

# Sensors and Systems

Edition 3.0



Your automation, our passion.

**pf** PEPPERL+FUCHS



### Properties

- Ø18 mm housing
- 5 mm, flush mountable
- DC, 2-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	5 mm
Installation	flush
Type of voltage	DC
Operating voltage	5 ... 60 V
Reverse polarity protection	tolerant
Operating current	2 ... 100 mA
Short-circuit protection	pulsing
Indication of the switching state	LED, yellow
Protection degree	IP67

#### Model Number

	green = preferred type	NBB5-18GM40-Z0	NCB5-18GM40-Z0	NCB5-18GM40-Z1	NBB5-18GM40-Z0-V1	NCB5-18GM40-Z0-V1	NCB5-18GM40-Z1-V1	NCB5-18GM40-Z3-V1
Switching element function	DC NO DC NC	●	●	●	●	●	●	●
Switching frequency	0 ... 350 Hz 0 ... 500 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	●	●	●	●	●	●	●
Connection type	Device connector M12 x 1, 4-pin cable PUR, 2 m cable PVC, 2 m	●	●	●	●	●	●	●

#### Approvals and Certificates

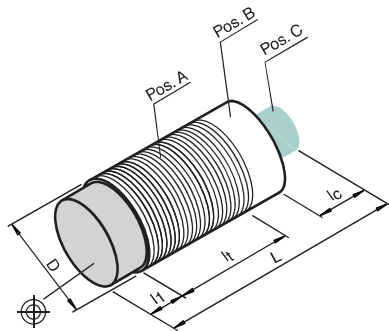
UL approval	cULus Listed, General Purpose	●	●	●	●	●	●	●
CSA approval	cCSAus Listed, General Purpose	●	●	●	●	●	●	●
CCC approval	Certified by China Compulsory Certification (CCC)	●	●	●	●	●	●	●

#### Dimensions

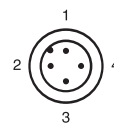
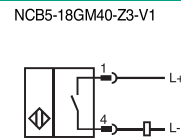
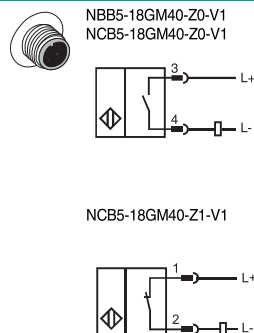
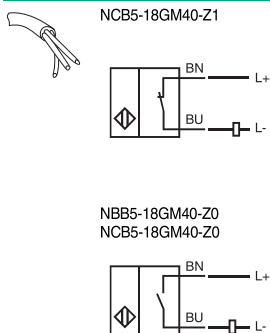
Length L [mm]	40	55
Diameter D [mm]	18	
Thread length l <sub>t</sub> [mm]	37	40
Cap length l <sub>1</sub> [mm]	0	
Connector area l <sub>c</sub> [mm]	0	15
LED position	Pos. C	

### Accessories This and more accessories can be found in chapter 10

<b>V1-G-BK</b>	4-pin, M12 female field-attachable connector
<b>V1-W-BK</b>	4-pin, M12 female field-attachable connector
<b>BF 18</b>	Mounting flange, 18 mm
<b>EXG-18</b>	Quick mounting bracket with dead stop
<b>V1-W-2M-PUR</b>	Cable socket, M12, 4-pin, PUR cable
<b>V1-G-2M-PUR</b>	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) |



**Properties**

- Ø18 mm housing
- 8 mm, flush mountable
- DC, 2-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	8 mm
Installation	flush
Type of voltage	DC
Operating voltage	3.5 ... 30 V
Reverse polarity protection	✓
Switching frequency	0 ... 1000 Hz
Operating current	2 ... 100 mA
Short-circuit protection	pulsing
Indication of the switching state	LED, yellow
Housing material	brass, nickel-plated
Protection degree	IP67

**Model Number**

			NCB8-18GM50-Z4	NCB8-18GM50-Z5	NCB8-18GM50-Z4-V1	NCB8-18GM50-Z5-V1
Switching element function	DC NO		●		●	
	DC NC			●		●
Pre-fault indication	LED, red		●	●	●	●
Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)		●	●	●	●
	-40 ... 70 °C (-40 ... 158 °F)				●	●
Connection type	Device 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	Products with a maximum operating voltage of ≤36 V do not bear a CCC marking because they do not require approval.				

