

# Sensors and Systems

Edition 3.0



Your automation, our passion.

**pf** PEPPERL+FUCHS

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**Properties**

- Ø6.5 mm housing
- 1.5 mm, 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.com](http://www.pepperl-fuchs.com)

**General Data**

Rated operating distance	1.5 mm
Installation	flush
Type of voltage	DC
Operating voltage	10 ... 60 V
No-load supply current	≤ 15 mA
Reverse polarity protection	✓
Operating current	0 ... 100 mA
Short-circuit protection	pulsing
Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)
Protection degree	IP67

**Model Number**

			NJ1,5-6,5-40-E0	NJ1,5-6,5-40-E2	NJ1,5-6,5-40-E0-V3	NJ1,5-6,5-40-E2-V3
Switching element function	NPN	NO	●		●	
	PNP	NO		●		●
Switching frequency	0 ... 2500 Hz		●		●	
	0 ... 500 Hz			●		●
Indication of the switching state	LED, yellow		●	●	●	●
Connection type	Device 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	44
Diameter D [mm]		6.5	6.5 / 8
Thread length l <sub>t</sub> [mm]			0
Cap length l <sub>1</sub> [mm]			0
Connector area l <sub>c</sub> [mm]		0	6
LED position	Pos.	C	A B

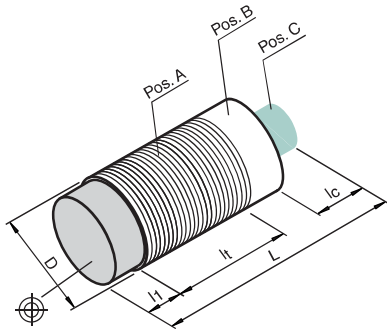
**Accessories**

This and more accessories can be found in chapter 10

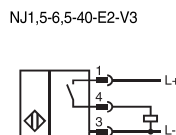
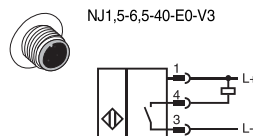
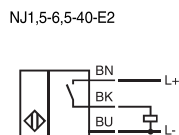
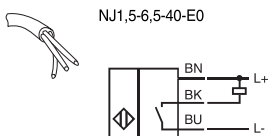
See pages from 972 ... for cordsets

See pages 1068 ... for mounting aids

- BF 6,5** Mounting flange, 6.5 mm
- V3-WM-2M-PUR** Cable socket, M8, 3-pin, PUR cable
- V3-GM** Female connector, M8, 3-pin, field attachable
- V3-GM-2M-PUR** Cable socket, M8, 3-pin, PUR cable
- V3-WM** Female connector, M8, 3-pin, field attachable



**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
- 1.5 mm, 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.com](http://www.pepperl-fuchs.com)

General Data

Rated operating distance	1.5 mm
Installation	flush
Type of voltage	DC
Operating voltage	10 ... 30 V
Reverse polarity protection	✓
Operating current	0 ... 200 mA
Short-circuit protection	✓
Indication of the switching state	LED, yellow
Ambient temperature	-25 ... 85 °C (-13 ... 185 °F)
Housing material	Stainless steel 1.4305 / AISI 303
Protection degree	IP67

Model Number

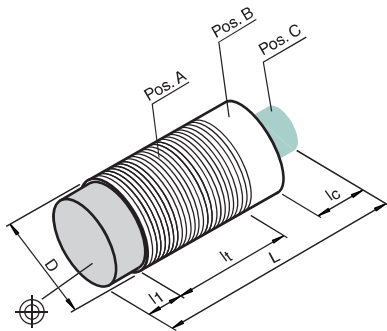
Switching element function	NPN NO	NPN NC	PNP NO	PNP NC	NBB1,5-6,5S16-E2	NBB1,5-6,5S30-E0	NBB1,5-6,5S30-E2	NBB1,5-6,5S20-E2-V3	NBB1,5-6,5S20-E3-V3	NBB1,5-6,5S40-E0-V3	NBB1,5-6,5S40-E1-V3	NBB1,5-6,5S40-E2-V3	NBB1,5-6,5S40-E3-V3
No-load supply current	≤ 10 mA	≤ 11 mA	≤ 2 mA	≤ 7 mA	●			●	●	●	●	●	●
Switching frequency	0 ... 1500 Hz	0 ... 2000 Hz	0 ... 5000 Hz	0 ... 6000 Hz		●	●		●	●	●	●	●
Connection type	connector (M8 x 1), 3-pin	cable PUR, 2 m			●	●	●	●	●	●	●	●	●

Approvals and Certificates

CCC approval Products with a maximum operating voltage of ≤36 V do not bear a CCC marking because they do not require approval.

