 7/8” - 16 UNF, 3-pin, PUR cable, straight
- V12-G-YE2M-PUR-H/S: Female cordset, 1/2” - 20 UNF, 3-pin, irradiated PUR cable, straight

Electrical Connection

- NMB5-18GMB8-US-C-FE-V12
- NMB5-18GMB8-US-C-FE-V93

Wire colors

1. GN (green)  2. BK (black)  3. WH (white)

These pages contain information about cordsets and mounting accessories.
Technical Data

Model Number
- NMB8-30G55Z0-C-FE-300MM-V1
- NMB8-30G55Z3-C-FE-300MM-V1

Properties
- Ø30 mm housing
- 8 mm sensing range
- Ferrous targets
- DC, 2-wire switching output
- Stainless steel barrel and sensing face w/spatter immune coating
- Pigtailed connector version with burn-proof POC cable jacket

Benefits
- Pigtail design excellent for compact welding areas
- Wear-proof housing outlasts plastic-face sensors by 20X
- Immune to electromagnetic weld fields
- Reduced maintenance and troubleshooting increases machine uptime

Electrical Connection

Wire colors in accordance with EN 60947-5-2

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

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data
- Output type: PNP NO
- Type of voltage: DC
- Operating voltage: 10 ... 30 V DC
- Reverse polarity protection: ✔
- Load current: 0 ... 200 mA
- Short-circuit protection: ✔, self-checking
- Switching state indication: Multihole-LED, yellow
- Ambient temperature: -25 ... 70 °C (-13 ... 158 °F)
- Housing material: Brass, PTFE coated
- Protection degree: IP67
- Connection type: Connector M12 x 1, 4-pin

Model Number

<table>
<thead>
<tr>
<th>Reduction factor 1</th>
<th>NBB10-30GM50-E2-C3-V1</th>
<th>NRB10-30GM50-E2-C-V1</th>
<th>NRB15-30GM50-E2-C-V1</th>
<th>NBN15-30GM50-E2-C-V1</th>
<th>NRN20-30GM50-E2-C-V1</th>
<th>NRN30-30GM50-E2-C-V1</th>
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<td>15 mm</td>
<td>20 mm</td>
<td>30 mm</td>
<td></td>
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</tr>
<tr>
<td>Installation</td>
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<td>non-flush</td>
<td></td>
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<td></td>
<td></td>
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<td>100 mT</td>
<td>150 mT</td>
<td>200 mT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mag. Field strength, DC fields</td>
<td>100 mT</td>
<td>150 mT</td>
<td>200 mT</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Approvals and Certificates
- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤36 V

Dimensions
- Length L [mm]: 65
- Diameter D [mm]: M30 x 1.5
- Thread length l1 [mm]: 50
- Cap length l2 [mm]: 18
- Connector length lc [mm]: 15
- LED position: Pos. C

Accessories
These and more accessories can be found in chapter 10
See pages from 970 ... for cordsets See pages 1066 ... for mounting accessories
- AB-30: Right angled mounting bracket
- MH01-M30: Mounting bracket M30 - 1/2" rod type
- V1-G-OR2M-POC: Female cordset, M12, 4-pin, TPE cable, welding-bead resistant, straight
- V1-W-OR2M-POC: Female cordset, M12, 4-pin, TPE cable, welding-bead resistant, angled

Electrical Connection

- NRB15-30GM50-E2-C-V1
- NRB20-30GM50-E2-C-V1
- NBN15-30GM50-E2-C-V1
- NRN15-30GM50-E2-C-V1
- NRN20-30GM50-E2-C-V1
- NRN30-30GM50-E2-C-V1

Wire colors in accordance with EN 60947-5-2
1. BN (brown) 2. WH (white) 3. BU (blue) 4. BK (black)
Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.com

General Data
- Metal face ✔
- Installation flush
- Output type PNP NO
- Operating voltage 10 ... 30 V DC
- Reverse polarity protection ✔
- Load current ≤ 200 mA
- Short-circuit protection ✔, self checking
- Mag. Field strength, AC fields 250 mT
- Mag. Field strength, DC fields 250 mT
- Operating voltage display LED, green
- Switching state indication LED, yellow
- Ambient temperature -25 ... 70 °C (-13 ... 158 °F)
- Housing material PTFE coated - Stainless steel 1.4305 / AISI 303
- Protection degree IP67 / IP68 / IP69K - cordset dependent according to cable Standard
- Connection type Connector M12 x 1 / 4-pin

Properties
- Ø30 mm housing
- 8 mm and 15 mm sensing ranges
- DC, 3-wire switching output
- Stainless steel barrel and sensing face w/spatter immune coating
- Connector version

Benefits
- Wear-proof housing outlasts plastic-face sensors by 20X
- Immune to electromagnetic weld fields
- Reduced maintenance and troubleshooting increases machine uptime

Model Number

Note: Devices with an ...-FE in the model number are suitable only in combination with ferrous targets.

Rated operating distance 15 mm
8 mm
Switching frequency 0 ... 2 Hz
0 ... 5 Hz

Approvals and Certificates
- UL approval cULus Listed, General Purpose
- CSA approval cCSAus Listed, General Purpose
- CCC approval CCC approval / marking not required for sensors rated ≤36 V

Dimensions
- Length L [mm] 65
- Diameter D [mm] M30 x 1.5
- Thread length l1 [mm] 37.5
- Cap length l2 [mm] 2.5
- Connector length l3 [mm] 15
- LED position Pos. C

Accessories
- These and more accessories can be found in chapter 10
- See pages from 970 ... for cordsets
- See pages 1066 ... for mounting accessories

AB-30-L3M-C
AB-30
MH01-M30
V1-G-OR2M-P0C

These and more accessories can be found in chapter 10

Wire colors in accordance with EN 60947-5-2
1  BN (brown)
2  WH (white)
3  BU (blue)
4  BK (black)

Electrical Connection

NMB15-30GM65-E2-C-V1
NMB8-30GM65-E2-C-FE-V1

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Technical Data

Model Number: NMS8-30GM8-US-C-FE-V93

Properties:
- Ø30 mm housing
- 8 mm sensing range
- Acceptable ferrous targets
- AC/DC, 2-wire switching output
- Stainless steel barrel and sensing face w/spatter immune coating
- Connector version

Benefits:
- Wear-proof housing outlasts plastic-face sensors by 20X
- Immune to electromagnetic weld fields
- Reduced maintenance and troubleshooting increases machine uptime

Approvals and Certificates:
- UL approval: cULus Listed, General Purpose
- CSA approval: cCSA Us Listed, General Purpose
- CCC approval: Certified by China Compulsory Certification (CCC)

Dimensions:
- Length L [mm]: 90
- Diameter D [mm]: M30 x 1.5
- Thread length l1 [mm]: 68.5
- Cap length l2 [mm]: 2.5
- Connector length lc [mm]: 19
- LED position: Pos. A

Accessories:
- AB-30-L3M-C: Right angle mounting bracket for “Cube” (L2M) housing retrofits
- AB-30: Right angled mounting bracket
- MH01-M30: Mounting bracket M30 - 1/2” rod type
- V93-G-YE2M-STOOW: Female cordset, 7/8" - 16 UNF, 3-pin, PUR cable, straight

Electrical Connection:

Wire colors:
- 1: GN (green)
- 2: BK (black)
- 3: WH (white)
1.1 Technical Data

General Data
- Rated operating distance: 4 mm
- Installation: flush
- Type of voltage: DC
- Operating voltage: 10 ... 60 V
- No-load supply current: \( \leq 15 \text{ mA} \)
- Reverse polarity protection: ✔
- Load current: 0 ... 200 mA
- Switching frequency: 0 ... 800 Hz
- Short-circuit protection: ✔, self checking
- Switching state indication: LED, yellow
- Ambient temperature: -40 ... 85 °C (-40 ... 185 °F)
- Housing material: brass, nickel-plated
- Protection degree: IP68 / IP69K

Model Number

<table>
<thead>
<tr>
<th>Output type</th>
<th>NPN NO</th>
<th>NPN NC</th>
<th>PNP NO</th>
<th>PNP NC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection type</td>
<td>Connector M12 x 1, 4-pin</td>
<td>cable PUR, 2 m</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cable connector Deutsch DT04, 3-pin with PUR cable 150 mm</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Approvals and Certificates
- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- e1 Type approval: 2006/28/EG

Dimensions
- Length \( L \) [mm]: 60 / 76
- Diameter \( D \) [mm]: M12 x 1
- Thread length \( l_t \) [mm]: 44 / 45
- Cap length \( l_1 \) [mm]: 0
- Connector length \( l_c \) [mm]: 16
- LED position: Pos. B

Accessories
- These and more accessories can be found in chapter 10
- See page 970 ... for cordsets
- See page 1066 ... for mounting accessories

Electrical Connection

Wire colors in accordance with EN 60047-5-2

1 = BN (brown)
2 = WH (white)
3 = BU (blue)
4 = BK (black)
**Cylindrical, Ø 18 mm, Mobile Equipment Series**

---

### Technical Data

**General Data**
- Rated operating distance: 8 mm
- Installation: flush
- Type of voltage: DC
- Operating voltage: 5 ... 60 V
- No-load supply current: ≤ 10 mA
- Reverse polarity protection: ✔
- Switching frequency: 0 ... 400 Hz
- Load current: 0 ... 200 mA
- Short-circuit protection: ✔, self checking
- Switching state indication: LED, yellow
- Ambient temperature: -40 ... 85 °C (-40 ... 185 °F)
- Housing material: brass, nickel-plated
- Protection degree: IP68 / IP69K

**Electrical Connection**
- Ø18 mm housing
- 8 mm sensing range
- DC, 3-wire switching output
- Cable and connector versions
- 100 V/m RF immunity
- Operational to -40 °C
- Heavy duty 18 AWG cable
- IP 69K / 1200 psi washdown rating

**Properties**

**Benefits**
- Ø18 mm housing
- 8 mm sensing range
- DC, 3-wire switching output
- Cable and connector versions
- 100 V/m RF immunity
- Operational to -40 °C
- Heavy duty 18 AWG cable
- IP 69K / 1200 psi washdown rating

**Model Number**

Output type:
- NPN NO
- NPN NC
- PNP NO
- PNP NC

Connection type:
- Connector M12 x 1, 4-pin
- Cable connector Deutsch DT04, 3-pin with PUR cable 150 mm

**Approvals and Certificates**

UL approval:
- cULus Listed, General Purpose

CSA approval:
- cCSAus Listed, General Purpose

e1 Type approval:
- 2006/28/EG

**Dimensions**

<table>
<thead>
<tr>
<th>Length L [mm]</th>
<th>Diameter D [mm]</th>
<th>Thread length l1 [mm]</th>
<th>Cap length l2 [mm]</th>
<th>Connector length l3 [mm]</th>
<th>LED position</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>50</td>
<td>47</td>
<td>50</td>
<td>0</td>
<td>Pos. C</td>
</tr>
<tr>
<td>65</td>
<td>65</td>
<td>50</td>
<td>45</td>
<td>15</td>
<td></td>
</tr>
</tbody>
</table>

**Accessories**

These and more accessories can be found in chapter 10 See pages from 970 ... for cordsets See pages 1066 ... for mounting accessories

- BN L+
- L-
- BK
- BU

Wire colors in accordance with EN 60947-5-2

1. BN (brown)
2. L- (white)
3. BU (blue)
4. BK (black)

---

Refer to General Notes Relating to Product Information

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Courtesy of Steven Engineering, Inc. - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com
## Technical Data
For detailed data and product description refer to the data sheets at [www.pepperl-fuchs.us](http://www.pepperl-fuchs.us)

### General Data
- **Rated operating distance:** 12 mm
- **Installation:** non-flush
- **Type of voltage:** DC
- **Operating voltage:** 5 ... 60 V
- **No-load supply current:** ≤ 10 mA
- **Reverse polarity protection:** ✔
- **Switching frequency:** 0 ... 200 Hz
- **Load current:** 0 ... 200 mA
- **Short-circuit protection:** ✔, self checking
- **Ambient temperature:** -40 ... 85 °C (-40 ... 185 °F)
- **Housing material:** brass, nickel-plated
- **Protection degree:** IP68 / IP69K

### Model Number

<table>
<thead>
<tr>
<th>Output type</th>
<th>Switching state indication</th>
<th>Connection type</th>
</tr>
</thead>
<tbody>
<tr>
<td>NPN NO</td>
<td>LED, yellow</td>
<td>Connector M12 x 1, 4-pin</td>
</tr>
<tr>
<td>PNP NO</td>
<td>Multihole-LED, yellow</td>
<td>cable PUR</td>
</tr>
</tbody>
</table>

### Dimensions
- **Length L [mm]:** 50 / 65
- **Diameter D [mm]:** M18 x 1
- **Thread length l₁ [mm]:** 37 / 40
- **Cap length l₂ [mm]:** 10 / 15
- **LED position:** Pos. C

### Accessories
These and more accessories can be found in chapter 10

See pages from 570 ... for cordsets  
See pages 1066 ... for mounting accessories

- **V1-W** 4-pin, M12 female field-attachable connector, angled
- **V1-G** 4-pin, M12 female field-attachable connector, straight
- **V1-G-BK2M-PUR-U** Female cordset, M12, 4-pin, 2 m PUR cable, straight
- **V1-W-BK2M-PUR-U** Female cordset, M12, 4-pin, 2 m PUR cable, angled

### Electrical Connection

<table>
<thead>
<tr>
<th>NBN12-18GM50-E0-M</th>
<th>NBN12-18GM50-E0-V1-M</th>
</tr>
</thead>
<tbody>
<tr>
<td>BN</td>
<td>BN (brown)</td>
</tr>
<tr>
<td>BK</td>
<td>BK (black)</td>
</tr>
<tr>
<td>L+</td>
<td></td>
</tr>
<tr>
<td>L-</td>
<td></td>
</tr>
<tr>
<td>BN</td>
<td>BN (brown)</td>
</tr>
<tr>
<td>BK</td>
<td>BK (black)</td>
</tr>
<tr>
<td>L+</td>
<td></td>
</tr>
<tr>
<td>L-</td>
<td></td>
</tr>
</tbody>
</table>

Wire colors in accordance with EN 60947-5-2

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

---

**Properties**

- Ø18 mm housing
- 12 mm sensing range
- DC, 3-wire switching output
- Cable and connector versions

**Benefits**

- 100 V/m RF immunity
- Operational to -40 °C
- Heavy duty 18 AWG cable
- IP 69K / 1200 psi washdown rating
Inductive sensor
cylindrical, Ø 30 mm, Mobile Equipment series

Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data
Rated operating distance 15 mm
Installation flush
Type of voltage DC
Operating voltage 5 ... 60 V
No-load supply current ≤ 10 mA
Reverse polarity protection ✔
Switching frequency 0 ... 200 Hz
Load current 0 ... 200 mA
Short-circuit protection ✔, self checking
Switching state indication LED, yellow
Ambient temperature -40 ... 85 °C (-40 ... 185 °F)
Housing material brass, nickel-plated
Protection degree IP68 / IP69K

Model Number

NBB15-30GM50-E0-M
NBB15-30GM50-E2-M
NBB15-30GM50-E0-V1-M
NBB15-30GM50-E1-V1-M
NBB15-30GM50-E2-V1-M
NBB15-30GM50-E3-V1-M
NBB15-30GM50-E2-M-150MM-3DT04

Output type
NPN NO
NPN NC
PNP NO
PNP NC

Connection type
Connector M12 x 1 , 4-pin
cable POC , 2 m

Approvals and Certificates
UL approval cULus Listed, General Purpose
CSA approval cCSAus Listed, General Purpose
e1 Type approval 2006/28/EG

Dimensions
Length L [mm] 50 65 50
Diameter D [mm] M30 x 1.5
Thread length l1 [mm] 47 50 47
Cap length l2 [mm] 0
Connector length lC [mm] 0 15 0

LED position Pos. C

Accessories
These and more accessories can be found in chapter 10
See pages from 970 ... for cordsets
See pages 1066 ... for mounting accessories
V1-W 4-pin, M12 female field-attachable connector, angled
V1-G 4-pin, M12 female field-attachable connector, straight
V1-G-BK2M-PUR-U Female cordset, M12, 4-pin, 2 m PUR cable, straight
V1-W-BK2M-PUR-U Female cordset, M12, 4-pin, 2 m PUR cable, angled

Electrical Connection

Refer to General Notes Relating to Product Information

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Sensing Your Needs

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Courtesy of Steven Engineering, Inc. - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com
Inductive sensor cylindrical, Ø 18 mm for high temperature

**Technical Data**

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

<table>
<thead>
<tr>
<th>General Data</th>
<th>NJS-18GK-N-150</th>
<th>NJS-18GK-N-150</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output type</td>
<td>NAMUR, NC</td>
<td></td>
</tr>
<tr>
<td>Type of voltage</td>
<td>DC</td>
<td></td>
</tr>
<tr>
<td>Nominal voltage</td>
<td>8.2 V (Ri approx. 1 kΩ)</td>
<td></td>
</tr>
<tr>
<td>Current consumption</td>
<td>Measuring plate not detected ≥ 3 mA</td>
<td>Measuring plate detected ≤ 1 mA</td>
</tr>
<tr>
<td></td>
<td>Ambient temperature -40 ... 150 °C (-40 ... 302 °F)</td>
<td></td>
</tr>
<tr>
<td>Housing material</td>
<td>PPS</td>
<td></td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP65</td>
<td></td>
</tr>
<tr>
<td>Connection type</td>
<td>cable SIHF , 2 m</td>
<td></td>
</tr>
</tbody>
</table>

**Model Number**

<table>
<thead>
<tr>
<th>Rated operating distance</th>
<th>NJS-18GK-N-150</th>
<th>NJS-18GK-N-150</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 mm</td>
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<td></td>
</tr>
<tr>
<td>8 mm</td>
<td></td>
<td></td>
</tr>
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</table>

**Use in the Hazardous Area**

<table>
<thead>
<tr>
<th>Use in the hazardous area</th>
<th>see instruction manuals</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Category</td>
<td>1G; 2G</td>
<td></td>
</tr>
</tbody>
</table>

**Approvals and Certificates**

<table>
<thead>
<tr>
<th>FM Control drawing</th>
<th>116-0165F</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>UL approval</td>
<td>cULus Listed, General Purpose</td>
<td></td>
</tr>
<tr>
<td>CSA approval</td>
<td>cCSAus Listed, General Purpose</td>
<td></td>
</tr>
<tr>
<td>CCC approval</td>
<td>CCC approval / marking not required for sensors rated ≤36 V</td>
<td></td>
</tr>
</tbody>
</table>

**Dimensions**

| Length L [mm] | 47 |
| Diameter D [mm] | M18 x 1 |
| Thread length l₁ [mm] | 34.5 |
| Cap length l₂ [mm] | 1 |
| Connector length l₃ [mm] | 7 |
| LED position |                |

**Accessories**

These and more accessories can be found in chapter 10

See pages from 970 ... for cordsets

See pages 1066 ... for mounting accessories

KCD2-SR-Ex2

2-channel isolated amplifier

For detailed information on isolated amplifiers refer to the data sheets at www.pepperl-fuchs.us

**Properties**

- Ø18 mm housing
- 5 mm and 8 mm sensing ranges
- NAMUR output
- Cable version

**Benefits**

- For use in high temperature applications
- Ex approval for use in hazardous area zone 0 and 1
- Intrinsically safe when connected to approved device

Application Note:

Reference appendix, data sheet, operating instructions, and appropriate standards. To be used within the electrical, environmental, and mechanical limitations of the device and area.

---

Refer to General Notes Relating to Product Information

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Singapore: +65 6779 9091

www.pepperl-fuchs.com
Inductive sensor  cylindrical, Ø 30 mm for high temperature

**Technical Data**
For detailed data and product description refer to the data sheets at [www.pepperl-fuchs.us](http://www.pepperl-fuchs.us)

### General Data
- **Output type**: NAMUR, NC
- **Type of voltage**: DC
- **Nominal voltage**: 8.2 V (Ri approx. 1 kΩ)
- **Current consumption**
  - Measuring plate not detected: ≥ 3 mA
  - Measuring plate detected: ≤ 1 mA
- **Protection degree**: IP65

### Model Number
- **NJ4-30GM-N-200**
- **NJ5-30GK-N-150**

### Rated operating distance
- 15 mm
- 4 mm
- 0 … 200°C (32 … 392°F)
- Stainless steel 1.4305 / AISI 303
- PPS
- Connection type: cable SIHF, 2 m
- Connector length: lc

### Use in the Hazardous Area
- **Use in the hazardous area**: see instruction manuals
- **Category**: 1G, 2G

### Approvals and Certificates
- **FM Control drawing**: 116-0165F
- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤ 36 V

### Dimensions
- **Length L [mm]**: 75 / 47
- **Diameter D [mm]**: M30 x 1.5
- **Thread length l [mm]**: 50 / 40
- **Cap length l1 [mm]**: 0
- **Connector length l2 [mm]**: 15 / 7
- **LED position**

### Accessories
These and more accessories can be found in chapter 10
- **KCD2-SR-Ex2**: 2-channel isolated amplifier
- For detailed information on isolated amplifiers refer to the data sheets at [www.pepperl-fuchs.us](http://www.pepperl-fuchs.us)

### Application Note:
Reference appendix, data sheet, operating instructions, and appropriate standards. To be used within the electrical, environmental, and mechanical limitations of the device and area.
### Technical Data

<table>
<thead>
<tr>
<th>General Data</th>
<th></th>
</tr>
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<tbody>
<tr>
<td>Rated operating distance</td>
<td>1.5 mm</td>
</tr>
<tr>
<td>Installation</td>
<td>flush</td>
</tr>
<tr>
<td>Output type</td>
<td>PNP NO</td>
</tr>
<tr>
<td>Operating voltage</td>
<td>10 ... 30 V DC</td>
</tr>
<tr>
<td>No-load supply current</td>
<td>≤ 10 mA</td>
</tr>
<tr>
<td>Reverse polarity protection</td>
<td>✔</td>
</tr>
<tr>
<td>Load current</td>
<td>0 ... 200 mA</td>
</tr>
<tr>
<td>Short-circuit protection</td>
<td>✔, self checking</td>
</tr>
<tr>
<td>Operating pressure</td>
<td>500 bar (725 psi)</td>
</tr>
<tr>
<td>Peak pressure</td>
<td>800 bar (1160 psi)</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-25 ... 80 °C (13 ... 176 °F)</td>
</tr>
<tr>
<td>Housing material</td>
<td>Stainless steel 1.4305 / AISI 303</td>
</tr>
<tr>
<td>Sensing face</td>
<td>Ceramic</td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP68</td>
</tr>
<tr>
<td>Connection type</td>
<td>Connector M12 x 1 , 4-pin</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Model Number</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>NCB1.5-12GM40-E2-D-V1</td>
<td></td>
</tr>
<tr>
<td>NCB1.5-12GM45-E2-D-V1</td>
<td></td>
</tr>
<tr>
<td>NCB1.5-12GM60-E2-D-V1</td>
<td></td>
</tr>
<tr>
<td>NCB1.5-12GM70-E2-D-V1</td>
<td></td>
</tr>
<tr>
<td>NCB1.5-12GM85-E2-D-V1</td>
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</table>

<table>
<thead>
<tr>
<th>Dimensions</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Length L [mm]</td>
<td>56</td>
</tr>
<tr>
<td>Diameter D [mm]</td>
<td>M12 x 1</td>
</tr>
<tr>
<td>Thread length l₁ [mm]</td>
<td>30</td>
</tr>
<tr>
<td>Cap length l₂ [mm]</td>
<td>18</td>
</tr>
<tr>
<td>LED position</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Accessories</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>These and more accessories can be found in chapter 10</td>
<td>See pages from 970 ... for cordsets See pages 1066 ... for mounting accessories</td>
</tr>
</tbody>
</table>

**Electrical Connection**

```
1.1.1
```

- **Switching frequency**: 0 ... 2000 Hz
- **Approvals and Certificates**
  - UL approval: cULus Listed, General Purpose
  - CSA approval: cCSAus Listed, General Purpose
  - CCC approval: CCC approval / marking not required for sensors rated ≤36 V

**Properties**

- Ø12 mm housing
- 1.5 mm, flush mountable
- DC, 3-wire switching output
- Connector version

**Benefits**

- For high pressure applications

**Electrical Connection**

```
NCB1.5-12GM40-E2-D-V1
NCB1.5-12GM45-E2-D-V1
NCB1.5-12GM60-E2-D-V1
NCB1.5-12GM70-E2-D-V1
NCB1.5-12GM85-E2-D-V1

1  BN  (brown)
2  WH  (white)
3  BU  (blue)
4  BK  (black)
```
Inductive sensor cylindrical, Ø 14 mm for high pressure

Technical Data
For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data
- Rated operating distance: 3 mm
- Installation: flush
- Operating voltage: 10 ... 30 V DC
- No-load supply current: ≤ 10 mA
- Reverse polarity protection: ✔
- Switching frequency: 0 ... 500 Hz
- Load current: ≤ 200 mA
- Short-circuit protection: ✔, self checking
- Operating pressure: 500 bar (725 psi)
- Peak pressure: 800 bar (1160 psi)
- Ambient temperature: -25 ... 80 °C (-13 ... 176 °F)
- Housing material: Stainless steel 1.4305 / AISI 303
- Sensing face: Ceramic
- Protection degree: IP68

Model Number
- Output type: NPN NO ●● NPN NC ●● NPN NC ●● PNP NO ●● PNP NC ●●
- Connection type: Connector M12 x 1, 4-pin ●●●●

Accessories
These and more accessories can be found in chapter 10
See pages from 970 ... for cordsets
See pages 1066 ... for mounting accessories
- V1-G: 4-pin, M12 female field-attachable connector, straight
- V1-W: 4-pin, M12 female field-attachable connector, angled
- V1-G-BK2M-PUR-U: Female cordset, M12, 4-pin, PUR cable, straight
- V1-W-BK2M-PUR-U: Female cordset, M12, 4-pin, PUR cable, angled

Electrical Connection

Properties
- Ø14 mm housing
- 3 mm, flush mountable
- DC, 3-wire switching output
- Cable and connector versions

Benefits
- For high pressure applications
Inductive sensor cylindrical, Ø 18 mm for high pressure

Technical Data
For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data
- Rated operating distance: 1.5 mm
- Installation: flush
- Operating voltage: 10 ... 60 V DC
- No-load supply current: ≤ 10 mA
- Reverse polarity protection: ✔
- Switching frequency: 0 ... 1500 Hz
- Load current: 0 ... 200 mA
- Reverse polarity protection: ✔, self checking
- Operating pressure: 350 bar (507 psi)
- Ambient temperature: -35 ... +80 °C (-31 ... +176 °F)
- Housing material: Stainless steel 1.4305 / AISI 303
- Sensing face: Epoxy (black)
- Protection degree: IP67

Model Number
- Output type: PNP NO
- Connection type: Connector M12 x 1, 4-pin cable PVC, 2 m

Approvals and Certificates
- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: Certified by China Compulsory Certification (CCC)

Dimensions
- Length L [mm]: 57, 57, 69
- Diameter D [mm]: M18 x 1
- Thread length l₁ [mm]: 41, 41, 44
- Cap length l₂ [mm]: 15
- Connector length l₃ [mm]: 0, 0, 10
- LED position:

Accessories
- These and more accessories can be found in chapter 10
- For high pressure applications
- See pages from 570 ... for cordsets
- See pages 1066 ... for mounting accessories

Properties
- Ø18 mm housing
- 1.5 mm, flush mountable
- DC, 3-wire switching output
- Cable and connector versions

Benefits
- For high pressure applications

Electrical Connection
- NCB1.5-18GM60-E2-D
- NCB1.5-18GM60-E2-D-V1

NOTE: Wire colors in accordance with EN 60947-5-2
1: BN (brown)
2: WH (white)
3: BU (blue)
4: BK (black)
## Technical Data

**General Data**
- **Installation:** flush
- **Output type:** NPN & PNP, NO
- **Operating voltage:** 10 ... 30 V DC
- **No-load supply current:** ≤ 35 mA
- **Off-state current:** ≤ 100 µA
- **Reverse polarity protection:**
- **Switching frequency:** 30 Hz
- **Load current:** ≤ 200 mA
- **Short-circuit protection:** ✔
- **Mag. Field strength, AC fields:** 250 mT
- **Mag. Field strength, DC fields:** 100 mT
- **Operating pressure dynamically:** 3000 psi
- **LED green:** Power on
- **LED yellow:** Output status
- **Ambient temperature:** -25 ... 70 °C (-13 ... 158 °F)
- **Protection degree:** IP67
- **Material:** Housing: zinc
- **Probe: aluminum
- **Connection type:** Connector 7/8”-16 UN, 5-pin

### Rated operating distance
- 1.5 mm
- 2 mm

### Model Number
- **NJ1.5-PD-E02-1.250-V95**
- **NJ2-PD-E02-2.062-V95**
- **NJ2-PD-E02-2.875-V95**
- **NJ2-PD-E02-4.562-V95**

### Approvals and Certificates
- **UL approval:** cULus Listed, General Purpose
- **CSA approval:** cCSAus Listed, General Purpose
- **CCC approval:** CCC approval / marking not required for sensors rated ≤36 V

### Dimensions
- **Length L [mm]:** 34.5
- **Diameter D [mm]:** 12.5
- **Connector length lc [mm]:** (from sensor’s center line) 52.5

### Accessories
- **V95-G-YE2M-STOOW:** Female connector, 7/8”-16 UNF, 5-pin, PUR cable, straight

---

**Properties**
- Ø1/2” probe diameter
- 1.5 mm and 2 mm sensing ranges
- DC, 4-wire switching outputs
- Connector version

**Benefits**
- Optimized for applications close to strong magnetic fields
- 3000 psi rating for high pressure applications
- Through port mounting probe

---

**Electrical Connection**

- **NJI.5-PD-E02-1.250-V95**
- **NJ1-PD-E02-2.062-V95**
- **NJ1-PD-E02-2.875-V95**
- **NJ1-PD-E02-4.562-V95**

**Wire colors**
- WH
- RD
- OR
- BK

---

**Refer to General Notes Relating to Product Information**

- **Pepperl+Fuchs Group USA:** +1 330 486 0001
- **Germany:** +49 621 776-4411
- **Singapore:** +65 6779 9091

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**courtesy of Steven Engineering, Inc. - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com**
## Technical Data

### General Data
- **Rated operating distance**: 2 mm
- **Installation**: flush
- **Output type**: NPN & PNP, NO
- **Operating voltage**: 10 ... 30 V DC
- **No-load supply current**: ≤ 35 mA
- **Off-state current**: ≤ 100 μA
- **Reverse polarity protection**: ✔
- **Switching frequency**: 30 Hz
- **Load current**: ≤ 200 mA
- **Short-circuit protection**: ✔
- **Mag. Field strength, AC fields**: 250 mT
- **Mag. Field strength, DC fields**: 100 mT
- **Operating pressure dynamically**: 3000 psi
- **LED green**: Power on
- **LED yellow**: Output status
- **Ambient temperature**: -25 ... 70 °C (-13 ... 158 °F)
- **Protection degree**: IP67
- **Material Housing**: zinc
- **Probe**: aluminum
- **Steel flange**:
- **Connection type**: Connector M12 x 1, 4-pin

### Model Number

NJ2-D-E02-1.025-V1
NJ2-D-E02-1.250-V1
NJ2-D-E02-1.875-V1
NJ2-D-E02-2.062-V1
NJ2-D-E02-2.875-V1
NJ2-D-E02-4.562-V1

### Approvals and Certificates
- **UL approval**: cULus Listed, General Purpose
- **CSA approval**: cCSAus Listed, General Purpose
- **CCC approval**: CCC approval / marking not required for sensors rated ≤36 V

### Dimensions

<table>
<thead>
<tr>
<th>Probe length X</th>
<th>Length L (mm)</th>
<th>Diameter D (mm)</th>
<th>Connector length lc (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.025 in (26 mm)</td>
<td>34.5</td>
<td>12.5</td>
<td>39</td>
</tr>
<tr>
<td>1.250 in (31.8 mm)</td>
<td>34.5</td>
<td>12.5</td>
<td>39</td>
</tr>
<tr>
<td>1.875 in (47.6 mm)</td>
<td>34.5</td>
<td>12.5</td>
<td>39</td>
</tr>
<tr>
<td>2.062 in (52.4 mm)</td>
<td>34.5</td>
<td>12.5</td>
<td>39</td>
</tr>
<tr>
<td>2.875 in (73 mm)</td>
<td>34.5</td>
<td>12.5</td>
<td>39</td>
</tr>
<tr>
<td>4.562 in (115.9 mm)</td>
<td>34.5</td>
<td>12.5</td>
<td>39</td>
</tr>
</tbody>
</table>

### Accessories

These more accessories can be found in chapter 10

#### V1-G-2M-PVC
- Female cordset, M12, 4-pin, PVC cable, straight

#### V1-W-2M-PVC
- Female cordset, M12, 4-pin, PVC cable, angled

### Electrical Connection

1. BN (brown)
2. WH (white)
3. BU (blue)
4. BK (black)
## Technical Data

### General Data
- Installation: flush
- Output type: NO contact
- Operating voltage: 20 ... 250 V AC/DC
- Off-state current: < 1.7 mA
- Reverse polarity protection: ✔
- Switching frequency: 0 ... 20 Hz
- Load current: 0 ... 300 mA
- Momentary current: ≤ 3 A
- Short-circuit protection: ✔
- Mag. Field strength, AC fields: 250 mT
- Mag. Field strength, DC fields: 100 mT
- Operating pressure dynamically: 3000 psi
- LED green: Power on
- LED red: Output status
- LED red/green: Short circuit/overload indication
- Ambient temperature: -25 ... 70 °C (-13 ... 158 °F)
- Protection degree: IP67
- Material: Housing: zinc, Probe: aluminum
- Connection type: Connector 7/8"-16 UN , 3-pin

### Model Number

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Rated operating distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>NJ1.5-PD-US-1.250-V93</td>
<td>1.5 mm</td>
</tr>
<tr>
<td>NJ2-PD-US-2.062-V93</td>
<td>2 mm</td>
</tr>
<tr>
<td>NJ2-PD-US-2.875-V93</td>
<td></td>
</tr>
<tr>
<td>NJ2-PD-US-4.562-V93</td>
<td></td>
</tr>
</tbody>
</table>

#### Approvals and Certificates
- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose

### Dimensions
- Probe length X: 1.250 in (31.8 mm), 2.062 in (52.4 mm), 2.875 in (73 mm), 4.562 in (115.9 mm)
- Length L [mm]: 34.5
- Diameter D [mm]: 12.5
- Connector length l [mm]: (from sensor’s center line) 52.5

### Accessories
- V93-G-YE2M-STOOW: Female connector, 7/8" - 16 UNF, 3-pin, PUR cable, straight

---

### Electrical Connection

```
\[\text{Connectors:} \quad 1 \quad \text{GN (green)} \quad 2 \quad \text{BK (black)} \quad 3 \quad \text{WH (white)}
\]
```

---

## Properties
- Ø1/2” probe diameter
- 1.5 mm and 2 mm sensing ranges
- AC/DC, 2-wire switching output
- Connector version

## Benefits
- Optimized for applications close to strong magnetic fields
- 3000 psi rating for high pressure applications
- Through port mounting probe

---

## Installation
- flush

## Output Type
- NO contact

## Operating Voltage
- 20 ... 250 V AC/DC

## Off-state Current
- < 1.7 mA

## Reverse Polarity Protection
- ✔

## Switching Frequency
- 0 ... 20 Hz

## Load Current
- 0 ... 300 mA

## Momentary Current
- ≤ 3 A

## Short-circuit Protection
- ✔

## Mag. Field Strength, AC fields
- 250 mT

## Mag. Field Strength, DC fields
- 100 mT

## Operating Pressure Dynamically
- 3000 psi

## LED Green
- Power on

## LED Red
- Output status

## LED Red/Green
- Short circuit/overload indication

## Ambient Temperature
- -25 ... 70 °C (-13 ... 158 °F)

## Protection Degree
- IP67

## Material
- Housing: zinc, Probe: aluminum

## Connection Type
- Connector 7/8"-16 UN , 3-pin

---

## Model Numbers

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Rated Operating Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>NJ1.5-PD-US-1.250-V93</td>
<td>1.5 mm</td>
</tr>
<tr>
<td>NJ2-PD-US-2.062-V93</td>
<td>2 mm</td>
</tr>
<tr>
<td>NJ2-PD-US-2.875-V93</td>
<td></td>
</tr>
<tr>
<td>NJ2-PD-US-4.562-V93</td>
<td></td>
</tr>
</tbody>
</table>
**Inductive sensor**

**Cylinder sensor for high pressure**

---

**Technical Data**

For detailed data and product description refer to the data sheets at [www.pepperl-fuchs.us](http://www.pepperl-fuchs.us)

### General Data

- **Rated operating distance**: 2 mm
- **Installation**: flush
- **Output type**: NO contact
- **Operating voltage**: 20 ... 250 V AC/DC
- **Off-state current**: < 1.7 mA
- **Reverse polarity protection**: ✔
- **Switching frequency**: 0 ... 20 Hz
- **Load current**: 8 ... 300 mA
- **Momentary current**: ≤ 3 A
- **Short-circuit protection**: ✔
- **Mag. Field strength, AC fields**: 250 mT
- **Mag. Field strength, DC fields**: 100 mT
- **Operating pressure dynamically**: 3000 psi
- **LED green**: Power on
- **LED red**: Output status
- **LED red/green**: Short circuit/overload indication
- **Ambient temperature**: -25 ... 70 °C (-13 ... 158 °F)
- **Protection degree**: IP67
- **Material**: Housing: zinc, Probe: aluminum

### Model Number

- **NJ2-D-US-1.025-V12**
- **NJ2-D-US-1.025-V93**
- **NJ2-D-US-1.250-V12**
- **NJ2-D-US-1.250-V93**
- **NJ2-D-US-1.500-V93**
- **NJ2-D-US-2.062-V12**
- **NJ2-D-US-2.062-V93**
- **NJ2-D-US-2.875-V93**
- **NJ2-D-US-4.562-V93**

### Dimensions

- **Probe length X (mm)**: 1.025, 1.250, 1.50, 2.062, 2.875, 4.562
- **Length L [mm]**: 34.5
- **Diameter D [mm]**: 12.5
- **Connector length lc [mm]**: (from sensor’s center line) 39, 53

### Accessories

- **V12-G-YE2M-PVC**: Female connector, 1/2" - 20 UNF, 3-pin, PVC cable, angled
- **V93-G-YE2M-STOOW**: Female connector, 7/8" - 16 UNF, 3-pin, PUR cable, straight
- **V12-W-YE2M-PVC**: Connecting cable, 1/2" - 20 UNF, 3-pin, PVC cable, angled

---

**Electrical Connection**

<table>
<thead>
<tr>
<th>Connector 1/2&quot;-20 UN , 3-pin</th>
<th>Connector 7/8&quot;-16 UN , 3-pin</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

**Wire colors**

- **GN** (green)
- **RD/BK** (red/black)
- **RD/WH** (red/white)
- **BK** (black)
- **WH** (white)

---

**Properties**

- Ø1/2” probe diameter
- 2 mm, flush mountable
- AC/DC, 2-wire switching output
- Connector version

**Benefits**

- Optimized for applications close to strong magnetic fields
- 3000 psi rating for high pressure applications
- Through port mounting probe

---

**Approvals and Certificates**

- **UL approval**: cULus Listed, General Purpose
- **CSA approval**: cCSAus Listed, General Purpose

**Accessories**

These and more accessories can be found in chapter 10 See pages from 570 ... for cordsets See pages 1066 ... for mounting accessories
Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

NBB2-8GM40-E2-V1-3G-3D
Rated operating distance 2 mm
Installation flush
Output type PNP
Operating voltage 10 ... 30 V DC
No-load supply current ≤ 15 mA
Reverse polarity protection ✔
Switching frequency 0 ... 1500 Hz
Load current 0 ... 100 mA
Short-circuit protection ✔, self checking
Switching state indication Multihole-LED, yellow
Ambient temperature -25 ... 70 °C (-13 ... 158 °F)
Housing material brass, nickel-plated
Protection degree IP67
Connection type Connector M12 x 1, 4-pin

Use in the Hazardous Area

Use in the hazardous area see instruction manuals
Category 3G; 3D

Approvals and Certificates

UL approval cULus Listed, General Purpose
CSA approval cCSAus Listed, General Purpose
CCC approval CCC approval / marking not required for sensors rated ≤36 V

Dimensions

Length L [mm] 65
Diameter D [mm] M8 x 1 / 12
Thread length l_t [mm] 40
Cap length l_1 [mm] 0
Connector length l_c [mm] 6
LED position Pos. B

Note: M8 x 1 / 12 indicated: barrel thread / connector end diameter (mm)

Accessories

These and more accessories can be found in chapter 10
See pages from 970 ... for cordsets
See pages 1046 ... for mounting accessories
BF 8
Mounting bracket, 8 mm

Electrical Connection

Wire colors in accordance with EN 60947-5-2

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

### General Data
- **Output type**: DC, NO
- **Operating voltage**: 5 ... 60 V DC
- **Reverse polarity protection**: ✔, polarity independent
- **Load current**: 2 ... 100 mA
- **Short-circuit protection**: ✔, self checking
- **Switching state indication**: LED, yellow
- **Ambient temperature**: -25 ... 70 °C (-13 ... 158 °F)
- **Protection degree**: IP67

### Model Number
- NBB2-12GM40-Z0-3G-3D
- NCB2-12GM40-Z0-V1-3G-3D
- NCN4-12GM40-Z0-3G-3D
- NC2-12GM40-Z0-3G-3D

### Rated Operating Distance
- 2 mm
- 4 mm

### Installation
- **Flush**
- **Non-flush**

### Switching Frequency
- 0 ... 1000 Hz
- 0 ... 800 Hz

### Housing Material
- Stainless steel 1.4305 / AISI 303
- Brass, nickel-plated

### Connection Type
- Connector M12 x 1, 4-pin
- Cable PVC, 2 m

### Use in the Hazardous Area
- **Category**: 3G, 3D

### Approvals and Certificates
- **UL approval**: cULus Listed, General Purpose
- **CSA approval**: cCSAus Listed, General Purpose
- **CCC approval**: Certified by China Compulsory Certification (CCC)

### Dimensions
- Length L [mm]: 40, 55
- Diameter D [mm]: M12 x 1
- Thread length l1 [mm]: 37, 32, 39
- Cap length l2 [mm]: 0, 5, 0
- Connector length l3 [mm]: 0, 6
- LED position: Pos.: C, B

### Accessories
- **BF 12**: Mounting bracket, 12 mm
- **AB-12**: Right angled mounting bracket
- **V1-G-BK2M-PUR-U**: Female cordset, M12, 4-pin, PUR cable, straight
- **V1-W-BK2M-PUR-U**: Female cordset, M12, 4-pin, PUR cable, angled

### Electrical Connection
- NBB2-12GM40-Z0-3G-3D
- NCN4-12GM40-Z0-3G-3D
- NC2-12GM40-Z0-3G-3D
- V1-W-BK2M-PUR-U

---

### Properties
- **Ø12 mm housing**
- 2 mm and 4 mm sensing ranges
- **DC, 2-wire switching output**
- **Cable and connector versions**

### Benefits
- ATEX-approval for zone 2 and zone 22
### Technical Data

**General Data**
- Operating voltage: 10 ... 30 V DC
- Reverse polarity protection: ✔
- Short-circuit protection: ✔, self checking
- Switching state indication: LED, yellow
- Ambient temperature: -25 ... 70 °C (-13 ... 158 °F)
- Protection degree: IP67

**Model Number**

<table>
<thead>
<tr>
<th>Model Number</th>
<th>NBB2-12GM40-E2-3G-3D</th>
<th>NBB2-12GM60-E2-3G-3D</th>
<th>NBB4-12GM50-E2-3G-3D</th>
<th>NCN4-12GM40-E2-V1-3G-3D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated operating distance</td>
<td>2 mm</td>
<td>4 mm</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Installation</td>
<td>flush</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Output type</td>
<td>PNP NO/NC</td>
<td>PNP NO</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>No-load supply current</td>
<td>≤ 15 mA</td>
<td>≤ 20 mA</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Switching frequency</td>
<td>0 ... 1000 Hz</td>
<td>0 ... 1200 Hz</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Load current</td>
<td>0 ... 150 mA</td>
<td>0 ... 200 mA</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Housing material</td>
<td>Stainless steel 1.4305 / AISI 303</td>
<td>brass, nickel-plated</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Connection type</td>
<td>Connector M12 x 1 , 4-pin</td>
<td>cable PVC , 2 m</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>

**Use in the Hazardous Area**
- Use in the hazardous area: see instruction manuals
- Category: 3G, 3D

**Approvals and Certificates**
- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤36 V

**Dimensions**

| Length L [mm] | 40 | 60 | 50 | 50 |
| Diameter D [mm] | M12 x 1 |
| Thread length l1 [mm] | 37 | 60 | 47 | 45 |
| Cap length l2 [mm] | 0 | 5 |
| Connector length l3 [mm] | 0 | 6 |
| LED position | Pos.: C | B |

**Accessories**
- These and more accessories can be found in chapter 10
- See pages from 970 ... for cordsets
- See pages 1066 ... for mounting accessories

- **BF 12**
  - Mounting bracket, 12 mm
  - Right angled mounting bracket

- **A8-12**
  - Female cordset, M12, 4-pin, PUR cable, straight

- **V1-G-BK2M-PUR-U**
  - Female cable, M12, 4-pin, PUR cable, straight

- **V1-W-BK2M-PUR-U**
  - Female cable, M12, 4-pin, PUR cable, angled

**Electrical Connection**

```
<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>BN (brown)</td>
</tr>
<tr>
<td>2</td>
<td>WH (white)</td>
</tr>
<tr>
<td>3</td>
<td>BU (blue)</td>
</tr>
<tr>
<td>4</td>
<td>BK (black)</td>
</tr>
</tbody>
</table>
```

Wire colors in accordance with EN 60947-5-2
**Technical Data**

- **Model Number**: NBB5-18GM40-Z0-3G-3D
- **Rated operating distance**: 5 mm
- **Installation**: flush
- **Output type**: DC, NO
- **Operating voltage**: 5 ... 60 V DC
- **Reverse polarity protection**: polarity independent
- **Load current**: 2 ... 100 mA
- **Short-circuit protection**: self checking
- **Switching frequency**: 0 ... 500 Hz
- **Switching state indication**: LED, yellow
- **Rated ambient temperature**: -25 ... 70 °C (-13 ... 158 °F)
- **Housing material**: brass, nickel-plated
- **Protection degree**: IP67
- **Connection type**: cable PVC, 2 m