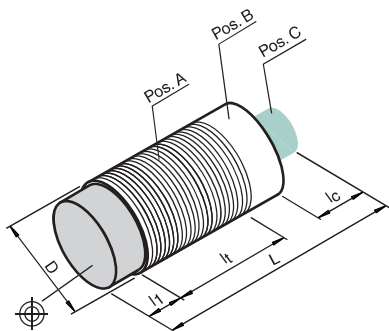
**Dimensions**

Length L [mm]		48	65
Diameter D [mm]			18
Thread length l <sub>t</sub> [mm]		45	50
Cap length l <sub>1</sub> [mm]			0
Connector area l <sub>c</sub> [mm]		0	15
LED position			Pos. C

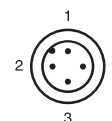
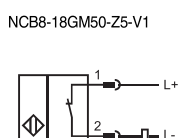
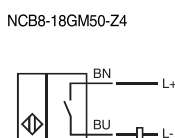
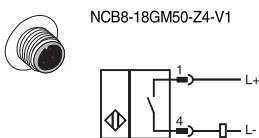
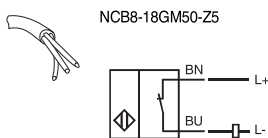
**Accessories**

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

- BF 18** Mounting flange, 18 mm
- V1-G-BK** 4-pin, M12 female field-attachable connector
- V1-W-BK** 4-pin, M12 female field-attachable connector
- EXG-18** Quick mounting bracket with dead stop
- V1-G-2M-PUR** Cable socket, M12, 4-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".

Pepperl+Fuchs Group  
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### Properties

- Ø18 mm housing
- 8 mm, non-flush mountable
- DC, 2-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	8 mm
Installation	non-flush
Type of voltage	DC
Operating voltage	5 ... 60 V
Reverse polarity protection	tolerant
Operating current	2 ... 100 mA
Short-circuit protection	pulsing
Indication of the switching state	LED, yellow
Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)
Protection degree	IP67

#### Model Number

			NBN8-18GM40-Z0	NCN8-18GM40-Z0	NCN8-18GM40-Z1	NBN8-18GM40-Z0-V1	NCN8-18GM40-Z0-V1	NCN8-18GM40-Z1-V1
Switching element function	DC NO	green = preferred type	●	●		●	●	
	DC NC				●			●
Switching frequency	0 ... 300 Hz			●	●		●	●
	0 ... 450 Hz					●		
	0 ... 500 Hz		●					
Housing material	Stainless steel 1.4305 / AISI 303			●	●		●	●
	brass, nickel-plated		●					
Connection type	Device 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	55
Diameter D [mm]			18
Thread length l <sub>t</sub> [mm]		37	30
Cap length l <sub>1</sub> [mm]			10
Connector area l <sub>c</sub> [mm]		0	15
LED position			Pos. C

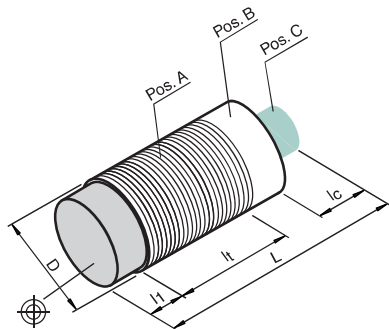
### Accessories

This and more accessories can be found in chapter 10

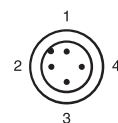
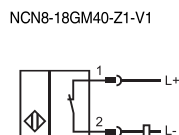
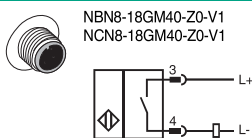
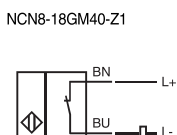
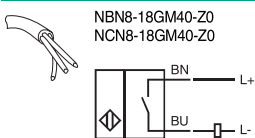
See pages from 972 ... for cordsets