Dimensions

Length L [mm]	16	35	35	20	20	40	40	40	40
Diameter D [mm]	6.5			6.5 / 8					
Thread length l <sub>t</sub> [mm]	0								
Cap length l <sub>1</sub> [mm]	0								
Connector area l <sub>c</sub> [mm]	0			9			5		
LED position	Pos.: C			B			B		



Accessories

This and more accessories can be found in chapter 10

See pages from 972 ... for cordsets

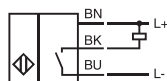
See pages 1068 ... for mounting aids

- BF 6,5 Mounting flange, 6.5 mm
- V3-GM Female connector, M8, 3-pin, field attachable
- V3-WM Female connector, M8, 3-pin, field attachable
- V3-GM-2M-PUR Cable socket, M8, 3-pin, PUR cable
- V3-WM-2M-PUR Cable socket, M8, 3-pin, PUR cable

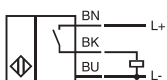
Electrical Connection



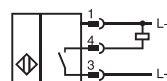
NBB1,5-6,5S30-E0



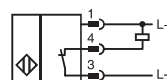
NBB1,5-6,5S16-E2  
NBB1,5-6,5S30-E2



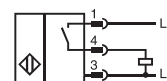
NBB1,5-6,5S40-E0-V3



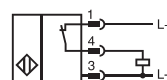
NBB1,5-6,5S40-E1-V3



NBB1,5-6,5S20-E2-V3  
NBB1,5-6,5S40-E2-V3



NBB1,5-6,5S20-E3-V3  
NBB1,5-6,5S40-E3-V3



Wire colors in accordance with EN 60947-5-2

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

Date of issue 04/08/2015

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

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Properties

- Ø6.5 mm housing
- 2 mm, 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.com](http://www.pepperl-fuchs.com)

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
Operating 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	brass, nickel-plated
Protection degree	IP67

Model Number

Switching element function	green = preferred type		NBB2-6,5M30-E0	NBB2-6,5M30-E2	NBB2-6,5M25-E0-V3	NBB2-6,5M25-E1-V3	NBB2-6,5M25-E2-V3	NBB2-6,5M25-E3-V3
	NPN	NO						
	NPN	NC				●		
	PNP	NO		●			●	
Operating voltage	PNP	NC					●	●
	10 ... 30 V		●	●			●	●
Connection type	5 ... 30 V				●	●		
	Device 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	Products with a maximum operating voltage of ≤36 V do not bear a CCC marking because they do not require approval.						

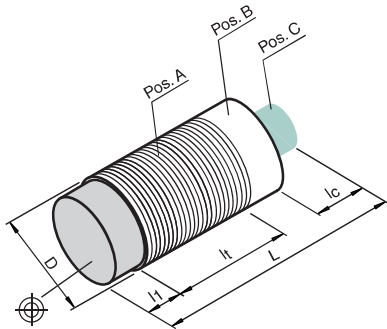
Dimensions

Length L [mm]		30	35
Diameter D [mm]		6,5	6,5 / 8
Thread length l <sub>t</sub> [mm]			0
Cap length l <sub>1</sub> [mm]			0
Connector area l <sub>c</sub> [mm]		0	6
LED position	Pos.	Pos. C	Pos. B