**Use in the Hazardous Area**

- **Use in the hazardous area**: see instruction manuals
- **Category**: 3G, 3D

**Approvals and Certificates**

- **UL approval**: cULus Listed, General Purpose
- **CSA approval**: cCSAus Listed, General Purpose
- **CCC approval**: Certified by China Compulsory Certification (CCC)

**Dimensions**

- **Length L (mm)**: 40
- **Diameter D (mm)**: M18 x 1
- **Thread length l (mm)**: 37
- **Cap length l1 (mm)**: 0
- **Connector length l2 (mm)**: 0
- **LED position**: Pos. C

**Accessories**

These and more accessories can be found in chapter 10

- **BF 18**: Mounting bracket, 18 mm
- **AB-18**: Right angled mounting bracket

**Properties**

- Ø18 mm housing
- 5 mm, flush mountable
- DC, 2-wire switching output
- Connector version

**Benefits**

- ATEX-approval for zone 2 and zone 22

**Electrical Connection**

- **Model Number**: NBB5-18GM40-Z0-3G-3D
- **Diagram**: Diagram showing electrical connection points A, B, C.
## Inductive Sensor

**cylindrical, Ø 18 mm (3G/3D)**

### Technical Data

**General Data**
- **Installation**: flush
- **Reverse polarity protection**: ✔
- **Load current**: 0 ... 200 mA
- **Short-circuit protection**: ✔, self checking
- **Switching state indication**: LED, yellow
- **Ambient temperature**: -25 ... 70 °C (-13 ... 158 °F)
- **Protection degree**: IP67

### Electrical Connection

#### Model Number
- NJ5-18GM60-E2-3G-3D
- NJ5-18GM60-E2-V1-3G-3D
- NBB5-18GM60-A2-V1-3G-3D
- NBB8-18GM60-A2-V1-3G-3D

#### Rated operating distance
- 5 mm ●●
- 8 mm ●●

#### Output type
- PNP NO/NC ●●
- PNP NO ●●●

#### Operating voltage
- 10 ... 30 V DC ●●
- 10 ... 60 V DC ●●

#### No-load supply current
- mA ≤ 9 ●●●

#### Switching frequency
- 0 ... 1500 Hz ●●
- 0 ... 500 Hz ●●●
- 0 ... 800 Hz ●●●

#### Housing material
- Stainless steel 1.4305 / AISI 303 ●●
- Brass, nickel-plated ●●●

#### Connection type
- Connector M12 x 1 , 4-pin ●●●
- Cable PVC , 2 m ●

#### Use in the Hazardous Area
- Use in the hazardous area: see instruction manuals
- **Category**: 3G, 3D ●●●

#### Approvals and Certificates
- **UL approval**: cULus Listed, General Purpose ●●●
- **CSA approval**: cCSAus Listed, General Purpose ●●●
- **CCC approval**: Certified by China Compulsory Certification (CCC) ●●
- **CCC approval / marking not required for sensors rated ≤36 V**: ●●

#### Dimensions
- **Length L [mm]**: 50, 65, 70, 70 M18 x 1
- **Diameter D [mm]**: 50, 50, 80, 60
- **Thread length l₁ [mm]**: 50
- **Cap length l₂ [mm]**: 0
- **Connector length lc [mm]**: 0
- **LED position Pos.**: A C A C B

#### Accessories
- These and more accessories can be found in chapter 10
- See pages from 970 ... for cordsets
- See pages 1066 ... for mounting accessories

#### Electrical Connection Diagrams
- NBB8-18GM60-A2-V1-3G-3D
- NJ5-18GM60-E2-V1-3G-3D
- NBB5-18GM60-A2-V1-3G-3D
- NBB8-18GM60-A2-V1-3G-3D

#### Wire colors in accordance with EN 60947-5-2
- 1: BN (brown)
- 2: WH (white)
- 3: BU (blue)
- 4: BK (black)

### Properties
- Ø18 mm housing
- 5 mm and 8 mm sensing ranges
- DC, 3-wire and 4-wire switching output
- Cable and connector versions

### Benefits
- ATEX-approval for zone 2 and zone 22

---

**Courtesy of Steven Engineering, Inc. - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com**
### Technical Data

**General Data**
- Operating voltage: 5 ... 60 V DC
- Reverse polarity protection: ✔, polarity independent
- Load current: 2 ... 100 mA
- Short-circuit protection: ✔, self checking
- Switching state indication: all direction LED, yellow
- Ambient temperature: -25 ... 70 °C (-13 ... 158 °F)
- Housing material: Stainless steel 1.4305 / AISI 303
- Protection degree: IP67
- Connection type: cable PVC, 2 m

**Rated operating distance**
- 10 mm
- 15 mm

**Installation**
- flush
- non-flush

**Output type**
- DC NO
- DC NC

**Switching frequency**
- 0 ... 100 Hz
- 0 ... 150 Hz

**Connection type**
- cable PVC, 2 m
- Connector M12 x 1, 4-pin

**Model Number**
- NCB10-30GM40-Z0-3G-3D
- NCB10-30GM40-Z1-3G-3D
- NCB10-30GM40-Z0-V1-3G-3D
- NCB10-30GM40-Z0-3G-3D
- NCB10-30GM40-Z0-3G-3D
- NCB10-30GM40-Z1-3G-3D
- NCB10-30GM40-Z0-V1-3G-3D

**Use in the Hazardous Area**
- Use in the hazardous area: see instruction manuals

**Approvals and Certificates**
- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: Certified by China Compulsory Certification (CCC)

**Dimensions**
- Length L [mm]: 40, 55
- Diameter D [mm]: M30 x 1.5
- Thread length l₁ [mm]: 37, 22, 40
- Cap length l₂ [mm]: 0, 18, 0
- Connector length l₃ [mm]: 0, 15
- LED position: Pos. C

**Accessories**
- BF 30: Mounting bracket, 30 mm
- AB-30: Right angled mounting bracket

### Properties
- Ø30 mm housing
- 10 mm and 15 mm sensing ranges
- DC, 2-wire switching output
- Cable version

### Benefits
- ATEX-approval for zone 2 and zone 22

---

**Electrical Connection**

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us
1.1.1 Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data

Reverse polarity protection ✔
Load current 0 ... 200 mA
Switching state indication LED, yellow
Short-circuit protection ✔, self checking
Ambient temperature -25 ... 70 °C (-13 ... 158 °F)
Protection degree IP67

Model Number

<table>
<thead>
<tr>
<th></th>
<th></th>
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<tbody>
<tr>
<td>10 mm</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>15 mm</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Installation

flush ✔
non-flush ✔

Output type

PNP NO ✔
PNP NC ✔

Operational voltage

10 ... 30 V DC ✔
10 ... 60 V DC ✔

No-load supply current

≤ 9 mA ✔

Switching frequency

0 ... 200 Hz ✔
0 ... 500 Hz ✔
0 ... 650 Hz ✔

Housing material

Stainless steel 1.4305 / AISI 303 ✔
brass, nickel-plated ✔

Connection type

Connector M12 x 1, 4-pin ✔
cable PVC, 2 m ✔

Use in the Hazardous Area

Use in the hazardous area see instruction manuals ✔

Category

3G, 3D ✔

Approvals and Certificates

UL approval cULus Listed, General Purpose ✔
CSA approval cCSAus Listed, General Purpose ✔
CCC approval Certified by China Compulsory Certification ✔
CCC approval / marking not required for sensors rated ≤36 V ✔

Dimensions

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<th>50</th>
<th>65</th>
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</thead>
<tbody>
<tr>
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<td>M30 x 1.5</td>
<td></td>
</tr>
<tr>
<td>Thread length lT [mm]</td>
<td>47 50 32 50 50 50 32</td>
<td></td>
</tr>
<tr>
<td>Cap length lC [mm]</td>
<td>0 0 18 0 0 0 18</td>
<td></td>
</tr>
<tr>
<td>Connector length lC [mm]</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>LED position</td>
<td>Pos..</td>
<td></td>
</tr>
<tr>
<td>LED</td>
<td>A</td>
<td>A</td>
</tr>
</tbody>
</table>

Electrical Connection

Wire colors in accordance with EN 60947-5-2

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

Use in the Hazardous Area

Use in the hazardous area see instruction manuals ✔

Category

3G, 3D ✔

Approvals and Certificates

UL approval cULus Listed, General Purpose ✔
CSA approval cCSAus Listed, General Purpose ✔
CCC approval Certified by China Compulsory Certification ✔
CCC approval / marking not required for sensors rated ≤36 V ✔

Dimensions

<table>
<thead>
<tr>
<th>Length L [mm]</th>
<th>50</th>
<th>65</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diameter D [mm]</td>
<td>M30 x 1.5</td>
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</tr>
<tr>
<td>Thread length lT [mm]</td>
<td>47 50 32 50 50 50 32</td>
<td></td>
</tr>
<tr>
<td>Cap length lC [mm]</td>
<td>0 0 18 0 0 0 18</td>
<td></td>
</tr>
<tr>
<td>Connector length lC [mm]</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>LED position</td>
<td>Pos..</td>
<td></td>
</tr>
<tr>
<td>LED</td>
<td>A</td>
<td>A</td>
</tr>
</tbody>
</table>

Accessories

These and more accessories can be found in chapter 10 See pages from 970 ... for cordsets See pages 1066 ... for mounting accessories

Mounting bracket, 30 mm BF 30

Refer to General Notes Relating to Product Information

www.pepperl-fuchs.com fa-info@de.pepperl-fuchs.com www.pepperl-fuchs.com fa-info@us.pepperl-fuchs.com fa-info@sg.pepperl-fuchs.com

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Proximity Sensors, Inductive Sensors, cylindrical

Inductive sensor cylindrical, Ø 30 mm (3G/3D)
Technical Data
For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data
Installation flush
Output type NAMUR, NC
Nominal voltage 8.2 V (Ri approx. 1 kΩ)
Current consumption
- Measuring plate not detected ≥ 3 mA
- Measuring plate detected ≤ 1 mA
Suitable for 2:1 technology ✓ Reverse polarity protection diode not required
Ambient temperature -25 ... 100 °C (-13 ... 212 °F)
Housing material Stainless steel 1.4305 / AISI 303
Protection degree IP67

Model Number
<table>
<thead>
<tr>
<th>Model Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>NJ0,8-4,5-N</td>
</tr>
<tr>
<td>NJ0,8-5GM-N</td>
</tr>
<tr>
<td>NJ1,5-6,5-N</td>
</tr>
<tr>
<td>NCB1,5-6,5M25-N0</td>
</tr>
<tr>
<td>NCB1,5-6,5M25-N0-V1</td>
</tr>
</tbody>
</table>

Rated operating distance
- 0.8 mm
- 1.5 mm
Switching frequency
- 0 ... 2000 Hz
- 0 ... 5000 Hz
Switching state indication
- LED, yellow
- Multihole-LED, yellow
Connection type
- Connector M12 x 1, 4-pin
- Cable PVC, 2 m

Use in the Hazardous Area
Use in the hazardous area see instruction manuals
Category
- 1G, 2G, 1D
- 2G

Approvals and Certificates
- FM control drawing 116-0165F
- UL approval cULus Listed, General Purpose
- CSA approval cCSAus Listed, General Purpose
- CCC approval CCC approval / marking not required for sensors rated ≤36 V

Dimensions
<table>
<thead>
<tr>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length L [mm]</td>
</tr>
<tr>
<td>Diameter D [mm]</td>
</tr>
<tr>
<td>Thread length lt [mm]</td>
</tr>
<tr>
<td>Cap length l1 [mm]</td>
</tr>
<tr>
<td>Connector length lc [mm]</td>
</tr>
<tr>
<td>LED position</td>
</tr>
<tr>
<td>Note: 6.5 / 12 indicated: barrel diameter / connector end diameter (mm)</td>
</tr>
</tbody>
</table>

Properties
- Ø4.5 mm / Ø5 mm and Ø6.5 mm housing versions
- 0.8 mm and 1.5 mm sensing ranges
- NAMUR output
- Cable and connector versions

Benefits
- ATEX approved sensor applicable up to zone 0 and zone 20
- Intrinsically safe when connected to approved device
- FM Class and Division approvals
- 2:1 technology allows two sensor signals on one line

Application Note: Reference appendix, data sheet, operating instructions, and appropriate standards. To be used within the electrical, environmental, and mechanical limitations of the device and area.

Accessories
These and more accessories can be found in chapter 10
See pages from 970 ... for cordsets
See pages 1066 ... for mounting accessories

Electrical Connection
<table>
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<tr>
<th>Electrical Connection</th>
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<tbody>
<tr>
<td>NJO.8-4.5-N</td>
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<tr>
<td>NJO.8-5GM-N</td>
</tr>
<tr>
<td>NCB1.5-6,5M25-N0</td>
</tr>
<tr>
<td>NJ1.5-6,5-N</td>
</tr>
</tbody>
</table>

Wire colors in accordance with EN 60947-5-6
1 | BN (brown) |
2 | BU (blue) |

Proximity Sensors, Inductive Sensors, cylindrical
Technical Data

General Data
Rated operating distance: 1.5 mm
Installation: flush
Output type: NAMUR, NC
Nominal voltage: 8.2 V (Ri approx. 1 kΩ)
Current consumption:
- Measuring plate not detected: ≥ 3 mA
- Measuring plate detected: ≤ 1 mA
Switching frequency: 0 ... 2000 Hz
Switching state indication: LED, yellow
Protection degree: IP67
Suitable for: 2:1 technology
- Reverse polarity protection diode not required
Switching state indication:
- LED, yellow
Protection degree:
- IP67
Ambient temperature: -25 ... 100 °C (-13 ... 212 °F)
Housing material: Stainless steel 1.4305 / AISI 303

Model Number
NCB1,5-8GM25-N0
NCB1,5-8GM25-N0-V1

Connection type:
- Connector M12 x 1 , 4-pin
- Cable PVC , 2 m

Use in the hazardous area
- See instruction manuals
- FM Class and Division approvals
- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤ 36 V

Dimensions
- Length L [mm]: 25, 45
- Diameter D [mm]: M8 x 1, M8 x 1 / 12
- Thread length l₁ [mm]: 25
- Cap length l₂ [mm]: 0
- Connector length l₃ [mm]: 6
- LED position: Pos. C

Note: M8 x 1 / 12 indicated: barrel thread / connector end diameter (mm)

Accessories
These and more accessories can be found in chapter 10
See pages from 970 ... for cordsets
See pages 1066 ... for mounting accessories

- BF 5-30
- Universal mounting bracket, 5 ... 30 mm
- BF 8
- Mounting bracket, 8 mm
- V1-G
- 4-pin, M12 female field-attachable connector, straight
- V1-W
- 4-pin, M12 female field-attachable connector, angled
- V1-G-N-2M-PUR
- Female cordset, M12, 2-pin, NAMUR, PUR cable, straight
- V1-W-N-2M-PUR
- Female cordset, M12, 2-pin, NAMUR, PUR cable, angled
- KFD2-SRA-Ex4
- 4-channel isolated amplifier for 2:1 technology

For detailed information on isolated amplifiers refer to the data sheets at www.pepperl-fuchs.us

Electrical Connection

Wire colors in accordance with EN 60947-5-6
1 | BN (brown)
2 | BU (blue)
3
4

Properties
- Ø mm housing
- 1.5 mm flush mountable
- NAMUR output
- Cable and connector versions

Benefits
- ATEX approved sensor applicable up to zone 0 and zone 20
- Intrinsically safe when connected to approved device
- FM Class and Division approvals
- 2:1 technology allows two sensor signals on one line

Application Note: Reference appendix, data sheet, operating instructions, and appropriate standards. To be used within the electrical, environmental, and mechanical limitations of the device and area.
Inductive sensor cylindrical Ø11/14 mm (NAMUR)

### Technical Data

#### General Data
- Output type: NAMUR, NC
- Nominal voltage: 8.2 V (Ri approx. 1 kΩ)
- Current consumption:
  - Measuring plate not detected: ≥ 3 mA
  - Measuring plate detected: ≤ 1 mA
- Switching frequency: 0 ... 3000 Hz
- Ambient temperature: -25 ... 100 °C (-13 ... 212 °F)
- Protection degree: IP68
- Connection type: cable PVC, 2 m

#### Model Number
- Rated operating distance: 2 mm
- Installation:
  - flush
  - non-flush
- Suitable for 2:1 technology: ✔ Reverse polarity protection
- Housing material:
  - Stainless steel 1.4305 / AISI 303
  - PVDF

#### Use in the Hazardous Area
- Use in the hazardous area: see instruction manuals
- Category: 1G, 2G, 3G, 1D, 3D

#### Approvals and Certificates
- FM control drawing: 116-0165F
- UL approval cULus Listed, General Purpose
- CSA approval cCSAus Listed, General Purpose
- CCC approval

#### Dimensions
- Length L [mm]
  - 30
- Diameter D [mm] 11 M14 x 1
- Thread length l1 [mm]
  - 0 30 0 17
- Cap length l2 [mm] 0
- Connector length lc [mm] 0
- LED position

#### Accessories
- These and more accessories can be found in chapter 10
- See pages from 970 ... for cordsets
- See pages 1066 ... for mounting accessories

### Properties
- Ø11 mm smooth and threaded housing versions
- 2 mm and 5 mm sensing ranges
- NAMUR output
- Cable version

### Benefits
- ATEX approved sensor applicable up to zone 0 and zone 20
- Intrinsically safe when connected to approved device
- FM Class and Division approvals

Application Note: Reference appendix, data sheet, operating instructions, and appropriate standards. To be used within the electrical, environmental, and mechanical limitations of the device and area.
### Technical Data

**General Data**
- **Output type**: NAMUR, NC
- **Nominal voltage**: 8.2 V (Ri approx. 1 kΩ)
- **Current consumption**:
  - Measuring plate not detected: ≥ 3 mA
  - Measuring plate detected: ≤ 1 mA
- **Ambient temperature**: -25 ... 100 °C (-13 ... 212 °F)
- **Housing material**: PBT
- **Connection type**: cable PVC, 2 m

**Model Number**

<table>
<thead>
<tr>
<th>Model Number</th>
<th>NJ2-12GK-N</th>
<th>NJ4-12GK-N</th>
<th>NCB2-12GK35-N0</th>
<th>NCN4-12GK35-N0</th>
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</thead>
<tbody>
<tr>
<td>Rated operating distance</td>
<td>2 mm</td>
<td>4 mm</td>
<td></td>
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</tr>
<tr>
<td>Installation</td>
<td>flush</td>
<td>non-flush</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Switching frequency</td>
<td>0 ... 1000 Hz</td>
<td>0 ... 1500 Hz</td>
<td>0 ... 2000 Hz</td>
<td>0 ... 800 Hz</td>
</tr>
<tr>
<td>Suitable for 2:1 technology</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP66 / IP68</td>
<td>IP67</td>
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</table>

**Use in the hazardous area**

- Category 2G; 1D
- Approvals and Certificates
  - FM control drawing: 116-0165F
  - UL approval: cULus Listed, General Purpose
  - CSA approval: cCSAus Listed, General Purpose
  - CCC approval / marking not required for sensors rated ≤ 36 V

**Dimensions**

- **Length L [mm]**: 34, 35
- **Diameter D [mm]**: M12 x 1
- **Thread length l₁ [mm]**: 30.5, 32
- **Cap length l₂ [mm]**: 0
- **Connector length l₃ [mm]**: 0
- **LED position**: Pos. C

**Accessories**

These and more accessories can be found in chapter 10. See pages from 970 ... for cordsets, see pages 1066 ... for mounting accessories.

- BF 12: Mounting bracket, 12 mm
- AB-12: Right angled mounting bracket
- KCD2-SR-Ex2: 2-channel isolated amplifier
- KFD2-SRA-Ex4: 4-channel isolated amplifier for 2:1 technology

For detailed information on isolated amplifiers refer to the data sheets at www.pepperl-fuchs.us

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**Properties**

- Ø12 mm housing
- 2 mm and 4 mm sensing ranges
- NAMUR output
- Cable version

**Benefits**

- ATEX approved sensor applicable up to zone 0 and zone 20
- Intrinsically safe when connected to approved device
- FM Class and Division approvals

Application Note: Reference appendix, data sheet, operating instructions, and appropriate standards. To be used within the electrical, environmental, and mechanical limitations of the device and area.
Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data
Output type NAMUR, NC
Nominal voltage 8.2 V (Ri approx. 1 kΩ)
Ambient temperature -25...100 °C (-13...212 °F)
Housing material Stainless steel 1.4305 / AISI 303

Model Number

<table>
<thead>
<tr>
<th>Model Number</th>
<th>NJ2-12GM-N</th>
<th>NJ2-12GM-N-V1</th>
<th>NJB2-12GM35-N0</th>
<th>NJB2-12GM35-N0-V1</th>
<th>NJB4-12GM40-N0</th>
<th>NJB4-12GM40-N0-V1</th>
<th>NCB2-12GM35-N0</th>
<th>NCB2-12GM35-N0-V1</th>
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<th>NJ4-12GM-N</th>
<th>NJ4-12GM-N-V1</th>
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<tr>
<td>Rated operating distance (mm)</td>
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<td>4</td>
<td>3</td>
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<tr>
<td>Installation</td>
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<tr>
<td>Current consumption (mA)</td>
<td>≥ 2.2</td>
<td>≥ 3</td>
<td>≥ 1</td>
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<tr>
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<td>Measuring plate detected</td>
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<td>≤ 1</td>
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<td>≤ 1</td>
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</tr>
<tr>
<td>Switching frequency (Hz)</td>
<td>0 ... 1000</td>
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<td>0 ... 2000</td>
<td>0 ... 800</td>
<td>0 ... 1000</td>
<td>0 ... 1500</td>
<td>0 ... 2000</td>
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<td>0 ... 2000</td>
<td>0 ... 800</td>
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<td>0 ... 1500</td>
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<td>✔</td>
<td>✔</td>
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<td>diode not required</td>
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<td>diode not required</td>
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<td>Connection type</td>
<td>Connector M12 x 1, 4-pin</td>
<td>Connector M12 x 1, 4-pin</td>
<td>Connector M12 x 1, 4-pin</td>
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<td>Connector M12 x 1, 4-pin</td>
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<tr>
<td>Use in the Hazardous Area</td>
<td>Category</td>
<td>1G; 2G</td>
<td>1G; 2G; 1D</td>
<td>1G; 2G; 2D; 3G</td>
<td>1G; 2G; 2D; 3G; 3D</td>
<td>1G; 2G; 2D; 3G; 3D</td>
<td>1G; 2G; 2D; 3G; 3D</td>
<td>1G; 2G; 2D; 3G; 3D</td>
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<td>1G; 2G; 2D; 3G; 3D</td>
<td>1G; 2G; 2D; 3G; 3D</td>
<td>1G; 2G; 2D; 3G; 3D</td>
<td>1G; 2G; 2D; 3G; 3D</td>
<td>1G; 2G; 2D; 3G; 3D</td>
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<td>Approvals and Certificates</td>
<td>FM control drawing</td>
<td>116-0165F</td>
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<td>CCC approval / marking not required for sensors rated ≤36 V</td>
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<tr>
<td>Dimensions</td>
<td>Length L (mm)</td>
<td>35</td>
<td>33</td>
<td>35</td>
<td>35</td>
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<td>35</td>
<td>35</td>
<td>35</td>
<td>35</td>
<td>35</td>
<td>35</td>
<td>35</td>
</tr>
<tr>
<td>Diameter D (mm)</td>
<td>M12 x 1</td>
<td>M12 x 1</td>
<td>M12 x 1</td>
<td>M12 x 1</td>
<td>M12 x 1</td>
<td>M12 x 1</td>
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<td>M12 x 1</td>
<td>M12 x 1</td>
<td>M12 x 1</td>
<td>M12 x 1</td>
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<tr>
<td>Thread length l_t (mm)</td>
<td>35</td>
<td>28</td>
<td>32</td>
<td>37</td>
<td>27</td>
<td>35</td>
<td>28</td>
<td>32</td>
<td>37</td>
<td>27</td>
<td>35</td>
<td>28</td>
<td>32</td>
<td>37</td>
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<tr>
<td>Cap length l_1 (mm)</td>
<td>0</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Connector length l_c (mm)</td>
<td>6</td>
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<td></td>
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<tr>
<td>Accessories</td>
<td>These and more accessories can be found in chapter 10</td>
<td>See pages from 970... for cordsets</td>
<td>See pages 1066... for mounting accessories</td>
<td></td>
<td></td>
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<tr>
<td>Electrical Connection</td>
<td>Wire colors in accordance with EN 60947-5-6</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>1 BN</td>
<td>(brown)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 BU</td>
<td>(blue)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Properties
- Ø12 mm housing
- 2 mm and 4mm sensing ranges
- NAMUR output
- Cable and connector versions

Benefits
- ATEX approved sensor applicable up to zone 0 and zone 20
- Intrinsically safe when connected to approved device
- FM Class and Division approvals

Application Note: Reference appendix, data sheet, operating instructions, and appropriate standards. To be used within the electrical, environmental, and mechanical limitations of the device and area.

Inductive sensor cylindrical, Ø 12 mm (NAMUR)
Inductive sensor cylindrical, Ø 18 mm (NAMUR)

Technical Data
For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data
Output type NAMUR, NC
Nominal voltage 8.2 V (Ri approx. 1 kΩ)
Current consumption
Measuring plate not detected ≥ 3 mA
Measuring plate detected ≤ 1 mA
Ambient temperature -25 ... 100 °C (-13 ... 212 °F)
Connection type cable PVC, 2 m

Model Number

<table>
<thead>
<tr>
<th>Rated operating distance</th>
<th>NJS-18GK-N</th>
<th>NJ8-18GK-N</th>
<th>NCB5-18GK40-N0</th>
<th>NCB8-18GK40-N0</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 mm</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>8 mm</td>
<td>●●</td>
<td>●●</td>
<td>●●</td>
<td>●●</td>
</tr>
</tbody>
</table>

Installation
flush - ●
non-flush - ●●

Switching frequency
0 ... 200 Hz - ●
0 ... 300 Hz - ●●
0 ... 400 Hz - ●●
0 ... 500 Hz - ●●

Switching state indication
all direction LED, yellow - ●

Housing material
PBT - ●
PBT/PPS - ●●

Protection degree
IP66 / IP68 - ●
IP67 - ●●
IP68 - ●●●

Use in the Hazardous Area
Use in the hazardous area see instruction manuals - ●
Category
2G, 1D - ●●●

Approvals and Certificates
FM control drawing 116-0165F - ●
UL approval cULus Listed, General Purpose - ●
CSA approval cCSAus Listed, General Purpose - ●
CCC approval CCC approval / marking not required for sensors rated ≤ 36 V - ●

Dimensions
Length L [mm] 39
Diameter D [mm] 18
Thread length l₁ [mm] 34.5
Cap length l₂ [mm] 1
Connector length l₃ [mm] 0
LED position - Pos. C

Accessories
These and more accessories can be found in chapter 10
See pages from 970 ... for cordsets
See pages 1066 ... for mounting accessories

<table>
<thead>
<tr>
<th>Accessories</th>
<th>AB-12</th>
<th>BF 18</th>
<th>KCD2-SR-Ex2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Right angled mounting bracket</td>
<td>Mounting bracket, 18 mm</td>
<td>2-channel isolated amplifier</td>
</tr>
</tbody>
</table>

Application Note: Reference appendix, data sheet, operating instructions, and appropriate standards. To be used within the electrical, environmental, and mechanical limitations of the device and area.
**Inductive sensor**

cylindrical, Ø 18 mm (NAMUR)

### Technical Data

For detailed data and product description refer to the data sheets at [www.pepperl-fuchs.us](http://www.pepperl-fuchs.us).

#### General Data

- **Output type**: NAMUR, NC
- **Nominal voltage**: 8.2 V (Ri approx. 1 kΩ)
- **Ambient temperature**: -25 ... 100 °C (-13 ... 212 °F)
- **Housing material**: Stainless steel 1.4305 / AISI 303

#### Model Number

- **Rated operating distance**: 5 mm
- **Installation**: flush
- **Current consumption**
  - Measuring plate detected: ≤ 1 mA
  - Measuring plate not detected: ≥ 3 mA
- **Switching frequency**
  - 0 ... 200 Hz
  - 0 ... 500 Hz
- **Suitable for 2:1 technology**: ✔

#### Use in the Hazardous Area

- **Category**: 1G; 2G
- **FM control drawing**: 116-0165F

#### Dimensions

<table>
<thead>
<tr>
<th>Length L [mm]</th>
<th>40</th>
<th>40</th>
<th>50</th>
<th>55</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diameter D [mm]</td>
<td>M18 x 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thread length l₁ [mm]</td>
<td>24</td>
<td>24</td>
<td>37</td>
<td>27</td>
</tr>
<tr>
<td>Cap length l₂ [mm]</td>
<td>0</td>
<td>16</td>
<td>0</td>
<td>16</td>
</tr>
<tr>
<td>Connector length l₃ [mm]</td>
<td>0</td>
<td>10</td>
<td>0</td>
<td>15</td>
</tr>
<tr>
<td>LED position</td>
<td>Pos.</td>
<td>C</td>
<td>C</td>
<td>C</td>
</tr>
</tbody>
</table>

#### Electrical Connection

- **Wire colors** in accordance with EN 60947-5-6

---

### Properties

- Ø18 mm housing
- 5 mm and 8 mm sensing ranges
- NAMUR output
- Cable and connector versions

### Benefits

- ATEX approved sensor applicable up to zone 0 and zone 20
- Intrinsically safe when connected to approved device
- FM Class and Division approvals

---

**Application Note**: Reference appendix, data sheet, operating instructions, and appropriate standards. To be used within the electrical, environmental, and mechanical limitations of the device and area.
Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data
Rated operating distance 1.5 mm
Installation flush
Output type NAMUR, NC
Nominal voltage 8.2 V (Ri approx. 1 kΩ)
Current consumption
  Measuring plate not detected ≥ 3 mA
  Measuring plate detected ≤ 1 mA
Switching frequency 0 ... 400 Hz
Ambient temperature -25 ... 85 °C (-13 ... 185 °F)
Housing material Stainless steel 1.4305 / AISI 303

Model Number
NJ1.5-18GM-N-D
NJ1.5-18GM-N-D-V1

Protection degree IP66 / IP68
Connection type Connector M12 x 1 , 4-pin cable PVC , 2 m

Use in the Hazardous Area
Use in the hazardous area see instruction manuals
Category 2G, 1D

Approvals and Certificates
UL approval cULus Listed, General Purpose
CSA approval cCSAus Listed, General Purpose
CCC approval CCC approval / marking not required for sensors rated ≤36 V

Dimensions
Length L [mm] 50 45
Diameter D [mm] M18 x 1
Thread length l_t [mm] 20
Cap length l_c [mm] 15
Connector length l_c [mm] 0 10
LED position -

Accessories
These and more accessories can be found in chapter 10
See pages from 970 ... for cordsets See pages 1066 ... for mounting accessories

V1-G
4-pin, M12 female field-attachable connector, straight

V1-W
4-pin, M12 female field-attachable connector, angled

V1-W-N2M-PUR
Female cordset, M12, 2-pin, NAMUR, PUR cable, angled

V1-G-N2M-PUR
Female cordset, M12, 2-pin, NAMUR, PUR cable, straight

KCD2-SR-Ex2
2-channel isolated amplifier

For detailed information on isolated amplifiers refer to the data sheets at www.pepperl-fuchs.us

Properties
- Ø18 mm housing
- 1.5 mm flush mountable
- NAMUR output
- Cable and connector versions

Benefits
- ATEX approved sensor applicable up to zone 0 and zone 20
- Intrinsically safe when connected to approved device
- FM Class and Division approvals
- Compression proof up to 350 bar, dynamically on active surface

Application Note: Reference appendix, data sheet, operating instructions, and appropriate standards. To be used within the electrical, environmental, and mechanical limitations of the device and area.

Electrical Connection

Wire colors in accordance with EN 60947-5-6

1  SN (brown)
2  BU (blue)
## Inductive sensor

### Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

### General Data

<table>
<thead>
<tr>
<th>Property</th>
<th>Specification</th>
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<tbody>
<tr>
<td>Output type</td>
<td>NAMUR, NC</td>
</tr>
<tr>
<td>Nominal voltage</td>
<td>8.2 V (Ri approx. 1 kΩ)</td>
</tr>
<tr>
<td>Current consumption</td>
<td></td>
</tr>
<tr>
<td>Measuring plate not detected</td>
<td>≥ 3 mA</td>
</tr>
<tr>
<td>Measuring plate detected</td>
<td>≤ 1 mA</td>
</tr>
<tr>
<td>Switching frequency</td>
<td>0 ... 2000 Hz</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-25 ... 100 °C (-13 ... 212 °F)</td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP68</td>
</tr>
<tr>
<td>Connection type</td>
<td>cable PVC , 2 m</td>
</tr>
</tbody>
</table>

### Model Number

<table>
<thead>
<tr>
<th>Model Number</th>
<th>NJ6-22-N</th>
<th>NJ6-22-N-G</th>
<th>NJ10-22-N</th>
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<tbody>
<tr>
<td>Rated operating distance</td>
<td>10 mm</td>
<td></td>
<td>6 mm</td>
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<tr>
<td>Installation</td>
<td>flush</td>
<td></td>
<td>flush</td>
<td></td>
</tr>
<tr>
<td>Housing material</td>
<td>Stainless steel 1.4305 / AISI 303</td>
<td></td>
<td>PBT</td>
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</table>

### Use in the Hazardous Area

- Use in the hazardous area: see instruction manuals
- Category: 2G, 2G; 1D, 2G; 3G, 2G; 3G, 3D

### Approvals and Certificates

- FM control drawing: 116-0165F
- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤36 V

### Dimensions

<table>
<thead>
<tr>
<th>Property</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length L [mm]</td>
<td>35</td>
</tr>
<tr>
<td>Diameter D [mm]</td>
<td>22, PG21</td>
</tr>
<tr>
<td>Thread length l₁ [mm]</td>
<td>0, 35</td>
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<tr>
<td>Cap length l₂ [mm]</td>
<td>0, 20</td>
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<tr>
<td>Connector length l₃ [mm]</td>
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<tr>
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</tbody>
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### Accessories

- These and more accessories can be found in chapter 10
- See pages from 970 ... for cordsets
- See pages 1066 ... for mounting accessories

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**Application Note:** Reference appendix, data sheet, operating instructions, and appropriate standards. To be used within the electrical, environmental, and mechanical limitations of the device and area.
Inductive sensor cylindrical, Ø30 mm (NAMUR)

Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data

Output type: NAMUR, NC
Nominal voltage: 8.2 V (Ri approx. 1 kΩ)
Ambient temperature: -25 ... 100 °C (-13 ... 212 °F)
Housing material: PBT
Connection type: cable PVC, 2 m

Model Number

NJ10-30GK-N
NJ15-30GK-N
NCG10-30GK40-N0
NCG15-30GK40-N0

Rated operating distance
10 mm ● ● ● ●
15 mm ● ● ● ●

Installation
flush ● ● ● ●
non-flush ● ● ● ●

Current consumption
Measuring plate detected: ≤ 1 mA ● ● ● ●
Measuring plate not detected: ≥ 2.2 mA ● ● ● ●

Switching frequency
0 ... 100 Hz ● ● ● ●
0 ... 150 Hz ● ● ● ●
0 ... 200 Hz ● ● ● ●
0 ... 300 Hz ● ● ● ●

Switching state indication
all direction LED, yellow ● ● ● ●

Protection degree
IP66 / IP68 ● ● ● ●

Use in the Hazardous Area

Use in the hazardous area: see instruction manuals ● ● ● ●
Category 2G: 1D ● ● ● ●
Category 2G; 3G; 1D; 3D ● ● ● ●

Approvals and Certificates

FM control drawing: 116-0165F ● ● ● ●
UL approval: cULus Listed, General Purpose ● ● ● ●
CSA approval: cCSAus Listed, General Purpose ● ● ● ●
CCC approval: CCC approval / marking not required for sensors rated ≤36 V ● ● ● ●

Dimensions

Length L [mm]: 40
Diameter D [mm]: M30 x 1.5
Thread length l1 [mm]: 34.5
Cap length l2 [mm]: 1
Connector length l3 [mm]: 0
LED position: - Pos. C -

Accessories

These and more accessories can be found in chapter 10
See pages 970 ... for cordsets
See pages 1066 ... for mounting accessories

BF 30
Mounting bracket, 30 mm
AB-30
Right angled mounting bracket
KCD2-SR-Ex2
2-channel isolated amplifier

For detailed information on isolated amplifiers refer to the data sheets at www.pepperl-fuchs.us

Benefits

- ATEX approved sensors applicable up to zone 1 and zone 20
- Intrinsically safe when connected to approved device
- FM Class and Division approvals

Properties

- Ø30 mm housing
- 10 mm and 15 mm sensing ranges
- NAMUR output
- Cable version

Application Note: Reference appendix, data sheet, operating instructions, and appropriate standards. To be used within the electrical, environmental, and mechanical limitations of the device and area.

Electrical Connection

NCG10-30GK40-N0
NJ10-30GK-N
NCG15-30GK40-NB
NJ15-30GK-N
## Technical Data

### General Data
- **Output type**: NAMUR, NC
- **Nominal voltage**: 8.2 V (Ri approx. 1 kΩ)
- **Ambient temperature**: -25 ... 100 °C (-13 ... 212 °F)
- **Housing material**: Stainless steel 1.4305 / AISI 303

### Model Number
- N1J0-30GM40-N0
- N1J0-30GM40-N0-V1
- NCB10-30GM40-N0
- NCB15-30GM40-N0
- NCB15-30GM40-N0-V1
- NCBN15-30GM40-N0-V1
- NJ10-30GM-N-V1
- NCB10-30GM40-N0-V1
- NCB15-30GM40-N0-V1
- NCBN15-30GM40-N0-V1

### Rated operating distance
- 10 mm
- 15 mm

### Current consumption
- Measuring plate not detected: ≥ 2.2 mA
- Measuring plate detected: ≤ 1 mA

### Switching frequency
- 0 ... 100 Hz
- 0 ... 150 Hz
- 0 ... 200 Hz
- 0 ... 300 Hz
- 0 ... 450 Hz

### Protection degree
- IP65
- IP67

### Connection type
- Connector M12 x 1, 4-pin
- Cable PVC, 2 m

### Use in the Hazardous Area
- **Category**: 1G; 2G; 1D; 3D

### Approvals and Certificates
- FM control drawing: 116-0165F
- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤ 36 V

### Dimensions
- **Length L [mm]**: 40, 50, 55
- **Diameter D [mm]**: M30 x 1.5
- **Thread length l1 [mm]**: 40, 37, 22, 40, 22
- **Cap length l2 [mm]**: 0, 10, 18, 0, 18
- **Connector length l3 [mm]**: 0
- **LED position**: Pos. C

### Accessories
- **These and more accessories can be found in chapter 10**
- **V1-G-N-2M-PUR**: Female cordset, M12, 2-pin, NAMUR, PUR cable, straight
- **V1-W-N-2M-PUR**: Female cordset, M12, 2-pin, NAMUR, PUR cable, angled
- **KCD2-SR-Ex2**: 2-channel isolated amplifier

### Electrical Connection
- Wire colors: BN (brown), BU (blue)

---

**Properties**
- Ø30 mm housing
- 10 mm and 15 mm sensing ranges
- NAMUR output
- Cable and connector versions

**Benefits**
- ATEX approved sensor applicable up to zone 0 and zone 20
- Intrinsically safe when connected to approved device
- FM Class and Division approvals

**Application Note**: Reference appendix, data sheet, operating instructions, and appropriate standards. To be used within the electrical, environmental, and mechanical limitations of the device and area.
**Inductive sensor**

**Technical Data**

**General Data**
- **Output type**: NAMUR, NC
- **Nominal voltage**: 8.2 V (Ri approx. 1 kΩ)
- **Current consumption**
  - Measuring plate not detected: ≥ 3 mA
  - Measuring plate detected: ≤ 1 mA
- **Ambient temperature**: -25 ... 100 °C (-13 ... 212 °F)
- **Housing material**: PBT
- **Protection degree**: IP67
- **Connection type**: terminal compartment

**Model Number**

<table>
<thead>
<tr>
<th>Model Number</th>
<th>NJ10-36GK-KN</th>
<th>NJ15-36GK-KN</th>
<th>NJ20-40-N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated operating distance [mm]</td>
<td>10</td>
<td>15</td>
<td>20</td>
</tr>
<tr>
<td>Diameter D [mm]</td>
<td>M30 x 1.5</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>Thread length l2 [mm]</td>
<td>58</td>
<td>0 (barrel 50)</td>
<td></td>
</tr>
<tr>
<td>Cap length l1 [mm]</td>
<td>2</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Connector length l3 [mm]</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LED position</td>
<td>-</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Dimensions**

| Length L [mm] | 115 | 95 |
| Diameter D [mm] | M30 x 1.5 | 40 |
| Thread length l2 [mm] | 58 | 0 (barrel 50) |
| Cap length l1 [mm] | 2 | 0 |
| Connector length l3 [mm] | 0 | |
| LED position | - | |

**Accessories**

- **These and more accessories can be found in chapter 10**
  - See pages from 970 ... for cordsets
  - See pages 1066 ... for mounting accessories

- **BF 30**: Mounting bracket, 30 mm
- **AB-30**: Right angled mounting bracket
- **BF 40**: Mounting bracket, 40 mm
- **KCD2-SR-Ex2**: 2-channel isolated amplifier

For detailed information on isolated amplifiers refer to the data sheets at www.pepperl-fuchs.us

**Application Note:** Reference appendix, data sheet, operating instructions, and appropriate standards. To be used within the electrical, environmental, and mechanical limitations of the device and area.
**Inductive sensor**

**Technical Data**

For detailed data and product description refer to the data sheets at [www.pepperl-fuchs.us](http://www.pepperl-fuchs.us)

- **Model Number**: NJ25-50-N
- **Rated operating distance**: 25 mm
- **Installation**: non-flush
- **Output type**: NAMUR, NC
- **Nominal voltage**: 8.2 V (Ri approx. 1 kΩ)
- **Measuring plate not detected**: ≥ 3 mA
- **Measuring plate detected**: ≤ 1 mA
- **Switching frequency**: 0 ... 250 Hz
- **Ambient temperature**: -25 ... 100 °C (-13 ... 212 °F)
- **Housing material**: PBT
- **Protection degree**: IP67
- **Connection type**: cable PVC, 2 m

**Use in the Hazardous Area**

- **Use in the hazardous area**: see instruction manuals
- **Category**: 2G

**Approvals and Certificates**

- **FM control drawing**: 116-0165F
- **UL approval**: cULus Listed, General Purpose
- **CSA approval**: cCSAus Listed, General Purpose
- **CCC approval**: CCC approval / marking not required for sensors rated ≤ 36 V

**Dimensions**

- **Height H [mm]**: 40
- **Diameter D [mm]**: 50
- **Thread length l₁ [mm]**: 0
- **Connector length l₂ [mm]**: 0

**Properties**

- Ø50 mm housing
- 25 mm non-flush mountable
- NAMUR output
- Cable version

**Benefits**

- ATEX approved sensor applicable up to zone 1
- Intrinsically safe when connected to approved device
- FM Class and Division approvals

**Accessories**

- KCD2-SR-Ex2
  2-channel isolated amplifier

For detailed information on isolated amplifiers refer to the data sheets at [www.pepperl-fuchs.us](http://www.pepperl-fuchs.us)

**Application Note:** Reference appendix, data sheet, operating instructions, and appropriate standards. To be used within the electrical, environmental, and mechanical limitations of the device and area.
Inductive sensor  

cylindrical, Ø 11 / 14 mm (NAMUR with safety function)

Technical Data  
For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

<table>
<thead>
<tr>
<th>General Data</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated operating distance</td>
<td>2 mm</td>
</tr>
<tr>
<td>Installation</td>
<td>flush</td>
</tr>
<tr>
<td>Output type</td>
<td>NAMUR, NC</td>
</tr>
<tr>
<td>Nominal voltage</td>
<td>8 V DC</td>
</tr>
<tr>
<td>Current consumption</td>
<td></td>
</tr>
<tr>
<td>Measuring plate not detected</td>
<td>≥ 3 mA</td>
</tr>
<tr>
<td>Measuring plate detected</td>
<td>≤ 1 mA</td>
</tr>
<tr>
<td>Switching frequency</td>
<td>0 ... 3000 Hz</td>
</tr>
<tr>
<td>Suitable for 2:1 technology</td>
<td>✓, with reverse polarity protection diode</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-40 ... 100 °C (-40 ... 212 °F)</td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP68</td>
</tr>
<tr>
<td>Connection type</td>
<td>cable silicon, 2 m</td>
</tr>
</tbody>
</table>

Model Number  
NJ2-11-SN  
NJ2-11-SN-G

Properties  
Ø11/14 mm housing  
2 mm, flush mountable  
NAMUR output  
Cable version

Benefits  
Usable up to SIL 3 acc. to IEC 61508  
Usable in hazardous area  
FM Class and Division approvals  
High protection degree (IP68)

Application Note: Reference appendix, data sheet, operating instructions, and appropriate standards. To be used within the electrical, environmental, and mechanical limitations of the device and area.

Model Number  
NJ2-11-SN  
NJ2-11-SN-G

Use in the Hazardous Area
Use in the hazardous area see instruction manuals  
Category 1G, 2G, 1D

Approvals and Certificates
FM control drawing 116-0165F  
UL approval cULus Listed, General Purpose  
CSA approval cCSAus Listed, General Purpose  
CCC approval CCC approval / marking not required for sensors rated ≤ 36 V

Dimensions  
| Length L [mm] | 31 | 30 |
| Thread length l1 [mm] | 11 | M14 x 1 |
| Cap length l2 [mm] | 0 | 30 |
| Connector length l3 [mm] | 0 |
| LED position | - |

Accessories
These and more accessories can be found in chapter 10  
See pages 970 ... for cordsets  
See pages 1066 ... for mounting accessories

BF 11  
Mounting bracket, 11 mm

Electrical Connection

Danger!  
In safety-related applications the sensor must be operated with a qualified fail safe interface from Pepperl+Fuchs, such as KFD2-SH-EX1.

Consider the "exida Functional Safety Assessment" document which is available on www.pepperl-fuchs.com as an integral part of this product's documentation.
Inductive sensor
cylindrical, Ø 12 mm (NAMUR with safety function)

Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

<table>
<thead>
<tr>
<th>General Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output type</td>
</tr>
<tr>
<td>Nominal voltage</td>
</tr>
<tr>
<td>Current consumption</td>
</tr>
<tr>
<td>Measuring plate not detected</td>
</tr>
<tr>
<td>Measuring plate detected</td>
</tr>
<tr>
<td>Housing material</td>
</tr>
<tr>
<td>Protection degree</td>
</tr>
<tr>
<td>Connection type</td>
</tr>
</tbody>
</table>

Model Number

<table>
<thead>
<tr>
<th>Model Number</th>
<th>NJ4-12GK-SN</th>
<th>NJ2-12GK-SN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated operating distance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 mm</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>4 mm</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Installation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>flush</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>non-flush</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Switching frequency</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 ... 1500 Hz</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>0 ... 2000 Hz</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Suitable for 2:1 technology</td>
<td></td>
<td></td>
</tr>
<tr>
<td>with reverse polarity protection diode</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-40 ... 100 °C (-40 ... 212 °F)</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>-50 ... 100 °C (-58 ... 212 °F)</td>
<td>●</td>
<td>●</td>
</tr>
</tbody>
</table>

Use in the Hazardous Area

<table>
<thead>
<tr>
<th>Use in the hazardous area</th>
<th>see instruction manuals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category</td>
<td></td>
</tr>
<tr>
<td>1G; 2G; 1D</td>
<td>●</td>
</tr>
<tr>
<td>1G; 2G; 3G; 1D; 3D</td>
<td>●</td>
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</tbody>
</table>

Approvals and Certificates

<table>
<thead>
<tr>
<th>FM control drawing</th>
<th>116-0165F</th>
</tr>
</thead>
<tbody>
<tr>
<td>UL approval</td>
<td>cULus Listed, General Purpose</td>
</tr>
<tr>
<td>GSA approval</td>
<td>cGSAus Listed, General Purpose</td>
</tr>
<tr>
<td>CCC approval</td>
<td>CCC approval / marking not required for sensors rated ≤36 V</td>
</tr>
</tbody>
</table>

Dimensions

<table>
<thead>
<tr>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length L [mm]</td>
</tr>
<tr>
<td>Diameter D [mm]</td>
</tr>
<tr>
<td>Thread length l1 [mm]</td>
</tr>
<tr>
<td>Cap length l2 [mm]</td>
</tr>
<tr>
<td>Connector length l3 [mm]</td>
</tr>
<tr>
<td>LED position</td>
</tr>
</tbody>
</table>

Accessories

These and more accessories can be found in chapter 10
See pages from 970 ... for cordsets
See pages 1066 ... for mounting accessories

Danger!

In safety-related applications the sensor must be operated with a qualified fail safe interface from Pepperl+Fuchs, such as KFD2-SH-EX1. Consider the "exida Functional Safety Assessment" document which is available on www.pepperl-fuchs.com as an integral part of this product’s documentation.

Properties

- Ø12 mm housing
- 2 mm and 4 mm sensing ranges
- NAMUR output
- Cable version

Benefits

- Usable up to SIL 3 acc. to IEC 61508
- Usable in hazardous area
- FM Class and Division approvals
- High protection degree (IP68)

Application Note: Reference appendix, data sheet, operating instructions, and appropriate standards. To be used within the electrical, environmental, and mechanical limitations of the device and area.

Electrical Connection

N4-12GK-SN
N2-12GK-SN
Inductive sensor
cylindrical, Ø 18 mm (NAMUR with safety function)

### Technical Data

**General Data**
- Nominal voltage: 8 V DC
- Protection degree: IP68
- Connection type: cable silicon, 2 m

#### Model Number

<table>
<thead>
<tr>
<th>Rated operating distance</th>
<th>NJ3-18GK-S1N</th>
<th>NJ5-18GK-SN</th>
<th>NJ8-18GK-SN</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 mm</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>5 mm</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>8 mm</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>

**Installation**
- flush
- non-flush

**Output type**
- NAMUR, NO
- NAMUR, NC

**Current consumption**
- Measuring plate not detected:
  - ≥ 3 mA
  - ≤ 1 mA
- Measuring plate detected:
  - ≥ 3 mA
  - ≤ 1 mA
- Switching frequency:
  - 0 ... 200 Hz
  - 0 ... 500 Hz

**Ambient temperature**
- -25 ... 100 °C (-13 ... 212 °F)
- -40 ... 100 °C (-40 ... 212 °F)

**Housing material**
- Hostalen PPN, black
- PP

**Use in the Hazardous Area**
- see instruction manuals

**Approvals and Certificates**
- FM control drawing: 116-0165F
- UL approval cULus Listed, General Purpose
- CSA approval cCSAus Listed, General Purpose
- CCC approval / marking not required for sensors rated ≤ 36 V

#### Dimensions

<table>
<thead>
<tr>
<th>Length L [mm]</th>
<th>Diameter D [mm]</th>
<th>Thread length l₁ [mm]</th>
<th>Cap length l₂ [mm]</th>
<th>Connector length l₃ [mm]</th>
<th>LED position</th>
</tr>
</thead>
<tbody>
<tr>
<td>40.5</td>
<td>M18 x 1</td>
<td>34.5</td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

#### Accessories

These and more accessories can be found in chapter 10
- See pages 970 ... for cordsets
- See pages 1066 ... for mounting accessories

**Application Note:** Reference appendix, data sheet, operating instructions, and appropriate standards. To be used within the electrical, environmental, and mechanical limitations of the device and area.

**Properties**
- Ø18 mm housing
- Up to 8 mm sensing ranges
- NAMUR output
- Cable version

**Benefits**
- Usable up to SIL 3 acc. to IEC 61508
- Usable in hazardous area
- FM Class and Division approvals
- High protection degree (IP68)

**Electrical Connection**

![Electrical Connection Diagram](image.png)

---

**Danger!**
In safety-related applications the sensor must be operated with a qualified fail safe interface from Pepperl+Fuchs, such as KFD2-SH-EXT. Consider the "exida Functional Safety Assessment" document which is available on www.pepperl-fuchs.com as an integral part of this product’s documentation.
**Inductive sensor**

**cylindrical, Ø 22 mm / PG21 (NAMUR with safety function)**

---

**Technical Data**

For detailed data and product description refer to the data sheets at [www.pepperl-fuchs.us](http://www.pepperl-fuchs.us)

<table>
<thead>
<tr>
<th>General Data</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated operating distance</td>
<td>6 mm</td>
</tr>
<tr>
<td>Installation</td>
<td>flush</td>
</tr>
<tr>
<td>Output type</td>
<td>NAMUR, NC</td>
</tr>
<tr>
<td>Nominal voltage</td>
<td>8 V DC</td>
</tr>
<tr>
<td>Current consumption</td>
<td>3 mA</td>
</tr>
<tr>
<td>Measuring plate not detected</td>
<td>≥ 3 mA</td>
</tr>
<tr>
<td>Measuring plate detected</td>
<td>≤ 1 mA</td>
</tr>
<tr>
<td>Switching frequency</td>
<td>0 ... 2000 Hz</td>
</tr>
<tr>
<td>Suitable for 2:1 technology</td>
<td>with reverse polarity protection diode</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-40 ... 100 °C (-40 ... 212 °F)</td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP68</td>
</tr>
<tr>
<td>Connection type</td>
<td>cable silicon, 2 m</td>
</tr>
</tbody>
</table>

---

**Model Number**

| Housing material | Stainless steel 1.4305 / AISI 303 |
| Use in the Hazardous Area | see instruction manuals |
| Category | 1G, 2G, 1D |
| Approvals and Certificates | FM control drawing 116-0165F |
| Use in the hazardous area | cULus Listed, General Purpose |
| Approvals and Certificates | cCSAus Listed, General Purpose |
| Dimensions | Length L [mm] 35 |
| Diameter D [mm] 22 PG21 |
| Thread length l1 [mm] 0 35 |
| Cap length l2 [mm] 0 |
| Connector length lc [mm] 0 |
| LED position | - |

---

**Properties**

- Ø22 mm / PG21 housing
- 6 mm, flush mountable
- NAMUR output
- Cable version

**Benefits**

- Usable up to SIL 3 acc. to IEC 61508
- Usable in hazardous area
- FM Class and Division approvals
- High protection degree (IP68)

**Application Note:** Reference appendix, data sheet, operating instructions, and appropriate standards. To be used within the electrical, environmental, and mechanical limitations of the device and area.

---

**Electrical Connection**

---

**Use in the Hazardous Area**

Use in hazardous area see instruction manuals

Category 1G; 2G; 1D

---

**Approvals and Certificates**

- FM control drawing 116-0165F
- UL approval cULus Listed, General Purpose
- cCSAus Listed, General Purpose
- CCC approval / marking not required for sensors rated ≤ 36 V

---

**Dimensions**

| Length L [mm] | 35 |
| Diameter D [mm] | 22 PG21 |
| Thread length l1 [mm] | 0 35 |
| Cap length l2 [mm] | 0 |
| Connector length lc [mm] | 0 |
| LED position | - |

---

**Electrical Connection**

---

**Use in the Hazardous Area**

Use in hazardous area see instruction manuals

Category 1G; 2G; 1D

---

**Approvals and Certificates**

- FM control drawing 116-0165F
- UL approval cULus Listed, General Purpose
- cCSAus Listed, General Purpose
- CCC approval / marking not required for sensors rated ≤ 36 V

---

**Dimensions**

| Length L [mm] | 35 |
| Diameter D [mm] | 22 PG21 |
| Thread length l1 [mm] | 0 35 |
| Cap length l2 [mm] | 0 |
| Connector length lc [mm] | 0 |
| LED position | - |
Technical Data

General Data
Nominal voltage 8 V DC
Housing material PP
Protection degree IP68
Connection type cable silicon, 2 m

Model Number
<table>
<thead>
<tr>
<th>Rated operating distance (mm)</th>
<th>NJ5-30GK-S1N</th>
<th>NJ10-30GK-SN</th>
<th>NJ15-30GK-SN</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>10</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>15</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>

Installation
flush
non-flush

Output type
NAMUR, NO
NAMUR, NC

Current consumption
Measuring plate not detected ≥ 3 mA ≤ 1 mA
Measuring plate detected ≥ 3 mA ≤ 1 mA

Switching frequency
0 ... 100 Hz
0 ... 150 Hz
0 ... 300 Hz

Suitable for 2:1 technology ✔
with reverse polarity protection diode

Ambient temperature
-25 ... 100 °C (-13 ... 212 °F)
-40 ... 100 °C (-40 ... 212 °F)
-50 ... 100 °C (-58 ... 212 °F)

Use in the Hazardous Area
Use in the hazardous area
see instruction manuals

Category
1G, 2G, 1D
1G, 2G, 3G, 1D, 3D

Approvals and Certificates
FM control drawing 116-0165F
UL approval cULus Listed, General Purpose
CSA approval cCSAus Listed, General Purpose
CCC approval CCC approval / marking not required for sensors rated <36 V

Dimensions
Length L [mm] 40
Diameter D [mm] M30 x 1.5
Thread length l1 [mm] 34.5
Cap length l2 [mm] 1
Connector length l3 [mm] 0
LED position -

Electrical Connection

Accessories
These and more accessories can be found in chapter 10
See pages from 970 ... for cordsets
See pages 1066 ... for mounting accessories
BF 30 Mounting bracket, 30 mm
AB-30 Right angled mounting bracket

Application Note: Reference appendix, data sheet, operating instructions, and appropriate standards. To be used within the electrical, environmental, and mechanical limitations of the device and area.

Properties
Ø30 mm housing
Up to 15 mm sensing ranges
DC, NAMUR safety interface
Cable version

Benefits
Usable up to SIL 3 acc. to IEC 61508
Usable in hazardous area
FM Class and Division approvals
High protection degree (IP68)
Models available with low temperature operation down to -50 °C (-58 °F)

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

Electrical Connection
Inductive sensor cylindrical, with AS interface

Technical Data

**General Data**
- Installation: flush
- Output type: AS-Interface, NO/NC programmable
- Slave type: A/B slave
- AS-Interface specification: V3.0
- Operating voltage: 26.5 ... 31.9 V via AS-i bus system
- No-load supply current: ≤ 25 mA
- Reverse polarity protection: ✔
- Switching state indication: dual-LED, yellow
- Fault indication: dual-LED, red
- Ambient temperature: -25 ... 70 °C (-13 ... 158 °F)
- Protection degree: IP67
- Connection type: Connector M12 x 1, 4-pin

**Model Number**

### Rated operating distance
- NCN4-12GM60-B3B-C2-V1
- NCB4-12GM60-B3B-V1
- NCB5-18GM60-B3B-V1
- NBB8-18GM60-B3B-V1
- NBB15-30GM60-B3B-V1

### Dimensions

<table>
<thead>
<tr>
<th>Model</th>
<th>Length L [mm]</th>
<th>Diameter D [mm]</th>
<th>Thread length l1 [mm]</th>
<th>Cap length l2 [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>BF 12</td>
<td>75 M12 x 1</td>
<td>75 M12 x 1</td>
<td>60</td>
<td>0</td>
</tr>
<tr>
<td>BF 18</td>
<td>70 M16 x 1</td>
<td>60 M16 x 1</td>
<td>44</td>
<td>0</td>
</tr>
<tr>
<td>BF 30</td>
<td>75 M30 x 1.5</td>
<td>75 M30 x 1.5</td>
<td>60</td>
<td>0</td>
</tr>
</tbody>
</table>

### Accessories

These and more accessories can be found in chapter 10, see pages from 970... for cordsets, see pages 1066...for mounting accessories.

**Properties**

- Ø12 mm, Ø18 mm and Ø30 mm housing versions
- Up to 15 mm sensing ranges
- AS interface
- Connector version

**Additional Products**

In this series, we offer the following additional products:

- NCN4-12GM60-B3B-C2-V1
- NCB4-12GM60-B3B-V1

Technical data like NCB4-12GM60-B3B-V1 but:
- Installation: non-flush
- Cap length: 5 mm

**Special property:** magnetic field resistant

**Electrical Connection**

- NCN4-12GM60-B3B-V1
- NCB4-12GM60-B3B-V1
- NBB8-18GM60-B3B-V1
- NBB15-30GM60-B3B-V1
- NCB5-18GM60-B3B-V1
- NBB15-30GM60-B3B-V1
- NCN4-12GM60-B3B-C2-V1
## Technical Data

For detailed data and product description refer to the data sheets at [www.pepperl-fuchs.us](http://www.pepperl-fuchs.us)

### General Data
- **Rated operating distance**: 2 mm
- **Installation**: flush
- **Operating voltage**: 10 ... 30 V DC
- **No-load supply current**: ≤ 15 mA
- **Reverse polarity protection**: ✔
- **Switching frequency**: 0 ... 1500 Hz
- **Load current**: 0 ... 100 mA
- **Short-circuit protection**: ✔, self checking
- **Switching state indication**: LED yellow
- **Ambient temperature**: -25 ... 70 °C (-13 ... 158 °F)
- **Housing material**: PC
- **Protection degree**: IP67
- **Connection type**: cable PVC, 0.5 m

### Model Number

<table>
<thead>
<tr>
<th>Output type</th>
<th>NBB2-F76-E0-0,5M</th>
<th>NBB2-F76-E1-0,5M</th>
<th>NBB2-F76-E2-0,5M</th>
<th>NBB2-F76-E3-0,5M</th>
</tr>
</thead>
<tbody>
<tr>
<td>NPN NC</td>
<td>✔</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>NPN NO</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>PNP NC</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>✔</td>
</tr>
<tr>
<td>PNP NO</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>✔</td>
</tr>
</tbody>
</table>

### Approvals and Certificates
- **CCC approval**: CCC approval / marking not required for sensors rated ≤ 36 V

### Dimensions
- **Length L [mm]**: 25
- **Width W [mm]**: 8
- **Height H [mm]**: 5.5
- **Connector length lc [mm]**: 3

### Properties
- Miniature F76 housing
- 2 mm, flush mountable
- DC, 3-wire switching output
- Cable version

### Electrical Connection

![Electrical Connection Diagram]

Refer to General Notes Relating to Product Information

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www.pepperl-fuchs.com fa-info@de.pepperl-fuchs.com fa-info@us.pepperl-fuchs.com fa-info@sg.pepperl-fuchs.com

Courtesy of Steven Engineering, Inc. - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com
### Technical Data

**General Data**
- Reverse polarity protection: ✔
- Switching frequency: 0 ... 1000 Hz
- Load current: 0 ... 100 mA
- Short-circuit protection: ✔, self checking
- Switching state indication: LED, yellow
- Ambient temperature: -25 ... 70 °C (-13 ... 158 °F)
- Protection degree: IP67
- Connection type: cable PVC, 2 m

**Model Number**

<table>
<thead>
<tr>
<th>Model Number</th>
<th>NBB2-F29-A0</th>
<th>NBB2-F29-A2</th>
<th>NBN4-F29-E0</th>
<th>NBN4-F29-E2</th>
<th>NBN4-F29-A0</th>
<th>NBN4-F29-A2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated operating distance</td>
<td>2 mm</td>
<td>✔</td>
<td>4 mm</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Installation</td>
<td>flush</td>
<td>✔</td>
<td>non-flush</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Output type</td>
<td>NPN</td>
<td>✔</td>
<td>NO/NC</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Operating voltage</td>
<td>10 ... 30 V DC</td>
<td>✔</td>
<td>4.75 ... 30 V DC</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>No-load supply current</td>
<td>≤ 10 mA</td>
<td>✔</td>
<td>≤ 15 mA</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Housing material</td>
<td>PPS</td>
<td>✔</td>
<td>Ryton R4</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>

**Approvals and Certificates**
- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤36 V

**Dimensions**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length L [mm]</td>
<td>27</td>
</tr>
<tr>
<td>Width W [mm]</td>
<td>10</td>
</tr>
<tr>
<td>Height H [mm]</td>
<td>6</td>
</tr>
<tr>
<td>Connector length lc [mm]</td>
<td>4</td>
</tr>
</tbody>
</table>

### Properties

- Miniature F29 housing
- 2 mm and 4 mm sensing ranges
- DC, 3-wire and 4-wire switching output
- Cable version

### Benefits

- Anti-slide tab (models available without tab)

### Electrical Connection

![Electrical Connection Diagram]
## Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

<table>
<thead>
<tr>
<th>General Data</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated operating distance</td>
<td>1.5 mm</td>
</tr>
<tr>
<td>Installation</td>
<td>flush</td>
</tr>
<tr>
<td>Operating voltage</td>
<td>5 ... 30 V DC</td>
</tr>
<tr>
<td>No-load supply current</td>
<td>≤ 15 mA</td>
</tr>
<tr>
<td>Switching frequency</td>
<td>0 ... 1200 Hz</td>
</tr>
<tr>
<td>Load current</td>
<td>0 ... 100 mA</td>
</tr>
<tr>
<td>Short-circuit protection</td>
<td>✔ (self checking)</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-25 ... 70 °C (-13 ... 158 °F)</td>
</tr>
<tr>
<td>Housing material</td>
<td>PA</td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP67</td>
</tr>
</tbody>
</table>

### Model Number

<table>
<thead>
<tr>
<th>Model Number</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>NBB1.5-F79-E0-0.5M</td>
<td></td>
</tr>
<tr>
<td>NBB1.5-F79-E1-0.5M</td>
<td></td>
</tr>
<tr>
<td>NBB1.5-F79-E2-0.5M</td>
<td></td>
</tr>
<tr>
<td>NBB1.5-F79-E3-0.5M</td>
<td></td>
</tr>
<tr>
<td>NBB1.5-F79-E0-1.0M</td>
<td></td>
</tr>
<tr>
<td>NBB1.5-F79-E1-1.0M</td>
<td></td>
</tr>
<tr>
<td>NBB1.5-F79-E2-1.0M</td>
<td></td>
</tr>
<tr>
<td>NBB1.5-F79-E3-1.0M</td>
<td></td>
</tr>
</tbody>
</table>

### Output type

- NPN NO
- NPN NC
- PNP NO
- PNP NC

### Connection type

- Cable PVC, 500 mm
- Cable connector M8 x 1, 3-pin with PVC cable 100 mm

### Approvals and Certificates

- CCC approval
- CCC approval / marking not required for sensors rated ≤ 36 V

### Dimensions

- Length L [mm]: 16
- Width W [mm]: 8
- Height H [mm]: 4
- Cap length l1 [mm]: 0.7
- Connector length lc [mm]: 1.5

### Accessories

- These and more accessories can be found in chapter 10
- See pages from 970 ... for cordsets
- See pages 1066 ... for mounting accessories

#### V3-WM
- Female connector, M8, 3-pin, field attachable, angled

#### V3-GM
- Female connector, M8, 3-pin, field attachable, straight

#### V3-WM-BK2M-PUR-U
- Female cordset, M8, 3-pin, PUR cable, angled

#### V3-GM-BK2M-PUR-U
- Female cordset, M8, 3-pin, PUR cable, straight

### Electrical Connection

- Wire colors in accordance with EN 60947-5-2
- BN (brown)
- BU (blue)
- BK (black)
- L+ 1
- L- 4
- BK 3
### Inductive sensor

#### V3 series

#### Technical Data

<table>
<thead>
<tr>
<th>General Data</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated operating distance</td>
<td>3 mm</td>
</tr>
<tr>
<td>Installation</td>
<td>flush</td>
</tr>
<tr>
<td>Operating voltage</td>
<td>5 ... 60 V DC</td>
</tr>
<tr>
<td>Reverse polarity protection</td>
<td>✔</td>
</tr>
<tr>
<td>Switching frequency</td>
<td>0 ... 2000 Hz</td>
</tr>
<tr>
<td>Load current</td>
<td>4 ... 100 mA</td>
</tr>
<tr>
<td>Lowest Load current</td>
<td>4 mA</td>
</tr>
<tr>
<td>Switching state indication</td>
<td>LED, yellow</td>
</tr>
<tr>
<td>Housing material</td>
<td>PBT</td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP67</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Model Number</th>
<th>NBB3-V3-Z4</th>
<th>NBB3-V3-Z5</th>
<th>NBB3-V3-Z4-V5</th>
<th>NBB3-V3-Z5-V5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output type</td>
<td>DC NO</td>
<td>DC NC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-25 ... 70 °C (-13 ... 158 °F)</td>
<td>-25 ... 85 °C (-13 ... 185 °F)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connection type</td>
<td>4.8 mm Faston cable PVC , 130 mm</td>
<td></td>
<td></td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Approvals and Certificates</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>UL approval</td>
<td>cULus Listed, General Purpose</td>
</tr>
<tr>
<td>CSA approval</td>
<td>cCSAus Listed, General Purpose</td>
</tr>
<tr>
<td>CCC approval</td>
<td>Certified by China Compulsory Certification (CCC)</td>
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</table>

<table>
<thead>
<tr>
<th>Dimensions</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Length L [mm]</td>
<td>27.8</td>
</tr>
<tr>
<td>Width W [mm]</td>
<td>16</td>
</tr>
<tr>
<td>Height H [mm]</td>
<td>10</td>
</tr>
<tr>
<td>Connector length lc [mm]</td>
<td>0</td>
</tr>
</tbody>
</table>

### Properties

- Miniature V3 housing
- 3 mm, flush mountable
- DC, 2-wire switching output
- Cable and connector versions

### Electrical Connection

#### NBB3-V3-Z4

```
+-----------+  +-----------+  +-----------+  +-----------+
|           |  |           |  |           |  |           |
| BN        |  | RJ        |  | RJ        |  | RJ        |
| BR        |  |          |  |          |  |          |
| L+        |  |          |  |          |  |          |
| L-        |  |          |  |          |  |          |
```

#### NBB3-V3-Z5

```
+-----------+  +-----------+  +-----------+  +-----------+
|           |  |           |  |           |  |           |
| EN        |  | SK        |  | SK        |  | SK        |
| BR        |  |          |  |          |  |          |
| L+        |  |          |  |          |  |          |
| L-        |  |          |  |          |  |          |
```

#### NBB3-V3-Z4-V5

```
+-----------+  +-----------+  +-----------+  +-----------+
|           |  |           |  |           |  |           |
| EN        |  | SK        |  | SK        |  | SK        |
| BR        |  |          |  |          |  |          |
| L+        |  |          |  |          |  |          |
| L-        |  |          |  |          |  |          |
```

#### NBB3-V3-Z5-V5

```
+-----------+  +-----------+  +-----------+  +-----------+
|           |  |           |  |           |  |           |
| EN        |  | SK        |  | SK        |  | SK        |
| BR        |  |          |  |          |  |          |
| L+        |  |          |  |          |  |          |
| L-        |  |          |  |          |  |          |
```
Proximity Sensors, Inductive Sensors, rectangular types

1.12

Technological Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data
- Output type: PNP NO
- Operating voltage: 10 ... 30 V DC
- No-load supply current: ≤ 15 mA
- Reverse polarity protection: ✓
- Load current: 0 ... 100 mA
- Short-circuit protection: ✓, self checking
- Switching state indication: LED, yellow
- Ambient temperature: -25 ... 70 °C (-13 ... 158 °F)
- Housing material: PBT
- Protection degree: IP67

Model Number

<table>
<thead>
<tr>
<th>Model Number</th>
<th>NBB2-V3-E2</th>
<th>NBN4-V3-E2</th>
<th>V3-V3-E2-V3</th>
</tr>
</thead>
</table>

Properties

- Miniature V3 housing
- 2 mm and 4 mm sensing ranges
- DC, 3-wire switching output
- Cable and connector versions

Electrical Connection

- Miniature V3 housing
- 2 mm and 4 mm sensing ranges
- DC, 3-wire switching output
- Cable and connector versions

Approvals and Certificates

- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval / marking not required for sensors rated ≤36 V

Dimensions

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>NBB2-V3-E2</th>
<th>NBN4-V3-E2</th>
<th>V3-V3-E2-V3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length L [mm]</td>
<td>27.8</td>
<td>27.8</td>
<td></td>
</tr>
<tr>
<td>Width W [mm]</td>
<td>16</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>Height H [mm]</td>
<td>10</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Connector length lantage [mm]</td>
<td>0</td>
<td>0</td>
<td>9.2</td>
</tr>
</tbody>
</table>

Accessories

These and more accessories can be found in chapter 10

- V3-WM: Female connector, M8, 3-pin, field attachable, angled
- V3-GM: Female connector, M8, 3-pin, field attachable, straight
- V3-WM-BK2M-PUR-U: Female cordset, M8, 3-pin, PUR cable, angled
- V3-GM-BK2M-PUR-U: Female cordset, M8, 3-pin, PUR cable, straight

Wire colors in accordance with EN 60947-5-2

1 | BN | (brown) |
3 | BU | (blue)  |
4 | BK | (black) |
**Inductive sensor**

**AC/DC, V3 series**

### Technical Data

<table>
<thead>
<tr>
<th>Property</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model Number</td>
<td>NBB2-V3-US</td>
</tr>
<tr>
<td>Rated operating distance</td>
<td>2 mm</td>
</tr>
<tr>
<td>Installation</td>
<td>flush mountable</td>
</tr>
<tr>
<td>Output type</td>
<td>AC/DC, NO</td>
</tr>
<tr>
<td>Operating voltage DC</td>
<td>10 ... 140 V</td>
</tr>
<tr>
<td>Operating voltage AC</td>
<td>20 ... 140 V</td>
</tr>
<tr>
<td>Switching frequency</td>
<td>25 Hz</td>
</tr>
<tr>
<td>Load current</td>
<td>5 ... 200 mA max</td>
</tr>
<tr>
<td>Switching state indication</td>
<td>LED, red</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-25 ... 70 °C (-13 ... 158 °F)</td>
</tr>
<tr>
<td>Housing material</td>
<td>PBT</td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP67</td>
</tr>
<tr>
<td>Connection type</td>
<td>cable PUR</td>
</tr>
</tbody>
</table>

### Properties

- Miniature V3 housing
- 2 mm, flush mountable
- AC/DC, 2-wire switching output
- Cable version

### Electrical Connection

**NBB2-V3-US**

- **BN**: AC/DC
## Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

### General Data
- Rated operating distance: 0.8 mm
- Installation: flush
- Operating voltage: 10 ... 30 V DC
- No-load supply current: ≤ 5 mA
- Reverse polarity protection: ✔
- Load current: 0 ... 200 mA
- Short-circuit protection: ✔, self checking
- Switching state indication: LED, yellow
- Ambient temperature: -25 ... 85 °C (-13 ... 185 °F)
- Housing material: brass, nickel-plated
- Protection degree: IP67
- Connection type: cable PUR, 2 m

### Model Number

<table>
<thead>
<tr>
<th>Model Number</th>
<th>NBB0.8-F141-E0</th>
<th>NBB0.8-F141-E1</th>
<th>NBB0.8-F141-E2</th>
<th>NBB0.8-F141-E3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output type</td>
<td>NPN normally closed</td>
<td>NPN NO</td>
<td>PNP NO</td>
<td>PNP NC</td>
</tr>
<tr>
<td>Switching frequency</td>
<td>0 ... 10000 Hz</td>
<td>0 ... 2500 Hz</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Approvals and Certificates
- CCC approval: CCC approval / marking not required for sensors rated ≤36 V

### Dimensions
- Length L [mm]: 25
- Width W [mm]: 5
- Height H [mm]: 5
- Connector length l_c [mm]: 0
- Active area position: Pos. A

## Electrical Connection

Refer to General Notes Relating to Product Information Copyright Pepperl+Fuchs

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Courtesy of Steven Engineering, Inc. - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com
Technological Data

General Data
- Rated operating distance: 1.5 mm

Installation: flush

Operating voltage: 10 ... 30 V DC

Reverse polarity protection: ✔

Short-circuit protection: ✔, self checking

Switching state indication: LED, yellow

Ambient temperature: -25 ... 70 °C (-13 ... 158 °F)

Housing material: brass, nickel-plated

Protection degree: IP67

Model Number
- NBB1,5-F41-E0
- NBB1,5-F41-E2
- NBB1,5-F41-E3
- NBB1,5-F41A-E2
- NBB1,5-F41A-E3
- NBB1,5-F41I-E2-V3
- NBB1,5-F41I-E3-V3

Output type
- NPN NO
- PNP NO
- PNP NC

No-load supply current
- ≤ 10 mA
- ≤ 15 mA

Switching frequency
- 0 ... 1500 Hz
- 0 ... 5000 Hz

Load current
- 0 ... 100 mA
- 0 ... 200 mA
- 0 ... 100 mA

Connection type
- Connector M8 x 1, 3-pin
- Cable PVC, 2 m

Approvals and Certificates
- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤ 36 V

Dimensions
- Length L [mm]: 40, 50, 46
- Width W [mm]: 8
- Height H [mm]: 8
- Connector length lc [mm]: 0, 9

Active area position
- Pos.: A, B, A, B

Accessories
- These and more accessories can be found in chapter 10
- See pages from 970 ... for cordsets
- See pages 1066 ... for mounting accessories

Electrical Connection

- NBB1,5-F41-E0
- NBB1,5-F41-E2
- NBB1,5-F41A-E2
- NBB1,5-F41-E3
- NBB1,5-F41A-E3

Wire colors in accordance with EN 60947-5-2
- 1: BN (brown)
- 3: BU (blue)
- 4: BK (black)

Properties
- Miniature F41 housing
- 1.5 mm, flush mountable
- DC, 3-wire switching output
- Cable and connector versions

Additional Products
- In this series, we offer the following additional products:
  - NBB2-F41-E2-V3

Technical data like NBB1,5-F41-E2-V3 but:
- Rated operating distance: 2 mm
### General Data
- **Rated operating distance**: 3 mm
- **Installation**: quasi-flush
- **Operating voltage**: 10 ... 30 V DC
- **No-load supply current**: ≤ 15 mA
- **Reverse polarity protection**: ✔ ✓
- **Switching frequency**: 0 ... 1000 Hz
- **Load current**: 0 ... 200 mA, above 50°C ≤ 150 mA
- **Short-circuit protection**: ✔ ✓ self-checking
- **Switching state indication**: LED, yellow
- **Ambient temperature**: -25 ... 85 °C (-13 ... 185 °F)
- **Housing material**: brass, nickel-plated
- **Protection degree**: IP67

<table>
<thead>
<tr>
<th>Model Number</th>
<th>NEB3-F41-E0</th>
<th>NEB3-F41-E1</th>
<th>NEB3-F41-E2</th>
<th>NEB3-F41-E1-V3</th>
<th>NEB3-F41-E2-V3</th>
<th>NEB3-F41-E3-V3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output type</td>
<td>NPN NO</td>
<td>NPN No</td>
<td>PNP No</td>
<td>NPN NC</td>
<td>NPN NC</td>
<td>PNP NC</td>
</tr>
<tr>
<td>Connection type</td>
<td>Connector M8 x 1, 3-pin</td>
<td>Connector M8 x 1, 3-pin</td>
<td>Connector M8 x 1, 3-pin</td>
<td>Connector M8 x 1, 3-pin</td>
<td>Connector M8 x 1, 3-pin</td>
<td>Connector M8 x 1, 3-pin</td>
</tr>
<tr>
<td>Cable PVC, 2 m</td>
<td>☐ ☐ ☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐ ☐ ☐</td>
<td>☐ ☐ ☐ ☐ ☐ ☐</td>
</tr>
</tbody>
</table>

### Dimensions
- **Length L [mm]**: 40, 50
- **Width W [mm]**: 8
- **Height H [mm]**: 8
- **Connector length lc [mm]**: 0, 6
- **Active area position**: Pos. A

### Accessories
These and more accessories can be found in chapter 10

- **V3-GM**: Female connector, M8, 3-pin, field attachable, straight
- **V3-WM**: Female connector, M8, 3-pin, field attachable, angled
- **V3-GM-BK2M-PUR-U**: Female cordset, M8, 3-pin, PUR cable, straight
- **V3-WM-BK2M-PUR-U**: Female cordset, M8, 3-pin, PUR cable, angled

### Electrical Connection
- **NEB3-F41-E0**, **NEB3-F41-E1**: Connections for different models.
- **NEB3-F41-E2**, **NEB3-F41-E3**: Connections for different models.
- **NEB3-F41-E3-V3**, **NEB3-F41-E1-V3**, **NEB3-F41-E2-V3**: Connections for different models.

Wire colors in accordance with EN 60947-5-2

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

---

**Proximity Sensors, Inductive Sensors, rectangular types**

**Inductive sensor**

**F41 series**

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us
## Technical Data

**General Data**
- **Rated operating distance**: 4 mm
- **Installation**: flush
- **Operating voltage**: 10 ... 30 V DC
- **No-load supply current**: ≤ 15 mA
- **Reverse polarity protection**: ✔ self checking
- **Switching frequency**: 0 ... 1400 Hz
- **Load current**: 0 ... 250 mA
- **Short-circuit protection**: ✔
- **Switching state indication**: LED, yellow
- **Ambient temperature**: -25 ... 70 °C (-13 ... 158 °F)
- **Housing material**: PA
- **Protection degree**: IP67

### Properties
- **Compact F1 housing**
- **4 mm, flush mountable**
- **DC, 3-wire switching output**
- **Cable and connector versions**

### Benefits
- **High visibility LED**

### Model Number

<table>
<thead>
<tr>
<th>Output type</th>
<th>NPN NO</th>
<th>PNP NO</th>
<th>NBB4-F1-E0</th>
<th>NBB4-F1-E2</th>
<th>NBB4-F1-E3</th>
<th>NBB4-F1-E0-V3</th>
<th>NBB4-F1-E2-V3</th>
<th>NBB4-F1-E3-V3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection type</td>
<td>Connector M8 x 1, 3-pin cable PVC , 2 m</td>
<td>✔ ✔ ✔ ✔ ✔ ✔ ✔</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Approvals and Certificates
- **UL approval**: cULus Listed, General Purpose
- **CSA approval**: cCSAus Listed, General Purpose
- **CCC approval**: CCC approval / marking not required for sensors rated ≤ 36 V

### Dimensions

<table>
<thead>
<tr>
<th>Length L [mm]</th>
<th>26</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width W [mm]</td>
<td>12</td>
</tr>
<tr>
<td>Height H [mm]</td>
<td>40</td>
</tr>
<tr>
<td>Connector length L_c [mm]</td>
<td>0</td>
</tr>
</tbody>
</table>

### Accessories

<table>
<thead>
<tr>
<th>Accessories</th>
<th>These and more accessories can be found in chapter 10</th>
<th>See pages from 570 ... for cordsets</th>
<th>See pages 1066 ... for mounting accessories</th>
</tr>
</thead>
<tbody>
<tr>
<td>V3-GM</td>
<td>Female connector, M8, 3-pin, field attachable, straight</td>
<td></td>
<td></td>
</tr>
<tr>
<td>V3-WM</td>
<td>Female connector, M8, 3-pin, field attachable, angled</td>
<td></td>
<td></td>
</tr>
<tr>
<td>V3-BKM-PUR-U</td>
<td>Female cordset, M8, 3-pin, PUR cable, straight</td>
<td></td>
<td></td>
</tr>
<tr>
<td>V3-WM-BKM-PUR-U</td>
<td>Female cordset, M8, 3-pin, PUR cable, angled</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Electrical Connection

- **Wire colors in accordance with EN 60947-5-2**
  - 1: BN (brown)
  - 3: BU (blue)
  - 4: BK (black)
Proximity Sensors, Inductive Sensors, rectangular types

1.12

1.1.2

General Data
- Rated operating distance: 4 mm
- Installation: flush
- Operating voltage: 10 ... 30 V DC
- No-load supply current: ≤ 15 mA
- Reverse polarity protection: ✔
- Switching frequency: 0 ... 1400 Hz
- Load current: 0 ... 250 mA
- Short-circuit protection: ✔ self checking
- Switching state indication: LED, yellow
- Ambient temperature: -25 ... 70 °C (-13 ... 158 °F)
- Housing material: PA
- Protection degree: IP67

Model Number

<table>
<thead>
<tr>
<th>Output type</th>
<th>NPB4-F1-A0</th>
<th>NPB4-F1-A2</th>
<th>NPB4-F1-A0-V31</th>
<th>NPB4-F1-A2-V31</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection type</td>
<td>NPN NO/NC</td>
<td>PNP NO/NC</td>
<td>NPN NO/NC</td>
<td>PNP NO/NC</td>
</tr>
<tr>
<td>Cable PVC</td>
<td>4-pin</td>
<td>cable PVC</td>
<td>2 m</td>
<td>2 m</td>
</tr>
</tbody>
</table>

Approvals and Certificates
- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤36 V

Dimensions
- Length L [mm]: 26
- Width W [mm]: 12
- Height H [mm]: 40
- Connector length lc [mm]: 0, 9

Accessories
- These and more accessories can be found in chapter 10
- See pages from 970 ... for cordsets
- See pages 1066 ... for mounting accessories

V31-GM-BK2M-PUR-U
- Female cordset, M8 x 1, 4-pin, PUR cable, straight

V31-WM-BK2M-PUR-U
- Female cordset, M8 x 1, 4-pin, PUR cable, angled

Electrical Connection

Wire colors in accordance with EN 60947-5-2

1 BN (brown)
2 WH (white)
3 BU (blue)
4 BK (black)
For detailed data and product description refer to the data sheets at www.pepperl-fuchs.com.

General Data
- Rated operating distance: 8 mm
- Installation: non-flush
- Operating voltage: 10 ... 30 V DC
- No-load supply current: ≤ 15 mA
- Reverse polarity protection: ✔
- Switching frequency: 0 ... 1400 Hz
- Load current: 0 ... 250 mA
- Short-circuit protection: ✔, self checking
- Switching state indication: LED, yellow
- Ambient temperature: -25 ... 70 °C (-13 ... 158 °F)
- Housing material: PA
- Protection degree: IP67

Model Number

<table>
<thead>
<tr>
<th>Output type</th>
<th>NPN NO</th>
<th>PNP NO</th>
<th>PNP NC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection type</td>
<td>Connector M8 × 1, 3-pin cable PVC, 2 m</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Approvals and Certificates
- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤36 V

Dimensions
- Length L [mm]: 26
- Width W [mm]: 12
- Height H [mm]: 40
- Connector length lc [mm]: 0

Accessories

<table>
<thead>
<tr>
<th>Accessories</th>
<th>These and more accessories can be found in chapter 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>V3-WM</td>
<td>Female connector, M8, 3-pin, field attachable, angled</td>
</tr>
<tr>
<td>V3-GM</td>
<td>Female connector, M8, 3-pin, field attachable, straight</td>
</tr>
<tr>
<td>V3-WM-BK2M-PUR-U</td>
<td>Female cordset, M8, 3-pin, PUR cable, angled</td>
</tr>
<tr>
<td>V3-GM-BK2M-PUR-U</td>
<td>Female cordset, M8, 3-pin, PUR cable, straight</td>
</tr>
</tbody>
</table>

Electric Connection

Wire colors in accordance with EN 60947-5-2:
1. BN (brown)
2. BU (blue)
3. BK (black)
Technical Data

General Data
- Rated operating distance: 8 mm
- Installation: non-flush
- Operating voltage: 10 ... 30 V DC
- No-load supply current: ≤ 15 mA
- Reverse polarity protection
- Switching frequency: 0 ... 1400 Hz
- Load current: 0 ... 250 mA
- Short-circuit protection: ✔, self checking
- Switching state indication: LED, yellow
- Ambient temperature: -25 ... 70 °C (-13 ... 158 °F)
- Housing material: PA
- Protection degree: IP67

Model Number

<table>
<thead>
<tr>
<th>Output type</th>
<th>NPN</th>
<th>NO/NC</th>
<th>NBN8-F1-A0</th>
<th>NBN8-F1-A2</th>
<th>NBN8-F1-A0-V31</th>
<th>NBN8-F1-A2-V31</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connection type</td>
<td>Connector M8 x 1, 4-pin</td>
<td>cable PVC, 2 m</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Approvals and Certificates
- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤ 36 V

Dimensions
- Length L [mm]: 26
- Width W [mm]: 12
- Height H [mm]: 40
- Connector length l_c [mm]: 0, 9

Accessories
- These and more accessories can be found in chapter 10
- V31-WM-BK2M-PUR-U: Female cordset, M8 x 1, 4-pin, PUR cable, angled
- V31-GM-BK2M-PUR-U: Female cordset, M8 x 1, 4-pin, PUR cable, straight

Electrical Connection

Wire colors in accordance with EN 60947-5-2
1. BN (brown)
2. WH (white)
3. BU (blue)
4. BK (black)
Inductive sensor

**AC/DC, F1 series**

### Technical Data

**General Data**
- Rated operating distance: 4 mm
- Installation: flush
- Operating voltage: 20 ... 253 V AC/DC
- No-load supply current: \( \leq 4 \) mA
- Reverse polarity protection: ✔
- Switching frequency: 0 ... 25 Hz
- Load current: 4 ... 250 mA AC
- Ambient temperature: -25 ... 70 °C (-13 ... 158 °F)
- Housing material: PA
- Connection type: cable PVC, 2 m

**Model Number**

<table>
<thead>
<tr>
<th>Model Number</th>
<th>NBB4-F1-US</th>
<th>NBB4-F1-UO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output type</td>
<td>AC/DC NO</td>
<td>AC/DC NC</td>
</tr>
</tbody>
</table>

**Approvals and Certificates**

| UL approval | cULus Listed, General Purpose |
| CSA approval | cCSAus Listed, General Purpose |
| CCC approval | Certified by China Compulsory Certification (CCC) |

**Dimensions**

| Length L [mm] | 26 |
| Width W [mm]  | 12 |
| Height H [mm] | 40 |
| Connector length \( l_c \) [mm] | 0 |

**Properties**

- Compact F1 housing
- 4 mm, flush mountable
- AC/DC, 2-wire switching output
- Cable version

**Benefits**

- High visibility LED

---

Refer to General Notes Relating to Product Information

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Inductive sensor AC/DC, F1 series

- Compact F1 housing
- 4 mm, flush mountable
- AC/DC, 2-wire switching output
- Cable version
- High visibility LED

Electrical Connection

NBB4-F1-UO

NBB4-F1-US
### Technical Data

**General Data**
- Rated operating distance: 5 mm
- Installation: non-flush
- Operating voltage: 10 ... 30 V DC
- No-load supply current: ≤ 20 mA
- Reverse polarity protection: ✔
- Switching frequency: 0 ... 500 Hz
- Load current: 0 ... 100 mA
- Short-circuit protection: ✔, self checking
- Switching state indication: LED, yellow
- Ambient temperature: -25 ... 70 °C (-13 ... 158 °F)
- Housing material: PBT
- Protection degree: IP67
- Connection type: cable PVC, 2 m

**Model Number**
- NBN5-F7-E0
- NBN5-F7-E2

**Output type**
- NPN NO
- PNP NO

**Approvals and Certificates**
- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤36 V

**Dimensions**
- Length L [mm]: 28
- Width W [mm]: 17
- Height H [mm]: 17
- Connector length lc [mm]: 0

### Electrical Connection

**BN5-F7-E0**

**BN5-F7-E2**
# Inductive sensor

## Technical Data

### General Data
- **Rated operating distance:** 5 mm
- **Installation:** flush
- **Operating voltage:** 10 ... 30 V DC
- **No-load supply current:** ≤ 15 mA
- **Reverse polarity protection:** ✔
- **Switching frequency:** 0 ... 500 Hz
- **Load current:** 0 ... 150 mA
- **Short-circuit protection:** ✔, self checking
- **Switching state indication:** LED, yellow
- **Ambient temperature:** -25 ... 70 °C (-13 ... 158 °F)
- **Housing material:** PBT
- **Protection degree:** IP67

### Model Number

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Output type</th>
<th>Connection type</th>
</tr>
</thead>
<tbody>
<tr>
<td>NBB5-F9-E0</td>
<td>NPN NO</td>
<td>Connector M8 push on, 3-pin cable PVC, 2 m</td>
</tr>
<tr>
<td>NBB5-F9-E2</td>
<td>PNP NO</td>
<td>Connector M8 push on, 3-pin cable PVC, 2 m</td>
</tr>
<tr>
<td>NBB5-F9-E0-V3</td>
<td>NPN NO</td>
<td>Connector M8 push on, 3-pin cable PVC, 2 m</td>
</tr>
<tr>
<td>NBB5-F9-E2-V3</td>
<td>PNP NO</td>
<td>Connector M8 push on, 3-pin cable PVC, 2 m</td>
</tr>
</tbody>
</table>