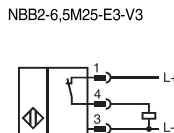
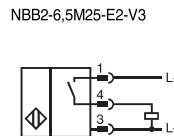
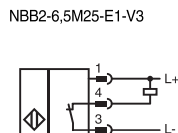
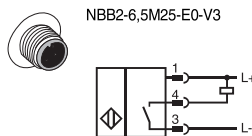
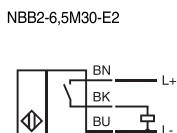
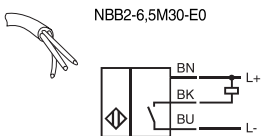
Accessories

This and more accessories can be found in chapter 10  
See pages from 972 ... for cordsets See pages 1068 ... for mounting aids

- BF 6,5** Mounting flange, 6.5 mm
- V3-GM** Female connector, M8, 3-pin, field attachable
- V3-WM** Female connector, M8, 3-pin, field attachable
- V3-GM-2M-PUR** Cable socket, M8, 3-pin, PUR cable
- V3-WM-2M-PUR** Cable socket, M8, 3-pin, PUR cable



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.com](http://www.pepperl-fuchs.com)

#### General Data

Rated operating distance	3 mm
Installation	virtually 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
Operating current	0 ... 200 mA, above 50°C ≤ 150 mA
Short-circuit protection	pulsing
Indication of the switching state	LED, yellow
Ambient temperature	-25 ... 85 °C (-13 ... 185 °F)
Housing material	brass, nickel-plated
Protection degree	IP67

### Properties

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

#### Model Number

Switching element function	NPN	NO	•	•	•	•	•	•	•
	NPN	NC	•	•	•	•	•	•	•
	PNP	NO	•	•	•	•	•	•	•
	PNP	NC	•	•	•	•	•	•	•
Connection type	Device connector M12 x 1, 4-pin		•	•	•	•	•	•	•
	Device connector M8 x 1, 3-pin cable PUR, 2 m		•	•	•	•	•	•	•

#### Approvals and Certificates

UL approval	cULus Listed, General Purpose	•
CCC approval	Products with a maximum operating voltage of ≤36 V do not bear a CCC marking because they do not require approval.	•

#### Dimensions

Length L [mm]	45	65	60
Diameter D [mm]	6.5	6.5 / 12	6.5 / 8
Thread length l <sub>t</sub> [mm]		0	
Cap length l <sub>1</sub> [mm]		0	
Connector area l <sub>c</sub> [mm]	0	8	7
LED position		Pos. A	

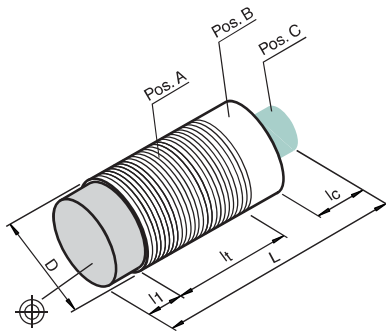
### Accessories

This and more accessories can be found in chapter 10

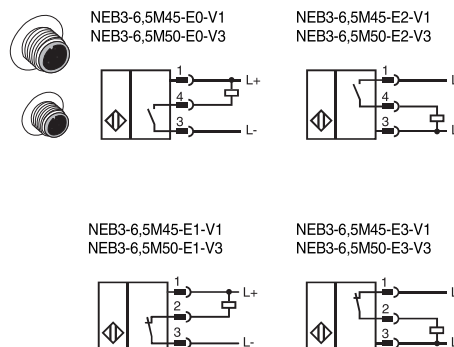
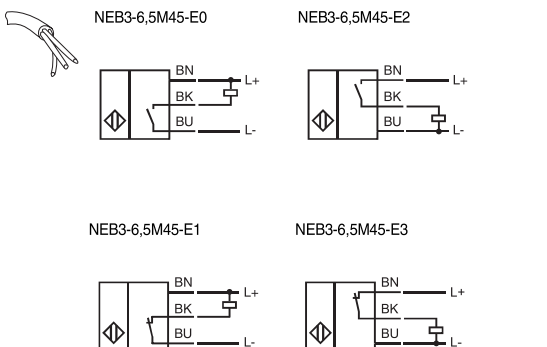
See pages from 972 ... for cordsets

See pages 1068 ... for mounting aids

- BF 6,5** Mounting flange, 6.5 mm
- V1-G-BK** 4-pin, M12 female field-attachable connector
- V3-GM** Female connector, M8, 3-pin, field attachable
- V3-WM** Female connector, M8, 3-pin, field attachable
- V1-W-BK** 4-pin, M12 female field-attachable connector
- V3-GM-2M-PUR** Cable socket, M8, 3-pin, PUR cable
- V1-G-2M-PUR** Cable socket, M12, 4-pin, PUR cable
- V3-WM-2M-PUR** Cable socket, M8, 3-pin, PUR cable
- V1-W-2M-PUR** 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)

Date of issue 04/08/2015

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

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www.pepperl-fuchs.com

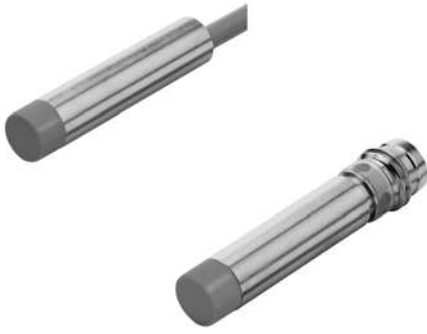
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Proximity Sensors, Inductive Sensors, cylindrical



### Technical Data

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

#### 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
Operating 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	brass, nickel-plated
Protection degree	IP67

### Properties

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

#### Model Number

		green = preferred type		NBN3-6,5M30-E0	NBN3-6,5M30-E2	NBN3-6,5M25-E0-V3	NBN3-6,5M25-E1-V3	NBN3-6,5M25-E2-V3
Switching element function	NPN	NO	•	•		•		
	NPN	NC					•	
	PNP	NO		•				•
Operating voltage	10 ... 30 V		•	•				•
	5 ... 30 V					•	•	
Connection type	Device 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	Products with a maximum operating voltage of ≤36 V do not bear a CCC marking because they do not require approval.					

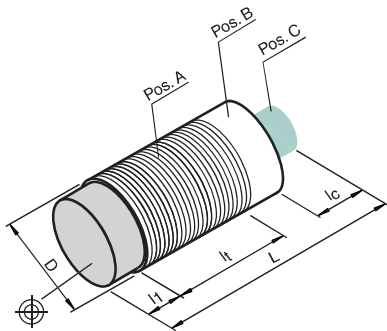
#### Dimensions

Length L [mm]	30	29
Diameter D [mm]	6.5	6.5 / 8
Thread length l <sub>t</sub> [mm]		0
Cap length l <sub>1</sub> [mm]		4
Connector area l <sub>c</sub> [mm]	0	6
LED position	Pos. C	Pos. B

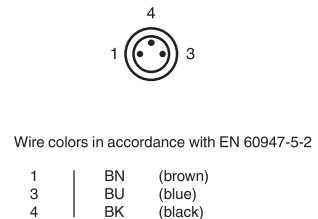
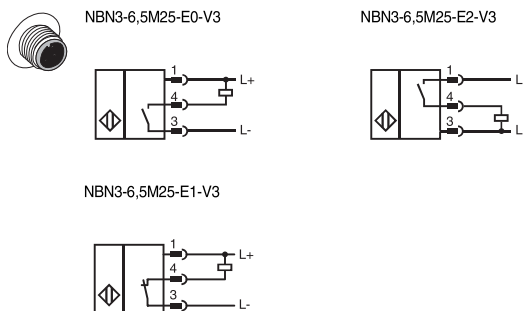
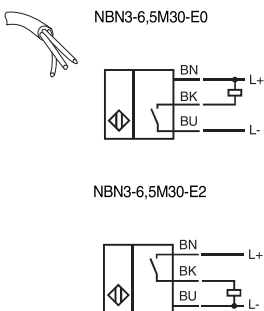
### Accessories

This and more accessories can be found in chapter 10  
See pages from 972 ... for cordsets    See pages 1068 ... for mounting aids

- BF 6,5** Mounting flange, 6.5 mm
- V3-GM-2M-PUR** Cable socket, M8, 3-pin, PUR cable
- V3-WM** Female connector, M8, 3-pin, field attachable
- V3-GM** Female connector, M8, 3-pin, field attachable
- V3-WM-2M-PUR** Cable socket, M8, 3-pin, PUR cable