### Approvals and Certificates
- **UL approval:** cULus Listed, General Purpose
- **CSA approval:** cCSAus Listed, General Purpose
- **CCC approval:** CCC approval / marking not required for sensors rated ≤ 36 V

### Dimensions

<table>
<thead>
<tr>
<th>Model</th>
<th>Length L [mm]</th>
<th>Width W [mm]</th>
<th>Height H [mm]</th>
<th>Connector length Lc [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>NBB5-F9-E0</td>
<td>38.5</td>
<td>16</td>
<td>16.5</td>
<td>0</td>
</tr>
<tr>
<td>NBB5-F9-E2</td>
<td>38.5</td>
<td>16</td>
<td>16.5</td>
<td>0</td>
</tr>
<tr>
<td>NBB5-F9-E0-V3</td>
<td>38.5</td>
<td>16</td>
<td>16.5</td>
<td>0</td>
</tr>
<tr>
<td>NBB5-F9-E2-V3</td>
<td>38.5</td>
<td>16</td>
<td>16.5</td>
<td>0</td>
</tr>
</tbody>
</table>

### Accessories
- **These and more accessories can be found in chapter 10**
- **See pages from 970 ... for cordsets**
- **See pages 1066 ... for mounting accessories**

**V3-GM**
- Female connector, M8, 3-pin, field attachable, straight

**V3-WM**
- Female connector, M8, 3-pin, field attachable, angled

**V3-WR-SM-PUR**
- Female cordset, M8 x 1, 3-pin, 5 m PUR cable, angled

**V3-WR-E2-SM-PUR**
- Female cordset with LED indicator, M8 x 1, 3-pin, 5 m PUR cable, angled

### Electrical Connection

**NBB5-F9-E0**
- BN (brown)
- BK (black)
- BU (blue)

**NBB5-F9-E2**
- BN (brown)
- BK (black)
- BU (blue)

**NBB5-F9-E0-V3**
- BN (brown)
- BK (black)
- BU (blue)

**NBB5-F9-E2-V3**
- BN (brown)
- BK (black)
- BU (blue)

Wire colors in accordance with EN 60947-5-2

1. BN (brown)
2. BK (black)
3. BU (blue)
4. L-
Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data
- Rated operating distance: 10 mm
- Installation: non-flush
- Operating voltage: 10 ... 30 V DC
- No-load supply current: ≤ 15 mA
- Reverse polarity protection: ✔
- Switching frequency: 0 ... 500 Hz
- Load current: 0 ... 150 mA
- Short-circuit protection: ✔, self checking
- Switching state indication: LED, yellow
- Ambient temperature: -25 ... 70 °C (-13 ... 158 °F)
- Housing material: PBT
- Protection degree: IP67

Model Number

<table>
<thead>
<tr>
<th></th>
<th>NBN10-F10-E0</th>
<th>NBN10-F10-E2</th>
<th>NBN10-F10-E0-V1</th>
<th>NBN10-F10-E2-V1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output type</td>
<td>NPN NO</td>
<td>NPN NO</td>
<td>PNP NO</td>
<td>PNP NO</td>
</tr>
<tr>
<td>Connection type</td>
<td>Connector M12 x 1, 4-pin</td>
<td>Connector M12 x 1, 4-pin</td>
<td>Connector M12 x 1, 4-pin</td>
<td>Connector M12 x 1, 4-pin</td>
</tr>
<tr>
<td></td>
<td>cable PVC , 2 m</td>
<td>cable PVC , 2 m</td>
<td>cable PVC , 2 m</td>
<td>cable PVC , 2 m</td>
</tr>
</tbody>
</table>

Approvals and Certificates
- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤36 V

Dimensions
- Length L [mm]: 38.5
- Width W [mm]: 25
- Height H [mm]: 25.5
- Connector length lc [mm]: 0 ... 10

Accessories
- These and more accessories can be found in chapter 10
- See pages from 970 ... for cordsets
- See pages 1066 ... for mounting accessories

1 L+ 2 WH 3 BU 4 BK

<table>
<thead>
<tr>
<th></th>
<th>V1-G</th>
<th>V1-W</th>
<th>V1-G-BK2M-PUR-U</th>
<th>V1-W-BK2M-PUR-U</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4-pin, M12 female field-attachable connector, straight</td>
<td>4-pin, M12 female field-attachable connector, angled</td>
<td>Female cordset, M12, 4-pin, PUR cable, straight</td>
<td>Female cordset, M12, 4-pin, PUR cable, angled</td>
</tr>
</tbody>
</table>

Electrical Connection

Wire colors in accordance with EN 60947-5-2

1 BN (brown)
2 WH (white)
3 BU (blue)
4 BK (black)
## Inductive Sensor F11 Series

### Technical Data

**General Data**
- **Rated operating distance**: 15 mm
- **Installation**: non-flush
- **Operating voltage**: 10 ... 30 V DC
- **No-load supply current**: ≤ 15 mA
- **Reverse polarity protection**: ✔
- **Switching frequency**: 0 ... 150 Hz
- **Load current**: 0 ... 150 mA
- **Short-circuit protection**: ✔, self checking
- **Switching state indication**: LED, yellow
- **Ambient temperature**: -25 ... 70 °C (-13 ... 158 °F)
- **Housing material**: PBT
- **Protection degree**: IP67

### Model Number

<table>
<thead>
<tr>
<th>Model Number</th>
<th>NBN15-F11-E0</th>
<th>NBN15-F11-E2</th>
<th>NBN15-F11-E0-V1</th>
<th>NBN15-F11-E2-V1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output type</td>
<td>NPN NO</td>
<td>NPN NO</td>
<td>NPN NO</td>
<td>NPN NO</td>
</tr>
<tr>
<td>Connection type</td>
<td>Connector M12 x 1, 4-pin cable PVC, 2 m</td>
<td>Connector M12 x 1, 4-pin cable PVC, 2 m</td>
<td>Connector M12 x 1, 4-pin cable PVC, 2 m</td>
<td>Connector M12 x 1, 4-pin cable PVC, 2 m</td>
</tr>
</tbody>
</table>

### Approvals and Certificates
- **UL approval**: cULus Listed, General Purpose
- **CSA approval**: cCSAus Listed, General Purpose
- **CCC approval**: CCC approval / marking not required for sensors rated ≤36 V

### Dimensions

<table>
<thead>
<tr>
<th>Dimension</th>
<th>NBN15-F11-E0</th>
<th>NBN15-F11-E2</th>
<th>NBN15-F11-E0-V1</th>
<th>NBN15-F11-E2-V1</th>
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<tbody>
<tr>
<td>Length L [mm]</td>
<td>52.5</td>
<td>52.5</td>
<td>52.5</td>
<td>52.5</td>
</tr>
<tr>
<td>Width W [mm]</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Height H [mm]</td>
<td>30.5</td>
<td>30.5</td>
<td>30.5</td>
<td>30.5</td>
</tr>
<tr>
<td>Connector length Lc [mm]</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

### Accessories

- These and more accessories can be found in chapter 10
- See pages from 970 for cordsets
- See pages 1066 for mounting accessories

**Accessories**
- V1-G: 4-pin, M12 female field-attachable connector, straight
- V1-W: 4-pin, M12 female field-attachable connector, angled
- V1-BK2M-PUR-U: Female cordset, M12, 4-pin, PUR cable, straight
- V1-W-BK2M-PUR-U: Female cordset, M12, 4-pin, PUR cable, angled

### Electrical Connection

<table>
<thead>
<tr>
<th>NBN15-F11-E0</th>
<th>NBN15-F11-E2</th>
<th>NBN15-F11-E0-V1</th>
<th>NBN15-F11-E2-V1</th>
</tr>
</thead>
<tbody>
<tr>
<td>BN</td>
<td>BK</td>
<td>Brown</td>
<td>Brown</td>
</tr>
<tr>
<td>WH</td>
<td>BU</td>
<td>White</td>
<td>Blue</td>
</tr>
<tr>
<td>BK</td>
<td>GB</td>
<td>Black</td>
<td>Black</td>
</tr>
</tbody>
</table>

Wire colors in accordance with EN 60947-5-2
## Technical Data

For detailed data and product description refer to the data sheets at [www.pepperl-fuchs.us](http://www.pepperl-fuchs.us)

<table>
<thead>
<tr>
<th>General Data</th>
<th>NBB7-F104M-A0</th>
<th>NBB7-F104M-A2</th>
<th>NBB7-F104M-A0-200MM-V1</th>
<th>NBB7-F104M-A2-200MM-V1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated operating distance</td>
<td>7 mm</td>
<td>7 mm</td>
<td>7 mm</td>
<td>7 mm</td>
</tr>
<tr>
<td>Installation</td>
<td>flush</td>
<td>flush</td>
<td>flush</td>
<td>flush</td>
</tr>
<tr>
<td>Operating voltage</td>
<td>10 ... 30 V DC</td>
<td>10 ... 30 V DC</td>
<td>10 ... 30 V DC</td>
<td>10 ... 30 V DC</td>
</tr>
<tr>
<td>No-load supply current</td>
<td>≤ 15 mA</td>
<td>≤ 15 mA</td>
<td>≤ 15 mA</td>
<td>≤ 15 mA</td>
</tr>
<tr>
<td>Reverse polarity protection</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Switching frequency</td>
<td>150 Hz</td>
<td>150 Hz</td>
<td>150 Hz</td>
<td>150 Hz</td>
</tr>
<tr>
<td>Load current</td>
<td>200 mA</td>
<td>200 mA</td>
<td>200 mA</td>
<td>200 mA</td>
</tr>
<tr>
<td>Short-circuit protection</td>
<td>✔, self checking</td>
<td>✔, self checking</td>
<td>✔, self checking</td>
<td>✔, self checking</td>
</tr>
<tr>
<td>Switching state indication</td>
<td>LED</td>
<td>LED</td>
<td>LED</td>
<td>LED</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-25 ... 70 °C (-13 ... 158 °F)</td>
<td>-25 ... 70 °C (-13 ... 158 °F)</td>
<td>-25 ... 70 °C (-13 ... 158 °F)</td>
<td>-25 ... 70 °C (-13 ... 158 °F)</td>
</tr>
<tr>
<td>Housing material</td>
<td>GD-Zn</td>
<td>GD-Zn</td>
<td>GD-Zn</td>
<td>GD-Zn</td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP67</td>
<td>IP67</td>
<td>IP67</td>
<td>IP67</td>
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</tbody>
</table>

## Model Number

<table>
<thead>
<tr>
<th>Model Number</th>
<th>NBB7-F104M-A0</th>
<th>NBB7-F104M-A2</th>
<th>NBB7-F104M-A0-200MM-V1</th>
<th>NBB7-F104M-A2-200MM-V1</th>
</tr>
</thead>
</table>

### Output type
- NPN NO/NC
- PNP NO/NC

### Connection type
- Cable PUR, 2 m
- Cable connector M12 x 1, 4-pin with PUR cable 200 mm

## Approvals and Certificates

<table>
<thead>
<tr>
<th>UL approval</th>
<th>cULus Listed, General Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>CCC approval</td>
<td>CCC approval / marking not required for sensors rated ≤36 V</td>
</tr>
</tbody>
</table>

## Dimensions

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>NBB7-F104M-A0</th>
<th>NBB7-F104M-A2</th>
<th>NBB7-F104M-A0-200MM-V1</th>
<th>NBB7-F104M-A2-200MM-V1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length L [mm]</td>
<td>32</td>
<td>32</td>
<td>32</td>
<td>32</td>
</tr>
<tr>
<td>Width W [mm]</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>Height H [mm]</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Connector length lc [mm]</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>

## Accessories

- These and more accessories can be found in chapter 10
- See pages from 970 ... for cordsets
- See pages 1066 ... for mounting accessories

### Accessories
- V1-G-BK2M-PUR-U: Female cordset, M12, 4-pin, PUR cable, straight
- V1-W-BK2M-PUR-U: Female cordset, M12, 4-pin, PUR cable, angled

## Electrical Connection

### Wire Colors

1. BN (brown)
2. WH (white)
3. RU (red)
4. BK (black)

Wire colors in accordance with EN 60947-5-2
## Technical Data

For detailed data and product description refer to the data sheets at [www.pepperl-fuchs.us](http://www.pepperl-fuchs.us)

### General Data

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
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<tbody>
<tr>
<td>Rated operating distance</td>
<td>5 mm</td>
</tr>
<tr>
<td>Installation</td>
<td>flush</td>
</tr>
<tr>
<td>Operating voltage</td>
<td>10 ... 30 V DC</td>
</tr>
<tr>
<td>Reverse polarity protection</td>
<td>✔</td>
</tr>
<tr>
<td>Switching frequency</td>
<td>0 ... 500 Hz</td>
</tr>
<tr>
<td>Load current</td>
<td>0 ... 200 mA</td>
</tr>
<tr>
<td>Short-circuit protection</td>
<td>✔</td>
</tr>
<tr>
<td>Switching state indication</td>
<td>LED</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-25 ... 70 °C (-13 ... 158 °F)</td>
</tr>
<tr>
<td>Housing material</td>
<td>metal</td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP67</td>
</tr>
<tr>
<td>Connection type</td>
<td>cable PVC, 2 m</td>
</tr>
</tbody>
</table>

### Model Number

<table>
<thead>
<tr>
<th>Model Number</th>
<th>NBB5-F33M-E0</th>
<th>NBB5-F33M-E2</th>
<th>NBB5-F33M-A0</th>
<th>NBB5-F33M-A2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output type</td>
<td>NPN NO/NC</td>
<td>NPN NO</td>
<td>PNP NO/NC</td>
<td>PNP NO</td>
</tr>
<tr>
<td>No-load supply current</td>
<td>≤ 15 mA</td>
<td>≤ 20 mA</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Approvals and Certificates

<table>
<thead>
<tr>
<th>Approval</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>UL approval</td>
<td>cULus Listed, General Purpose</td>
</tr>
<tr>
<td>CSA approval</td>
<td>cCSAus Listed, General Purpose</td>
</tr>
<tr>
<td>CCC approval</td>
<td>CCC approval / marking not required for sensors rated ≤36 V</td>
</tr>
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</table>

### Dimensions

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length L [mm]</td>
<td>50</td>
</tr>
<tr>
<td>Width W [mm]</td>
<td>25</td>
</tr>
<tr>
<td>Height H [mm]</td>
<td>10</td>
</tr>
<tr>
<td>Connector length l_c [mm]</td>
<td>0</td>
</tr>
</tbody>
</table>

## Electrical Connection

Refer to General Notes Relating to Product Information

---

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www.pepperl-fuchs.com fa-info@us.pepperl-fuchs.com fa-info@de.pepperl-fuchs.com fa-info@sg.pepperl-fuchs.com

Courtesy of Steven Engineering, Inc. - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com
### F33 series

#### Technical Data

**General Data**
- **Installation**: flush
- **Reverse polarity protection**: ✔
- **Load current**: 0 ... 200 mA
- **Short-circuit protection**: ✔, self checking
- **Housing material**: PBT
- **Protection degree**: IP67
- **Connection type**: cable PVC , 2 m

**Model Number**

<table>
<thead>
<tr>
<th>Model Number</th>
<th>NBB5-F33-E0</th>
<th>NBB8-F33-E0</th>
<th>NBB8-F33-E1</th>
<th>NBB8-F33-E2</th>
<th>NBB8-F33-E3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated operating distance</td>
<td>5 mm</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>8 mm</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Output type</td>
<td>NPN NO/NC</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>NPN NO</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>NPN NC</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>PNP NO/NC</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>PNP NO</td>
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<td>✔</td>
<td>✔</td>
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</tr>
<tr>
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<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Operating voltage</td>
<td>10 ... 30 V DC</td>
<td>✔</td>
<td>✔</td>
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<td>✔</td>
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<tr>
<td>10 ... 60 V DC</td>
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<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>No-load supply current</td>
<td>≤ 10 mA</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>≤ 15 mA</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>≤ 20 mA</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Switching frequency</td>
<td>0 ... 350 Hz</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>0 ... 500 Hz</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Switching state indication</td>
<td>LED yellow</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-25 ... 70 °C (-13 ... 158 °F)</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>-35 ... 70 °C (-31 ... 158 °F)</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>

**Approvals and Certificates**
- **UL approval**: cULus Listed, General Purpose
- **CSA approval**: cCSAus Listed, General Purpose
- **CCC approval**: Certified by China Compulsory Certification (CCC)
- **CCC approval / marking not required for sensors rated ≤36 V**

**Dimensions**
- **Length L [mm]**: 50
- **Width W [mm]**: 25
- **Height H [mm]**: 10
- **Connector length lc [mm]**: 0

#### Properties

- **Compact F33 plastic housing**
- **5 mm and 8 mm sensing ranges**
- **DC, 3-wire and 4-wire switching output**
- **Cable version**

#### Electrical Connection

- NBB5-F33-E0
- NBB5-F33-E2
- NBB8-F33-E1
- NBB8-F33-E2
- NBB5-F33-E3
- NBB8-F33-E3
- NBB5-F33-A0
- NBB8-F33-A0
**Technical Data**

- **Model Number**: NCN15-M1K-Z2
- **Rated operating distance**: 15 mm
- **Installation**: non-flush
- **Output type**: DC, NO/NC
- **Operating voltage**: 5 ... 60 V DC
- **Reverse polarity protection**: ✔
- **Switching frequency**: 0 ... 150 Hz
- **Load current**: 2 ... 200 mA
- **Lowest Load current**: 2 mA
- **Short-circuit protection**: ✔
- **Switching state indication LED**: yellow
- **Pre-fault indication**: LED, red
- **Ambient temperature**: -25 ... 70 °C (-13 ... 158 °F)
- **Housing material**: PBT
- **Protection degree**: IP67
- **Connection type**: screw terminals
- **Approvals and Certificates**
  - UL approval: cULus Listed, General Purpose
  - CSA approval: cCSAus Listed, General Purpose
  - CCC approval: Certified by China Compulsory Certification (CCC)

**Dimensions**

- **Length L [mm]**: 91
- **Width W [mm]**: 30
- **Height H [mm]**: 30
- **Connector length Lc [mm]**: 0
- **Connector thread**: M16 X 1.5

**Electrical Connection**

- **Diagram**: Electrical connection diagram for NCN15-M1K-Z2
  - Note: Only connect as Normally open or Normally closed - cannot be used simultaneously
### Technical Data

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model Number</td>
<td>NBN15-M1K-WS</td>
</tr>
<tr>
<td>Rated operating distance</td>
<td>15 mm</td>
</tr>
<tr>
<td>Installation</td>
<td>non-flush</td>
</tr>
<tr>
<td>Output type</td>
<td>AC</td>
</tr>
<tr>
<td>Operating voltage</td>
<td>20 ... 253 V AC</td>
</tr>
<tr>
<td>Switching frequency</td>
<td>0 ... 20 Hz</td>
</tr>
<tr>
<td>Load current</td>
<td>5 ... 400 mA</td>
</tr>
<tr>
<td>Operating voltage display</td>
<td>LED, green</td>
</tr>
<tr>
<td>Switching state indication</td>
<td>yellow</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-25 ... 70 °C (-13 ... 158 °F)</td>
</tr>
<tr>
<td>Housing material</td>
<td>PBT</td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP67</td>
</tr>
<tr>
<td>Connection type</td>
<td>screw terminals</td>
</tr>
</tbody>
</table>

### Approvals and Certificates

- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose

### Dimensions

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length L [mm]</td>
<td>91</td>
</tr>
<tr>
<td>Width W [mm]</td>
<td>30</td>
</tr>
<tr>
<td>Height H [mm]</td>
<td>30</td>
</tr>
<tr>
<td>Connector length lc</td>
<td>0</td>
</tr>
<tr>
<td>Connector thread</td>
<td>M16 X 1.5</td>
</tr>
</tbody>
</table>

### Accessories

These and more accessories can be found in chapter 10. See pages from 970 for cordsets. See pages 1066 for mounting accessories.

MH 04-3742A
Mounting bracket for Limit Switch style and -M1K-

### Properties

- Flexible Mini-Cube housing
- 15 mm, non-flush mountable
- AC, 2-wire switching output
- Terminal compartment

### Electrical Connection

![Electrical Connection Diagram](image)
Cube style, L2 series

Technical Data
For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data
Switching frequency 0 ... 30 Hz
Load current 2 ... 100 mA
Short-circuit protection ✔, self checking
Switching state indication LED, yellow
Ambient temperature -25 ... 70 °C (-13 ... 158 °F)
Housing material PA
Protection degree IP69K
Connection type Connector M12 x 1, 4-pin

Model Number
- NBB20-L2-Z0-V1
- NBB20-L2-Z4-V1
- NBB20-L2-Z5-V1
- NBN40-L2-Z0-V1
- NBN40-L2-Z4-V1
- NBN40-L2-Z5-V1

Rated operating distance 20 mm 40 mm
Installation flush non-flush
Output type NO NC
Operating voltage 3.8 ... 30 V DC 5 ... 30 V DC
Reverse polarity protection ✔, polarity independent

Approvals and Certificates
UL approval cULus Listed, General Purpose
CSA approval cCSAus Listed, General Purpose
CCC approval CCC approval / marking not required for sensors rated ≤ 36 V

Dimensions
Length L [mm] 67
Width W [mm] 40
Height H [mm] 40

Accessories
- V1-G 4-pin, M12 female field-attachable connector, straight
- V1-W 4-pin, M12 female field-attachable connector, angled
- V1-G-BK2M-PUR-U Female cordset, M12, 4-pin, PUR cable, straight
- V1-W-BK2M-PUR-U Female cordset, M12, 4-pin, PUR cable, angled
- MHW 01 Modular mounting bracket
- MH 02-L Mounting bracket
- MH 01-L2-W Mounting bracket - 1/2" rod type, angled

Electrical Connection
NBB20-L2-Z0-V1 NBN40-L2-Z0-V1
NBB20-L2-Z4-V1 NBN40-L2-Z4-V1
NBB20-L2-Z5-V1 NBN40-L2-Z5-V1

Wire colors in accordance with EN 60947-5-2
1 BN (brown)
2 WH (white)
3 RV (red)
4 BK (black)
**Technical Data**

For detailed data and product description refer to the data sheets at [www.pepperl-fuchs.us](http://www.pepperl-fuchs.us)

### General Data

- **Operating voltage**: 10 ... 30 V DC
- **No-load supply current**: ≤ 20 mA
- **Reverse polarity protection**: ✔
- **Load current**: 0 ... 200 mA
- **Short-circuit protection**: ✔, self checking
- **Operating voltage display LED**: green
- **Switching state indication LED**: yellow
- **Housing material**: PA
- **Protection degree**: IP69K
- **Connection type**: Connector M12 x 1, 4-pin

### Model Number

<table>
<thead>
<tr>
<th>Model Number</th>
<th>NBB20-L2-E0-V1</th>
<th>NBB20-L2-E2-V1</th>
<th>NBB20-L2-A0-V1</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>NBB20-L2-A2-T-V1</td>
<td>NBB20-L2-A2-V1</td>
<td>NBB40-L2-A0-V1</td>
</tr>
<tr>
<td></td>
<td>NBB40-L2-A2-V1</td>
<td>NBB40-L2-E0-V1</td>
<td>NBB40-L2-E2-V1</td>
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<td></td>
<td>NBB40-L2-E34-V1</td>
<td>NBB40-L2-A2-V1</td>
<td></td>
</tr>
</tbody>
</table>

### Rated operating distance

- 20 mm
- 40 mm

### Installation

- flush
- non-flush

### Output type

- NPN NO/NC
- NPN NO
- PNP NO/NC
- PNP NO
- PNP NC

### Switching frequency

- 0 ... 100 Hz
- 0 ... 150 Hz

### Ambient temperature

- -25 ... 85 °C (-13 ... 185 °F)
- -25 ... 100 °C (-13 ... 212 °F)

### Approvals and Certificates

- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤ 36 V

### Dimensions

<table>
<thead>
<tr>
<th>Length L [mm]</th>
<th>67</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width W [mm]</td>
<td>40</td>
</tr>
<tr>
<td>Height H [mm]</td>
<td>40</td>
</tr>
</tbody>
</table>

### Accessories

These and more accessories can be found in chapter 10
See pages from 970 ... for cordsets
See pages 1066 ... for mounting accessories

- 4-pin, M12 female field-attachable connector, straight
- 4-pin, M12 female field-attachable connector, angled
- Female cordset, M12, 4-pin, PUR cable, straight
- Female cordset, M12, 4-pin, PUR cable, angled
- Modular mounting bracket
- Mounting bracket
- Mounting bracket - 1/2" rod type, angled

### Electrical Connection

Wire colors in accordance with EN 60947-5-2

1. BN (brown)
2. WH (white)
3. BU (blue)
4. BK (black)
Cube style, L2 series

**Technical Data**

For detailed data and product description refer to the data sheets at [www.pepperl-fuchs.us](http://www.pepperl-fuchs.us).

**General Data**

- **Operating voltage**: 10 ... 30 V DC
- **No-load supply current**: \( \leq 20 \) mA
- **Reverse polarity protection**: ✔
- **Load current**: 0 ... 200 mA
- **Short-circuit protection**: ✔, self checking
- **Operating voltage display LED**: green
- **Switching state indication LED**: yellow
- **Housing material**: PA-GF35 metal base Xylan coated metal mounting flange Xylan coated.
- **Protection degree**: IP69K
- **Connection type**: Connector M12 x 1, 4-pin

**Model Number**

- NBB20-L2M-E0-V1
- NBN40-L2M-E0-V1
- NBB20-L2M-E2-V1
- NBN40-L2M-E2-V1
- NBB20-L2M-E34-V1
- NBN40-L2M-E34-V1
- NBB20-L2M-A0-V1
- NBN40-L2M-A0-V1
- NBB20-L2M-A2-V1
- NBN40-L2M-A2-V1
- NBB20-L2M-A2-T-V1
- NBN40-L2M-A2-T-V1

**Rated operating distance**

- 20 mm
- 40 mm

**Installation**

- **Flush**
- **Non-flush**

**Output type**

- NPN NO/NC
- NPN NO
- PNP NO/NC
- PNP NO
- PNP NC

**Switching frequency**

- 0 ... 100 Hz
- 0 ... 150 Hz

**Ambient temperature**

- -25 ... 85 °C (-13 ... 185 °F)
- -25 ... 100 °C (-13 ... 212 °F)

**Approvals and Certificates**

- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated \( \leq 36 \) V

**Dimensions**

- **Length L [mm]**: 67
- **Width W [mm]**: 40
- **Height H [mm]**: 40

**Accessories**

- These and more accessories can be found in chapter 10.
- See pages from 970 ... for cordsets.
- See pages 1066 ... for mounting accessories.

**Electrical Connection**

- Wire colors in accordance with EN 60947-5-2

- 1 BN (brown)
- 2 WH (white)
- 3 BU (blue)
- 4 BK (black)
## Inductive sensor

### Technical Data

**General Data**
- Operating voltage: 20 ... 250 V AC/DC
- No-load supply current: ≤ 0.6 mA
- Reverse polarity protection: ✔
- Switching frequency: 0 ... 30 Hz
- Load current: 3 ... 300 mA
- Short-circuit protection: ✔, self checking
- Operating voltage display: LED, green
- Switching state indication: LED, red
- Ambient temperature: -25 ... 70 °C (-13 ... 158 °F)
- Housing material: metal - Zinc housing
- Housing base: Metal Bracket
- Protection degree: IP67

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Model Number</th>
<th>Model Number</th>
<th>Model Number</th>
<th>Model Number</th>
<th>Model Number</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Rated operating distance</td>
<td>20 mm</td>
<td>40 mm</td>
<td>Installation</td>
<td>flush</td>
<td>flush</td>
</tr>
<tr>
<td>Output type</td>
<td>AC/DC NC</td>
<td>✔</td>
<td>Connection type</td>
<td>Connector 1/2&quot;-20 UN, 3-pin</td>
<td>Connector 1/2&quot;-20 UN, 3-pin</td>
</tr>
<tr>
<td></td>
<td>✔</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dimensions</td>
<td>Length L [mm]</td>
<td>67</td>
<td>Width W [mm]</td>
<td>40</td>
<td>Height H [mm]</td>
</tr>
<tr>
<td></td>
<td>76</td>
<td>67</td>
<td>76</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Properties
- Compact cube style, L3M housing
- 20 mm and 40 mm sensing ranges
- AC/DC, 2-wire switching output
- Connector version

### Benefits
- High visibility LED indication
- Sensor head can be positioned 5-ways
- Mounting base with quick release bracket

### Approvals and Certificates
- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: Certified by China Compulsory Certification (CCC)

### Accessories
- These and more accessories can be found in chapter 10
- See pages from 970 ... for cordsets
- See pages 1066 ... for mounting accessories

#### Dimensions
- Length L [mm]: 67, 76
- Width W [mm]: 40
- Height H [mm]: 40

#### Electrical Connection
- Wire colors:
  - 1: GN (green)
  - 2: BK (black)
  - 3: WH (white)
Inductive sensor

Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

<table>
<thead>
<tr>
<th>General Data</th>
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</thead>
<tbody>
<tr>
<td>Output type</td>
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<tr>
<td>Operating voltage</td>
</tr>
<tr>
<td>Reverse polarity protection</td>
</tr>
<tr>
<td>Load current</td>
</tr>
<tr>
<td>Short-circuit protection</td>
</tr>
<tr>
<td>Switching state indication</td>
</tr>
<tr>
<td>Ambient temperature</td>
</tr>
<tr>
<td>Material</td>
</tr>
<tr>
<td>Protection degree</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Model Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated operating distance</td>
</tr>
<tr>
<td>Installation</td>
</tr>
<tr>
<td>Switching frequency</td>
</tr>
<tr>
<td>Connection type</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Properties</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flexible limit switch style housing</td>
</tr>
<tr>
<td>20 mm and 40 mm sensing ranges</td>
</tr>
<tr>
<td>DC, 2-wire switching output</td>
</tr>
<tr>
<td>Terminal compartment and connector versions</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Approvals and Certificates</th>
</tr>
</thead>
<tbody>
<tr>
<td>UL approval</td>
</tr>
<tr>
<td>CSA approval</td>
</tr>
<tr>
<td>CCC approval</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length L [mm]</td>
</tr>
<tr>
<td>Width W [mm]</td>
</tr>
<tr>
<td>Head width Wb [mm]</td>
</tr>
<tr>
<td>Height H [mm]</td>
</tr>
<tr>
<td>Connector length lc [mm]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Accessories</th>
</tr>
</thead>
<tbody>
<tr>
<td>V1-G</td>
</tr>
<tr>
<td>V1-W</td>
</tr>
<tr>
<td>V1-G-BK2M-PUR-U</td>
</tr>
<tr>
<td>V1-W-BK2M-PUR-U</td>
</tr>
<tr>
<td>1/2&quot;NPT-V1-G-S-3M</td>
</tr>
<tr>
<td>MHW 01</td>
</tr>
<tr>
<td>MH 04-2681F</td>
</tr>
</tbody>
</table>

Electrical Connection

<table>
<thead>
<tr>
<th>Wire colors in accordance with EN 60947-5-2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>4</td>
</tr>
</tbody>
</table>

Note: Only connect as Normally open or Normally closed - cannot be used simultaneously
1.12

**Inductive sensor**

### Technical Data

**General Data**
- Rated operating distance: 20 mm
- Installation: flush
- Operating voltage: 10 ... 30 V DC
- No-load supply current: ≤ 20 mA
- Reverse polarity protection: ✔ self checking
- Switching frequency: 0 ... 150 Hz
- Load current: 0 ... 200 mA

**Properties**
- Flexible limit switch style housing
- 20 mm, flush mountable
- DC, 3-wire switching output
- Terminal compartment and connector versions

**Electrical Connection**

**Model Number**

<table>
<thead>
<tr>
<th>Output type</th>
<th>NPN</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Housing base</td>
<td>plastic</td>
<td>metal</td>
</tr>
<tr>
<td>Connection type</td>
<td>Connector M12 x 1, 4-pin screw terminals</td>
<td></td>
</tr>
</tbody>
</table>

**Dimensions**

| Length L [mm] | 118 |
| Width W [mm] | 40 |
| Head width W₀ [mm] | 40 |
| Height H [mm] | 40 |

**Accessories**

These and more accessories can be found in chapter 10 See pages from 970 ... for cordsets See pages 1066 ... for mounting accessories

**Approvals and Certificates**

| UL approval | cUS Listed, General Purpose |
| CSA approval | cCSAus Listed, General Purpose |
| CCC approval | CCC approval / marking not required for sensors rated ≤36 V |

**Connections**

NBB20-U2-E0

NBB20-U4-E0

NBB20-U2-E2

NBB20-U4-E2

NBB20-U2-E0-V1

NBB20-U4-E0-V1

NBB20-U2-E2-V1

NBB20-U4-E2-V1

Wire colors in accordance with EN 60947-5-2

1. BN (brown)
2. WH (white)
3. BU (blue)
4. BK (black)
## Technical Data
For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

<table>
<thead>
<tr>
<th>General Data</th>
<th>NBB20-U2-A0</th>
<th>NBB20-U2-A2</th>
<th>NBB20-U2-A2-T</th>
<th>NBB20-U4-A0</th>
<th>NBB20-U4-A0-T</th>
<th>NBB20-U4-A2</th>
<th>NBB20-U4-A2-T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated operating distance</td>
<td>20 mm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Installation</td>
<td>flush</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating voltage</td>
<td>10 ... 30 V DC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No-load supply current</td>
<td>≤ 20 mA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reverse polarity protection</td>
<td></td>
<td>✔</td>
<td></td>
<td>✔</td>
<td></td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Load current</td>
<td>0 ... 200 mA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Short-circuit protection</td>
<td></td>
<td></td>
<td>w', self checking</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating voltage display</td>
<td>LED, green</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Switching state indication</td>
<td>LED, yellow</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP68 / IP69K</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connection type</td>
<td>screw terminals</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Additional Products

In this series, we offer the following additional products:

- **NBB20-U4-A2-V1**
  - Technical data like NBB20-U4-A2 but:
  - Connection type: Connector M12 x 1, 4-pin

### Properties

- Flexible limit switch style housing
- 20 mm, flush mountable
- DC, 4-wire switching output
- Terminals

### Approvals and Certificates

- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤ 36 V

### Dimensions

- Length L [mm]: 118
- Width W [mm]: 40
- Head width Wh [mm]: 40
- Height H [mm]: 40
- Connector length lc [mm]: 0
- Connector thread: conduit entrance with 1/2" NPT opening

### Accessories

These and more accessories can be found in chapter 10. See pages from 970 ... for cordsets, See pages 1066 ... for mounting accessories.

- **MHW 01** Modular mounting bracket
- **MH 04-2681F** Mounting bracket for Limit Switch style, +U1+ and +U9*
- **1/2"NPT-V1-G-S-3M** Receptacle 1/2"NPT to M12 x 1, 4-pin
- **V1-G** 4-pin, M12 female field-attachable connector, straight
- **V1-W** 4-pin, M12 female field-attachable connector, angled
- **V1-W-BK2M-PUR-U** Female cordset, M12, 4-pin, PUR cable, angled
- **V1-G-BK2M-PUR-U** Female cordset, M12, 4-pin, PUR cable, straight

### Electrical Connection

Wire colors in accordance with EN 60947-5-2

- **1** BN (brown)
- **2** WH (white)
- **3** BU (blue)
- **4** BK (black)
Inductive sensor

Technical Data
For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data
Rated operating distance: 40 mm
Installation: non-flush
Operating voltage: 10 ... 30 V DC
No-load supply current: ≤ 20 mA
Reverse polarity protection:
Switching frequency: 0 ... 150 Hz
Load current: 0 ... 200 mA
Short-circuit protection:
Operating voltage display: LED, green
Switching state indication: LED, yellow
Ambient temperature: -25 ... 85 °C (-13 ... 185 °F)
Protection degree: IP68 / IP69K

Model Number
<table>
<thead>
<tr>
<th>Output type</th>
<th>NPN NO</th>
<th>PNP NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material</td>
<td>PA housing/plastic base</td>
<td>PA housing/metal base</td>
</tr>
<tr>
<td>Connection type</td>
<td>Connector M12 x 1, 4-pin</td>
<td>screw terminals</td>
</tr>
</tbody>
</table>

Approvals and Certificates
UL approval: ULus Listed, General Purpose
CSA approval: cCSAus Listed, General Purpose
CCC approval: CCC approval / marking not required for sensors rated ≤36 V

Dimensions
<table>
<thead>
<tr>
<th>Length L [mm]</th>
<th>118</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width W [mm]</td>
<td>40</td>
</tr>
<tr>
<td>Head width Wh [mm]</td>
<td>40</td>
</tr>
<tr>
<td>Height H [mm]</td>
<td>40</td>
</tr>
<tr>
<td>Connector length lc [mm]</td>
<td>0</td>
</tr>
<tr>
<td>Connector thread</td>
<td>conduit entrance with 1/2&quot; NPT opening</td>
</tr>
</tbody>
</table>

Accessories
These and more accessories can be found in chapter 10
See pages from 970 ... for cordsets
See pages 1066 ... for mounting accessories

Electrical Connection

Properties
- Flexible limit switch style housing
- 40 mm, non-flush mountable
- DC, 3-wire switching output
- Terminal compartment and connector versions

Wire colors in accordance with EN 60947-5-2
1: BN (brown)
2: WH (white)
3: BK (black)
4: Bl (blue)
## Technical Data

### General Data
- **Rated operating distance**: 40 mm
- **Installation**: non-flush
- **Output type**: PNP, NO/NC
- **Operating voltage**: 10 ... 30 V DC
- **No-load supply current**: ≤ 20 mA
- **Reverse polarity protection**: ✔
- **Load current**: 0 ... 200 mA
- **Short-circuit protection**: ✔, self checking
- **Operating voltage display**: LED, green
- **Switching state indication**: LED, yellow
- **Protection degree**: IP68 / IP69K
- **Connection type**: screw terminals

### Model Number

<table>
<thead>
<tr>
<th>Model</th>
<th>NBN40-U4-A2</th>
<th>NBN40-U2-A2</th>
<th>NBN40-U2-A2-T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switching frequency</td>
<td>0 ... 150 Hz</td>
<td>0 ... 250 Hz</td>
<td></td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-25 ... 100 °C (-13 ... 212 °F)</td>
<td>-25 ... 85 °C (-13 ... 185 °F)</td>
<td></td>
</tr>
<tr>
<td>Material</td>
<td>PA housing/plastic base</td>
<td>PA housing/metal base</td>
<td></td>
</tr>
</tbody>
</table>

### Dimensions

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length L [mm]</td>
<td>118</td>
</tr>
<tr>
<td>Width W [mm]</td>
<td>40</td>
</tr>
<tr>
<td>Head width Wh [mm]</td>
<td>40</td>
</tr>
<tr>
<td>Height H [mm]</td>
<td>40</td>
</tr>
<tr>
<td>Connector length lc [mm]</td>
<td>0</td>
</tr>
<tr>
<td>Connector thread conduit entrance</td>
<td>1/2” NPT opening</td>
</tr>
</tbody>
</table>

### Accessories

These and more accessories can be found in chapter 10. See pages from 970 ... for cordsets. See pages 1066 ... for mounting accessories.

- **MH 04-2681F**: Mounting bracket for Limit Switch style, +U1+ and +U9*
- **MHW 01**: Modular mounting bracket
- **1/2”NPT-V1-G-S-JM**: Receptacle 1/2”NPT to M12 x 1, 4-pin
- **V1-G-BK2M-PUR-U**: Female cordset, M12, 4-pin, PUR cable, straight
- **V1-W-BK2M-PUR-U**: Female cordset, M12, 4-pin, PUR cable, angled
- **V1-G**: 4-pin, M12 female field-attachable connector, straight
- **V1-W**: 4-pin, M12 female field-attachable connector, angled

### Electrical Connection

Wire colors in accordance with EN 60947-5-2:

- 1: BN (brown)
- 2: WH (white)
- 3: BU (blue)
- 4: BK (black)
Inductive sensor

AC, Limit switch style

Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data

<table>
<thead>
<tr>
<th>Output type</th>
<th>AC NO/NC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating voltage</td>
<td>20 ... 253 V AC</td>
</tr>
<tr>
<td>Switching frequency</td>
<td>0 ... 20 Hz</td>
</tr>
<tr>
<td>Load current</td>
<td>8 ... 500 mA</td>
</tr>
<tr>
<td>Operating voltage display</td>
<td>LED, green</td>
</tr>
<tr>
<td>Switching state indication</td>
<td>LED, yellow</td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP68</td>
</tr>
<tr>
<td>Connection type</td>
<td>screw terminals</td>
</tr>
</tbody>
</table>

Model Number

<table>
<thead>
<tr>
<th>Rated operating distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 mm</td>
</tr>
<tr>
<td>20 mm</td>
</tr>
<tr>
<td>30 mm</td>
</tr>
<tr>
<td>40 mm</td>
</tr>
</tbody>
</table>

Installation

| flush |
| non-flush |

Ambient temperature

-25 ... 100 °C (-13 ... 212 °F)
-25 ... 70 °C (-13 ... 158 °F)
0 ... 100 °C (32 ... 212 °F)

Material

PBT housing/plastic base
PBT housing/metal base

Approvals and Certificates

UL approval cULus Listed, General Purpose
CSA approval cCSAus Listed, General Purpose
CCC approval Certified by China Compulsory Certification (CCC)

Dimensions

| Length L [mm] | 118 | 128 |
| Head width Wh [mm] | 40 | 55 |
| Height H [mm] | 40 | 55 |

Connector thread

Conduit entrance with 1/2" NPT opening

Accessories

These and more accessories can be found in chapter 10
See pages from 970 ... for cordsets
See pages 1066 ... for mounting accessories

| MHW 01 |
| 1/2"NPT-V12-G-S-.3M |
| Receptacle 1/2"NPT to 1/2" - 20 UNF, 3-pin |
| 1/2"NPT-V93-G-S-.3M |
| Receptacle 1/2"NPT to 7/8" - 16 UN, 3-pin |

Electrical Connection

Note: Only connect as Normally open or Normally closed - cannot be used simultaneously

---

Properties

- Flexible limit switch style housing
- Up to 30 mm sensing ranges
- AC, 2-wire switching output
- Terminals

Benefits

- High Temperature models
## Technical Data

**General Data**
- Rated operating distance: 20 mm
- Installation: non-flush
- Output type: AC, NO/NC
- Operating voltage: 20 ... 253 V AC
- Switching frequency: 0 ... 20 Hz
- Load current: 10 ... 500 mA
- Switching state indication: LED green: NC, LED red: NO
- Ambient temperature: -25 ... 70 °C (-13 ... 158 °F)
- Protection degree: IP68
- Connection type: screw terminals

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Material</th>
<th>Model Number</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PBT housing/plastic base</td>
<td>NJ20+U2+W4</td>
<td>PBT housing/metal base</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NJ20+U4+W4</td>
<td></td>
</tr>
</tbody>
</table>

### Properties
- Flexible limit switch style housing
- 20 mm, non-flush mountable
- AC, 4-wire switching output
- Terminal connections

### Electrical Connection
- N200+U2+W4
- N200+U4+W4

### Dimensions
- Length L [mm]: 118
- Width W [mm]: 40
- Head width Wh [mm]: 40
- Height H [mm]: 40
- Connector length lc [mm]: 0
- Connector thread conduit entrance with 1/2" NPT opening

### Accessories
- These and more accessories can be found in chapter 10
- See pages from 970 ... for cordsets
- See pages 1066 ... for mounting accessories
- 1/2"NPT-V95-G-S-3M
- MHW 01

### Approvals and Certificates
- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: Certified by China Compulsory Certification (CCC)

### Electrical Connection
**Inductive sensor**

**AC/DC, Limit switch style**

---

### Technical Data

For detailed data and product description refer to the data sheets at [www.pepperl-fuchs.us](http://www.pepperl-fuchs.us)

#### General Data

- **Output type**: AC/DC NO/NC
- **Operating voltage AC**: 20 ... 253 V
- **Operating voltage DC**: 20 ... 300 V
- **Reverse polarity protection**: ✔
- **Switching frequency**: 0 ... 25 Hz
- **Short-circuit protection**: ✔, self checking
- **Operating voltage display**: LED, green
- **Switching state indication**: LED, yellow
- **Ambient temperature**: -25 ... 70 °C (-13 ... 158 °F)
- **Protection degree**: IP66
- **Connection type**: screw terminals

#### Model Number

- NCB15+U2+U
- NCB15+U4+U
- NCB20+U4+U
- NCB30+U4+U
- NCN10+U4+U
- NCN20+U4+U
- NCN30+U4+U
- NEN40+U4+U
- NEN40+U4+U

#### Rated operating distance

- 15 mm
- 20 mm
- 30 mm
- 40 mm

#### Installation

- flush
- non-flush

#### Load current

- 3 ... 400 mA
- 5 ... 500 mA

#### Housing material

- PBT housing/plastic base
- PBT housing/metal base

#### Approvals and Certificates

- **UL approval**: cULus Listed, General Purpose
- **CSA approval**: cCSAus Listed, General Purpose
- **CCC approval**: Certified by China Compulsory Certification (CCC)

#### Dimensions

<table>
<thead>
<tr>
<th>Parameter</th>
<th>NCB15+U2+U</th>
<th>NCB15+U4+U</th>
<th>NCB20+U4+U</th>
<th>NCB30+U4+U</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length L [mm]</td>
<td>118</td>
<td>128</td>
<td>118</td>
<td>128</td>
</tr>
<tr>
<td>Width W [mm]</td>
<td>40</td>
<td>40</td>
<td>40</td>
<td>55</td>
</tr>
<tr>
<td>Head width Wh [mm]</td>
<td>40</td>
<td>55</td>
<td>40</td>
<td>55</td>
</tr>
<tr>
<td>Height H [mm]</td>
<td>40</td>
<td>55</td>
<td>40</td>
<td>55</td>
</tr>
<tr>
<td>Connector length lc [mm]</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Connector thread</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Accessories

These and more accessories can be found in chapter 10. See pages from 970 ... for cordsets. See pages 1066 ... for mounting accessories.