### Electrical Connection





### 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	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
Operating current	0 ... 200 mA , above 50°C ≤ 150 mA
Short-circuit protection	pulsing
Indication of the switching state	LED, yellow
Ambient temperature	-25 ... 85 °C (-13 ... 185 °F)
Housing material	brass, nickel-plated
Protection degree	IP67

### Properties

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

#### Model Number

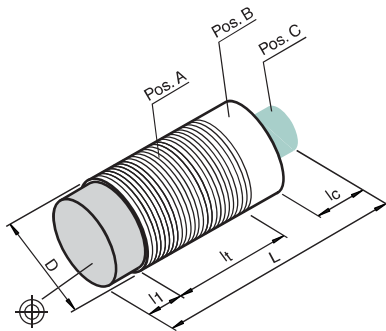
Switching element function	NPN	NO	●	●	●	●	●	●	●
	NPN	NC	●	●	●	●	●	●	●
	PNP	NO	●	●	●	●	●	●	●
	PNP	NC	●	●	●	●	●	●	●
Connection type	Device connector M12 x 1 , 4-pin		●	●	●	●	●	●	●
	Device connector M8 x 1 , 3-pin cable PUR , 2 m		●	●	●	●	●	●	●

#### Approvals and Certificates

UL approval	cULus Listed, General Purpose	●
CCC approval	Products with a maximum operating voltage of ≤36 V do not bear a CCC marking because they do not require approval.	●

#### Dimensions

Length L [mm]	45	60	65
Diameter D [mm]	6.5	6.5 / 8	6.5 / 12
Thread length l <sub>t</sub> [mm]		0	
Cap length l <sub>1</sub> [mm]		4	
Connector area l <sub>c</sub> [mm]	0	6	8
LED position		Pos. A	

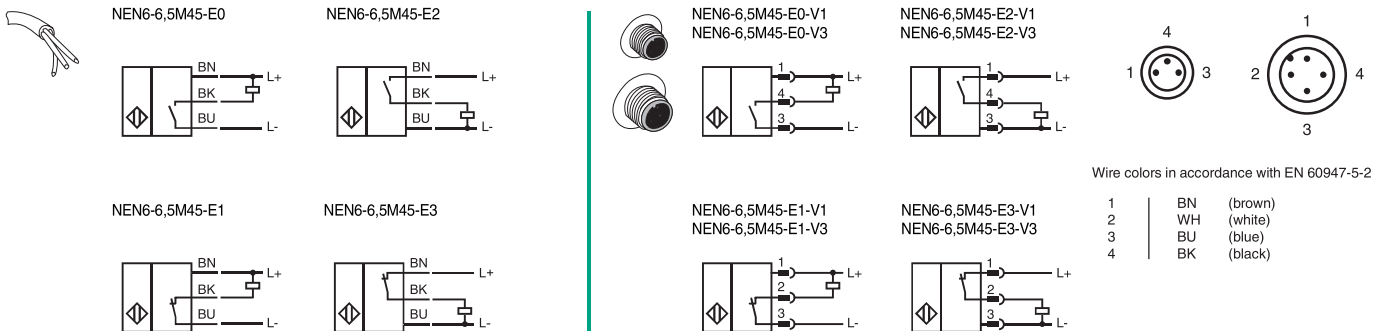


### Accessories

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BF 6,5	Mounting flange, 6.5 mm
V3-GM	Female connector, M8, 3-pin, field attachable
V3-WM	Female connector, M8, 3-pin, field attachable
V3-GM-2M-PUR	Cable socket, M8, 3-pin, PUR cable
V3-WM-2M-PUR	Cable socket, M8, 3-pin, PUR cable
V1-G-BK	4-pin, M12 female field-attachable connector
V1-W-BK	4-pin, M12 female field-attachable connector
V1-G-2M-PUR	Cable socket, M12, 4-pin, PUR cable
V1-W-2M-PUR	Cable socket, M12, 4-pin, PUR cable

### Electrical Connection



Date of issue 04/08/2015