- **MHW 01**: Modular mounting bracket
- **1/2"NPT-V12-G-S-3M**: Receptacle 1/2"NPT to 1/2" - 20 UNF, 3-pin
- **1/2"NPT-V93-G-S-3M**: Receptacle 1/2"NPT to 3/8" - 16 UN, 3-pin

---

### Electrical Connection

- **NCB0-U4+U**
- **NEN40-U4+U**
- **NCB15-U4+U**
- **NCN40-U4+U**
- **NCN20-U4+U**
- **NCN30-U4+U**

---

**Note:** Only connect as Normally open or Normally closed - cannot be used simultaneously.
Proximity Sensors, Inductive Sensors, rectangular types

**Technical Data**

<table>
<thead>
<tr>
<th>General Data</th>
<th>NCB50-FP-Z2-P1</th>
<th>NCB50-FP-Z4-V1</th>
<th>NCB50-FP-Z5-V1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated operating distance</td>
<td>50 mm</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Installation</td>
<td>flush</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating voltage</td>
<td>10 ... 60 V DC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reverse polarity protection</td>
<td>✔</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Switching frequency</td>
<td>0 ... 80 Hz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Load current</td>
<td>2 ... 200 mA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lowest Load current</td>
<td>2 mA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Short-circuit protection</td>
<td>✔, self checking</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Switching state indication</td>
<td>LED, yellow</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP68</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-25 ... 70 °C (-13 ... 158 °F)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Model Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output type</td>
</tr>
<tr>
<td>Housing material</td>
</tr>
<tr>
<td>Protection class</td>
</tr>
<tr>
<td>Connection type</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Approvals and Certificates</th>
</tr>
</thead>
<tbody>
<tr>
<td>UL approval</td>
</tr>
<tr>
<td>CSA approval</td>
</tr>
<tr>
<td>CCC approval</td>
</tr>
<tr>
<td>CCC approval / marking not required for sensors rated ≤36 V</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length L [mm]</td>
</tr>
<tr>
<td>Width W [mm]</td>
</tr>
<tr>
<td>Height H [mm]</td>
</tr>
<tr>
<td>Cap length l₁ [mm]</td>
</tr>
<tr>
<td>Connector length l₂ [mm]</td>
</tr>
<tr>
<td>Connector thread</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Accessories</th>
</tr>
</thead>
<tbody>
<tr>
<td>These and more accessories can be found in chapter 10 See pages from 570 ... for cordsets See pages 1066 ... for mounting accessories</td>
</tr>
</tbody>
</table>

| V1-G | 4-pin, M12 female field-attachable connector, straight |
| V1-W | 4-pin, M12 female field-attachable connector, angled |
| V1-G-BK2M-PUR-U | Female cordset, M12, 4-pin, PUR cable, straight |
| V1-W-BK2M-PUR-U | Female cordset, M12, 4-pin, PUR cable, angled |

**Properties**

- Flat pack housing
- 50 mm, flush mountable
- DC, 2-wire switching output
- Terminal compartment and connector versions

**Electrical Connection**

Refer to General Notes Relating to Product Information
Proximity Sensors, Inductive Sensors, rectangular types

## Technical Data

<table>
<thead>
<tr>
<th>General Data</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated operating distance</td>
<td>50 mm</td>
</tr>
<tr>
<td>Installation</td>
<td>flush</td>
</tr>
<tr>
<td>Operating voltage</td>
<td>10 ... 60 V DC</td>
</tr>
<tr>
<td>No-load supply current</td>
<td>≤ 20 mA</td>
</tr>
<tr>
<td>Reverse polarity protection</td>
<td>✔</td>
</tr>
<tr>
<td>Switching frequency</td>
<td>0 ... 80 Hz</td>
</tr>
<tr>
<td>Load current</td>
<td>0 ... 200 mA</td>
</tr>
<tr>
<td>Short-circuit protection</td>
<td>✔, self checking</td>
</tr>
<tr>
<td>Operating voltage display</td>
<td>LED, green</td>
</tr>
<tr>
<td>Switching state indication</td>
<td>LED, yellow</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-25 ... 70 °C (-13 ... 158 °F)</td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP 68</td>
</tr>
</tbody>
</table>

### Model Number

<table>
<thead>
<tr>
<th>Output type</th>
<th>PNP NO/NC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Housing material</td>
<td>PBT housing / PBT base</td>
</tr>
<tr>
<td>Connection type</td>
<td>Connector M12 x 1, 4-pin</td>
</tr>
<tr>
<td></td>
<td>screw terminals</td>
</tr>
</tbody>
</table>

### Approvals and Certificates

<table>
<thead>
<tr>
<th>UL approval</th>
<th>cULus Listed, General Purpose</th>
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</thead>
<tbody>
<tr>
<td>CSA approval</td>
<td>cCSAus Listed, General Purpose</td>
</tr>
<tr>
<td>CCC approval</td>
<td>Certified by China Compulsory Certification (CCC)</td>
</tr>
</tbody>
</table>

### Dimensions

| Length L [mm] | 84 |
| Width W [mm] | 84 |
| Height H [mm] | 40 |
| Cap length l1 [mm] | 0 |
| Connector length lc [mm] | 9 10 9 10 25 |
| Connector thread | conduit entrance with 1/2" NPT opening M20 x 1.5 |

### Accessories

These and more accessories can be found in chapter 10 See pages from 970 ... for cordsets See pages 1066 ... for mounting accessories

1/2"NPT-V1-G-S-.3M Receptacle 1/2"NPT to M12 x 1, 4-pin
V1-G 4-pin, M12 female field-attachable connector, straight
V1-W 4-pin, M12 female field-attachable connector, angled
V1-W-BK2M-PUR-U Female cordset, M12, 4-pin, PUR cable, angled
V1-G-BK2M-PUR-U Female cordset, M12, 4-pin, PUR cable, straight

### Output wiring

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>BN (brown)</td>
<td>WH (white)</td>
<td>BK (black)</td>
<td></td>
</tr>
</tbody>
</table>

Wire colors in accordance with EN 60947-5-2

---

**Inductive sensor**

**FP series**

**Properties**

- Flat pack housing
- 50 mm, flush mountable
- DC, 3-wire and 4-wire switching output
- Terminal compartment and connector versions
Inductive sensor

Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data
- Output type: AC NO/NC
- Operating voltage: 20 ... 253 V AC
- Switching frequency: 0 ... 20 Hz
- Load current: 5 ... 500 mA
- Operating voltage display: LED, green
- Switching state indication: LED, yellow
- Protection degree: IP68
- Connection type: screw terminals

Model Number

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated operating distance</td>
<td>40 mm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Installation</td>
<td>flush</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-25 ... 100 °C (-13 ... 212 °F)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Material</td>
<td>PBT housing/plastic base</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Approvals and Certificates
- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: Certified by China Compulsory Certification (CCC)

Dimensions
- Length L [mm]: 80
- Width W [mm]: 80
- Height H [mm]: 40
- Cap length l1 [mm]: 11
- Connector thread: conduit entrance with 1/2" NPT opening

Accessories
- These and more accessories can be found in chapter 10
- See pages from 970 ... for cordsets
- See pages 1066 ... for mounting accessories
- 1/2"NPT-V12-G-S-.3M Receptacle 1/2"NPT to 1/2" - 20 UNF, 3-pin
- 1/2"NPT-V93-G-S-.3M Receptacle 1/2"NPT to 7/8" - 16 UN, 3-pin

Electrical Connection

Note: Only connect as Normally open or Normally closed - cannot be used simultaneously
**Technical Data**

For detailed data and product description refer to the data sheets at [www.pepperl-fuchs.us](http://www.pepperl-fuchs.us)

### General Data
- **Installation**: non-flush
- **Measurement range**: 15 ... 40 mm
- **Output type**: Analog current output 0 ... 20 mA
- **Operating voltage**: 15 ... 30 V DC
- **No-load supply current**: ≤ 8 mA
- **Repeatability**: 0 ... 6 µm
- **Linearity error**: ≤ ± 10 % of full-scale value
- **Load resistor**: ≤ 500 Ω
- **Ambient temperature**: -10 ... 70 °C (14 ... 158 °F)
- **Housing material**: PBT housing / PBT base
- **Protection degree**: IP67

### Model Number

<table>
<thead>
<tr>
<th></th>
<th>IA40-FP-I3-P1</th>
<th>IA40-FP-I3-P2</th>
<th>IA40-FP-I3-P2-V1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Connection type</strong></td>
<td>Connector M12 x 1, 4-pin screw terminals</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Approvals and Certificates
- **UL approval**: cULus Listed, General Purpose
- **CSA approval**: cCSAus Listed, General Purpose
- **CCC approval**: CCC approval / marking not required for sensors rated ≤36 V

### Dimensions
- **Length L [mm]**: 80
- **Width W [mm]**: 80
- **Height H [mm]**: 40
- **Cap length l1 [mm]**: 0
- **Connector length l2 [mm]**: 11
- **Connector thread**: M20 x 1,5

### Accessories
- These and more accessories can be found in chapter 10
- See pages from 970 ... for cordsets
- See pages 1066 ... for mounting accessories

<table>
<thead>
<tr>
<th></th>
<th>V1-G-BK2M-PUR-U</th>
<th>V1-W-BK2M-PUR-U</th>
<th>DAS-IU-C</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Female cordset, M12, 4-pin, PUR cable, straight</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Female cordset, M12, 4-pin, PUR cable, angled</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Digital display unit</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Electrical Connection

![Electrical Connection Diagram]

Wire colors in accordance with EN 60947-5-2

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

Refer to General Notes Relating to Product Information

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Courtesy of Steven Engineering, Inc. - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com
Proximity Sensors, Inductive Sensors, rectangular types

Inductive sensor FPS series

Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data
- No-load supply current ≤ 20 mA
- Reverse polarity protection ✔
- Short-circuit protection ✔
- Operating voltage display LED, green
- Switching state indication LED, yellow
- Ambient temperature -25 ... 85 °C (-13 ... 185 °F)
- Housing material PBT
- Housing base PBT
- Protection degree IP65
- Connection type screw terminals

Model Number

<table>
<thead>
<tr>
<th>Model</th>
<th>NBN30-FPS-E5</th>
<th>NBB25-FPS-A2</th>
<th>NBN30-FPS-A2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated operating distance</td>
<td>25 mm</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>30 mm</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Installation</td>
<td>flush</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>non-flush</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Output type</td>
<td>PNP, NO/NC, programmable</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>PNP NO/NC</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Operating voltage</td>
<td>10 ... 30 V DC</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>10 ... 65 V DC</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Switching frequency</td>
<td>0 ... 50 Hz</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>0 ... 70 Hz</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Load current</td>
<td>0 ... 200 mA</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>0 ... 300 mA</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>

Approvals and Certificates

- CCC approval
  - CCC approval / marking not required for sensors rated ≤36 V

Dimensions

<table>
<thead>
<tr>
<th>Dimension</th>
<th>NBN30-FPS-E5</th>
<th>NBB25-FPS-A2</th>
<th>NBN30-FPS-A2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length L (mm)</td>
<td>77</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Width W (mm)</td>
<td>60</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Height H (mm)</td>
<td>41</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Connector length lc (mm)</td>
<td>8</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Connector thread</td>
<td>M20 x 1.5</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>

Properties

- Compact flat pack housing
- 25 mm and 30 mm sensing ranges
- DC, 3-wire and 4-wire switching output
- Terminal compartment

Electrical Connection

Refer to General Notes Relating to Product Information
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Proximity Sensors, Inductive Sensors, rectangular types

Inductive sensor

AC/DC, FPS series

Technical Data

<table>
<thead>
<tr>
<th>General Data</th>
<th>NBN30-FPS-UU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated operating distance</td>
<td>30 mm</td>
</tr>
<tr>
<td>Installation</td>
<td>non-flush</td>
</tr>
<tr>
<td>Output type</td>
<td>AC/DC, NO/NC</td>
</tr>
<tr>
<td>Operating voltage</td>
<td>20 ... 265 V AC/DC</td>
</tr>
<tr>
<td>No-load supply current</td>
<td>≤ 2 mA</td>
</tr>
<tr>
<td>Reverse polarity protection</td>
<td>✔</td>
</tr>
<tr>
<td>Switching frequency</td>
<td>0 ... 25 Hz</td>
</tr>
<tr>
<td>Load current</td>
<td>0 ... 300 mA</td>
</tr>
<tr>
<td>Switching state indication</td>
<td>LED, yellow</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-25 ... 85 °C (-13 ... 185 °F)</td>
</tr>
<tr>
<td>Housing base</td>
<td>PBT</td>
</tr>
<tr>
<td>Housing material</td>
<td>PBT</td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP65</td>
</tr>
<tr>
<td>Connection type</td>
<td>screw terminals</td>
</tr>
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</table>

Dimensions

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length L [mm]</td>
<td>77</td>
</tr>
<tr>
<td>Width W [mm]</td>
<td>60</td>
</tr>
<tr>
<td>Height H [mm]</td>
<td>41</td>
</tr>
<tr>
<td>Connector length lc [mm]</td>
<td>8</td>
</tr>
<tr>
<td>Connector thread</td>
<td>M20 x 1.5</td>
</tr>
</tbody>
</table>

Properties

- Compact flat pack housing
- 30 mm non-flush mountable
- AC/DC, 2-wire switching output
- Terminal compartment

Electrical Connection

Note: Only connect as Normally open or Normally closed - cannot be used simultaneously
### Technical Data

<table>
<thead>
<tr>
<th>General Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>NCN100-F23-E2-V1</td>
</tr>
<tr>
<td>Rated operating distance</td>
</tr>
<tr>
<td>Installation</td>
</tr>
<tr>
<td>Output type</td>
</tr>
<tr>
<td>Operating voltage</td>
</tr>
<tr>
<td>No-load supply current</td>
</tr>
<tr>
<td>Reverse polarity protection</td>
</tr>
<tr>
<td>Switching frequency</td>
</tr>
<tr>
<td>Load current</td>
</tr>
<tr>
<td>Short-circuit protection</td>
</tr>
<tr>
<td>Operating voltage display</td>
</tr>
<tr>
<td>Switching state indication</td>
</tr>
<tr>
<td>Ambient temperature</td>
</tr>
<tr>
<td>Housing material</td>
</tr>
<tr>
<td>Protection degree</td>
</tr>
<tr>
<td>Connection type</td>
</tr>
<tr>
<td>Dimensions</td>
</tr>
<tr>
<td>Length L [mm]</td>
</tr>
<tr>
<td>Width W [mm]</td>
</tr>
<tr>
<td>Height H [mm]</td>
</tr>
<tr>
<td>Connector length lc [mm]</td>
</tr>
</tbody>
</table>

### Properties
- F23 surface mount housing
- 100 mm non-flush mountable
- DC, 3-wire switching output
- Connector version

### Approvals and Certificates
- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose

### Dimensions
- Length L [mm]: 177
- Width W [mm]: 177
- Height H [mm]: 60.5
- Connector length lc [mm]: 15

### Accessories
These and more accessories can be found in chapter 10 See pages from 970 ... for cordsets See pages 1066 ... for mounting accessories
- V1-G: 4-pin, M12 female field-attachable connector, straight
- V1-W: 4-pin, M12 female field-attachable connector, angled
- V1-W-BK2M-PUR-U: Female cordset, M12, 4-pin, PUR cable, angled
- V1-G-BK2M-PUR-U: Female cordset, M12, 4-pin, PUR cable, straight

### Electrical Connection

![Electrical Connection Diagram](image)

Wire colors in accordance with EN 60947-5-2

1. BN (brown)
2. WH (white)
3. BK (black)
4. 1 - 2 - 3 - 4
## Inductive Sensor

### Technical Data

<table>
<thead>
<tr>
<th>General Data</th>
<th>NCN100-F23-US-V93</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated operating distance</td>
<td>100 mm</td>
</tr>
<tr>
<td>Installation</td>
<td>non-flush</td>
</tr>
<tr>
<td>Operating voltage</td>
<td>Non-flush</td>
</tr>
<tr>
<td>Operating voltage</td>
<td>20 ... 300 V DC</td>
</tr>
<tr>
<td>Operating voltage</td>
<td>20 ... 253 V AC</td>
</tr>
<tr>
<td>No-load supply current</td>
<td>≤ 1 mA</td>
</tr>
<tr>
<td>Switching frequency</td>
<td>0 ... 10 Hz</td>
</tr>
<tr>
<td>Load current</td>
<td>0 ... 300 mA</td>
</tr>
<tr>
<td>Short-circuit protection</td>
<td>✔ self checking</td>
</tr>
<tr>
<td>Operating voltage display</td>
<td>LED, green</td>
</tr>
<tr>
<td>Switching state indication</td>
<td>LED, red</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-25 ... 70 °C (-13 ... 158 °F)</td>
</tr>
<tr>
<td>Housing material</td>
<td>ABS (TSG), bottom Al</td>
</tr>
<tr>
<td>Connection type</td>
<td>Connector 7/8&quot;-16 UN , 3-pin</td>
</tr>
</tbody>
</table>

### Properties

- F23 surface mount housing
- 100 mm non-flush mountable
- AC/DC, 2-wire switching output
- Connector version

### Approvals and Certificates

- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: Certified by China Compulsory Certification (CCC)

### Dimensions

- Length L [mm]: 177
- Width W [mm]: 177
- Height H [mm]: 60.5
- Connector length lc [mm]: 15

### Accessories

These and more accessories can be found in chapter 10

See pages from 970 for cordsets
See pages 1066 for mounting accessories

V93-G-YE2M-STOOW
Female connector, 7/8" - 16 UNF, 3-pin, PUR cable, straight

### Electrical Connection

**NCN100-F23-US-V93**

```
1  GN (green)
2  BK (black)
3  WH (white)
```
**Technical Data**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model Number</td>
<td>NBN4-F29-E2-C</td>
</tr>
<tr>
<td>Rated operating distance</td>
<td>4 mm</td>
</tr>
<tr>
<td>Installation</td>
<td>non-flush</td>
</tr>
<tr>
<td>Switching element function</td>
<td>PNP NO</td>
</tr>
<tr>
<td>Operating voltage</td>
<td>10 ... 30 V DC</td>
</tr>
<tr>
<td>No-load supply current</td>
<td>( \leq 10 ) mA</td>
</tr>
<tr>
<td>Reverse polarity protection</td>
<td>✔</td>
</tr>
<tr>
<td>Switching frequency</td>
<td>0 ... 1000 Hz</td>
</tr>
<tr>
<td>Load current</td>
<td>0 ... 100 mA</td>
</tr>
<tr>
<td>Short-circuit protection</td>
<td>pulsing</td>
</tr>
<tr>
<td>Indication of the switching state</td>
<td>LED, yellow</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-25 ... 70 °C (-13 ... 158 °F)</td>
</tr>
<tr>
<td>Housing material</td>
<td>PPS</td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP67</td>
</tr>
<tr>
<td>Connection type</td>
<td>cable PVC, 2 m</td>
</tr>
</tbody>
</table>

**Properties**
- Miniature F29 housing
- 4 mm non-flush mountable
- DC, 3-wire switching output
- Cable version

**Benefits**
- Specially optimized for welding applications

**Approvals and Certificates**
- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated \( \leq 36 \) V

**Dimensions**
- Length L [mm]: 27
- Width W [mm]: 10
- Height H [mm]: 6
- Connector area \( l_c \) [mm²]: 4
### F104 series

#### Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

<table>
<thead>
<tr>
<th>Model Number</th>
<th>NBB5-F104M-E2-C-200MM-V1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated operating distance</td>
<td>5 mm</td>
</tr>
<tr>
<td>Installation</td>
<td>flush</td>
</tr>
<tr>
<td>Switching element function</td>
<td>PNP, NO</td>
</tr>
<tr>
<td>Operating voltage</td>
<td>10 ... 30 V DC</td>
</tr>
<tr>
<td>No-load supply current</td>
<td>≤ 15 mA</td>
</tr>
<tr>
<td>Reverse polarity protection</td>
<td>✓</td>
</tr>
<tr>
<td>Switching frequency</td>
<td>100 Hz</td>
</tr>
<tr>
<td>Load current</td>
<td>200 mA</td>
</tr>
<tr>
<td>Short-circuit protection</td>
<td>pulsing</td>
</tr>
<tr>
<td>Indication of the switching state</td>
<td>LED</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-25 ... 70 °C (-13 ... 158 °F)</td>
</tr>
<tr>
<td>Housing material</td>
<td>GD-Zn</td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP67</td>
</tr>
<tr>
<td>Connection type</td>
<td>Cable connector M12 x 1, 4-pin with PUR Cable, 200 mm</td>
</tr>
</tbody>
</table>

#### Properties

- Miniature F104 metal housing
- 5 mm flush mountable
- DC, 3-wire switching output
- Pigtailed connector version

#### Approvals and Certificates

- UL approval: cULus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤36 V

#### Dimensions

<table>
<thead>
<tr>
<th>Length L [mm]</th>
<th>32</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width W [mm]</td>
<td>20</td>
</tr>
<tr>
<td>Height H [mm]</td>
<td>8</td>
</tr>
<tr>
<td>Connector area lc [mm²]</td>
<td>0</td>
</tr>
</tbody>
</table>

#### Accessories

- These and more accessories can be found in chapter 10
- See pages from 970 ... for cordsets
- See pages 1066 ... for mounting accessories

V1-G-OR2M-POC
Female cordset, M12, 4-pin, TPE cable, welding-bead resistant

#### Electrical Connection

NBB5-F104M-E2-C-200MM-V1

Wire colors in accordance with EN 60947-5-2

| 1 | BN (brown) |
| 2 | WH (white) |
| 3 | BU (blue)  |
| 4 | BK (black) |
### Technical Data

**General Data**
- Operating voltage: 3.8 ... 30 V DC
- Reverse polarity protection: ✔
- Switching frequency: 0 ... 3 Hz
- Load current: 0 ... 100 mA
- Short-circuit protection: pulsing
- Indication of the switching state: LED, yellow
- Ambient temperature: -25 ... 70 °C (-13 ... 158 °F)
- Housing material: PA
- Protection degree: IP69K
- Connection type: Device connector M12 x 1, 4-pin

**Rated operating distance**
- 20 mm
- 40 mm

### Model Number

<table>
<thead>
<tr>
<th>Model Number</th>
<th>NBB20-L2-Z4-C-V1</th>
<th>NBB20-L2-Z5-C-V1</th>
<th>NBN40-L2-Z4-C-V1</th>
<th>NBN40-L2-Z5-C-V1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated operating distance</td>
<td>20 mm</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Installation</td>
<td>flush</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Switching element function</td>
<td>NO</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Approvals and Certificates</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Dimensions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Length L [mm]</td>
<td>67</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Width W [mm]</td>
<td>40</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Height H [mm]</td>
<td>40</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connector area l_{c} [mm]</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Accessories

- Modular mounting bracket
- Mounting aid

**Wire colors in accordance with EN 60947-5-2**

1. BN (brown)
2. WH (white)
3. BU (blue)
4. BK (black)
## Technical Data

**General Data**
- Operating voltage: 10 ... 30 V DC
- No-load supply current: ≤ 20 mA
- Reverse polarity protection: ✔
- Switching frequency: 0 ... 10 Hz
- Load current: 0 ... 200 mA
- Short-circuit protection: pulsing
- Operating voltage display: LED, green
- Indication of the switching state: LED, yellow
- Ambient temperature: -25 ... 85 °C (-13 ... 185 °F)
- Housing material: PA
- Protection degree: IP69K

### Model Number

<table>
<thead>
<tr>
<th>Model Number</th>
<th>NBB20-L2-E2-C-V1</th>
<th>NBN40-L2-E2-C-V1</th>
<th>NBN40-L2-A2-C-V1</th>
<th>NBB20-L2-A2-C-V1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated operating distance</td>
<td>20 mm</td>
<td>40 mm</td>
<td>20 mm</td>
<td>40 mm</td>
</tr>
<tr>
<td>Installation</td>
<td>flush</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Switching element function</td>
<td>PNP NO</td>
<td>PNP NO</td>
<td>PNP NO</td>
<td>PNP NO</td>
</tr>
</tbody>
</table>

### Approvals and Certificates
- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤36 V

### Dimensions
- Length L [mm]: 67
- Width W [mm]: 40
- Height H [mm]: 40
- Connector area l_c [mm]: 0

### Accessories
- These and more accessories can be found in chapter 10 (See pages from 970 ... for cordsets See pages 1066 ... for mounting accessories)
  - V1-G: 4-pin, M12 female field-attachable connector
  - V1-W: 4-pin, M12 female field-attachable connector
  - V1-G-BK2M-PUR-U: Cable socket, M12, 4-pin, PUR cable
  - V1-W-BK2M-PUR-U: Cable socket, M12, 4-pin, PUR cable
  - MHW 01: Modular mounting bracket
  - MH 02-L: Mounting aid
  - MH 01-L2-W: Mounting bracket - 1/2” rod type, angled

### Electrical Connection

Wire colors in accordance with EN 60947-5-2
- 1: BN (brown)
- 2: WH (white)
- 3: BU (blue)
- 4: BK (black)

---

**Properties**
- Compact cube style, L2 housing
- 20 mm and 40 mm sensing ranges
- DC, 3-wire and 4-wire switching output
- Connector version

**Benefits**
- High visibility LED Indication
- Sensor head can be positioned 5-ways
- Mounting base with quick clamping lever for swift mounting
- Adjustable connector allows flexible wiring
- Specially optimized for welding applications
Inductive sensor

Cube style, L2 series, weld immune

**Technical Data**

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

### General Data
- **Operating voltage**: 10 ... 30 V DC
- **No-load supply current**: ≤ 20 mA
- **Reverse polarity protection**: ✔
- **Switching frequency**: 0 ... 5 Hz
- **Load current**: 0 ... 200 mA
- **Short-circuit protection**: pulsing
- **Operating voltage display**: LED, green
- **Indication of the switching state**: LED, yellow
- **Ambient temperature**: -25 ... 85 °C (-13 ... 185 °F)
- **Connection type**: Device connector M12 x 1, 4-pin

### Model Number
- **NBB20-L3-A2-C3-V1**
- **NBB20-L3M-A2-C3-V1**
- **NBN40-L3M-A2-C3-V1**
- **NBN40-L3M-A0-C3-V1**
- **NBN40-L3M-A2-C3-V1**

### Rated operating distance
- 20 mm
- 40 mm

### Installation
- **Flush**
- **Non-flush**

### Switching element function
- **NPN NO/NC**
- **PNP NO/NC**

### Housing material
- **GD-ZnAl4Cu1, Coated metal fixing flange, coated.**
- **GD-ZnAl4Cu1, coated mounting flange PA6-GF35**
- **PTFE coated zinc**

### Approvals and Certificates
- **UL approval**: cULus Listed, General Purpose
- **CSA approval**: cCSAus Listed, General Purpose
- **CCC approval**: CCC approval / marking not required for sensors rated ≤ 36 V

### Dimensions
- **Length L [mm]**: 67
- **Width W [mm]**: 40
- **Height H [mm]**: 40

### Accessories
These and more accessories can be found in chapter 10
- **V1-G**: 4-pin, M12 female field-attachable connector
- **V1-G-OR2M-POC**: Female cordset, M12, 4-pin, TPE cable, welding-bead resistant
- **V1-W**: 4-pin, M12 female field-attachable connector
- **V1-W-BK2M-PUR-U**: Cable socket, M12, 4-pin, PUR cable
- **V1-G-BK2M-PUR-U**: Cable socket, M12, 4-pin, PUR cable
- **MHW 01**: Modular mounting bracket
- **MH 02-L**: Mounting aid
- **MH 01-L2-W**: Mounting bracket - 1/2" rod type, angled

**Electrical Connection**

**Wire colors in accordance with EN 60947-5-2**

1. **BN** (brown)
2. **WH** (white)
3. **RU** (gray)
4. **BK** (black)
### Proximity Sensors, Inductive Sensors, rectangular types

**Inductive sensor**

Cube style, L2 series, weld immune

#### Technical Data

For detailed data and product description refer to the data sheets at [www.pepperl-fuchs.us](http://www.pepperl-fuchs.us)

<table>
<thead>
<tr>
<th>General Data</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating voltage</td>
<td>20 ... 250 V AC/DC</td>
</tr>
<tr>
<td>No-load supply current</td>
<td>≤ 0.6 mA</td>
</tr>
<tr>
<td>Reverse polarity protection</td>
<td>✔</td>
</tr>
<tr>
<td>Switching frequency</td>
<td>2 Hz</td>
</tr>
<tr>
<td>Load current</td>
<td>3 ... 300 mA</td>
</tr>
<tr>
<td>Short-circuit protection</td>
<td>pulsing</td>
</tr>
<tr>
<td>Operating voltage display</td>
<td>LED, green</td>
</tr>
<tr>
<td>Indication of the switching state</td>
<td>LED, red</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-25 ... 70 °C (-13 ... 158 °F)</td>
</tr>
<tr>
<td>Housing material</td>
<td>PTFE coated zinc</td>
</tr>
<tr>
<td>Housing base</td>
<td>PTFE coated zinc</td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP67</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Model Number</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated operating distance</td>
<td>20 mm</td>
</tr>
<tr>
<td>Installation</td>
<td>40 mm</td>
</tr>
<tr>
<td>Switching element function</td>
<td>AC/DC normally open</td>
</tr>
<tr>
<td>Connection type</td>
<td>Device connector 1/2&quot;-20 UN , 3-pin</td>
</tr>
</tbody>
</table>

#### Approvals and Certificates

- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: Certified by China Compulsory Certification (CCC)

### Dimensions

- Length L [mm]: 67
- Width W [mm]: 40
- Height H [mm]: 40

### Accessories

These and more accessories can be found in chapter 10 for control applications

- V93-G-YE2M-STOW Female connector, 7/8" - 16 UNF, 3-pin, PUR cable
- V12-W-YE2M-PUR-H/S Connecting cable, 1/2" - 20 UNF, 3-pin, irradiated PUR cable
- MHW 01 Modular mounting bracket
- MH 02-L Mounting aid
- MH 01-L2-W Mounting bracket - 1/2" rod type, angled

### Electrical Connection

#### Wire colors

1. GN (green)
2. BK (black)
3. WH (white)

#### Connectors

- Device connector 1/2"-20 UN , 3-pin
- Device connector 7/8"-16 UN , 3-pin
Inductive sensor

**Technical Data**

**General Data**
- **Rated operating distance**: 20 mm
- **Installation**: flush
- **Switching element function**: PNP NO
- **Operating voltage**: 10 ... 30 V DC
- **No-load supply current**: ≤ 20 mA
- **Reverse polarity protection**: ✔
- **Switching frequency**: 0 ... 5 Hz
- **Load current**: 0 ... 200 mA
- **Short-circuit protection**: pulsing
- **Operating voltage display**: LED, green
- **Indication of the switching state**: LED, yellow
- **Ambient temperature**: -25 ... 85 °C (-13 ... 185 °F)
- **Housing material**: PA/metal with epoxy powder coating
- **Housing base**: metal
- **Protection degree**: IP68 / IP69K
- **Reverse polarity protection**: ✔
- **Switching frequency**: 0 ... 5 Hz
- **Load current**: 0 ... 200 mA
- **Short-circuit protection**: pulsing
- **Operating voltage display**: LED, green
- **Indication of the switching state**: LED, yellow
- **Ambient temperature**: -25 ... 85 °C (-13 ... 185 °F)
- **Housing material**: PA/metal with epoxy powder coating
- **Housing base**: metal
- **Protection degree**: IP68 / IP69K

**Model Number**
- **Connection type**: Device connector M12 x 1, 4-pin screw terminals

**Approvals and Certificates**
- **UL approval**: cULus Listed, General Purpose
- **CSA approval**: cCSAus Listed, General Purpose
- **CCC approval**: CCC approval / marking not required for sensors rated ≤36 V

**Dimensions**
- **Length L [mm]**: 118
- **Width W [mm]**: 40
- **Height H [mm]**: 40
- **Connector area lc [mm]**: 0 (1/2" NPT) 25

**Accessories**
- **These and more accessories can be found in chapter 10**

**Electrical Connection**

Wire colors in accordance with EN 60947-5-2
- 1: BN (brown)
- 2: WH (white)
- 3: BU (blue)
- 4: BK (black)

Refer to General Notes Relating to Product Information

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Proximity Sensors, Inductive Sensors, Rectangular Types

Courtesy of Steven Engineering, Inc. - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com
Inductive sensor

FP series, weld immune

Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data
Rated operating distance 50 mm
Installation flush
No-load supply current ≤ 20 mA
Reverse polarity protection ✔
Switching frequency 0 ... 1 Hz
Load current 0 ... 200 mA
Short-circuit protection pulsing
Operating voltage display LED, green
Indication of the switching state LED, yellow
Ambient temperature -25 ... 70 °C (-13 ... 158 °F)
Housing material PBT/metal
Housing base metal
Protection degree IP68
Connection type Device connector M12 x 1, 4-pin

Model Number
NCB50-FP-E2-C-P3-V1
NCB50-FP-E34-C-P3-V1
NCB50-FP-A2-C-P3-V1

Switching element function
PNP NO contact
PNP NO/NC
PNP NC

Operating voltage
10 ... 30 V DC
10 ... 60 V DC

Approvals and Certificates
UL approval cULus Listed, General Purpose
CSA approval cCSAus Listed, General Purpose
CCC approval Certified by China Compulsory Certification (CCC)

Dimensions
Length L [mm] 84
Width W [mm] 84
Height H [mm] 40
Connector area lc [mm] 32

Accessories
These and more accessories can be found in chapter 10
See pages from 970 ... for cordsets
See pages 1066 ... for mounting accessories

V1-G
4-pin, M12 female field-attachable connector

V1-W
4-pin, M12 female field-attachable connector

V1-G-BK2M-PUR-U
Cable socket, M12, 4-pin, PUR cable

V1-W-BK2M-PUR-U
Cable socket, M12, 4-pin, PUR cable

Electrical Connection

Wire colors in accordance with EN 60947-5-2
1 BN (brown)
2 WH (white)
3 BU (blue)
4 BK (black)
Inductive sensor

Cube style series, reduction factor 1

Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

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<thead>
<tr>
<th>General Data</th>
<th>NRB20-L3-A2-V1</th>
<th>NRB20-L3-E2-V1</th>
<th>NRB20-L4-A2-V1</th>
<th>NRB40-L3-A2-V1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating voltage</td>
<td>10 ... 30 V DC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No-load supply current</td>
<td>≤ 25 mA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reverse polarity protection</td>
<td>✔</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Switching frequency</td>
<td>0 ... 100 Hz</td>
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<td></td>
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</tr>
<tr>
<td>Load current</td>
<td>0 ... 200 mA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Short-circuit protection</td>
<td>✔</td>
<td></td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Operating voltage display</td>
<td>LED, green</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Switching state indication</td>
<td>LED, yellow</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-25 ... 70 °C (-13 ... 158 °F)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Housing material</td>
<td>GD-ZnAl4Cu1, coated</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>mounting flange PAG-GF35</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP67</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connection type</td>
<td>Connector M12 x 1, 4-pin</td>
<td></td>
<td></td>
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<table>
<thead>
<tr>
<th>Model Number</th>
<th></th>
</tr>
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<tbody>
<tr>
<td>Rated operating distance</td>
<td>20 mm</td>
</tr>
<tr>
<td>Installation</td>
<td>flush</td>
</tr>
<tr>
<td>Output type</td>
<td>PNP NO/NC</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Properties</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Flexible Cube style housing</td>
<td></td>
</tr>
<tr>
<td>Up to 40 mm sensing ranges</td>
<td></td>
</tr>
<tr>
<td>DC, 3-wire and 4-wire switching output</td>
<td></td>
</tr>
<tr>
<td>Connector version</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Benefits</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Same sensing range for all metals</td>
<td></td>
</tr>
<tr>
<td>High visibility LED indication</td>
<td></td>
</tr>
<tr>
<td>Sensor head can be positioned 5-ways</td>
<td></td>
</tr>
<tr>
<td>Adjustable connector allows flexible wiring</td>
<td></td>
</tr>
<tr>
<td>Quick release mounting bracket</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Accessories</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>These and more accessories can be found in chapter 10</td>
<td>See pages from 570 ... for cordsets See pages 1066 ... for mounting accessories</td>
</tr>
<tr>
<td>MHW 01</td>
<td>Modular mounting bracket</td>
</tr>
<tr>
<td>MH 02-L</td>
<td>Mounting bracket - 1/2&quot; rod type, straight</td>
</tr>
<tr>
<td>MH 01-L2-W</td>
<td>Mounting bracket - 1/2&quot; rod type, angled</td>
</tr>
<tr>
<td>V1-G</td>
<td>4-pin, M12 female field-attachable connector, straight</td>
</tr>
<tr>
<td>V1-W</td>
<td>4-pin, M12 female field-attachable connector, angled</td>
</tr>
<tr>
<td>V1-G-BK2M-PUR-U</td>
<td>Female cordset, M12, 4-pin, PUR cable, straight</td>
</tr>
<tr>
<td>V1-W-BK2M-PUR-U</td>
<td>Female cordset, M12, 4-pin, PUR cable, angled</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dimensions</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Length L [mm]</td>
<td>67</td>
</tr>
<tr>
<td>Width W [mm]</td>
<td>40</td>
</tr>
<tr>
<td>Height H [mm]</td>
<td>40</td>
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<tr>
<td>Connector length l_c [mm]</td>
<td>0</td>
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</table>

<table>
<thead>
<tr>
<th>Wire colors in accordance with EN 60947-5-2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>4</td>
</tr>
</tbody>
</table>

Refer to General Notes Relating to Product Information
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Proximity Sensors, Inductive Sensors, rectangular types

---

Inductive sensor Cube style series, reduction factor 1

- Flexible Cube style housing
- Up to 40 mm sensing ranges
- DC, 3-wire and 4-wire switching output
- Connector version

Properties

- Same sensing range for all metals
- High visibility LED indication
- Sensor head can be positioned 5-ways
- Adjustable connector allows flexible wiring
- Quick release mounting bracket

Benefits

- Same sensing range for all metals
- High visibility LED indication
- Sensor head can be positioned 5-ways
- Adjustable connector allows flexible wiring
- Quick release mounting bracket

---

Electrical Connection

NRB20-L3-A2-V1

NRB20-L3-E2-V1

NRN35-L3-A2-V1

NRN40-L3K-A2-V1

NRN40-L3K-A2-V1

Wire colors in accordance with EN 60947-5-2

1   | BN (brown) |
2   | WH (white) |
3   | BU (blue)  |
4   | BK (black) |
### Technical Data
For detailed data and product description refer to the data sheets at [www.pepperl-fuchs.us](http://www.pepperl-fuchs.us)

#### General Data
- Magnet field immunity ✔
- Weld immune ✔
- Operating voltage 10 ... 30 V DC
- No-load supply current ≤ 25 mA
- Reverse polarity protection ✔
- Switching frequency 0 ... 100 Hz
- Load current 0 ... 200 mA
- Short-circuit protection ✔, self checking
- Operating voltage display LED, green
- Switching state indication LED, yellow
- Ambient temperature -25 ... 70 °C (-13 ... 158 °F)
- Housing material GD-ZnAl4Cu1, coated mounting flange PA6-GF35
- Protection degree IP67
- Connection type Connector M12 x 1, 4-pin

#### Model Number
- NRB20-L3-E2-C-V1
- NRB20-L3-A2-C-V1
- NRN35-L3-E2-C-V1
- NRN35-L3-A2-C-V1
- NRN40-L3K-E2-C-V1
- NRN40-L3K-A2-C-V1

#### Rated operating distance
- 20 mm
- 35 mm
- 40 mm

#### Installation
- flush (✔)
- non-flush (✔)

#### Output type
- PNP NO/NC
- PNP NO

#### Approvals and Certificates
- Protection class II
- UL approval cUS Listed, General Purpose
- CSA approval cCSAus Listed, General Purpose
- CCC approval CCC approval / marking not required for sensors rated ≤ 36 V

#### Dimensions
- Length L [mm] 67
- Width W [mm] 40
- Height H [mm] 40
- Connector length lc [mm] 0

#### Accessories
These and more accessories can be found in chapter 10
See pages from 970 ... for cordsets
See pages 1066 ... for mounting accessories

#### Electrical Connection
- NRB20-L3M-A2-C3-V1
- Technical data like NRB20-L3-A2-C-V1 but:
  - Housing material: GD-ZnAl4Cu1, coated metal fixing flange, coated.

---

### Properties
- Flexible Cube style housing
- Up to 40 mm sensing ranges
- DC, 3-wire and 4-wire switching output
- Connector version

### Benefits
- Same sensing range for all metals
- Magnetic field and weld slag resistant
- Designed for tough automotive plant applications
- High visibility LED indication
- Sensor head can be positioned 5-ways

### Additional Products
In this series, we offer the following additional products:
- NRB20-L3M-A2-C3-V1
- Technical data like NRB20-L3-A2-C-V1 but:
  - Housing material: GD-ZnAl4Cu1, coated metal fixing flange, coated.

---

### Electrical Connection
- Wire colors in accordance with EN 60947-5-2
  - 1 BN (brown)
  - 2 WH (white)
  - 3 BU (blue)
  - 4 BK (black)
### Technical Data

**General Data**
- Magnetic field immunity: ✔
- Operating voltage: 10 ... 30 V DC
- No-load supply current: ≤ 20 mA
- Reverse polarity protection: ✔
- Load current: 0 ... 200 mA
- Short-circuit protection: ✔, self checking
- Operating voltage display: LED, green
- Switching state indication: LED, yellow
- Ambient temperature: 0 ... 50 °C (32 ... 122 °F) (± 10 % changing operating distance)
- 25 ... 70 °C (-13 ... 158 °F) (± 20 % changing operating distance)
- Housing material: PBT/metal
- Housing base: metal
- Protection degree: IP68
- Connection type: Connector M12 x 1, 4-pin

**Model Number**

<table>
<thead>
<tr>
<th>Model Number</th>
<th>NR50-FP-A2-P3-V1</th>
<th>NR50-FP-A2-C-P3-V1</th>
<th>NR50-FP-E2-P3-V1</th>
<th>NR50-FP-E2-C-P3-V1</th>
<th>NRN75-FP-A2-P3-V1</th>
<th>NRN75-FP-A2-C-P3-V1</th>
<th>NRN75-FP-E2-P3-V1</th>
<th>NRN75-FP-E2-C-P3-V1</th>
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<tbody>
<tr>
<td>Weld immune</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
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<tr>
<td>Rated operating distance</td>
<td>50 mm</td>
<td>75 mm</td>
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<td>75 mm</td>
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<td>75 mm</td>
<td>50 mm</td>
<td>75 mm</td>
</tr>
<tr>
<td>Installation flush</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
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<td>Output type</td>
<td>PNP NO/NC</td>
<td>PNP NO</td>
<td>PNP NO</td>
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<td>PNP NO</td>
<td>PNP NO</td>
<td>PNP NO</td>
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<tr>
<td>Switching frequency</td>
<td>0 ... 1 Hz</td>
<td>0 ... 20 Hz</td>
<td>0 ... 1 Hz</td>
<td>0 ... 20 Hz</td>
<td>0 ... 1 Hz</td>
<td>0 ... 20 Hz</td>
<td>0 ... 1 Hz</td>
<td>0 ... 20 Hz</td>
</tr>
</tbody>
</table>

**Approvals and Certificates**
- Protection class: II
- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤ 36 V

**Dimensions**
- Length L [mm]: 84 80 84 80
- Width W [mm]: 84 80 84 80
- Height H [mm]: 40
- Connector length lc [mm]: 32 33 32 33

**Accessories**
- These and more accessories can be found in chapter 10
- See pages from 970 ... for cordsets
- See pages 1066 ... for mounting accessories

**Electrical Connection**

#### Properties
- Flat pack housing
- 50 mm and 75 mm sensing ranges
- DC, 3-wire and 4-wire switching output
- Connector version

#### Benefits
- Same sensing range for all metals
- Magnetic field and weld slag resistant
- Designed for tough automotive plant applications
Proximity Sensors, Inductive Sensors, rectangular types

Inductive sensor

F33 Mobile Equipment series

Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
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<tbody>
<tr>
<td>Operating voltage</td>
<td>5 ... 60 V DC</td>
</tr>
<tr>
<td>No-load supply current</td>
<td>≤ 10 mA</td>
</tr>
<tr>
<td>Reverse polarity protection</td>
<td>reverse polarity protected</td>
</tr>
<tr>
<td>Load current</td>
<td>0 ... 200 mA</td>
</tr>
<tr>
<td>Short-circuit protection</td>
<td>✓, self checking</td>
</tr>
<tr>
<td>Switching state indication</td>
<td>LED yellow</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-40 ... 85 °C (-40 ... 185 °F)</td>
</tr>
<tr>
<td>Housing material</td>
<td>PBT</td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP67 / IP69K</td>
</tr>
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</table>

Model Number

<table>
<thead>
<tr>
<th>Model Number</th>
<th>5 mm range</th>
<th>10 mm range</th>
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<tbody>
<tr>
<td>NBB8-F33-E0-M</td>
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<td>✔</td>
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<td>NBB8-F33-E1-M</td>
<td>✔</td>
<td>✔</td>
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<td>NBB8-F33-E2-M</td>
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<td>NBB8-F33-E3-M</td>
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<td>NBN10-F33-E0-M</td>
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<tr>
<td>NBN10-F33-E2-M</td>
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<td>✔</td>
</tr>
<tr>
<td>NBN10-F33-E3-M</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>NBB8-F33-E2-M-150MM-3DT04</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>

Rated operating distance: 10 mm

Installation:
- 8 mm
- flush / non-flush

Output type:
- NPN NO
- NPN NC
- PNP NO
- PNP NC

Switching frequency:
- 0 ... 200 Hz
- 0 ... 350 Hz

Connection type:
- cable PUR, 2 m
- Cable connector Deutsch DT04, 3-pin with PUR cable 150 mm

Approvals and Certificates

- e1 Type approval 2006/28/EG
- UL approval cULus Listed, General Purpose

Dimensions

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
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<tbody>
<tr>
<td>Length L [mm]</td>
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<tr>
<td>Width W [mm]</td>
<td>25</td>
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<tr>
<td>Height H [mm]</td>
<td>10</td>
</tr>
<tr>
<td>Connector length lc [mm]</td>
<td>0</td>
</tr>
</tbody>
</table>

Electrical Connection

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Terminal Assignments</th>
</tr>
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<tbody>
<tr>
<td>NBB8-F33-E0-M</td>
<td>✓</td>
</tr>
<tr>
<td>NBB8-F33-E1-M</td>
<td>✓</td>
</tr>
<tr>
<td>NBB8-F33-E2-M</td>
<td>✓</td>
</tr>
<tr>
<td>NBB8-F33-E3-M</td>
<td>✓</td>
</tr>
<tr>
<td>NBN10-F33-E0-M</td>
<td>✓</td>
</tr>
<tr>
<td>NBN10-F33-E1-M</td>
<td>✓</td>
</tr>
<tr>
<td>NBN10-F33-E2-M</td>
<td>✓</td>
</tr>
<tr>
<td>NBN10-F33-E3-M</td>
<td>✓</td>
</tr>
<tr>
<td>NBB8-F33-E2-M-150MM-3DT04</td>
<td>✓</td>
</tr>
</tbody>
</table>
# Inductive sensor

## F148P Mobile Equipment series

### Technical Data

**For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us**

<table>
<thead>
<tr>
<th>General Data</th>
<th>Model Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installation</td>
<td>flush</td>
</tr>
<tr>
<td>Load current</td>
<td>≤ 200 mA</td>
</tr>
<tr>
<td>Switching state indication</td>
<td>LED, yellow</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-40 ... 85 °C (-40 ... 185 °F)</td>
</tr>
<tr>
<td>Housing material</td>
<td>anodized aluminum</td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP67/IP69K</td>
</tr>
<tr>
<td>Rated operating distance</td>
<td>15 mm</td>
</tr>
<tr>
<td>Output type</td>
<td>1 electronic relay, N.C.</td>
</tr>
<tr>
<td>Operating voltage</td>
<td>10 ... 30 V DC</td>
</tr>
<tr>
<td>No-load supply current</td>
<td>≤ 10 mA</td>
</tr>
<tr>
<td>Voltage drop</td>
<td>≤ 8 mA</td>
</tr>
<tr>
<td>Reverse polarity protection</td>
<td>polarity independent</td>
</tr>
<tr>
<td>Switching frequency</td>
<td>0 ... 120 Hz</td>
</tr>
<tr>
<td>Short-circuit protection</td>
<td>self checking</td>
</tr>
<tr>
<td>Connection type</td>
<td>cable PUR, 2 m</td>
</tr>
<tr>
<td>Dimensions</td>
<td></td>
</tr>
<tr>
<td>Length L [mm]</td>
<td>50</td>
</tr>
<tr>
<td>Width W [mm]</td>
<td>35</td>
</tr>
<tr>
<td>Height H [mm]</td>
<td>10</td>
</tr>
<tr>
<td>Cap length l1 [mm]</td>
<td>10</td>
</tr>
<tr>
<td>Connector length l2 [mm]</td>
<td>0</td>
</tr>
</tbody>
</table>

### Properties

- Durable metal housing
- 8 mm and 15 mm sensing ranges
- DC, 3-wire switching and 4-wire relay output
- Cable and pigtailed connector versions

### Benefits

- Verifies outrigger extension
- Relay model features ultra low voltage drop
- Operational to -40 °C
- 20 AWG heavy duty cable
- IP 69K / 1200psi washdown rating

### Electrical Connection

- NBB8-F148P10-E0-M
- NBB8-F148P10-E10-M
- NBB15-F148P10-E0-M
- NBB15-F148P10-E10-M
- NBB8-F148P10-E2-M
- NBB15-F148P10-E2-M
- NBB8-F148P10-ARD-M
- NBB8-F148P10-ARD-M-150MM-3DT04
- NBB8-F148P10-E2-M-150MM-3DT04

Refer to General Notes Relating to Product Information

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Proximity Sensors, Inductive Sensors, rectangular types

1.12

Properties

- Compact "cube" housing
- 20 mm and 40 mm sensing ranges
- DC, 4-wire switching output
- Connector version

Benefits

- High visibility LED indication
- Sensor head can be positioned 5-ways
- Maximum sensing range in a space-saving housing
- -40 °C operational temperature
- IP 69K / 1200 psi washdown rating

Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data

- Operating voltage: 10 ... 60 V DC
- No-load supply current: ≤ 20 mA
- Reverse polarity protection: ✔
- Load current: 0 ... 200 mA
- Short-circuit protection: ✔, self checking
- Operating voltage display: LED, green
- Switching state indication: LED, yellow
- Ambient temperature: -40 ... 65 °C (-40 ... 185 °F)
- Housing material: PA
- Protection degree: IP69K
- Connection type: Connector M12 x 1, 4-pin

Model Number

- NBB20-L2-A0-V1-M
- NBB20-L2-A2-V1-M
- NBN40-L2-A0-V1-M
- NBN40-L2-A2-V1-M

Rated operating distance

<table>
<thead>
<tr>
<th>Model</th>
<th>20 mm</th>
<th>40 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>NBB20</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>NBN40</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>

Installation

<table>
<thead>
<tr>
<th>Model</th>
<th>flush</th>
<th>non-flush</th>
</tr>
</thead>
<tbody>
<tr>
<td>NBB20</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>NBN40</td>
<td>✔</td>
<td></td>
</tr>
</tbody>
</table>

Output type

<table>
<thead>
<tr>
<th>Model</th>
<th>NPN</th>
<th>NO/NC</th>
</tr>
</thead>
<tbody>
<tr>
<td>NBB20</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>NBN40</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>

Switching frequency

<table>
<thead>
<tr>
<th>Model</th>
<th>0 ... 100 Hz</th>
<th>0 ... 200 Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td>NBB20</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>NBN40</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>

Approvals and Certificates

- e1 Type approval: 2006/28/EG

Dimensions

| Length L [mm] | 67 |
|              | 40 |
| Height H [mm] | 40 |
| Connector Lc [mm] | 0 |

Accessories

These and more accessories can be found in chapter 10
See pages from 970 ... for cordsets  See pages 1066 ... for mounting accessories

- V1-G: 4-pin, M12 female field-attachable connector, straight
- V1-W: 4-pin, M12 female field-attachable connector, angled
- V1-GSK2M-PUR-U: Female cordset, M12, 4-pin, PUR cable, straight
- V1-WBK2M-PUR-U: Female cordset, M12, 4-pin, PUR cable, angled

Electrical Connection

Wire colors in accordance with EN 60947-5-2

- 1: BN (brown)
- 2: WH (white)
- 3: BU (blue)
- 4: BK (black)
Inductive sensor

Cube style Mobile Equipment series

Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data
- Operating voltage: 10 ... 60 V DC
- No-load supply current: \( \leq 20 \) mA
- Reverse polarity protection: ✔
- Load current: \( 0 \ldots 200 \) mA
- Short-circuit protection: ✔, self checking
- Operating voltage display LED, green
- Switching state indication LED, yellow
- Ambient temperature: \(-40 \ldots 85 \) °C \((-40 \ldots 185 \) °F)
- Housing material: PA-GF35 metal base powder coated
- Protection degree: IP69K
- Connection type: Connector M12 x 1, 4-pin

Model Number
- NBB20-L2M-A0-V1-M
- NBB20-L2M-A2-V1-M
- NBN40-L2M-A0-V1-M
- NBN40-L2M-A2-V1-M

Rated operating distance
- 20 mm
- 40 mm

Installation
- flush
- non-flush

Output type
- NPN NO/NC
- PNP NO/NC

Switching frequency
- 0 ... 100 Hz
- 0 ... 200 Hz

Approvals and Certificates
- e1 Type approval 2006/28/EG

Dimensions
- Length L [mm]: 67
- Width W [mm]: 40
- Height H [mm]: 40
- Connector length lc [mm]: 0

Accessories
- These and more accessories can be found in chapter 10
- See pages from 970 ... for cordsets
- See pages 1066 ... for mounting accessories
- V1-G: 4-pin, M12 female field-attachable connector, straight
- V1-W: 4-pin, M12 female field-attachable connector, angled
- V1-G-BK2M-PUR-U: Female cordset, M12, 4-pin, PUR cable, straight
- V1-W-BK2M-PUR-U: Female cordset, M12, 4-pin, PUR cable, angled

Properties
- Compact "cube" housing
- 20 mm and 40 mm sensing ranges
- DC, 4-wire switching output
- Connector version

Benefits
- High visibility LED indication
- High torque metal mounting bracket
- Sensor head can be positioned 5-ways
- Maximum sensing range in a space-saving housing
- \(-40 \) °C operational temperature
- IP 69K / 1200 psi washdown rating

Electrical Connection

Wire colors in accordance with EN 60947-5-2

1. BN (brown)
2. WH (white)
3. BJ (blue)
4. BK (black)
### Technical Data

<table>
<thead>
<tr>
<th>General Data</th>
<th>10 ... 60 V DC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating voltage</td>
<td>≤ 20 mA</td>
</tr>
<tr>
<td>No-load supply current</td>
<td>0 ... 200 mA</td>
</tr>
<tr>
<td>Load current</td>
<td>✔, self checking</td>
</tr>
<tr>
<td>Reverse polarity protection</td>
<td>✔</td>
</tr>
<tr>
<td>Short-circuit protection</td>
<td>✔, self checking</td>
</tr>
<tr>
<td>Operating voltage display</td>
<td>LED, green</td>
</tr>
<tr>
<td>Switching state indication</td>
<td>LED, yellow</td>
</tr>
<tr>
<td>Housing material</td>
<td>PA/metal with epoxy powder coating</td>
</tr>
<tr>
<td>Housing base</td>
<td>metal</td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP68 / IP69K</td>
</tr>
<tr>
<td>Connection type</td>
<td>screw terminals</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Model Number</th>
<th>NBB20-U4-A0-M</th>
<th>NBB20-U4-A2-M</th>
<th>NBB20-U4-E0-M</th>
<th>NBB20-U4-E2-M</th>
<th>NBN40-U4-A0-M</th>
<th>NBN40-U4-A2-M</th>
<th>NBN40-U4-E0-M</th>
<th>NBN40-U4-E2-M</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated operating distance</td>
<td>20 mm</td>
<td>40 mm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Installation</td>
<td>flush</td>
<td>non-flush</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Output type</td>
<td>NPN NO/NC</td>
<td>NPN NO</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Switching frequency</td>
<td>≥ 0 Hz</td>
<td>≥ 150 Hz</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Approvals and Certificates</td>
<td>e1 Type approval</td>
<td>2006/28/EG</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Dimensions | | | | | | | | |
| Length L [mm] | 128 |
| Width W [mm] | 40 |
| Width Ww [mm] | 40 |
| Height H [mm] | 40 |
| Connector length lc [mm] | 0 (1/2'' NPT) |

### Properties

- Limit switch style housing
- 20 mm and 40 mm sensing ranges
- DC, 3-wire and 4-wire switching output
- Cast metal terminal compartment

### Benefits

- 360° power & output LED visibility
- Accepts a wide range of cable gauges
- 5-way rotatable head
- -40 C operational temperature
- IP 69K / 1200 psi washdown rating

### Electrical Connection

- NBB20-U4-00-M
- NBN40-U4-00-M
- NBB20-U4-E2-M
- NBN40-U4-E2-M
- NBB20-U4-A2-M
- NBN40-U4-A2-M
- NBB20-U4-A0-M
- NBN40-U4-A0-M

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us.
Inductive sensor

F35 series for high temperature applications

Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data

Description: Sensor consists of a sensor head and a cylindrical amplifier
Installation: Flush mountable
Output type: PNP NO/NC
Operating voltage: 10 ... 30 V
No-load supply current: ≤ 25 mA
Reverse polarity protection: ✔
Load current: 0 ... 200 mA
Switching frequency: 0 ... 20 Hz
Short-circuit protection: ✔, self checking
Indication of the switching state: Multihole-LED, yellow
Ambient temperature: 0 ... 250 °C (32 ... 482 °F)
Housing material: PTFE / Al / 1.4305 / AISI 303
Protection degree: Amplifier IP67
Connection type: Connector M12 x 1 , 4-pin

Model Number

<table>
<thead>
<tr>
<th>Model Number</th>
<th>10M/V1</th>
<th>15M/V1</th>
<th>20M/V1</th>
</tr>
</thead>
<tbody>
<tr>
<td>NCN20-F35-A2-250-V1</td>
<td>✔</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NCN20-F35-A2-250-10M-V1</td>
<td></td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>NCN25-F35-A2-250-15M-V1</td>
<td></td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>NCN25-F35-A2-250-20M-V1</td>
<td></td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>

Rated operating distance

<table>
<thead>
<tr>
<th>Distance (mm)</th>
<th>20 mm</th>
<th>25 mm</th>
<th>10 m</th>
<th>15 m</th>
<th>20 m</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>

Cable length between sensor and amplifier

<table>
<thead>
<tr>
<th>Length (m)</th>
<th>20 mm</th>
<th>25 mm</th>
<th>10 m</th>
<th>15 m</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>

Approvals and Certificates

UL approval: cULus Listed, General Purpose, Class 2 Power Source
CSA approval: cCSAus Listed, General Purpose
CCC approval: CCC approval / marking not required for sensors rated ≤ 36 V

Dimensions

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Length L (mm)</th>
<th>Width W (mm)</th>
<th>Height H (mm)</th>
<th>Connector length lc (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>56</td>
<td>40</td>
<td>40</td>
<td>12</td>
</tr>
</tbody>
</table>

Accessories

These and more accessories can be found in chapter 10
See pages from 970 ... for cordsets
See pages 1066 ... for mounting accessories

SH-F35

Protective cover

V1-G

4-pin, M12 female field-attachable connector, straight

V1-W

4-pin, M12 female field-attachable connector, angled

V1-G-BK2M-PUR-U

Female cordset, M12, 4-pin, PUR cable, straight

V1-W-BK2M-PUR-U

Female cordset, M12, 4-pin, PUR cable, angled

Electrical Connection

Wire colors in accordance with EN 60947-5-2

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

Technical Data

Model Number: NBB3-V3-Z4-3G-3D
Rated operating distance: 3 mm
Installation: flush
Output type: DC, NO
Operating voltage: 5 ... 60 V DC
Reverse polarity protection: ✔
Switching frequency: 0 ... 2000 Hz
Load current: 4 ... 100 mA
Switching state indication: LED, yellow
Ambient temperature: -25 ... 85 °C (-13 ... 185 °F)
Housing material: PBT
Protection degree: IP67
Connection type: cable PVC, 130 mm

Use in the Hazardous Area
Use in the hazardous area: see instruction manuals
Category: 3G, 3D

Approvals and Certificates
- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤36 V

Dimensions
- Length L [mm]: 27.8
- Width W [mm]: 16
- Height H [mm]: 10
- Connector length lc [mm]: 0

Properties
- Miniature V3 housing
- 3 mm, flush mountable
- DC, 2-wire switching output
- Cable version

Benefits
- ATEX approval for use in zone 2/zone 22

Electrical Connection

NBB3-V3-Z4-3G-3D
### Technical Data

<table>
<thead>
<tr>
<th>General Data</th>
<th>NBB2-V3-E2-3G-3D</th>
<th>NBB2-V3-E3-3G-3D</th>
<th>NBN4-V3-E2-3G-3D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating voltage</td>
<td>10 ... 30 V DC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No-load supply current</td>
<td>≤ 15 mA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reverse polarity protection</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Load current</td>
<td>0 ... 100 mA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Short-circuit protection</td>
<td>✓; self checking</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Switching state indication</td>
<td>LED, yellow</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-25 ... 70 °C (-13 ... 158 °F)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Housing material</td>
<td>PBT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP67</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connection type</td>
<td>cable PVC, 130 mm</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Model Number

<table>
<thead>
<tr>
<th>Model Number</th>
<th>NBB2-V3-E2-3G-3D</th>
<th>NBB2-V3-E3-3G-3D</th>
<th>NBN4-V3-E2-3G-3D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated operating distance</td>
<td>2 mm</td>
<td>4 mm</td>
<td></td>
</tr>
<tr>
<td>Installation</td>
<td>flush</td>
<td>non-flush</td>
<td></td>
</tr>
<tr>
<td>Output type</td>
<td>PNP NO</td>
<td>PNP NC</td>
<td></td>
</tr>
<tr>
<td>Switching frequency</td>
<td>0 ... 1000 Hz</td>
<td>0 ... 500 Hz</td>
<td></td>
</tr>
</tbody>
</table>

### Use in the Hazardous Area

<table>
<thead>
<tr>
<th>Category</th>
<th>NBB2-V3-E2-3G-3D</th>
<th>NBB2-V3-E3-3G-3D</th>
<th>NBN4-V3-E2-3G-3D</th>
</tr>
</thead>
<tbody>
<tr>
<td>3G, 3D</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Approvals and Certificates

<table>
<thead>
<tr>
<th>UL approval</th>
<th>cULus Listed, General Purpose</th>
<th>NBB2-V3-E2-3G-3D</th>
<th>NBB2-V3-E3-3G-3D</th>
<th>NBN4-V3-E2-3G-3D</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSA approval</td>
<td>cCSAus Listed, General Purpose</td>
<td>NBB2-V3-E2-3G-3D</td>
<td>NBB2-V3-E3-3G-3D</td>
<td>NBN4-V3-E2-3G-3D</td>
</tr>
<tr>
<td>CCC approval</td>
<td>CCC approval / marking not required for sensors rated ≤36 V</td>
<td>NBB2-V3-E2-3G-3D</td>
<td>NBB2-V3-E3-3G-3D</td>
<td>NBN4-V3-E2-3G-3D</td>
</tr>
</tbody>
</table>

### Dimensions

<table>
<thead>
<tr>
<th>Length L [mm]</th>
<th>27.8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width W [mm]</td>
<td>16</td>
</tr>
<tr>
<td>Height H [mm]</td>
<td>10</td>
</tr>
<tr>
<td>Connector length lc [mm]</td>
<td>0</td>
</tr>
</tbody>
</table>
Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data
Operating voltage 10 ... 30 V DC
No-load supply current ≤ 20 mA
Reverse polarity protection✔
Load current 0 ... 200 mA
Short-circuit protection✔, self checking
Operating voltage display LED, green
Switching state indication LED, yellow
Ambient temperature -25 ... 85 °C (-13 ... 185 °F)
Housing material PA
Protection degree IP69K
Connection type Connector M12 x 1 , 4-pin

Model Number

<table>
<thead>
<tr>
<th>NBB20-L2-E2-V1-3G-3D</th>
<th>NBN40-L2-E2-V1-3G-3D</th>
<th>NBN40-L2-A2-V1-3G-3D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated operating distance 20 mm</td>
<td>40 mm</td>
<td></td>
</tr>
<tr>
<td>Installation flush</td>
<td>non-flush</td>
<td></td>
</tr>
<tr>
<td>Output type PNP NO/NC</td>
<td>PNP NO</td>
<td></td>
</tr>
<tr>
<td>Switching frequency 0 ... 100 Hz</td>
<td>0 ... 150 Hz</td>
<td></td>
</tr>
</tbody>
</table>

Use in the Hazardous Area
Use in the hazardous area see instruction manuals
Category 3G; 3D
Approvals and Certificates
UL approval cULus Listed, General Purpose
CSA approval cCSAus Listed, General Purpose
CCC approval CCC approval / marking not required for sensors rated ≤36 V

Dimensions
Length L [mm] 67
Width W [mm] 40
Height H [mm] 40
Connector length l_c [mm] 0

Accessories
These and more accessories can be found in chapter 10
See pages from 970 ... for cordsets See pages 1066 ... for mounting accessories
V1-G-8K2M-PUR-U Female cordset, M12, 4-pin, PUR cable, straight
V1-W-8K2M-PUR-U Female cordset, M12, 4-pin, PUR cable, angled

Electrical Connection

Wire colors in accordance with EN 60947-5-2
1 BN (brown)
2 WH (white)
3 BU (blue)
4 BK (black)
## Technical Data

### General Data
- **Installation**: flush
- **Operating voltage**: 10 ... 60 V DC
- **No-load supply current**: ≤ 20 mA
- **Reverse polarity protection**: ✔
- **Switching frequency**: 0 ... 80 Hz
- **Load current**: 0 ... 200 mA
- **Operating voltage display**: LED, green
- **Switching state indication**: LED, yellow
- **Ambient temperature**: -25 ... 70 °C (-13 ... 158 °F)
- **Housing material**: PBT housing / PBT base

### Model Number

<table>
<thead>
<tr>
<th>Model Number</th>
<th>NCB40-PP-A2-P1-3G-3D</th>
<th>NCB50-PP-E2-P1-3G-3D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated operating distance</td>
<td>40 mm</td>
<td>50 mm</td>
</tr>
<tr>
<td>Output type</td>
<td>PNP NO</td>
<td>PNP NO/NC</td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP67</td>
<td>IP68</td>
</tr>
<tr>
<td>Connection type</td>
<td>Connector M12 x 1; 4-pin</td>
<td>screw terminals</td>
</tr>
<tr>
<td><strong>Use in the Hazardous Area</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use in hazardous area</td>
<td>see instruction manuals</td>
<td></td>
</tr>
<tr>
<td>Category</td>
<td>3G, 3D</td>
<td></td>
</tr>
<tr>
<td><strong>Approvals and Certificates</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UL approval</td>
<td>cULus Listed, General Purpose</td>
<td></td>
</tr>
<tr>
<td>CSA approval</td>
<td>cCSAus Listed, General Purpose</td>
<td></td>
</tr>
<tr>
<td>CCC approval</td>
<td>Certified by China Compulsory Certification (CCC)</td>
<td></td>
</tr>
<tr>
<td><strong>Dimensions</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Length L [mm]</td>
<td>80</td>
<td>84</td>
</tr>
<tr>
<td>Width W [mm]</td>
<td>80</td>
<td>84</td>
</tr>
<tr>
<td>Height H [mm]</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>Connector length lc [mm]</td>
<td>11</td>
<td>25</td>
</tr>
<tr>
<td>Connector thread</td>
<td>M20 x 1.5</td>
<td></td>
</tr>
</tbody>
</table>

### Accessories

- V1-G-BK2M-PUR-U: Female cordset, M12, 4-pin, PUR cable, straight
- V1-W-BK2M-PUR-U: Female cordset, M12, 4-pin, PUR cable, angled

Accessories can be found in chapter 10 See pages from 970 ... for cordsets See pages 1066 ... for mounting accessories

### Electrical Connection

- **NCB40-PP-A2-P1-3G-3D**:
  - 1: BN (brown)
  - 2: WH (white)
  - 3: BU (blue)
  - 4: BK (black)

- **NCB50-PP-E2-P1-3G-3D**:
  - 1: BN (brown)
  - 2: WH (white)
  - 3: BU (blue)
  - 4: BK (black)

Wire colors in accordance with EN 60947-5-2


## Technical Data

For detailed data and product description refer to the data sheets at [www.pepperl-fuchs.us](http://www.pepperl-fuchs.us)

### General Data

- **Output type**: NAMUR, NC
- **Type of voltage**: DC
- **Nominal voltage**: 8.2 V (Ri approx. 1 kΩ)
- **Current consumption**:
  - Measuring plate not detected: ≥ 3 mA
  - Measuring plate detected: ≤ 1 mA
- **Ambient temperature**: -25 ... 100 °C (-13 ... 212 °F)
- **Housing material**: PBT
- **Protection degree**: IP67

### Model Number

<table>
<thead>
<tr>
<th>Model Number</th>
<th>NJ2-V3-N</th>
<th>NCB2-V3-N0</th>
<th>NCN4-V3-N0</th>
<th>NJ2-V3-N-V5</th>
<th>NCB2-V3-N0-V5</th>
<th>NCN4-V3-N0-V5</th>
</tr>
</thead>
</table>

### Rated operating distance

- 2 mm
- 4 mm

### Installation

- flush
- non-flush

### Switching frequency

- 0 ... 1000 Hz
- 0 ... 2000 Hz

### Suitable for 2:1 technology

- ✔

### Switching state indication

- LED, yellow

### Connection type

- 4.8 mm Faston
  - cable PVC, 130 mm

### Use in the Hazardous Area

Use in the hazardous area see instruction manuals

- Category 1G; 2G; 1D

### Approvals and Certificates

- **FM Control drawing**: 116-0165F
- **UL approval** cULus Listed, General Purpose
- **CSA approval** cCSAus Listed, General Purpose
- **CCC approval** CCC approval / marking not required for sensors rated ≤36 V

### Dimensions

- **Length L [mm]**: 27.8
- **Width W [mm]**: 16
- **Height H [mm]**: 10
- **Connector length L_c [mm]**: 0 9.2

### Accessories

These and more accessories can be found in chapter 10

- See pages from 970 ... for cordsets
- See pages 1066 ... for mounting accessories

KCD2-SR-Ex2

2-channel isolated amplifier

For detailed information on isolated amplifiers refer to the data sheets at [www.pepperl-fuchs.us](http://www.pepperl-fuchs.us)
## Inductive sensor

### Mini-Cube series (NAMUR)

#### Technical Data

<table>
<thead>
<tr>
<th>Property</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model Number</td>
<td>NCN15-M1K-N0</td>
</tr>
<tr>
<td>Rated operating distance</td>
<td>15 mm</td>
</tr>
<tr>
<td>Installation</td>
<td>non-flush</td>
</tr>
<tr>
<td>Output type</td>
<td>NAMUR, NC</td>
</tr>
<tr>
<td>Type of voltage</td>
<td>DC</td>
</tr>
<tr>
<td>Nominal voltage</td>
<td>8.2 V (Ri approx. 1 kΩ)</td>
</tr>
<tr>
<td>Current consumption</td>
<td></td>
</tr>
<tr>
<td>Measuring plate not detected</td>
<td>≥ 3 mA</td>
</tr>
<tr>
<td>Measuring plate detected</td>
<td>≤ 1 mA</td>
</tr>
<tr>
<td>Switching frequency</td>
<td>0 ... 500 Hz</td>
</tr>
<tr>
<td>Switching state indication</td>
<td>LED, yellow</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-25 ... 100 °C (-13 ... 212 °F)</td>
</tr>
<tr>
<td>Housing material</td>
<td>PBT</td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP67</td>
</tr>
<tr>
<td>Connection type</td>
<td>screw terminals</td>
</tr>
</tbody>
</table>

#### Properties

- Compact and flexible Mini-Cube housing
- 15 mm, non-flush mountable
- NAMUR output
- Terminal compartment

#### Benefits

- ATEX approval up to zone 0 / zone 20
- Intrinsically safe when connected to approved device
- FM Class/Div approvals

**Application Note:** Reference appendix, data sheet, operating instructions, and appropriate standards. To be used within the electrical, environmental, and mechanical limitations of the device and area.

#### Use in the Hazardous Area

Use in the hazardous area see instruction manuals

Category 1G, 2G, 1D

#### Approvals and Certificates

- FM Control drawing 116-0165F
- UL approval cULus Listed, General Purpose
- CSA approval cCSAus Listed, General Purpose
- CCC approval CCC approval / marking not required for sensors rated ≤36 V

#### Dimensions

- Length L [mm]: 91
- Width W [mm]: 30
- Height H [mm]: 30
- Connector length lc [mm]: 0
- Connector thread: M16 X 1.5

#### Accessories

These and more accessories can be found in chapter 10

See pages from 970 ... for cordsets See pages 1066 ... for mounting accessories

KCD2-SR-Ex2

2-channel isolated amplifier

For detailed information on isolated amplifiers refer to the data sheets at www.pepperl-fuchs.us

#### Electrical Connection

Refer to General Notes Relating to Product Information

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Proximity Sensors, Inductive Sensors, rectangular types

1.2

Inductive sensor

Cube style, L2 series (NAMUR)

Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data

Output type: NAMUR, NC
Type of voltage: DC
Nominal voltage: 8.2 V (Ri approx. 1 kΩ)

Current consumption:
- Measuring plate not detected: ≥ 2.2 mA
- Measuring plate detected: ≤ 1 mA

Switching state indication: LED, yellow

Ambient temperature: -25 ... 100 °C (-13 ... 212 °F)

Housing material: PA

Protection degree: IP69K

Connection type: Connector M12 x 1, 4-pin

Model Number

<table>
<thead>
<tr>
<th>Model Number</th>
<th>NCN20-L2-N0-V1</th>
<th>NCN40-L2-N0-V1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated operating distance</td>
<td>20 mm</td>
<td>40 mm</td>
</tr>
<tr>
<td>Installation</td>
<td>flush</td>
<td>non-flush</td>
</tr>
<tr>
<td>Switching frequency</td>
<td>0 ... 150 Hz</td>
<td>0 ... 300 Hz</td>
</tr>
</tbody>
</table>

Use in the Hazardous Area

Use in the hazardous area: see instruction manuals

Category: 1G, 2G, 3G, 3D

Approvals and Certificates

UL approval: cULus Listed, General Purpose
CSA approval: cCSAus Listed, General Purpose
CCC approval: CCC approval / marking not required for sensors rated ≤ 36 V

Dimensions

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>NCN20-L2-N0-V1</th>
<th>NCN40-L2-N0-V1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length L [mm]</td>
<td>67</td>
<td></td>
</tr>
<tr>
<td>Width W [mm]</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>Height H [mm]</td>
<td>40</td>
<td></td>
</tr>
</tbody>
</table>

Connector length lc [mm]: 0

Accessories

These and more accessories can be found in chapter 10
See pages from 970 ... for cordsets
See pages 1066 ... for mounting accessories

V1-G: 4-pin, M12 female field-attachable connector
V1-W: 4-pin, M12 female field-attachable connector
V1-G-N-2M-PUR: Female cordset, M12, 2-pin, NAMUR, PUR cable
V1-W-N-2M-PUR: Female cordset, M12, 2-pin, NAMUR, PUR cable
MHW 01: Modular mounting bracket
KCDX-SR-Ex2: 2-channel isolated amplifier

For detailed information on isolated amplifiers refer to the data sheets at www.pepperl-fuchs.us

Properties

- Compact cube style housing
- 20 mm and 40 mm sensing ranges
- NAMUR output
- Connector version

Benefits

- ATEX approval up to zone 0 / zone 20
- Intrinsically safe when connected to approved device
- Adjustable connector allows flexible wiring
- Quick release mounting

Application Note: Reference appendix, data sheet, operating instructions, and appropriate standards. To be used within the electrical, environmental, and mechanical limitations of the device and area.

Electrical Connection

Wire colors in accordance with EN 60947-5-6

1 | BN (brown)
2 | BU (blue)

Refer to General Notes Relating to Product Information
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Proximity Sensors, Inductive Sensors, rectangular types

Inductive sensor

Limit switch style (NAMUR)

Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data

- Rated operating distance: 40 mm
- Installation: non-flush
- Output type: NAMUR, NC
- Type of voltage: DC
- Nominal voltage: 8.2 V (Ri approx. 1 kΩ)
- Current consumption:
  - Measuring plate not detected: ≥ 3 mA
  - Measuring plate detected: ≤ 1 mA
- Switching frequency: 0 ... 100 Hz
- Ambient temperature: -25 ... 100 °C (-13 ... 212 °F)
- Protection degree: IP68
- Connection type: screw terminals

Model Number

- Material: PBT housing/plastic base
- Use in the Hazardous Area: see instruction manuals
- Approvals and Certificates:
  - FM Control drawing: 116-0165F
  - UL approval: cULus Listed, General Purpose
  - CSA approval: cCSAus Listed, General Purpose
  - CCC approval: CCC approval / marking not required for sensors rated ≤36 V

Dimensions

- Length L [mm]: 118
- Width W [mm]: 40
- Height H [mm]: 40
- Head width Wh [mm]: 55
- Head height Hh [mm]: 55
- Connector length Lc [mm]: 0
- Connector thread: conduit entrance with 1/2" NPT opening

Accessories

These and more accessories can be found in chapter 10

- MHW 01: Modular mounting bracket
- KCD2-SR-Ex2: 2-channel isolated amplifier

Refer to General Notes Relating to Product Information.

Proximity Sensors, Inductive Sensors, rectangular types

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**Technical Data**

For detailed data and product description refer to the data sheets at [www.pepperl-fuchs.us](http://www.pepperl-fuchs.us).

<table>
<thead>
<tr>
<th>General Data</th>
<th>Model Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output type</td>
<td>NBB15-U2K-N0</td>
</tr>
<tr>
<td>Type of voltage</td>
<td>DC</td>
</tr>
<tr>
<td>Nominal voltage</td>
<td>8.2 V (Ri approx. 1 kΩ)</td>
</tr>
<tr>
<td>Switching state indication</td>
<td>LED, yellow</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-25 ... 100 °C (-13 ... 212 °F)</td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP68 / IP69K</td>
</tr>
<tr>
<td>Current consumption</td>
<td>≤ 2.2 mA</td>
</tr>
<tr>
<td>Measuring plate detected</td>
<td>≤ 3 mA</td>
</tr>
<tr>
<td>Measuring plate not detected</td>
<td>≤ 1 mA</td>
</tr>
<tr>
<td>Switching frequency</td>
<td>0 ... 100 Hz</td>
</tr>
<tr>
<td></td>
<td>0 ... 150 Hz</td>
</tr>
<tr>
<td></td>
<td>0 ... 250 Hz</td>
</tr>
<tr>
<td></td>
<td>0 ... 300 Hz</td>
</tr>
<tr>
<td>Material</td>
<td>Housing PA/base PA</td>
</tr>
<tr>
<td>Connection type</td>
<td>Connector M12 x 1, 4-pin</td>
</tr>
<tr>
<td>Use in the hazardous area</td>
<td>see instruction manuals</td>
</tr>
<tr>
<td>Approvals and Certificates</td>
<td>UL approval</td>
</tr>
<tr>
<td></td>
<td>cULus Listed, General Purpose</td>
</tr>
<tr>
<td></td>
<td>CSA approval</td>
</tr>
<tr>
<td></td>
<td>cCSAus Listed, General Purpose</td>
</tr>
<tr>
<td></td>
<td>CCC approval / marking not required for sensors rated ≤ 36 V</td>
</tr>
<tr>
<td>Dimensions</td>
<td>Length L [mm] 118</td>
</tr>
<tr>
<td></td>
<td>Width W [mm] 40</td>
</tr>
<tr>
<td></td>
<td>Height H [mm] 40</td>
</tr>
<tr>
<td></td>
<td>Connector length lc [mm] 0 30</td>
</tr>
<tr>
<td>Use in the Hazardous Area</td>
<td>Use in the hazardous area see instruction manuals</td>
</tr>
<tr>
<td></td>
<td>Category</td>
</tr>
<tr>
<td></td>
<td>1G, 2G, 3G</td>
</tr>
<tr>
<td>Accessory</td>
<td>Modular mounting bracket</td>
</tr>
<tr>
<td></td>
<td>Receptacle 1/2&quot;NPT to M12 x 1, 4-pin</td>
</tr>
<tr>
<td></td>
<td>4-pin, M12 female field-attachable connector</td>
</tr>
<tr>
<td></td>
<td>Female cordset, M12, 2-pin, NAMUR, PUR cable</td>
</tr>
<tr>
<td></td>
<td>Female cordset, M12, 2-pin, NAMUR, PUR cable</td>
</tr>
<tr>
<td></td>
<td>2-channel isolated amplifier</td>
</tr>
<tr>
<td>Accessories</td>
<td>For detailed information on isolated amplifiers refer to the data sheets at <a href="http://www.pepperl-fuchs.us">www.pepperl-fuchs.us</a></td>
</tr>
</tbody>
</table>

**Properties**

- Limit switch style housing
- Up to 40 mm sensing ranges
- NAMUR output
- Terminal compartment and connector versions

**Benefits**

- ATEX approval up to zone 0
- Intrinsically safe when connected to approved device

Application Note: Reference appendix, data sheet, operating instructions, and appropriate standards.

To be used within the electrical, environmental, and mechanical limitations of the device and area.

Refer to General Notes Relating to Product Information

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Inductive sensor

### Technical Data

#### General Data
- **Output type**: NAMUR, NC
- **Type of voltage**: DC
- **Nominal voltage**: 8.2 V (Ri approx. 1 kΩ)
- **Current consumption**:
  - Measuring plate not detected: ≥ 3 mA
  - Measuring plate detected: ≤ 1 mA
- **Housing material**: PBT/metal
- **Protection degree**: IP67

#### Model Number

<table>
<thead>
<tr>
<th>Model Number</th>
<th>N50-FP-N-P4</th>
<th>NCB40-FP-N0-P4</th>
<th>NCN50-FP-N0-P4</th>
<th>NCN50-FP-N0-P4-V1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated operating distance</td>
<td>40 mm</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Installation</td>
<td>flush</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Switching frequency</td>
<td>0 ... 100 Hz</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-25 ... 100 °C (-13 ... 212 °F)</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Connection type</td>
<td>Connector M12 x 1, 4-pin screw terminals</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
</tbody>
</table>

#### Use in the Hazardous Area

- **Category**: 1G, 2G, 1D
- **Approvals and Certificates**:
  - FM Control drawing: 116-0165F
  - UL approval: cULus Listed, General Purpose
  - CSA approval: cCSAus Listed, General Purpose
  - CCC approval: CCC approval / marking not required for sensors rated ≤36 V

#### Dimensions

- **Length L [mm]**: 80
- **Width W [mm]**: 80
- **Height H [mm]**: 40
- **Connector length lc [mm]**: 11, 25
- **Connector thread**: conduit entrance with 1/2" NPT opening

#### Accessories

These and more accessories can be found in chapter 10. See pages from 970 ... for cordsets. See pages 1066 ... for mounting accessories.

- 1/2" NPT-V1-G-S-3M: Receptacle 1/2" NPT to M12 x 1, 4-pin
- V1-G: 4-pin, M12 female field-attachable connector
- V1-W: 4-pin, M12 female field-attachable connector
- V1-G-N-2M-PUR: Female cordset, M12, 2-pin, NAMUR, PUR cable
- V1-W-N-2M-PUR: Female cordset, M12, 2-pin, NAMUR, PUR cable
- KCD2-SR-Ex2: 2-channel isolated amplifier

For detailed information on isolated amplifiers refer to the data sheets at www.pepperl-fuchs.us

#### Electrical Connection

- **Wire colors**: in accordance with EN 60947-5-6
  - 1: BN (brown)
  - 2: BU (blue)

---

**Properties**

- Flat pack housing
- 40 mm and 50 mm sensing ranges
- NAMUR output
- Terminal compartment and connector versions

**Benefits**

- ATEX approval up to zone 0 / zone 20
- Intrinsically safe when connected to approved device
- FM Class/Div approvals

**Application Note**: Reference appendix, data sheet, operating instructions, and appropriate standards. To be used within the electrical, environmental, and mechanical limitations of the device and area.
**Inductive sensor**

**Limit switch style (NAMUR with safety function)**

### Technical Data

#### General Data
- **Output type:** NAMUR, NC
- **Type of voltage:** DC
- **Nominal voltage:** 8.2 V (Ri approx. 1 kΩ)
- **Current consumption:**
  - Measuring plate not detected: ≤ 3 mA
  - Measuring plate detected: ≤ 1 mA
- **Switching frequency:** 0 ... 150 Hz
- **Ambient temperature:** -40 ... 100 °C (-40 ... 212 °F)
- **Protection degree:** IP68
- **Connection type:** screw terminals

#### Model Number

<table>
<thead>
<tr>
<th>Model Number</th>
<th>NJ15S+U1+N</th>
<th>NJ15S+U4+N</th>
<th>NJ20S+U1+N</th>
<th>NJ20S+U4+N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated operating distance</td>
<td>15 mm</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Installation</td>
<td>flush</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Housing material</td>
<td>PBT housing / PBT base</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Use in the Hazardous Area</td>
<td>see instruction manuals</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Category</td>
<td>1G, 2G, 1D</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
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<tr>
<td>Approvals and Certificates</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
- **FM Control drawing:** 116-0165F
- **UL approval:** cULus Listed, General Purpose
- **CSA approval:** cCSAuS Listed, General Purpose
- **CCC approval:** CCC approval / marking not required for sensors rated ≤36 V

#### Dimensions

| Length L [mm] | 118 |
| Width W [mm] | 40 |
| Height H [mm] | 40 |
| Connector length lₙ [mm] | 0 |
| Connector thread | M20 x 1.5 conduit entrance with 1/2” NPT opening |

#### Accessories

These and more accessories can be found in chapter 10

- **MHW 01**
- **KFD2-SH-EX1**
  - Modular mounting bracket
  - Isolated amplifier

**Danger!** In safety-related applications the sensor must be operated with a qualified fail safe interface from Pepperl+Fuchs, such as KFD2-SH-EX1.

Consider the “exida Functional Safety Assessment” document which is available on www.pepperl-fuchs.com as an integral part of this product’s documentation.

**Application Note:** Reference appendix, data sheet, operating instructions, and appropriate standards. To be used within the electrical, environmental, and mechanical limitations of the device and area.

### Additional Products

In this series, we offer the following additional products:

- **NJ6S1+U1+N1** for aluminum targets only.
- **Technical data:**
  - Rated operating distance: 6 mm
  - Installation: flush in mild steel
  - Output type: NAMUR, NO
  - Current consumption:
    - Measuring plate not detected: ≤ 1 mA
    - Measuring plate detected: ≤ 3 mA

### Properties

- **Limit switch style housing**
- **15 mm and 20 mm sensing ranges**
- **NAMUR output**
- **Terminal compartment**

### Benefits

- **Usable up to SIL 3 acc. to IEC 61508**
- **ATEX approval up to zone 0 / zone 20**
- **FM Class and Division approvals**

**Electrical Connection**

```plaintext
NJ15S+U1+N  
NJ15S+U4+N  
NJ20S+U1+N  
NJ20S+U4+N  
```

```plaintext
NJ6S1+U1+N1
```

---

**Proximity Sensors, Inductive Sensors, rectangular types**

---

Copyright Pepperl+Fuchs
Inductive sensor

FP series (NAMUR with safety function)

Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

Model Number  NJ40-FP-SN-P4
Rated operating distance  40 mm
Installation  non-flush
Output type  NAMUR, NC
Type of voltage  DC
Nominal voltage  8.2 V (Ri approx. 1 kΩ)
Current consumption
  Measuring plate not detected  ≥ 3 mA
  Measuring plate detected  ≤ 1 mA
Switching frequency  0 ... 100 Hz
Ambient temperature  -40 ... 100 °C (-40 ... 212 °F)
Housing material  PBT housing / metal base
Protection degree  IP68
Connection type  screw terminals

Use in the Hazardous Area
Use in the hazardous area  see instruction manuals
Category  2G, 1D

Approvals and Certificates
Control drawing  116-0165F
UL approval  cULus Listed, General Purpose
CSA approval  cCSAus Listed, General Purpose
CCC approval / marking not required for sensors rated ≤36 V

Dimensions
Length L [mm]  80
Width W [mm]  80
Height H [mm]  40
Connector length lc [mm]  11 (M20 x 1.5)

Accessories
These and more accessories can be found in chapter 10
KFD2-SH-EX1
See pages from 970 ... for cordsets  See pages 1066 ... for mounting accessories
An isolated amplifier

Properties
Flat pack housing
40 mm, non-flush mountable
NAMUR output
Terminal compartment

Benefits
Usable up to SIL 3 acc. to IEC 61508
ATEX approval up to zone 1 / zone 20
FM Class and Division approvals

Electrical Connection

Refer to General Notes Relating to Product Information

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Refer to General Notes Relating to Product Information

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fa-info@us.pepperl-fuchs.com

Courtesy of Steven Engineering, Inc. - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com
### Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

<table>
<thead>
<tr>
<th>General Data</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Output type</td>
<td>NO/NC programmable</td>
<td></td>
</tr>
<tr>
<td>Slave type</td>
<td>A/B slave</td>
<td></td>
</tr>
<tr>
<td>AS-Interface specification</td>
<td>V3.0</td>
<td></td>
</tr>
<tr>
<td>Required master specification</td>
<td>≥ V2.1</td>
<td></td>
</tr>
<tr>
<td>Operating voltage</td>
<td>26.5 ... 31.9 V via AS-i bus system</td>
<td></td>
</tr>
<tr>
<td>Reverse polarity protection</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating voltage display</td>
<td>LED, green</td>
<td>LED, yellow</td>
</tr>
<tr>
<td>Indication of the switching state</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fault indication</td>
<td>LED, red</td>
<td></td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-25 ... 70 °C (-13 ... 158 °F)</td>
<td></td>
</tr>
<tr>
<td>Housing material</td>
<td>PA</td>
<td></td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP69K</td>
<td></td>
</tr>
<tr>
<td>Connection type</td>
<td>Device connector M12 x 1 , 4-pin</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Model Number</th>
<th>NBB20-L2-B3B-V1</th>
<th>NBN40-L2-B3B-V1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated operating distance</td>
<td>20 mm</td>
<td>40 mm</td>
</tr>
<tr>
<td>Installation</td>
<td>flush</td>
<td>non-flush</td>
</tr>
<tr>
<td>No-load supply current</td>
<td>≤ 25 mA</td>
<td>≤ 40 mA</td>
</tr>
<tr>
<td>Switching frequency</td>
<td>0 ... 150 Hz</td>
<td>0 ... 50 Hz</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Approvals and Certificates</th>
<th>cULus Listed, General Purpose</th>
<th>cCSAus Listed, General Purpose</th>
<th>CCC approval</th>
<th>CCC approval / marking not required for sensors rated ≤36 V</th>
</tr>
</thead>
</table>

| Dimensions                                        | | | |
|---------------------------------------------------| | | |
| Length $L$ [mm]                                   | 67                  | | |
| Width $W$ [mm]                                    | 40                  | | |
| Height $H$ [mm]                                   | 40                  | | |
| Connector area $l_c$ [mm]                         | 0                   | | |

<table>
<thead>
<tr>
<th>Accessories</th>
<th>These and more accessories can be found in chapter 10</th>
<th>See pages from 970 ... for cordsets</th>
<th>See pages 1066 ... for mounting accessories</th>
</tr>
</thead>
<tbody>
<tr>
<td>V1-G</td>
<td>4-pin, M12 female field-attachable connector</td>
<td></td>
<td></td>
</tr>
<tr>
<td>V1-W</td>
<td>4-pin, M12 female field-attachable connector</td>
<td></td>
<td></td>
</tr>
<tr>
<td>V1-G-BK2M-PUR-U</td>
<td>Female cordset, M12, 4-pin, PUR cable, straight</td>
<td></td>
<td></td>
</tr>
<tr>
<td>V1-W-BK2M-PUR-U</td>
<td>Female cordset, M12, 4-pin, PUR cable, angled</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MHW 01</td>
<td>Modular mounting bracket</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MH 02-L</td>
<td>Mounting bracket</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MH 01-L2-W</td>
<td>Mounting bracket - 1/2&quot; rod type, angled</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Properties

- Compact cube style, L2 housing
- 20 mm and 40 mm sensing ranges
- AS interface
- Connector version

### Benefits

- High visibility LED indication
- Sensor head can be positioned 5-ways
- Mounting base with quick clamping lever for swift mounting
- Adjustable connector allows flexible wiring

### Electrical Connection

- NBB20-L2-B3B-V1
- NBN40-L2-B3B-V1

---

** Courtesy of Steven Engineering, Inc. - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com **
**Inductive slot sensor**

**Technical Data**

For detailed data and product description refer to the data sheets at [www.pepperl-fuchs.us](http://www.pepperl-fuchs.us)

<table>
<thead>
<tr>
<th>Model Number</th>
<th>SB2-Z0-GN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slot width</td>
<td>2 mm</td>
</tr>
<tr>
<td>Output type</td>
<td>DC NO</td>
</tr>
<tr>
<td>Lateral immersion</td>
<td>5 ... 7 mm</td>
</tr>
<tr>
<td>Operating voltage</td>
<td>5 ... 30 V DC</td>
</tr>
<tr>
<td>Reverse polarity</td>
<td>✓ polarity independent</td>
</tr>
<tr>
<td>Switching frequency</td>
<td>0 ... 2000 Hz</td>
</tr>
<tr>
<td>Load current</td>
<td>2 ... 50 mA</td>
</tr>
<tr>
<td>Short-circuit protection</td>
<td>✓ self checking</td>
</tr>
<tr>
<td>Switching state indication</td>
<td>LED, yellow</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-25 ... 70 °C (-13 ... 158 °F)</td>
</tr>
<tr>
<td>Housing material</td>
<td>PBT</td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP67</td>
</tr>
<tr>
<td>Connection type</td>
<td>flexible leads LIFYW, 500 mm</td>
</tr>
</tbody>
</table>

**Properties**

- 2 mm slot width
- Very fast response
- DC, 2-wire switching output
- Flexible leads version

**Dimensions**

- Length L [mm]: 15
- Width W [mm]: 8
- Height H [mm]: 12
- Slot width G [mm]: 2 mm
- Connector length lc [mm]: 0

**Electrical Connection**

SB2-Z0-GN
Inductive slot sensor

3.5 mm slot width

Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data
- Slot width: 3.5 mm
- Lateral immersion switchpoint: 5 ... 7 mm
- Operating voltage: 10 ... 30 V DC
- No-load supply current: \( \leq 15 \) mA
- Reverse polarity protection: ✔
- Load current: 0 ... 100 mA
- Short-circuit protection: ✔, self checking
- Housing material: PBT
- Protection degree: IP67

Model Number

<table>
<thead>
<tr>
<th>Model Number</th>
<th>SB3,5-E2</th>
<th>SB3,5-G-E2</th>
<th>SB3,5-A2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output type</td>
<td>PNP</td>
<td>NO/NC</td>
<td></td>
</tr>
<tr>
<td>Switching frequency</td>
<td>0 ... 2000 Hz</td>
<td>0 ... 3000 Hz</td>
<td></td>
</tr>
<tr>
<td>Switching state indication</td>
<td>LED, yellow</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-25 ... 70 °C (-13 ... 158 °F)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connection type</td>
<td>cable PVC, 500 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>flexible leads PVC, 135 mm</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Approvals and Certificates

- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated \( \leq 36 \) V

Dimensions

<table>
<thead>
<tr>
<th>Dimension</th>
<th>SB3,5-E2</th>
<th>SB3,5-G-E2</th>
<th>SB3,5-A2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length L [mm]</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Width W [mm]</td>
<td>19</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Height H [mm]</td>
<td>15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Slot width G [mm]</td>
<td>3.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connector length lc [mm]</td>
<td>0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Electrical Connection

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data
- Slot width: 3.5 mm
- Lateral immersion switchpoint: 5 ... 7 mm
- Operating voltage: 10 ... 30 V DC
- No-load supply current: \( \leq 15 \) mA
- Reverse polarity protection: ✔
- Load current: 0 ... 100 mA
- Short-circuit protection: ✔, self checking
- Housing material: PBT
- Protection degree: IP67

Model Number

<table>
<thead>
<tr>
<th>Model Number</th>
<th>SB3,5-E2</th>
<th>SB3,5-G-E2</th>
<th>SB3,5-A2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output type</td>
<td>PNP</td>
<td>NO/NC</td>
<td></td>
</tr>
<tr>
<td>Switching frequency</td>
<td>0 ... 2000 Hz</td>
<td>0 ... 3000 Hz</td>
<td></td>
</tr>
<tr>
<td>Switching state indication</td>
<td>LED, yellow</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-25 ... 70 °C (-13 ... 158 °F)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connection type</td>
<td>cable PVC, 500 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>flexible leads PVC, 135 mm</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Approvals and Certificates

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Dimensions

<table>
<thead>
<tr>
<th>Dimension</th>
<th>SB3,5-E2</th>
<th>SB3,5-G-E2</th>
<th>SB3,5-A2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length L [mm]</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Width W [mm]</td>
<td>19</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Height H [mm]</td>
<td>15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Slot width G [mm]</td>
<td>3.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connector length lc [mm]</td>
<td>0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Electrical Connection

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data
- Slot width: 3.5 mm
- Lateral immersion switchpoint: 5 ... 7 mm
- Operating voltage: 10 ... 30 V DC
- No-load supply current: \( \leq 15 \) mA
- Reverse polarity protection: ✔
- Load current: 0 ... 100 mA
- Short-circuit protection: ✔, self checking
- Housing material: PBT
- Protection degree: IP67

Model Number

<table>
<thead>
<tr>
<th>Model Number</th>
<th>SB3,5-E2</th>
<th>SB3,5-G-E2</th>
<th>SB3,5-A2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output type</td>
<td>PNP</td>
<td>NO/NC</td>
<td></td>
</tr>
<tr>
<td>Switching frequency</td>
<td>0 ... 2000 Hz</td>
<td>0 ... 3000 Hz</td>
<td></td>
</tr>
<tr>
<td>Switching state indication</td>
<td>LED, yellow</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-25 ... 70 °C (-13 ... 158 °F)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connection type</td>
<td>cable PVC, 500 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>flexible leads PVC, 135 mm</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Approvals and Certificates

- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated \( \leq 36 \) V

Dimensions

<table>
<thead>
<tr>
<th>Dimension</th>
<th>SB3,5-E2</th>
<th>SB3,5-G-E2</th>
<th>SB3,5-A2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length L [mm]</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Width W [mm]</td>
<td>19</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Height H [mm]</td>
<td>15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Slot width G [mm]</td>
<td>3.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connector length lc [mm]</td>
<td>0</td>
<td></td>
<td></td>
</tr>
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</table>

Electrical Connection
Inductive slot sensor

Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data
- Slot width: 10 mm
- Lateral immersion switchpoint: 13.5 ... 16.5 mm
- Operating voltage: 10 ... 30 V DC
- No-load supply current: ≤ 15 mA
- Reverse polarity protection: ✔
- Switching frequency: 0 ... 1000 Hz
- Load current: 0 ... 200 mA
- Short-circuit protection: ✔, self checking
- Ambient temperature: -25 ... 70 °C (-13 ... 158 °F)
- Housing material: PBT
- Protection degree: IP67
- Connection type: cable PVC, 2 m

Model Number

<table>
<thead>
<tr>
<th>Output type</th>
<th>NPN NO</th>
<th>PNP NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>SJ10-E</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>SJ10-E2</td>
<td></td>
<td>✔</td>
</tr>
</tbody>
</table>

Approvals and Certificates

- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤36 V

Dimensions

<table>
<thead>
<tr>
<th>Length L [mm]</th>
<th>25</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width W [mm]</td>
<td>44</td>
</tr>
<tr>
<td>Height H [mm]</td>
<td>45</td>
</tr>
<tr>
<td>Slot width G [mm]</td>
<td>10</td>
</tr>
<tr>
<td>Connector length lc [mm]</td>
<td>6</td>
</tr>
</tbody>
</table>

Electrical Connection

- SJ10-E
- SJ10-E2

Properties

- 10 mm slot width
- Very fast response
- DC, 3-wire switching output
- Cable version
Inductive slot sensor

15 mm slot width

Technical Data
For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data
- Slot width: 15 mm
- Lateral immersion switchpoint: 17 ... 20 mm
- Operating voltage: 10 ... 30 V DC
- No-load supply current: \( \leq 20 \text{ mA} \)
- Reverse polarity protection: ✔
- Switching frequency: 0 ... 500 Hz
- Load current: 0 ... 200 mA
- Short-circuit protection: ✔, self checking
- Ambient temperature: -25 ... 70 °C (-13 ... 158 °F)
- Housing material: PBT
- Protection degree: IP67

Model Number
- Output type: NPN NO/NC
- Connection type: Connector M12 x 1, 4-pin cable PVC, 2 m

Properties
- 15 mm slot width
- Fast response
- DC, 3-wire and 4-wire switching output
- Cable and connector versions

Approvals and Certificates
- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated \( \leq 36 \text{ V} \)

Dimensions
- Length \( L \) [mm]: 30
- Width \( W \) [mm]: 48
- Height \( H \) [mm]: 60
- Slot width \( G \) [mm]: 15
- Connector length \( l_c \) [mm]: 0, 12

Accessories
These and more accessories can be found in chapter 10
See pages from 970 ... for cordsets
See pages 1066 ... for mounting accessories
- V1-G: 4-pin, M12 female field-attachable connector, straight
- V1-W: 4-pin, M12 female field-attachable connector, angled
- V1-G-BK2M-PUR-U: Female cordset, M12, 4-pin, PUR cable, straight
- V1-W-BK2M-PUR-U: Female cordset, M12, 4-pin, PUR cable, angled

Electrical Connection
- Wire colors in accordance with EN 60947-5-2
  - 1: BN (brown)
  - 2: WH (white)
  - 3: BU (blue)
  - 4: BK (black)
**Inductive slot sensor**

**Technical Data**

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

**General Data**

<table>
<thead>
<tr>
<th>Property</th>
<th>SJ30-A</th>
<th>SJ30-A2</th>
<th>SJ30-A0-V1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slot width</td>
<td>30 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lateral immersion switchpoint</td>
<td>27 ... 31 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No-load supply current</td>
<td>≤ 20 mA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reverse polarity protection</td>
<td>✔</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Switching frequency</td>
<td>0 ... 150 Hz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Load current</td>
<td>0 ... 200 mA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Short-circuit protection</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-25 ... 70 °C (-13 ... 158 °F)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Housing material</td>
<td>ABS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP67</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Model Number**

- Output type: NPN NO/NC
- Operating voltage: 10 ... 30 V DC
- Connection type: Connector M12 x 1, 4-pin cable PVC, 2 m

**Approvals and Certificates**

- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤36 V

**Dimensions**

<table>
<thead>
<tr>
<th>Property</th>
<th>SJ30-A</th>
<th>SJ30-A2</th>
<th>SJ30-A0-V1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length L [mm]</td>
<td>51</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Width W [mm]</td>
<td>84</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Height H [mm]</td>
<td>110</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Slot width G [mm]</td>
<td>30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connector length lc [mm]</td>
<td>35</td>
<td>22</td>
<td></td>
</tr>
</tbody>
</table>

**Accessories**

- 4-pin, M12 female field-attachable connector, straight
- 4-pin, M12 female field-attachable connector, angled

**Electrical Connection**

Refer to General Notes Relating to Product Information

Required for sales and service inquiries

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Singapore: +65 6779 9091

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www.pepperl-fuchs.us

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Proximity Sensors, Inductive Sensors, slot type

1.13
### Technical Data

**General Data**
- Operating voltage: 20 ... 253 V AC
- Switching frequency: 0 ... 25 Hz
- Load current: 10 ... 500 mA
- Ambient temperature: -25 ... 70 °C (-13 ... 158 °F)
- Protection degree: IP67
- Connection type: cable PVC, 2 m

**Model Number**

<table>
<thead>
<tr>
<th>Slot width</th>
<th>SJ15-WO</th>
<th>SJ30-WO</th>
<th>OA65-MS</th>
<th>OA66-MS</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 mm</td>
<td>●</td>
<td>●</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30 mm</td>
<td>●</td>
<td></td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Output type</td>
<td>AC</td>
<td>NO</td>
<td>AC</td>
<td>NC</td>
</tr>
<tr>
<td>Lateral immersion switchpoint</td>
<td>18.5 ... 20.5 mm</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>27 ... 31 mm</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Housing material</td>
<td>ABS</td>
<td>●</td>
<td>●</td>
<td>PBT</td>
</tr>
</tbody>
</table>

**Approvals and Certificates**
- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: Certified by China Compulsory Certification (CCC)

**Dimensions**

<table>
<thead>
<tr>
<th></th>
<th>SJ15-WO</th>
<th>SJ30-WO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length L [mm]</td>
<td>30</td>
<td>51</td>
</tr>
<tr>
<td>Width W [mm]</td>
<td>48</td>
<td>84</td>
</tr>
<tr>
<td>Height H [mm]</td>
<td>60</td>
<td>110</td>
</tr>
<tr>
<td>Slot width G [mm]</td>
<td>15</td>
<td>30</td>
</tr>
<tr>
<td>Connector length lc [mm]</td>
<td>0</td>
<td>35</td>
</tr>
</tbody>
</table>

### Electrical Connection

- SJ15-WO
- SJ30-WO
- SJ15-WS
- SJ30-WS

---

**Properties**

- 15 mm and 30 mm slot width
- Fast response
- AC, 2-wire switching output
- Cable version

---

**Electrically Connected Inductive Sensors, Inductive Sensors, slot type**

1.3
### Technical Data

<table>
<thead>
<tr>
<th>Property</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model Number</td>
<td>SJ2-N</td>
</tr>
<tr>
<td>Slot width</td>
<td>2 mm</td>
</tr>
<tr>
<td>Output type</td>
<td>NAMUR, NC</td>
</tr>
<tr>
<td>Lateral immersion switchpoint</td>
<td>7 ± 0.3 mm, typ. 6 mm</td>
</tr>
<tr>
<td>Suitable for 2:1 technology</td>
<td>✔ Reverse polarity protection diode not required</td>
</tr>
<tr>
<td>Nominal voltage</td>
<td>8.2 V (R, approx. 1 kΩ)</td>
</tr>
<tr>
<td>Operating voltage</td>
<td>5 ... 25 V</td>
</tr>
<tr>
<td>Current consumption</td>
<td>Measuring plate not detected: ≥ 3 mA</td>
</tr>
<tr>
<td></td>
<td>Measuring plate detected: ≤ 1 mA</td>
</tr>
<tr>
<td>Switching frequency</td>
<td>0 ... 5000 Hz</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-25 ... 100 °C (-13 ... 212 °F)</td>
</tr>
<tr>
<td>Housing material</td>
<td>PBT</td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP67</td>
</tr>
<tr>
<td>Connection type</td>
<td>Flexible leads LIFYW, 500 mm</td>
</tr>
</tbody>
</table>

### Use in the Hazardous Area

See instruction manuals

<table>
<thead>
<tr>
<th>Category</th>
<th>1G, 2G, 1D</th>
</tr>
</thead>
</table>

### Approvals and Certificates

- FM control drawing: 116-0165F
- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval, marking not required for sensors rated ≤36 V

### Dimensions

- Length L [mm]: 8
- Width W [mm]: 8
- Height H [mm]: 12
- Slot width G [mm]: 2
- Connector length lc [mm]: 0

### Accessories

See pages from 970 ... for cordsets
See pages 1066 ... for mounting accessories

KFD2-SRA-Ex4

4-channel isolated amplifier for 2:1 technology

For detailed information on isolated amplifiers refer to the data sheets at [www.pepperl-fuchs.us](http://www.pepperl-fuchs.us)

---

**Properties**

- 2 mm slot width
- Extraordinary fast response
- NAMUR output
- Flexible leads version

**Benefits**

- ATEX approval up to zone 0 / zone 20
- Intrinsically safe when connected to approved device
- FM Class/Div approvals
- 2:1 technology allows two sensor signals on one line

Application Note: Reference appendix, data sheet, operating instructions, and appropriate standards. To be used within the electrical, environmental, and mechanical limitations of the device and area.
### Technical Data

**General Data**
- Slot width: 3.5 mm
- Output type: NAMUR, NC
- Lateral immersion switchpoint: 5 ... 7 mm; typ. 6 mm
- Nominal voltage: 8.2 V (Ri approx. 1 kΩ)
- Operating voltage: 5 ... 25 V
- Current consumption:
  - Measuring plate not detected: ≥ 3 mA
  - Measuring plate detected: ≤ 1 mA
- Switching frequency: 0 ... 3000 Hz
- Ambient temperature: -25 ... 100 °C (-13 ... 212 °F)
- Protection degree: IP67

**Model Number**
- Suitable for 2:1 technology
- Reverse polarity protection diode not required
- Switching state indication: LED, yellow
- Housing material: PBT
- Connection type:
  - Flexible leads L/Y, 500 mm
  - Flexible leads PVC, 135 mm
  - Flexible leads PVC, 500 mm

**Use in the Hazardous Area**
- Use in the hazardous area: see instruction manuals
- Category:
  - 1G; 2G; 1D
  - 1G; 2G; 3G; 1D
  - 2G

**Approvals and Certificates**
- FM control drawing: 116-0165F
- UL approval:
  - cULus Listed, General Purpose
- CSA approval:
  - cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤36 V

**Dimensions**
- Length L [mm]: 10
- Width W [mm]: 19
- Height H [mm]: 3.5
- Slot width G [mm]: 0
- Connector length lc [mm]: 0

**Notes:**
- SJ3.5-G-N and SJ3.5-N-GN differ in switching hysteresis.
- SC3,5-G-N0 and SC3,5-N-G0 differ in switching hysteresis.

### Properties
- 3.5 mm slot width
- Very fast response
- NAMUR output
- Flexible leads version

### Benefits
- ATEX approval up to zone 0 / zone 20
- Intrinsically safe when connected to approved device
- FM Class/Div approvals
- 2:1 technology allows two sensor signals on one line

**Application Note:** Reference appendix, data sheet, operating instructions, and appropriate standards. To be used within the electrical, environmental, and mechanical limitations of the device and area.

### Electrical Connection

**Accessories**
These and more accessories can be found in chapter 10

See pages from 970 ... for cordsets
See pages 1066 ... for mounting accessories

KF02-SRA-Ex4
4-channel isolated amplifier for 2:1 technology

For detailed information on isolated amplifiers refer to the data sheets at www.pepperl-fuchs.us
Inductive slot sensor

5 mm slot width (NAMUR)

Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data

| Slot width | 5 mm |
| NAMUR, NC |
| Nominal voltage | 8.2 V (Ri approx. 1 kΩ) |
| Operating voltage | 5 ... 25 V |
| Current consumption |
| Measuring plate not detected | ≥ 3 mA |
| Measuring plate detected | ≤ 1 mA |
| Switching frequency | 0 ... 2000 Hz |
| Ambient temperature | -25 ... 100 °C (-13 ... 212 °F) |
| Housing material | PBT |
| Protection degree | IP67 |

Model Number

| SJ5-N | SJ5-G-N | SJ5-K-N |
| Lateral immersion switchpoint |
| 5 ... 7 mm, typ. 6 mm |
| 8 ... 10 mm, typ. 9 mm |
| Connection type |
| cable PVC, 2 m |
| flexible leads LIY, 500 mm |

Use in the Hazardous Area

| Use in the hazardous area | see instruction manuals |
| Category | 1G, 2G, 1D |
| Approvals and Certificates |
| FM control drawing | 116-0165F |
| UL approval | cULus Listed, General Purpose |
| CSA approval | cCSAus Listed, General Purpose |
| CCC approval | CCC approval / marking not required for sensors rated ≤36 V |

Dimensions

| Length L [mm] | 10 | 15 |
| Width W [mm] | 15 | 29 |
| Height H [mm] | 15 | 31 |
| Slot width G [mm] | 5 |
| Connector length lc [mm] | 0 |

Accessories

These and more accessories can be found in chapter 10
See pages from 970 ... for cordsets
See pages 1066 ... for mounting accessories

KCD2-SR-Ex2
2-channel isolated amplifier
For detailed information on isolated amplifiers refer to the data sheets at www.pepperl-fuchs.us

Properties

- 5 mm slot width
- Very fast response
- NAMUR output
- Flexible leads and cable versions

Benefits

- ATEX approval up to zone 0 / zone 20
- Intrinsically safe when connected to approved device
- FM Class/Div approvals

Application Note: Reference appendix, data sheet, operating instructions, and appropriate standards. To be used within the electrical, environmental, and mechanical limitations of the device and area.
Inductive slot sensor

Technical Data

<table>
<thead>
<tr>
<th>General Data</th>
<th>SJ10-N</th>
<th>SJ15-N</th>
<th>SJ30-N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output type</td>
<td>NAMUR, NC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nominal voltage</td>
<td>8.2 V (Ri approx. 1 kΩ)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating voltage</td>
<td>5 ... 25 V</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measuring plate not detected</td>
<td>≥ 3 mA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measuring plate detected</td>
<td>≤ 1 mA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP67</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connection type</td>
<td>cable PVC, 2 m</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Model Number</th>
<th>SJ10-N</th>
<th>SJ15-N</th>
<th>SJ30-N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slot width</td>
<td>10 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>15 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>30 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lateral immersion switchpoint</td>
<td>13.5 ... 16.5 mm, typ. 15 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>16 ... 19 mm, typ. 17.5 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>27 ... 30 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Switching frequency</td>
<td>0 ... 1000 Hz</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0 ... 150 Hz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-25 ... 100 °C (-13 ... 212 °F)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>-25 ... 70 °C (-13 ... 158 °F)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Housing material</td>
<td>ABS</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PBT</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Use in the Hazardous Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use in the hazardous area</td>
</tr>
<tr>
<td>Category</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Approvals and Certificates</th>
</tr>
</thead>
<tbody>
<tr>
<td>FM control drawing</td>
</tr>
<tr>
<td>UL approval</td>
</tr>
<tr>
<td>CSA approval</td>
</tr>
<tr>
<td>CCC approval</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length L [mm]</td>
</tr>
<tr>
<td>Width W [mm]</td>
</tr>
<tr>
<td>Height H [mm]</td>
</tr>
<tr>
<td>Slot width G [mm]</td>
</tr>
<tr>
<td>Connector length lc [mm]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Accessories</th>
</tr>
</thead>
<tbody>
<tr>
<td>These and more accessories can be found in chapter 10</td>
</tr>
<tr>
<td>See pages from 970 ... for cordsets</td>
</tr>
<tr>
<td>See pages 1066 ... for mounting accessories</td>
</tr>
</tbody>
</table>

Electrical Connection

<table>
<thead>
<tr>
<th>Electrical Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>SJ10-N</td>
</tr>
</tbody>
</table>

Application Note: Reference appendix, data sheet, operating instructions, and appropriate standards. To be used within the electrical, environmental, and mechanical limitations of the device and area.
Inductive slot sensor

2 mm slot width (NAMUR with safety function)

Technical Data

General Data
- Slot width: 2 mm
- Lateral immersion switchpoint: 5...7 typ. 6 mm
- Type of voltage: DC
- Nominal voltage: 8 V
- Switching frequency: 0 ... 5000 Hz
- Suitable for 2:1 technology, with reverse polarity protection diode
- Housing material: PBT
- Protection degree: IP67
- Connection type: flexible leads LIFYW, 500 mm

Model Number

<table>
<thead>
<tr>
<th>Output type</th>
<th>SJ2-SN</th>
<th>SJ2-S1N</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAMUR, NO</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>NAMUR, NC</td>
<td>●</td>
<td>●</td>
</tr>
</tbody>
</table>

Current consumption
- Measuring plate not detected: ≥ 3 mA
- Measuring plate detected: ≥ 3 mA
- ≤ 1 mA

Ambient temperature
- -25 ... 100 °C (-13 ... 212 °F)
- -40 ... 100 °C (-40 ... 212 °F)

Use in the Hazardous Area
- Use in the hazardous area: see instruction manuals
- Category: 1G; 2G; 3G; 1D

Approvals and Certificates
- FM control drawing: 116-0165F
- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤36 V

Dimensions
- Length L [mm]: 15
- Width W [mm]: 8
- Height H [mm]: 12
- Slot width G [mm]: 2
- Connector length lc [mm]: 0

Application Note: Reference appendix, data sheet, operating instructions, and appropriate standards. To be used within the electrical, environmental, and mechanical limitations of the device and area.

Danger!
In safety-related applications the sensor must be operated with a qualified fail safe interface from Pepperl+Fuchs, such as KFD2-SH-EX1. Consider the "exida Functional Safety Assessment" document which is available on www.pepperl-fuchs.com as an integral part of this product’s documentation.

Electrical Connection

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us
### Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

<table>
<thead>
<tr>
<th>General Data</th>
<th>SJD.5-SN</th>
<th>SJD.5-S1N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slot width</td>
<td>3.5 mm</td>
<td></td>
</tr>
<tr>
<td>Lateral immersion switchpoint</td>
<td>5 ... 7 typ. 6 mm</td>
<td></td>
</tr>
<tr>
<td>Type of voltage</td>
<td>DC</td>
<td></td>
</tr>
<tr>
<td>Nominal voltage</td>
<td>8 V</td>
<td></td>
</tr>
<tr>
<td>Suitable for 2:1 technology</td>
<td>✓, with reverse polarity protection diode</td>
<td></td>
</tr>
<tr>
<td>Housing material</td>
<td>PBT</td>
<td></td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP67</td>
<td></td>
</tr>
<tr>
<td>Connection type</td>
<td>flexible leads LIY, 500 mm</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Model Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output type</td>
</tr>
<tr>
<td>Current consumption</td>
</tr>
<tr>
<td>Measuring plate not detected</td>
</tr>
<tr>
<td>Measuring plate detected</td>
</tr>
<tr>
<td>Switching frequency</td>
</tr>
<tr>
<td>0 ... 2500 Hz</td>
</tr>
<tr>
<td>0 ... 3000 Hz</td>
</tr>
<tr>
<td>Ambient temperature</td>
</tr>
<tr>
<td>-25 ... 100 °C</td>
</tr>
<tr>
<td>-50 ... 100 °C</td>
</tr>
</tbody>
</table>

| Use in the Hazardous Area |
| Use in the hazardous area | see instruction manuals |          |
| Category | 1G, 2G, 3G, 1D |          |

| Approvals and Certificates |
| FM control drawing | 116-0165F |          |
| UL approval | cULus Listed, General Purpose |          |
| CSA approval | cCSAus Listed, General Purpose |          |
| CCC approval |                  |          |

| Dimensions |
| Length L [mm] | 10 |
| Width W [mm] | 19 |
| Height H [mm] | 15 |
| Slot width G [mm] | 3.5 |
| Connector length lc [mm] | 0 |

### Properties

- 3.5 mm slot width
- Fast response time
- NAMUR output
- Flexible leads version

### Benefits

- EX approval 1G/1D for use up to zone 0 / zone 20
- FM Class and Division approvals
- Applicable up to SIL3 acc. to IEC 61508

**Application Note:** Reference appendix, data sheet, operating instructions, and appropriate standards. To be used within the electrical, environmental, and mechanical limitations of the device and area.

**Danger:** In safety-related applications the sensor must be operated with a qualified fail safe interface from Pepperl+Fuchs, such as KFD2-SH-EX1. Consider the “exida Functional Safety Assessment” document which is available on www.pepperl-fuchs.com as an integral part of this product’s documentation.

### Electrical Connection

#### SJD.5-SN

- **RD**
  - **L+**
  - **L-GN**
- **BN**
  - **L+**
  - **L-BU**

#### SJD.5-S1N

- **RD**
  - **L+**
  - **L-**
- **BN**
  - **L+**
  - **L-**
## Inductive ring sensor

### Technical Data

**General Data**
- Operating voltage: 10 ... 30 V DC
- No-load supply current: \( \leq 20 \) mA
- Reverse polarity protection: ✓
- Load current: 0 ... 200 mA
- Short-circuit protection: ✓, self checking
- Ambient temperature: -25 ... 70 °C (-13 ... 158 °F)
- Housing material: PBT
- Protection degree: IP67
- Connection type: cable PVC, 2 m

**Model Number**

<table>
<thead>
<tr>
<th>Inside diameter</th>
<th>RJ21-E</th>
<th>RJ43-E</th>
<th>RJ21-E2</th>
<th>RJ43-E2</th>
</tr>
</thead>
<tbody>
<tr>
<td>21 mm</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>43 mm</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Output type**

<table>
<thead>
<tr>
<th>NPN NO</th>
<th>PNP NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

**Measuring cylinder (target)**

<table>
<thead>
<tr>
<th>Min. diameter / min. length</th>
<th>RJ21-E</th>
<th>RJ43-E</th>
<th>RJ21-E2</th>
<th>RJ43-E2</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 mm / 12 mm</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 mm / 18 mm</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Switching frequency</th>
<th>RJ21-E</th>
<th>RJ43-E</th>
<th>RJ21-E2</th>
<th>RJ43-E2</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 ... 1000 Hz</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>0 ... 500 Hz</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Approvals and Certificates**

- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose

### Properties

- Ø21 mm and Ø43 mm inside diameters
- Mild steel targets
- Very fast response
- DC, 3-wire switching output

### Dimensions

<table>
<thead>
<tr>
<th>Model</th>
<th>Length L [mm]</th>
<th>Width W [mm]</th>
<th>Height H [mm]</th>
<th>Inside diameter D [mm]</th>
<th>Connector length lc [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>RJ21-E</td>
<td>20</td>
<td>45</td>
<td>80</td>
<td>21</td>
<td>0</td>
</tr>
<tr>
<td>RJ43-E</td>
<td></td>
<td>70</td>
<td>80</td>
<td>43</td>
<td></td>
</tr>
<tr>
<td>RJ21-E2</td>
<td></td>
<td>45</td>
<td>80</td>
<td>21</td>
<td>0</td>
</tr>
<tr>
<td>RJ43-E2</td>
<td></td>
<td>70</td>
<td>100</td>
<td>43</td>
<td></td>
</tr>
</tbody>
</table>

### Electrical Connection

Refer to General Notes Relating to Product Information
Inductive ring sensor 15 mm / 21 mm / 43 mm inside diameter (NAMUR)

Technical Data

<table>
<thead>
<tr>
<th>Property</th>
<th>RJ15-N</th>
<th>RJ21-N</th>
<th>RJ43-N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inside diameter (mm)</td>
<td>15</td>
<td>21</td>
<td>43</td>
</tr>
<tr>
<td>Measuring cylinder (target)</td>
<td>3 mm / 4 mm</td>
<td>6 mm / 12 mm</td>
<td>9 mm / 18 mm</td>
</tr>
<tr>
<td>Switching frequency</td>
<td>0 ... 500 Hz</td>
<td>0 ... 1000 Hz</td>
<td>0 ... 1500 Hz</td>
</tr>
<tr>
<td>Dimensions</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Length L [mm]</td>
<td>20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Width W [mm]</td>
<td>29</td>
<td>45</td>
<td>70</td>
</tr>
<tr>
<td>Height H [mm]</td>
<td>45</td>
<td>80</td>
<td>100</td>
</tr>
<tr>
<td>Inside diameter D [mm]</td>
<td>15</td>
<td>21</td>
<td>43</td>
</tr>
<tr>
<td>Connector length lc [mm]</td>
<td>0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Properties
- Up to Ø43 mm inside diameters
- 9S20K targets
- Very fast response
- NAMUR output

Benefits
- EX approved sensor applicable up to zone 1
- Intrinsically safe when connected to approved device
- FM Class & Division approvals

Accessories
These and more accessories can be found in chapter 10 See pages from 970 ... for cordsets See pages 1066 ... for mounting accessories

Electrical Connection

Application Note:
Reference appendix, data sheet, operating instructions, and appropriate standards. To be used within the electrical, environmental, and mechanical limitations of the device and area.
Inductive ring sensor

Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data
Output type: NAMUR, NC
Type of voltage: DC
Nominal voltage: 8.2 V (Ri approx. 1 kΩ)
Measuring cylinder (target): 9S20K
Current consumption
- Measuring plate not detected: ≥ 3 mA
- Measuring plate detected: ≤ 1 mA
Ambient temperature: -20 ... 65 °C (-4 ... 149 °F)
Housing material: PBT
Protection degree: IP67
Connection type: cable PVC, 2 m

Model Number

<table>
<thead>
<tr>
<th>Inside diameter</th>
<th>RC10-14-N0</th>
<th>RC15-14-N0</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Measuring cylinder (target)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>min. diameter / min. length</td>
<td>2.5 mm / 4 mm</td>
<td>3 mm / 4 mm</td>
</tr>
<tr>
<td>Switching frequency</td>
<td>0 ... 1500 Hz</td>
<td>0 ... 2000 Hz</td>
</tr>
<tr>
<td>Suitable for 2:1 technology</td>
<td>yes , Reverse polarity protection diode not required</td>
<td></td>
</tr>
</tbody>
</table>

Use in the Hazardous Area
Use in the hazardous area: see instruction manuals
Category: 2G

Approvals and Certificates
FM control drawing: 116-0165F
UL approval: cULus Listed, General Purpose
CSA approval: cCSAus Listed, General Purpose

Dimensions
Length L [mm]: 20
Width W [mm]: 25
Height H [mm]: 32.5
Inside diameter D [mm]: 10 | 15
Connector length l_c [mm]: 0

Properties
- Ø10 mm and Ø15 mm inside diameters
- 9S20K targets
- Very fast response
- NAMUR output

Benefits
- EX approved sensor applicable up to zone 1
- Intrinsically safe when connected to approved device
- FM Class & Division approvals

Application Note: Reference appendix, data sheet, operating instructions, and appropriate standards. To be used within the electrical, environmental, and mechanical limitations of the device and area.

Electrical Connection

KCD2-SR-Ex2
2-channel isolated amplifier

KFD2-SRA-Ex4
4-channel isolated amplifier for 2:1 technology

For detailed information on isolated amplifiers refer to the data sheets at www.pepperl-fuchs.us

These and more accessories can be found in chapter 10
See pages from 970 ... for cordsets
See pages 1066 ... for mounting accessories

Accessories

Refer to General Notes Relating to Product Information

Copyright Pepperl+Fuchs

Proximity Sensors, Inductive Sensors, ring type

329
**Inductive ring sensor**

**10 mm / 15 mm inside diameter (NAMUR)**

**Technical Data**

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

**General Data**
- **Output type**: NAMUR, bistable
- **Type of voltage**: DC
- **Nominal voltage**: 8.2 V (Ri approx. 1 kΩ)
- **Measuring cylinder (target)**: ferrous metal
- **Current consumption**: see drawing, below
- **Traverse B**: 3 mA
- **Traverse A**: 1 mA
- **Passage speed**: ≤ 10 m/s
- **Housing material**: PBT
- **Protection degree**: IP67
- **Connection type**: cable PVC, 2 m

**Model Number**

<table>
<thead>
<tr>
<th>Inside diameter</th>
<th>RC10-14-N3</th>
<th>RC15-14-N3</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 mm</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>15 mm</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Measuring cylinder (target)</td>
<td>2.5 mm / 3 mm</td>
<td>●</td>
</tr>
<tr>
<td>min. diameter / min. length</td>
<td>3 mm / 4 mm</td>
<td>●</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-20 ... 100 °C (-4 ... 212 °F)</td>
<td>●</td>
</tr>
<tr>
<td></td>
<td>-20 ... 70 °C (-4 ... 158 °F)</td>
<td>●</td>
</tr>
</tbody>
</table>

**Use in the Hazardous Area**

- **Use in the hazardous area**: see instruction manuals
- **Category**: 2G

**Approvals and Certificates**
- **FM control drawing**: 116-0165F
- **UL approval**: cULus Listed, General Purpose
- **CSA approval**: cCSAus Listed, General Purpose

**Dimensions**

| Length L [mm] | 20
| Width W [mm] | 25
| Height H [mm] | 32.5
| Inside diameter D [mm] | 10 15
| Connector length lc [mm] | 0

**Accessories**

These and more accessories can be found in chapter 10

| See pages from 970 ... for cordsets | See pages 1066 ... for mounting accessories |

**KCD2-SR-Ex2**

2-channel isolated amplifier

For detailed information on isolated amplifiers refer to the data sheets at www.pepperl-fuchs.us

**Traverse A and B direction**

**Properties**

- Ø10 mm and Ø15 mm inside diameters
- Ferrous targets
- Very fast response
- Bistable NAMUR output

**Benefits**

- Direction detection possible
- EX approved sensor applicable up to zone 1
- Intrinsically safe when connected to approved device
- FM Class & Division approvals

**Application Note:** Reference appendix, data sheet, operating instructions, and appropriate standards. To be used within the electrical, environmental, and mechanical limitations of the device and area.

**Electrical Connection**

K1014-N3

K1514-N3

BN L+

L-BU

RC10-14-N3

RC15-14-N3

KCD2-SR-Ex2

2-channel isolated amplifier

For detailed information on isolated amplifiers refer to the data sheets at www.pepperl-fuchs.us

**Accessories**

These and more accessories can be found in chapter 10

| See pages from 970 ... for cordsets | See pages 1066 ... for mounting accessories |

KCD2-SR-Ex2

2-channel isolated amplifier

For detailed information on isolated amplifiers refer to the data sheets at www.pepperl-fuchs.us

**Traverse A and B direction**

**Properties**

- Ø10 mm and Ø15 mm inside diameters
- Ferrous targets
- Very fast response
- Bistable NAMUR output

**Benefits**

- Direction detection possible
- EX approved sensor applicable up to zone 1
- Intrinsically safe when connected to approved device
- FM Class & Division approvals

**Application Note:** Reference appendix, data sheet, operating instructions, and appropriate standards. To be used within the electrical, environmental, and mechanical limitations of the device and area.
**Technical Data**

**General Data**
- Rated operating distance: 3 mm
- Output type: Dual (NO)
- Installation: Flush mountable
- Operating voltage: 6 ... 60 V DC
- Reverse polarity protection: ✔, polarity independent
- Switching frequency: 0 ... 500 Hz
- Load current: 4 ... 100 mA
- Off-state current: 0 ... 1 mA, typically 0.7 mA
- Switching state indication: LED, yellow
- Ambient temperature: -25 ... 70 °C (-13 ... 158 °F)
- Housing material: PBT
- Protection degree: IP67

**Model Number**
- NBN3-F25-Z8-0,14
- NBN3-F25-Z8-5M
- NBN3-F25-Z8-V1

**Connection type**
- Connector M12 x 1, 4-pin
- Cable PVC, 180 mm
- Cable PVC, 5 m

**Approvals and Certificates**
- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: Certified by China Compulsory Certification (CCC)

**Dimensions**
- Length L [mm]: 52, 61
- Width W [mm]: 52
- Height H [mm]: 20
- Radius R [mm]: 20.8
- Connector length l_c [mm]: 0, 12

**Accessories**
- These and more accessories can be found in chapter 10

**Electrical Connection**
- Wire colors in accordance with EN 60947-5-2

---

**Properties**
- F25 housing
- 3 mm, flush mountable
- DC, dual 2-wire switching output
- Cable and connector versions

**Benefits**
- NAMUR compliant mounting - hole spacing 30 x 80

---

**Electrical Connection**

---

**Accessories**

- BT32-F25-0: Activator for F25 series, 80x30 mount, <34mm shaft diam., 20mm actuator height
- BT33-F25-0: Activator for F25 series, 80x30 mount, <34mm shaft diam., 30mm actuator height
- BT34-F25-4: Activator for F25 series, 130x30 mount, >34mm shaft diam., 50mm actuator height
- V1-G: 4-pin, M12 female field-attachable connector, straight
- V1-W: 4-pin, M12 female field-attachable connector, angled
- V1-G-BK2M-PUR-U: Female cordset, M12, 4-pin, PUR cable, straight
- V1-W-BK2M-PUR-U: Female cordset, M12, 4-pin, PUR cable, angled

---
### Technical Data

**General Data**
- Rated operating distance: 3 mm
- Output type: PNP, Dual NO
- Installation: flush-mountable
- Operating voltage: 10 ... 30 V DC
- No-load supply current: ≤ 25 mA
- Reverse polarity protection: all connections
- Switching frequency: 0 ... 500 Hz
- Load current: 0 ... 200 mA
- Off-state current: 0 ... 0.5 mA, typically 0.1 µA at 25 °C
- Short-circuit protection: ✔, self checking
- Switching voltage display: LED, green
- Protection degree: IP67
- Ambient temperature: -25 ... 70 °C (-13 ... 158 °F)
- Housing material: PBT

**Model Number**

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>NBN3-F25-E8-0,14</td>
<td>Activator for F25 series, 80x30 mount, &lt;34mm shaft diam., 20mm actuator height</td>
</tr>
<tr>
<td>NBN3-F25-E8-5M</td>
<td>Technical data like NBN3-F25-E8-5M but protection degree IP20</td>
</tr>
<tr>
<td>NBN3-F25-E8-V1</td>
<td>Cable and connector versions</td>
</tr>
</tbody>
</table>

**Connection type**
- Connector M12 x 1, 4-pin
- Cable PVC, 180 mm
- Cable PVC, 5 m

**Approvals and Certificates**
- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤ 36 V

**Dimensions**
- Length L [mm]: 52, 61
- Width W [mm]: 52
- Height H [mm]: 20
- Radius R [mm]: 20.8
- Connector length Lc [mm]: 0, 12

**Accessories**

<table>
<thead>
<tr>
<th>Description</th>
<th>Model Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>BT32-F25-0</td>
<td>Activator for F25 series, 80x30 mount, &lt;34mm shaft diam., 20mm actuator height</td>
</tr>
<tr>
<td>BT33-F25-0</td>
<td>Activator for F25 series, 80x30 mount, &lt;34mm shaft diam., 20mm actuator height</td>
</tr>
<tr>
<td>BT34-F25-4</td>
<td>Activator for F25 series, 130x30 mount, &gt;34mm shaft diam., 50mm actuator height</td>
</tr>
<tr>
<td>V1-G</td>
<td>4-pin, M12 female field-attachable connector, straight</td>
</tr>
<tr>
<td>V1-W</td>
<td>4-pin, M12 female field-attachable connector, angled</td>
</tr>
<tr>
<td>V1-W-SK2M-PUR-U</td>
<td>Female cordset, M12, 4-pin, PUR cable, angled</td>
</tr>
<tr>
<td>V1-G-BK2M-PUR-U</td>
<td>Female cordset, M12, 4-pin, PUR cable, straight</td>
</tr>
</tbody>
</table>

**Electrical Connection**

Wire colors in accordance with EN 60947-5-2
- 1: BN (brown)
- 2: WH (white)
- 3: BU (blue)
- 4: BK (black)
## Technical Data

For detailed data and product description refer to the data sheets at [www.pepperl-fuchs.us](http://www.pepperl-fuchs.us)

### General Data
- Rated operating distance: 3 mm
- Output type: Dual (NO)
- Installation: flush mountable
- Operating voltage: 6 ... 60 V DC
- Reverse polarity protection: ✔, polarity independent
- Switching frequency: 0 ... 500 Hz
- Off-state current: 0 ... 1 mA, typically 0.7 mA
- Switching state indication: LED, yellow
- Ambient temperature: -25 ... 70 °C (-13 ... 158 °F)
- Housing material: PBT
- Protection degree: IP67

### Model Number

<table>
<thead>
<tr>
<th>Model Number</th>
<th>NBN3-F31-Z8-K</th>
<th>NBN3-F31-Z8-K-K</th>
<th>NBN3-F31-Z8-V1</th>
<th>NBN3-F31-Z8-V16-V15</th>
<th>NBN3-F31-Z8-V16-V16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valve status indication</td>
<td>LED, yellow</td>
<td>LED, yellow</td>
<td>LED, yellow</td>
<td>LED, yellow</td>
<td>LED, yellow</td>
</tr>
<tr>
<td>Connection type</td>
<td>Connector M18 x 1, 4-pin</td>
<td>Connector M12 x 1, 4-pin</td>
<td>Connector Rd24 x 1/8, 4-pin</td>
<td>PVC cable 5 m</td>
<td>PVC cable 0.5 m</td>
</tr>
<tr>
<td>Connection (valve side)</td>
<td>5-pin, M12 x 1 socket</td>
<td>Connection Rd24 x 1/8, 4-pin</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Approvals and Certificates</td>
<td>UL approval: cULus Listed, General Purpose</td>
<td>CSA approval: cCSAus Listed, General Purpose</td>
<td>CCC approval: Certified by China Compulsory Certification (CCC)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dimensions</td>
<td>Length L [mm]: 36</td>
<td>Width W [mm]: 65</td>
<td>Height H [mm]: 33.5</td>
<td>Connector length lc [mm]: 28, 10, 18, 28</td>
<td></td>
</tr>
</tbody>
</table>

### Accessories
- These and more accessories can be found in chapter 10
- See pages from 970 ... for cordsets
- See pages 1066 ... for mounting accessories

**Electrical Connection**

<table>
<thead>
<tr>
<th>Wire colors in accordance with EN 60947-5-2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
</tr>
<tr>
<td>4</td>
</tr>
</tbody>
</table>

**Properties**

- **F31 housing**
- 3 mm, flush mountable
- DC, dual 2-wire switching output
- Cable and connector versions

**Benefits**

- LED indicators for switching state and valve output
- Direct mounting without additional mounting brackets on NAMUR bore holes 30 x 80 and 30 x 130

**Accessories**

- Inductive sensor F31 series
  - F31 housing
  - 3 mm, flush mountable
  - DC, dual 2-wire switching output
  - Cable and connector versions

**Approvals and Certificates**

- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: Certified by China Compulsory Certification (CCC)
**Technical Data**

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.com

**General Data**
- Rated operating distance: 3 mm
- Output type: PNP, Dual NO
- Installation: flush mountable
- Operating voltage: 10 ... 30 V DC
- No-load supply current: ≤ 25 mA
- Reverse polarity protection: ✔
- Switching frequency: 0 ... 500 Hz
- Load current: 0 ... 100 mA
- Off-state current: 0 ... 0.5 mA, typically 0.1 µA at 25 °C
- Short-circuit protection: ✔, self checking
- Operating voltage display: LED, green
- Switching state indication: LED, yellow
- Housing material: PBT
- Ambient temperature: -25 ... 70 °C (-13 ... 158 °F)
- Protection degree: IP67

**Model Number**
- NBN3-F31-E8-K
- NBN3-F31-E8-K-K
- NBN3-F31-E8-V1
- NBN3-F31-E8-V15
- NBN3-F31-E8-V18

**Valve status indication**
- LED, yellow

**Connection type**
- Connector M12 x 1, 4-pin
- Connector M18 x 1, 4-pin

**Connection (system side)**
- Connector R24 x 1/8, 4-pin
- PVC cable 5 m

**Connection (valve side)**
- 5-pin, M12 x 1 socket
- PVC cable 0.5 m

**Approvals and Certificates**
- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤36 V

**Dimensions**
- Length L [mm]: 36
- Width W [mm]: 65
- Height H [mm]: 33.5
- Connector length l_c [mm]: 28

**Accessories**
- These and more accessories can be found in chapter 10
- See pages from 970 ... for cordsets
- See pages 1066 ... for mounting accessories

**Electrical Connection**

Wire colors in accordance with EN 60947-5-2

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

Note: S = system side, V = valve side

---

**Properties**

- F31 housing
- 3 mm, flush mountable
- DC, dual 3-wire switching output
- Cable and connector versions

**Benefits**

- LED indicators for switching state and valve output
- NAMUR compliant mounting - hole spacing 30 x 80 and 30 x 130
# Inductive sensor

## F31 series

### Technical Data

**General Data**
- **Rated operating distance**: 3 mm
- **Output type**: AC/DC binary NO
- **Installation**: Mountable
- **Operating voltage**: 20 ... 253 V AC/DC
- **Reverse polarity protection**: ✔
- **Switching frequency**: 25 Hz
- **Load current**: 4 ... 400 mA
- **Off-state current**: ≤ 1.7 mA
- **Short-circuit protection**: ✔
- **Operating voltage display LED**: Green
- **Switching state indication LED**: Yellow
- **Ambient temperature**: -25 ... 70 °C (-13 ... 158 °F)
- **Housing material**: PBT
- **Protection degree**: IP67

### Model Number

<table>
<thead>
<tr>
<th>Connection type</th>
<th>NBN3-F31-U8-K</th>
<th>NBN3-F31-U8-V125</th>
<th>NBN3-F31-U8-V18</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connector 1/2&quot;-20 UN</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connector M18 x 1, 4-pin</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cable PVC, 5 m</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Approvals and Certificates

- **UL approval**: cULus Listed, General Purpose
- **CSA approval**: cCSAus Listed, General Purpose

### Dimensions

- **Length L [mm]**: 36
- **Width W [mm]**: 65
- **Height H [mm]**: 33.5
- **Connector length Lc [mm]**: 28, 10, 18

### Accessories

**These and more accessories can be found in chapter 10**

- **See pages from 970 ... for cordsets**
- **See pages 1066 ... for mounting accessories**

**BT65A**
- Activator for F31 series, 80 x 30 mm, 5 mm shaft diam., 20 mm and 30 mm actuator height

**BT115A**
- Activator for F31 series, 130 x 30 mm, 5 mm shaft diam., 30 mm and 50 mm actuator height, <110 mm ring diam.

**BT65B**
- Activator for F31 series, 80 x 30 mm, 5 mm shaft diam., 20 mm actuator height

**BT115B**
- Activator for F31 series, 130 x 30 mm, 5 mm shaft diam., 30 mm and 50 mm actuator height, <105 mm ring diam.

**V18-G**
- 4-pin, M18 female field-attachable connector, straight

**V18-W**
- 4-pin, M18 female field-attachable connector, angled

**V125-G-YE2M-PVC**
- Female cordset, M12, 5-pin, PVC cable, straight

**V125-W-YE2M-PVC**
- Female cordset, 1/2"-20 UNF, 5-pin, PVC cable, angled

### Properties

- **F31 housing**: 3 mm, flush mountable
- **AC/DC, dual 2-wire switching output**: Cable and connector versions

### Benefits

- **LED indicators for switching state and valve output**: NAMUR compliant mounting - hole spacing 30 x 80 and 30 x 130

### Electrical Connection

![Electrical Connection Diagram](image_url)

**Wire colors in accordance with EN 60947-5-2**

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

---

**Note:** S = system side
Inductive sensor

F31K series

Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

<table>
<thead>
<tr>
<th>Property</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Data</td>
<td></td>
</tr>
<tr>
<td>Rated operating distance</td>
<td>3 mm</td>
</tr>
<tr>
<td>Output type</td>
<td>DC binary NO</td>
</tr>
<tr>
<td>Installation</td>
<td>flush mountable</td>
</tr>
<tr>
<td>Reverse polarity protection</td>
<td>✔ polarity independent</td>
</tr>
<tr>
<td>Switching frequency</td>
<td>0 ... 500 Hz</td>
</tr>
<tr>
<td>Load current</td>
<td>4 ... 100 mA</td>
</tr>
<tr>
<td>Off-state current</td>
<td>0 ... 1 mA, typically 0.7 mA</td>
</tr>
<tr>
<td>Switching state indication LED, yellow</td>
<td></td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-25 ... 70 °C (-13 ... 158 °F)</td>
</tr>
<tr>
<td>Housing material</td>
<td>PBT</td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP67</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Model Number</th>
<th>NBN3-F31K-Z8</th>
<th>NBN3-F31K-Z8-K</th>
<th>NBN3-F31K-Z8-V1-V1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating voltage</td>
<td>10 ... 30 V DC</td>
<td>6 ... 60 V DC</td>
<td></td>
</tr>
<tr>
<td>No-load supply current</td>
<td>25 mA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Short-circuit protection</td>
<td>✔ self checking</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating voltage display</td>
<td>LED, green</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Valve status indication LED, yellow</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connection (system side)</td>
<td>Cage tension spring terminals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connection (valve side)</td>
<td>4-pin, M12 x 1 socket</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LED indicators for switching state and valve output</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benefits</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LED indicators for switching state and valve output</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NAMUR compliant mounting - hole spacing 30 x 80 and 30 x 130</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Approvals and Certificates</th>
<th>cULus Listed, General Purpose</th>
<th>cCSAus Listed, General Purpose</th>
<th>CCC approval</th>
</tr>
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<tbody>
<tr>
<td>UL approval</td>
<td>cULus Listed, General Purpose</td>
<td>cCSAus Listed, General Purpose</td>
<td>CCC approval</td>
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<tr>
<td>CSA approval</td>
<td>cCSAus Listed, General Purpose</td>
<td>CCC approval / marking not required for sensors rated &lt;36 V</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dimensions</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Length L [mm]</td>
<td>77.5</td>
</tr>
<tr>
<td>Width W [mm]</td>
<td>65</td>
</tr>
<tr>
<td>Height H [mm]</td>
<td>35</td>
</tr>
<tr>
<td>Connector length l1 [mm]</td>
<td>10</td>
</tr>
<tr>
<td>Connector length l2 [mm]</td>
<td>10</td>
</tr>
<tr>
<td>Connector length l3 [mm]</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Accessories</th>
<th>These and more accessories can be found in chapter 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>BT65A</td>
<td>Activator for F31 series, 80x30 mount, &lt;55mm shaft diam., 20mm and 30mm actuator height</td>
</tr>
<tr>
<td>BT115A</td>
<td>Activator for F31 series, 130x30 mount, &lt;90mm shaft diam., 30mm and 50mm actuator height, &lt;110mm ring diam.</td>
</tr>
<tr>
<td>BT65B</td>
<td>Activator for F31 series, 80x30 mount, &lt;55mm shaft diam., 20mm actuator height</td>
</tr>
<tr>
<td>BT115B</td>
<td>Activator for F31 series, 130x30 mount, &lt;90mm shaft diam., 30mm and 50mm actuator height, &lt;110mm ring diam.</td>
</tr>
<tr>
<td>VMA-2+P/Z2-0.3M-PVC-V1-W-Y</td>
<td>Valve connector, Form A on M12, 2 PE, LED, Z diode, PVC cable</td>
</tr>
<tr>
<td>VMB-2+P/Z2-0.3M-PVC-V1-W-Y</td>
<td>Valve connector, Form B on M12, 2 PE, LED, Z diode, PUR cable</td>
</tr>
<tr>
<td>VMc-2+P/Z2-0.3M-PVC-V1-Y</td>
<td>Valve connector, model C on M12, 2 PE, LED, Zener diode, PVC cable</td>
</tr>
<tr>
<td>VMCi-2+P/Z2-0.3M-PVC-V1-Y</td>
<td>Valve connector, model C (ind) on M12, 2 PE, LED, Zener diode, PVC cable</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Electrical Connection</th>
<th>Wire colors in accordance with EN 60947-6-2</th>
</tr>
</thead>
<tbody>
<tr>
<td>NBN3-F31K-Z8</td>
<td>1 BN (brown) 2 WH (white) 3 BU (blue) 4 BK (black) 5 GY (gray)</td>
</tr>
<tr>
<td>NBN3-F31K-Z8-K</td>
<td></td>
</tr>
<tr>
<td>NBN3-F31K-Z8-V1-V1</td>
<td>1 2 3 4 5</td>
</tr>
</tbody>
</table>

Note: S = system side, V = valve side

Refer to General Notes Relating to Product Information Copyright Pepperl+Fuchs

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Contact of Steven Engineering, Inc. - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com

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### Technical Data

**General Data**
- Rated operating distance: 3 mm
- Output type: PNP, Dual NO
- Installation: flush mountable
- Operating voltage: 10 ... 30 V DC
- No-load supply current: ≤ 25 mA
- Reverse polarity protection: ✔
- Switching frequency: 0 ... 500 Hz
- Load current: 0 ... 100 mA
- Off-state current: 0 ... 0.5 mA, typically 0.1 µA
- Short-circuit protection: ✔
- Switching state indication LED, yellow
- Operating voltage display LED, green
- Ambient temperature: -25 ... 70 °C (-13 ... 158 °F)
- Housing material: PBT
- Protection degree: IP67

**Model Number**
- NBN3-F31K-E8
- NBN3-F31K-E8-K
- NBN3-F31K-E8-V1-V1

**Valve status indication** LED, yellow

**Connection (system side)** Cage tension spring terminals
- 2-pin, M12 x 1 socket

**Connection (valve side)**
- 4-pin, M12 x 1 socket
- Cage tension spring terminals

**Approvals and Certificates**
- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤ 36 V

**Dimensions**
- Length L [mm]: 77.5
- Width W [mm]: 65
- Height H [mm]: 35
- Connector length l1 [mm]: 10
- Connector length l2 [mm]: 10
- Connector length l3 [mm]: -

**Accessories**

<table>
<thead>
<tr>
<th>Accessory</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>NBN3-F31K-E8</td>
<td>Activator for F31 series, 80x30 mount, &lt;58mm shaft diam., 20mm and 30mm actuator height</td>
</tr>
<tr>
<td>NBN3-F31K-E8-K</td>
<td>Activator for F31 series, 130x30 mount, &lt;90mm shaft diam., 30mm and 50mm actuator height</td>
</tr>
<tr>
<td>NBN3-F31K-E8-V1-V1</td>
<td>Activator for F31 series, 130x30 mount, &lt;90mm shaft diam., 30mm and 50mm actuator height, &lt;105mm ring diam</td>
</tr>
<tr>
<td>VMA-2x+P/Z2-0,3M-PVC-V1-W-Y</td>
<td>Valve connector, Form A on M12, 2 + PE, LED, Z diode, PVC cable</td>
</tr>
<tr>
<td>VMB-2x+P/Z2-0,3M-PVC-V1-W-Y</td>
<td>Valve connector, Form B on M12, 2 + PE, LED, Z diode, PUR cable</td>
</tr>
<tr>
<td>VMC-2x+P/Z2-0,3M-PVC-V1-W-Y</td>
<td>Valve connector, model C on M12, 2 + PE, LED, zener diode, PVC cable</td>
</tr>
<tr>
<td>VMI-2+P/Z2-0,3M-PVC-V1-W-Y</td>
<td>Valve connector, model C (ind) on M12, 2 + PE, LED, zener diode, PVC cable</td>
</tr>
</tbody>
</table>

**Electrical Connection**

**Wire colors in accordance with EN 60947-5-2**

1. BN (brown)
2. WH (white)
3. BU (blue)
4. BK (black)
5. GF (gray)

**Properties**

- **F31K housing**
  - 3 mm, flush mountable
  - DC, dual 3-wire switching output
  - Terminal compartment
  - Connector and cable gland versions

**Benefits**

- LED indicators for switching state and valve output
- NAMUR compliant mounting - hole spacing 30 x 80 and 30 x 130

**Notes:**
- S = system side, V = valve side

For detailed data and product description refer to the data sheets at [www.pepperl-fuchs.us](http://www.pepperl-fuchs.us).
Inductive sensor

F31 series

Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

General Data

- Rated operating distance: 3 mm
- Installation: flush mountable
- Output type: programmable
- Operating voltage: 26.5 ... 31.9 V via AS-i bus system
- Switching frequency: 0 ... 100 Hz
- LED PWR: AS-interface voltage; LED green
- LED IN: switching state (input); LED yellow
- Ambient temperature: -25 ... 70 °C (-13 ... 158 °F)
- Protection degree: IP67
- Connection (system side): M12 x 1, 4-pin

Model Number

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>NCN3-F31-B3B-V1-K</td>
<td>LED OUT: binary LED yellow/red</td>
</tr>
<tr>
<td>NCN3-F31-B3B-V1-Y</td>
<td>LED OUT: red: lead breakage/short-circuit</td>
</tr>
<tr>
<td>NCN3-F31-B3B-V1</td>
<td>Connection (valve side): 0.5 m, PVC cable</td>
</tr>
<tr>
<td>NCN3-F31-B3B-V1-Y</td>
<td>Connection (valve side): M12 x 1, 4-pin</td>
</tr>
</tbody>
</table>

Approvals and Certificates

- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤36 V

Dimensions

- Length L [mm]: 36
- Width W [mm]: 65
- Height H [mm]: 33.5
- Connector length lc [mm]: 10 12 15

Accessories

- These and more accessories can be found in chapter 10
  - See pages from 970 ... for cordsets
  - See pages 1066 ... for mounting accessories

- BT65A: Activator for F31 series, 80x30 mount, <58mm shaft diam., 20mm and 30mm actuator height
- BT115A: Activator for F31 series, 130x30 mount, <90mm shaft diam., 30mm and 50mm actuator height, <110mm ring diam.
- BT65B: Activator for F31 series, 80x30 mount, <53mm shaft diam., 20mm actuator height
- BT115B: Activator for F31 series, 130x30 mount, <90mm shaft diam., 30mm and 50mm actuator height, <105mm ring diam.
- V1-W-BK2M-PUR-U: Female cordset, M12, 4-pin, PUR cable, angled
- V1-G-BK2M-PUR-U: Female cordset, M12, 4-pin, PUR cable, straight
- V1-G: 4-pin, M12 female field-attachable connector, straight

Properties

- F31 housing
- 3 mm, flush mountable
- AS interface
- Cable and connector versions

Benefits

- LED indicators for switching state and valve output
- NAMUR compliant mounting - hole spacing 30 x 80 and 30 x 130

Electrical Connection

Note: S = system side, V = valve side
## Inductive sensor

### F31K series

#### Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

<table>
<thead>
<tr>
<th>Model Number</th>
<th>NCN3-F31K-B3B-B31</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated operating distance</td>
<td>3 mm</td>
</tr>
<tr>
<td>Installation</td>
<td>flush mountable</td>
</tr>
<tr>
<td>Output type</td>
<td>programmable</td>
</tr>
<tr>
<td>Operating voltage</td>
<td>26.5 ... 31.9 V via AS-i bus system</td>
</tr>
<tr>
<td>Switching frequency</td>
<td>0 ... 100 Hz</td>
</tr>
<tr>
<td>LED PWR</td>
<td>AS-interface voltage, LED green</td>
</tr>
<tr>
<td>LED IN</td>
<td>switching state (input), LED yellow</td>
</tr>
<tr>
<td>LED OUT</td>
<td>binary LED yellow/red</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-25 ... 70 °C (-13 ... 158 °F)</td>
</tr>
<tr>
<td>Housing material</td>
<td>PBT</td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP67</td>
</tr>
<tr>
<td>Connection (system side)</td>
<td>screw terminals</td>
</tr>
<tr>
<td>Connection (valve side)</td>
<td>screw terminals</td>
</tr>
</tbody>
</table>

#### Properties

- F31K housing
- 3 mm, flush mountable
- AS interface
- Terminal compartment

#### Benefits

- LED indicators for switching state and valve output
- NAMUR compliant mounting - hole spacing 30 x 50 and 30 x 130

#### Approvals and Certificates

- UL approval: cULus Listed, General Purpose
- CSA approval: cCSAus Listed, General Purpose
- CCC approval: CCC approval / marking not required for sensors rated ≤36 V

#### Dimensions

- Length L [mm]: 77.5
- Width W [mm]: 65
- Height H [mm]: 35
- Connector length l1 [mm]: 10
- Connector length l2 [mm]: 10

#### Accessories

These and more accessories can be found in chapter 10

- BT65A: Activator for F31 series, 80x30 mount, <58mm shaft diam., 20mm and 30mm actuator height
- BT115A: Activator for F31 series, 130x30 mount, <90mm shaft diam., 30mm and 50mm actuator height
- BT65B: Activator for F31 series, 80x30 mount, <53mm shaft diam., 20mm actuator height
- BT115B: Activator for F31 series, 130x30 mount, <90mm shaft diam., 30mm and 50mm actuator height, <105mm ring diam.

### Electrical Connection

<table>
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<tr>
<th>NCN3-F31K-B3B-B31</th>
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</thead>
<tbody>
<tr>
<td>V</td>
</tr>
<tr>
<td>W</td>
</tr>
<tr>
<td>H</td>
</tr>
<tr>
<td>L</td>
</tr>
</tbody>
</table>

Note: S = system side, V = valve side
## Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

### General Data
- **Rated operating distance**: 3 mm
- **Installation**: flush mountable
- **Output type**: NAMUR Dual NC
- **Type of voltage**: DC
- **Nominal voltage**: 8.2 V (Ri approx. 1 kΩ)
- **Reverse polarity protection**: ✔
- **Current consumption**:
  - Measuring plate not detected: ≥ 3 mA
  - Measuring plate detected: ≤ 1 mA
- **Switching frequency**: 0 ... 1500 Hz
- **Suitable for 2:1 technology**: ✔
- **Switching state indication**: LED, yellow
- **Ambient temperature**: -25 ... 100 °C (-13 ... 212 °F)
- **Housing material**: PBT
- **Protection degree**: IP67

### Model Number

<table>
<thead>
<tr>
<th>Model</th>
<th>NCN3-F25-N4-0,14</th>
<th>NCN4-F25F-N4-V1</th>
<th>NCN3-F25-N4-V1</th>
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<tbody>
<tr>
<td>Installation</td>
<td>compact design</td>
<td>compact design</td>
<td>compact design</td>
</tr>
<tr>
<td>type</td>
<td>for box installation and direct installation</td>
<td>for box installation and direct installation</td>
<td>for box installation and direct installation</td>
</tr>
<tr>
<td>Connection type</td>
<td>Connector M12 x 1, 4-pin</td>
<td>Connector M12 x 1, 4-pin</td>
<td>Connector M12 x 1, 4-pin</td>
</tr>
<tr>
<td></td>
<td>Cable PVC, 180 mm</td>
<td>Cable PVC, 180 mm</td>
<td>Cable PVC, 180 mm</td>
</tr>
</tbody>
</table>

### Use in the Hazardous Area

- **Use in the hazardous area**: see instruction manuals
- **Category**: 1G, 2G, 3G
- **FM Class & Division approvals**: ✔
- **NAMUR compliant mounting - hole spacing 30 x 80**: ✔

### Approvals and Certificates

- **FM control drawing**: 116-0165F
- **UL approval**: cULus Listed, General Purpose
- **CSA approval**: cCSAus Listed, General Purpose
- **CCC approval**: CCC approval / marking not required for sensors rated ≤ 36 V

### Dimensions

<table>
<thead>
<tr>
<th>Length L [mm]</th>
<th>52</th>
<th>62</th>
<th>61</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width W [mm]</td>
<td>52</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Height H [mm]</td>
<td>20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connector length l_c [mm]</td>
<td>0</td>
<td>17</td>
<td>9</td>
</tr>
</tbody>
</table>

### Accessories

- **These and more accessories can be found in chapter 10**
- **See pages from V70 ... for cordsets**
- **See pages 1066 ... for mounting accessories**

<table>
<thead>
<tr>
<th>Accessory</th>
<th>BT32-F25-0</th>
<th>BT33-F25-0</th>
<th>BT34-F25-4</th>
<th>V1-G</th>
<th>V1-G-N4-5M-PUR</th>
<th>KCDB2-SR-Ex2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activator</td>
<td>80x30 mount, &lt;34mm shaft diam., 20mm actuator height</td>
<td>80x30 mount, &lt;34mm shaft diam., 30mm actuator height</td>
<td>130x30 mount, &lt;34mm shaft diam., 50mm actuator height</td>
<td>4-pin, M12 female field-attachable connector, straight</td>
<td>Female cordset, M12, 4-pin, NAMUR, PUR cable, straight</td>
<td>2-channel isolated amplifier</td>
</tr>
</tbody>
</table>

For detailed information on isolated amplifiers refer to the data sheets at www.pepperl-fuchs.us
**Inductive sensor**

## Technical Data

For detailed data and product description refer to the data sheets at www.pepperl-fuchs.us

### General Data
- **Rated operating distance**: 3 mm
- **Installation**: flush mountable
- **Output type**: NAMUR Dual NC
- **Type of voltage**: DC
- **Nominal voltage**: 8.2 V (Ri approx. 1 kΩ)
- **Current consumption**:
  - Measuring plate not detected: ≥ 3 mA
  - Measuring plate detected: ≤ 1 mA
- **Switching frequency**: 0 ... 1500 Hz
- **Ambient temperature**: -25 ... 100 °C (-13 ... 212 °F)
- **Housing material**: PBT
- **Protection degree**: IP67

### Model Number
- **NCN3-F25-SN4-0,14**
- **NCN3-F25-SN4-V1**

### Use in the Hazardous Area
- **Category**: 1G; 2G; 3G
- **Approvals and Certificates**:
  - **FM control drawing**: 116-0165F
  - **UL approval**: cULus Listed, General Purpose
  - **CSA approval**: cCSAus Listed, General Purpose
  - **CCC approval**: CCC approval / marking not required for sensors rated ≤ 36 V

### Dimensions
- **Length L [mm]**: 52 | 61
- **Width W [mm]**: 52
- **Height H [mm]**: 20
- **Connector length lc [mm]**: 0 | 9

### Accessories
- **These and more accessories can be found in chapter 10**
- **See pages from 970 ... for cordsets**
- **See pages 1066 ... for mounting accessories**

**Electrical Connection**

### Properties
- **F25 housing**
- **3 mm, flush mountable**
- **NAMUR dual output**
- **Cable and connector versions**

### Benefits
- **EX approval 1G applicable up to zone 0**
- **FM Class & Division approvals**
- **Usable up to SIL3 acc. to IEC 61508**
- **LED indicators for switching state and valve output**
- **NAMUR compliant mounting - hole spacing 30 x 80**

Application Note: Reference appendix, data sheet, operating instructions, and appropriate standards. To be used within the electrical, environmental, and mechanical limitations of the device and area.

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**Proximity Sensors, Inductive Sensors, Dual-Position Sensors for Valve Actuators**

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**F25 series (NAMUR with safety function)**

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**Electrical Connection**

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**Refer to General Notes Relating to Product Information**

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# Proximity Sensors, Inductive Sensors, Dual Position Sensors for Valve Actuators

## F31 series (NAMUR)

### Technical Data

<table>
<thead>
<tr>
<th>General Data</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated operating distance</td>
<td>3 mm</td>
</tr>
<tr>
<td>Installation</td>
<td>flush mountable</td>
</tr>
<tr>
<td>Output type</td>
<td>NAMUR, dual NC</td>
</tr>
<tr>
<td>Type of voltage</td>
<td>DC</td>
</tr>
<tr>
<td>Nominal voltage</td>
<td>8.2 V (Ri approx. 1 kΩ)</td>
</tr>
<tr>
<td>Reverse polarity protection</td>
<td>✔</td>
</tr>
<tr>
<td>Measuring plate not detected</td>
<td>≥ 3 mA</td>
</tr>
<tr>
<td>Measuring plate detected</td>
<td>≤ 1 mA</td>
</tr>
<tr>
<td>Switching frequency</td>
<td>0 ... 200 Hz</td>
</tr>
<tr>
<td>Suitable for 2:1 technology</td>
<td>✔</td>
</tr>
<tr>
<td>Switching state indication</td>
<td>LED, yellow</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>-25 ... 100 °C (-13 ... 158 °F)</td>
</tr>
<tr>
<td>Housing material</td>
<td>PBT</td>
</tr>
</tbody>
</table>

### Model Number

<table>
<thead>
<tr>
<th>Model Number</th>
<th>NCN3-F31-N4-K-K</th>
<th>NCN3-F31-N4-V16-K-K</th>
<th>NCN3-F31-N4-V18</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NCN3-F31-N4-V16-K</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>NCN3-F31-N4-V16-V16</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Use in the Hazardous Area

<table>
<thead>
<tr>
<th>Use in the hazardous area</th>
<th>see instruction manuals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category</td>
<td>1G, 2G, 3G</td>
</tr>
<tr>
<td></td>
<td>1G, 2G, 3G</td>
</tr>
</tbody>
</table>

### Approvals and Certificates

- **FM control drawing:** 116-0165F
- **UL approval:** cULus Listed, General Purpose
- **CSA approval:** cCSAus Listed, General Purpose
- **CCC approval:** CCC approval / marking not required for sensors rated ≤36 V

### Dimensions

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length L [mm]</td>
<td>36</td>
</tr>
<tr>
<td>Width W [mm]</td>
<td>65</td>
</tr>
<tr>
<td>Height H [mm]</td>
<td>33.5</td>
</tr>
<tr>
<td>Connector length lc [mm]</td>
<td>16 28 28 10 22 28</td>
</tr>
</tbody>
</table>

### Accessories

- **Use in the Hazardous Area**
- **Approvals and Certificates**
- **Dimensions**
- **Accessories**

### Electrical Connection

- **NCN3-F31-N4-K**
- **NCN3-F31-N4-V18**
- **NCN3-F31-N4-V16**

**Note:** S = system side, V = valve side

---

**Application Note:** Reference appendix, data sheet, operating instructions, and appropriate standards. To be used within the electrical, environmental, and mechanical limitations of the device and area.
## Proximity Sensors

### 1.1.1 Proximity Sensors, Inductive Sensors, rectangular types

### 1.1.2 Proximity Sensors, Inductive Sensors, slot type

### 1.1.3 Proximity Sensors, Inductive Sensors, ring type

### 1.1.4 Proximity Sensors, Inductive Sensors, Rotational Speed Monitors

### 1.1.5 Proximity Sensors, Inductive Sensors, Dual Position Sensors for Valve Actuators

### 1.1.6 Proximity Sensors, Inductive Sensors, Dual Sensors for Clamping Systems

### 1.1.7 Proximity Sensors, Inductive Sensors, Valve Position Sensors (Accessories)

---

### Actuator (Puck), Mounting Sets, and Brackets for Position Feedback Sensors (-F25 Series)

<table>
<thead>
<tr>
<th>Mounting kit</th>
<th>Shaft diameter</th>
<th>Shaft height</th>
<th>Mounting hole pattern</th>
<th>Includes: Actuator</th>
<th>Bracket</th>
<th>Fig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>BT32-F25-0</td>
<td>&lt; 34 mm</td>
<td>20 mm</td>
<td>30 mm x 80 mm</td>
<td>BT32</td>
<td>–</td>
<td>1</td>
</tr>
<tr>
<td>BT33-F25-0</td>
<td>&lt; 34 mm</td>
<td>30 mm</td>
<td>30 mm x 80 mm</td>
<td>BT33</td>
<td>–</td>
<td>3</td>
</tr>
<tr>
<td>BT34-F25-2</td>
<td>preferably &gt; 34 mm</td>
<td>20/30 mm</td>
<td>30 mm x 80 mm</td>
<td>BT34</td>
<td>K2</td>
<td>2</td>
</tr>
<tr>
<td>BT34-F25-3</td>
<td>preferably &gt; 34 mm</td>
<td>30 mm</td>
<td>30 mm x 130 mm</td>
<td>BT34</td>
<td>K3</td>
<td>4</td>
</tr>
<tr>
<td>BT34-F25-4</td>
<td>preferably &gt; 34 mm</td>
<td>50 mm</td>
<td>30 mm x 130 mm</td>
<td>BT34</td>
<td>K4</td>
<td>5</td>
</tr>
<tr>
<td>MH5-F25-Y43089</td>
<td>&lt; 34 mm</td>
<td>20/30 mm</td>
<td>30 mm x 130 mm</td>
<td>–</td>
<td>Metal plate</td>
<td>6</td>
</tr>
<tr>
<td>MH20-F25-Y43090</td>
<td>Height compensation for mounting second sensor</td>
<td>–</td>
<td>Plastic plate</td>
<td>–</td>
<td></td>
<td>7</td>
</tr>
</tbody>
</table>

1) Includes mounting screws for the respective double sensor

2) If the ring is higher than 3 mm, the height of the snap ring is the determining factor rather than the shaft diameter.

---

### Individual part

<table>
<thead>
<tr>
<th>Actuator</th>
<th>Shaft diameter</th>
<th>Shaft height</th>
<th>Number of switching targets</th>
<th>Notes</th>
<th>Fig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>BT32</td>
<td>≤ 34 mm</td>
<td>20 mm</td>
<td>2</td>
<td>Active height: 28 mm</td>
<td>8</td>
</tr>
<tr>
<td>BT32XS</td>
<td>≤ 34 mm</td>
<td>20 mm</td>
<td>1</td>
<td>As per BT32, with reverse-damping operation</td>
<td>9</td>
</tr>
<tr>
<td>BT32XAS</td>
<td>≤ 34 mm</td>
<td>20 mm</td>
<td>2</td>
<td>As per BT32, with reverse-damping operation</td>
<td>9</td>
</tr>
<tr>
<td>BT33</td>
<td>≤ 34 mm</td>
<td>30 mm</td>
<td>2</td>
<td>Active height: 38 mm</td>
<td>10</td>
</tr>
<tr>
<td>BT34</td>
<td>≥ 34 mm</td>
<td>≥ 20 mm</td>
<td>2</td>
<td>Active height: 28 mm, sitting on the drive shaft</td>
<td>11</td>
</tr>
<tr>
<td>BT37</td>
<td>≥ 34 mm</td>
<td>20 mm</td>
<td>1</td>
<td>Actuator BT37 with 4 mm groove for mounting on drive</td>
<td>–</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MountingBracket</th>
<th>Shaft diameter</th>
<th>Shaft height</th>
<th>Number of switching targets</th>
<th>Notes</th>
<th>Fig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>K2</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>Mounting hole pattern 30 mm x 80 mm</td>
<td>2</td>
</tr>
<tr>
<td>K3</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>Mounting hole pattern 30 mm x 130 mm</td>
<td>4</td>
</tr>
<tr>
<td>K4</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>Mounting hole pattern 30 mm x 130 mm</td>
<td>5</td>
</tr>
</tbody>
</table>

3) Actuator only, sensor mounting hardware not included

---

[Figures 1-11]
Inductive Sensors

1.1.5 Sensors and Systems for Factory Automation Issue 2012

Proximity Sensors, Inductive Sensors

.1.1 Proximity Sensors, Inductive Sensors, cylindrical types

.1.2 Proximity Sensors, Inductive Sensors, rectangular types

.1.3 Proximity Sensors, Inductive Sensors, slot type

.1.4 Proximity Sensors, Inductive Sensors, ring type

.1.5 Proximity Sensors, Inductive Sensors, Rotational Speed Monitors

.1.6 Proximity Sensors, Inductive Sensors, Dual Sensors for Clamping Systems

.1.7 Proximity Sensors, Inductive Sensors, Dual Position Sensors for Valve Actuators

Valve Position Sensors (Accessories)

The following actuators are made from conductive plastic that prevents build-up of electrostatic charge and therefore can be used in hazardous areas.

The adjustment surface of the BT65XA and BT115XA actuators is made out of stainless steel (V2A) with openings at the actuating positions. This results in an inverted operating principle.

Actuators (Pucks) for the -F31 / -F31K / -F31K2 Series with Fixed Switching Positions

<table>
<thead>
<tr>
<th>Actuator</th>
<th>Drive shaft diameter</th>
<th>Shaft height</th>
<th>Mounting hole pattern</th>
<th>Notes</th>
<th>Illustration</th>
</tr>
</thead>
<tbody>
<tr>
<td>BT65A</td>
<td>&lt; 58 mm</td>
<td>20 mm and 30 mm</td>
<td>30 mm x 80 mm</td>
<td>Snap ring diameter max. 65 mm, snap ring height max. 6 mm. For right and left rotating drives with 90°/180° rotation.</td>
<td>![Illustration]</td>
</tr>
<tr>
<td>BT65X</td>
<td>&lt; 58 mm</td>
<td>30 mm x 80 mm</td>
<td></td>
<td></td>
<td>![Illustration]</td>
</tr>
<tr>
<td>BT65XA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>![Illustration]</td>
</tr>
<tr>
<td>BT115A</td>
<td>&lt; 90 mm</td>
<td>30 mm and 50 mm</td>
<td>30 mm x 130 mm</td>
<td>Snap ring diameter max. 110 mm, snap ring height max. 7 mm. For right and left rotating drives with 90°/180° rotation.</td>
<td>![Illustration]</td>
</tr>
<tr>
<td>BT115X</td>
<td>&lt; 90 mm</td>
<td>30 mm and 50 mm</td>
<td>30 mm x 130 mm</td>
<td>Snap ring diameter max. 110 mm, snap ring height max. 7 mm. For right and left rotating drives with 90°/180° rotation.</td>
<td>![Illustration]</td>
</tr>
</tbody>
</table>

Actuators (Pucks) for the -F31 / -F31K Series with Adjustable Sensing Positions

<table>
<thead>
<tr>
<th>Actuator</th>
<th>Drive shaft diameter</th>
<th>Shaft height</th>
<th>Mounting hole pattern</th>
<th>Notes</th>
<th>Illustration</th>
</tr>
</thead>
<tbody>
<tr>
<td>BT65B</td>
<td>&lt; 58 mm</td>
<td>20 mm and 30 mm</td>
<td>30 mm x 80 mm</td>
<td>Snap ring diameter max. 65 mm, snap ring height max. 6 mm</td>
<td>![Illustration]</td>
</tr>
<tr>
<td>BT115B</td>
<td>&lt; 90 mm</td>
<td>30 mm and 50 mm</td>
<td>30 mm x 130 mm</td>
<td>Snap ring diameter max. 110 mm, snap ring height max. 7 mm</td>
<td>![Illustration]</td>
</tr>
</tbody>
</table>

*) 30 mm using MH-BT65B mounting base

MH-BT65B Mounting Base

MH-BT65B

Mounting plate for using BT65B actuators on drives with:
hole dimension 80 mm x 30 mm
hole dimension 130 mm x 30 mm
and drive shaft height 30 mm
## Technical Data

**General Data**

- **Suitable sensors**: Double sensor, -F25 series with actuator BT32...
- **Double sensor, -F31 series with actuator BT65A**
- **Double sensor, -F31K series with actuator BT65A**
- **Material**: Mounting bracket and nut: stainless steel 1.4301
- **Tappet and shaft**: Stainless steel 1.4305 / AISI 303 (V2A)
- **Sensor plate**: Vestamid (PA 12), conductive

**Model Number**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A [mm]</td>
<td>16</td>
<td>20.7</td>
<td>20.7</td>
<td>24.36</td>
<td>24.36</td>
<td>34.5</td>
<td>34.5</td>
<td>52.12</td>
<td>52.12</td>
<td>66.39</td>
</tr>
<tr>
<td>B [mm]</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>C [mm]</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>D [mm]</td>
<td>54</td>
<td>54</td>
<td>54</td>
<td>54</td>
<td>54</td>
<td>54</td>
<td>54</td>
<td>54</td>
<td>54</td>
<td>54</td>
</tr>
<tr>
<td>Ø D4 [mm]</td>
<td>3.3</td>
<td>3.3</td>
<td>3.3</td>
<td>6.5</td>
<td>6.5</td>
<td>8.5</td>
<td>8.5</td>
<td>11</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>Ø D5 [mm]</td>
<td>60 mm / 70 mm / 80 mm / 90 mm / 100 mm, adjustable</td>
<td>80 mm / 90 mm / 100 mm / 110 mm / 120 mm, adjustable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H [mm]</td>
<td>25</td>
<td>25</td>
<td>50</td>
<td>25</td>
<td>50</td>
<td>45</td>
<td>45</td>
<td>60</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>L [mm]</td>
<td>5</td>
<td>5</td>
<td>6</td>
<td>5</td>
<td>6</td>
<td>8</td>
<td>8</td>
<td>10</td>
<td>12</td>
<td>10</td>
</tr>
<tr>
<td>M [mm]</td>
<td>5</td>
<td>5</td>
<td>6</td>
<td>5</td>
<td>6</td>
<td>8</td>
<td>8</td>
<td>10</td>
<td>12</td>
<td>10</td>
</tr>
</tbody>
</table>

**Properties**

- Simple mounting
- Conforming to standards
- Adjustable in height
- Adjustable shaft extension

**Benefits**

- Suitable for use in hazardous areas due to conductive material
- Sturdy holder consisting of stainless steel and Vestamid
- Easy standard installation acc. to ISO5211-DIN3337

---

Assembly set with switch plate for mounting of inductive valve sensors on manual operated valves acc. to ISO5211-DIN3337. The assembly set includes a 2-parts mounting bracket with switch plate, a driver stem and a lock nut.
## Technical Data

For detailed data and product description refer to the data sheets at [www.pepperl-fuchs.us](http://www.pepperl-fuchs.us)

### General Data

- **Rated operating distance**: 2 mm
- **Installation**: flush in aluminum, non-flush in steel
- **Operating voltage**: 10 ... 30 V DC
- **Reverse polarity protection**: ✔
- **Load current**: 0 ... 100 mA
- **Short-circuit protection**: ✔, self checking
- **Constant magnetic field**: 100 mT
- **Alternating magnetic field**: 100 mT
- **Operating voltage display**: LED green
- **Switching state indication**: switching state “close” = LED red (S2) switching state “open” = LED yellow (S1)
- **Material**: amplifier; PBT, PA6 + GD-ZN AL4 oscillators; PBT
- **Connection type**: Connector M12 x 1, 4-pin

### Model Number

<table>
<thead>
<tr>
<th>Model Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>NBN2-F581-100S6-E8-V1</td>
</tr>
<tr>
<td>NBN2-F581-120S6-E8-V1</td>
</tr>
<tr>
<td>NBN2-F581-140S6-E8-V1</td>
</tr>
<tr>
<td>NBN2-F581-160S6-E8-V1</td>
</tr>
<tr>
<td>NBN2-F581-200S6-E8-V1</td>
</tr>
<tr>
<td>NBN2-F581-50S6-E8-V1</td>
</tr>
<tr>
<td>NBN2-F581-80S3-E8-V1</td>
</tr>
<tr>
<td>NBN2-F583-100S3-E8-V1</td>
</tr>
</tbody>
</table>

### Output Type

- **Output type**: PNP Dual NO
- **No-load supply current**: ≤ 15 mA
- **Switching frequency**: 0 ... 100 Hz
- **Ambient temperature**: -25 ... 70 °C (-13 ... 158 °F)
- **Protection degree**: IP65
- **Approvals and Certificates**: UL approval cULus Listed, General Purpose, CSA approval cCSAus Listed, General Purpose, CCC approval / marking not required for sensors rated ≤ 36 V
- **Dimensions**
  - Length L [mm]: 47
  - Width W [mm]: 18
  - Height H [mm]: 18
  - Cable length LC1 [mm]: 100, 120, 140, 160, 200, 50
  - Cable length LC2 [mm]: 100, 120, 140, 160, 200, 50

### Accessories

<table>
<thead>
<tr>
<th>Accessories</th>
</tr>
</thead>
<tbody>
<tr>
<td>These and more accessories can be found in chapter 10 See pages from 970 ... for cordsets See pages 1066 ... for mounting accessories</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>V1-G-GR2M-POC</td>
<td>Female cordset, M12, 4-pin, TPE cable, welding-bead resistant, straight</td>
</tr>
<tr>
<td>V1-G-BK2M-PUR-U H/S</td>
<td>Female cordset, M12, 4-pin, irradiated PUR cable, straight</td>
</tr>
<tr>
<td>V1-W-BK2M-PUR-U H/S</td>
<td>Female cordset, M12, 4-pin, irradiated PUR cable, angled</td>
</tr>
</tbody>
</table>

### Electrical Connection

- **Wire colors in accordance with EN 60947-5-2**
  - 1 BN (brown)
  - 2 WH (white)
  - 3 BU (blue)
  - 4 BK (black)

**Note:** oscillator I is assigned to O (yellow LED), oscillator II is assigned to C (red LED)
## Technical Data

### General Data
- **Rated operating distance**: 15 mm
- **Installation**: flush
- **Output type**: PNP, NO
- **Operating voltage**: 15 ... 60 V DC
- **No-load supply current**: ≤ 25 mA
- **Reverse polarity protection**: ✔
- **Short-circuit protection**: ✔, self checking
- **Load current**: 0 ... 100 mA
- **Switching state indication**: LED yellow
- **Ambient temperature**: -25 ... 70 °C (-13 ... 158 °F)
- **Protection degree**: IP67
- **Connection type**: screw terminals

### Model Number

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Frequency range</th>
<th>Housing material</th>
</tr>
</thead>
<tbody>
<tr>
<td>NJ15-U4-DW1-1</td>
<td>0.1 ... 1 Hz, adjustable</td>
<td>PBT housing/PBT base</td>
</tr>
<tr>
<td>NJ15-U2-DW1-10</td>
<td>1 ... 10 Hz, adjustable</td>
<td>PBT housing/metal base</td>
</tr>
<tr>
<td>NJ15-U4-DW1-10</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Approvals and Certificates
- **UL approval**: cULus Listed, General Purpose
- **CSA approval**: cCSAus Listed, General Purpose
- **CCC approval**: Certified by China Compulsory Certification (CCC)

### Dimensions

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length L [mm]</td>
<td>118</td>
</tr>
<tr>
<td>Width W [mm]</td>
<td>40</td>
</tr>
<tr>
<td>Head width Wb [mm]</td>
<td>40</td>
</tr>
<tr>
<td>Height H [mm]</td>
<td>40</td>
</tr>
<tr>
<td>Connector length lc [mm]</td>
<td>0</td>
</tr>
<tr>
<td>Connector thread</td>
<td>conduit entrance with 1/2&quot; NPT opening</td>
</tr>
</tbody>
</table>

### Electrical Connection

- N15-U2-DW1-10
- N15-U4-DW1-1
- N15-U4-DW1-10

---

**Properties**
- Limit switch style housing
- 15 mm, flush mountable
- DC, 3-wire switching output
- Terminal compartment

**Benefits**
- Sensor head can be positioned 5-ways
- Low speed detection monitoring
### Technical Data

**General Data**
- Output type: NO
- Load current: 0 ... 150 mA
- Switching state indication: LED yellow
- Ambient temperature: -25 ... 70 °C (-13 ... 158 °F)
- Protection degree: IP67
- Connection type: screw terminals

**Properties**
- Limit switch style housing
- 15 mm and 40 mm sensing ranges
- AC, 3-wire switching output
- Terminal compartment

**Benefits**
- Sensor head can be positioned 5-ways
- Low speed detection monitoring

**Model Number**

<table>
<thead>
<tr>
<th>Model Number</th>
<th>N15+U4+DW2-1</th>
<th>N15+U4+DW2-10</th>
<th>N15+U2+DW2-10</th>
<th>N15+U4+DW2-100</th>
<th>N15+U2+DW2-10</th>
<th>N15+U4+DW2-100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated operating distance</td>
<td>15 mm</td>
<td>40 mm</td>
<td>15 mm</td>
<td>15 mm</td>
<td>15 mm</td>
<td>15 mm</td>
</tr>
<tr>
<td>Installation</td>
<td>flush</td>
<td>non-flush</td>
<td>flush</td>
<td>non-flush</td>
<td>flush</td>
<td>non-flush</td>
</tr>
<tr>
<td>Frequency range</td>
<td>0.1 ... 1 Hz , adjustable</td>
<td>0.1 ... 1 Hz , adjustable</td>
<td>1 ... 10 Hz , adjustable</td>
<td>10 ... 100 Hz , adjustable</td>
<td>0.1 ... 1 Hz , adjustable</td>
<td>0.1 ... 1 Hz , adjustable</td>
</tr>
<tr>
<td>Operating voltage</td>
<td>20 ... 253 V AC</td>
<td>20 ... 253 V AC</td>
<td>90 ... 250 V AC</td>
<td>90 ... 250 V AC</td>
<td>90 ... 250 V AC</td>
<td>90 ... 250 V AC</td>
</tr>
<tr>
<td>Housing material</td>
<td>PBT housing/PBT base</td>
<td>PBT housing/PBT base</td>
<td>PBT housing/PBT base</td>
<td>PBT housing/PBT base</td>
<td>PBT housing/PBT base</td>
<td>PBT housing/PBT base</td>
</tr>
<tr>
<td>Approvals and Certificates</td>
<td>cUlus Listed, General Purpose</td>
<td>cUlus Listed, General Purpose</td>
<td>cCSAus Listed, General Purpose</td>
<td>cCSAus Listed, General Purpose</td>
<td>cCSAus Listed, General Purpose</td>
<td>cCSAus Listed, General Purpose</td>
</tr>
</tbody>
</table>

**Dimensions**

| Length L [mm] | 118 | 128 |
| Width W [mm]  | 40  | 55  |
| Head width W, [mm] | 40  | 55  |
| Height H [mm] | 40  | 55  |
| Connector length l, [mm] | 0   |     |
| Connector thread | conduit entrance with 1/2" NPT opening |

**Accessories**

These and more accessories can be found in chapter 10
- See pages from 970 ... for cordsets
- See pages 1066 ... for mounting accessories

MHW 01
- Modular mounting bracket

### Electrical Connection

- N15+U2+DW2-10
- N15+U2+DW2-100
- NJ40+U4+DW2-1
- N15+U4+DW2-1
- N15+U4+DW2-10
- NJ40+U4+DW2-100

Refer to General Notes Relating to Product Information

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Courtesy of Steven Engineering, Inc. - (800) 258-9200 - sales@steveneng.com - www.stevenengineering.com
Proximity Sensors

1.1.1 Proximity Sensors, Inductive Sensors, cylindrical types

1.1.2 Proximity Sensors, Inductive Sensors, rectangular types

1.1.3 Proximity Sensors, Inductive Sensors, slot type

1.1.4 Proximity Sensors, Inductive Sensors, ring type

1.1.5 Proximity Sensors, Inductive Sensors, Dual Position Sensors for Valve Actuators

1.1.6 Proximity Sensors, Inductive Sensors, Dual Sensors for Clamping Systems

1.1.7 Proximity Sensors, Inductive Sensors, Rotational Speed Monitors

1.1.8 Proximity Sensors, Inductive Sensors, Valve Position Sensors (Accessories)