See pages 1068 ... for mounting aids

- V1-G-BK** 4-pin, M12 female field-attachable connector
- BF 18-F** Mounting flange with dead stop, 18 mm
- BF 18** Mounting flange, 18 mm
- V1-W-BK** 4-pin, M12 female field-attachable connector
- V1-W-2M-PUR** Cable socket, M12, 4-pin, PUR cable
- EXG-18** Quick mounting bracket with dead stop
- V1-G-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)





### 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	12 mm
Installation	non-flush
Type of voltage	DC
Operating voltage	3.5 ... 30 V
Reverse polarity protection	reverse polarity-conductive
Switching frequency	0 ... 1000 Hz
Operating current	2 ... 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

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

#### Model Number

			NCN12-18GM50-Z4	NCN12-18GM50-Z5	NCN12-18GM50-Z4-V1	NCN12-18GM50-Z5-V1
Switching element function	DC NO		●		●	
	DC NC			●		●
Pre-fault indication	LED, red		●		●	
Connection type	Device 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	Products with a maximum operating voltage of ≤36 V do not bear a CCC marking because they do not require approval.				

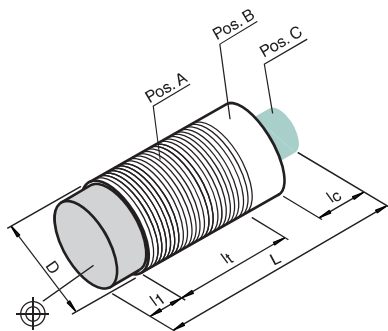
#### Dimensions

Length L [mm]		48	65
Diameter D [mm]			18
Thread length l <sub>t</sub> [mm]		35	40
Cap length l <sub>1</sub> [mm]			10
Connector area l <sub>c</sub> [mm]		0	15
LED position			Pos. C

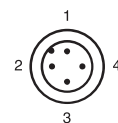
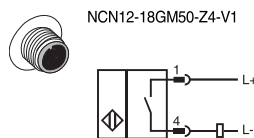
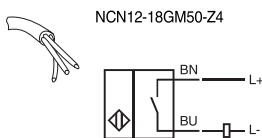
### Accessories

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

<b>BF 18</b>	Mounting flange, 18 mm
<b>V1-G-BK</b>	4-pin, M12 female field-attachable connector
<b>V1-W-BK</b>	4-pin, M12 female field-attachable connector
<b>V1-G-2M-PUR</b>	Cable socket, M12, 4-pin, PUR cable
<b>V1-W-2M-PUR</b>	Cable socket, M12, 4-pin, PUR cable

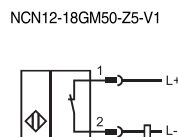
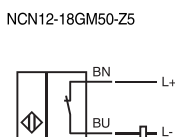


### Electrical Connection



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



**Properties**

- Ø18 mm housing
- 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	5 mm
Installation	flush
Type of voltage	DC
Operating voltage	10 ... 30 V
Reverse polarity protection	✓
Short-circuit protection	pulsing
Indication of the switching state	LED, yellow
Housing material	brass, nickel-plated
Protection degree	IP67

**Model Number**

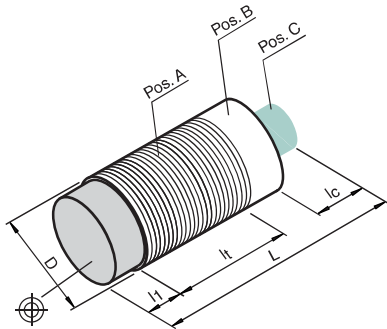
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Switching element function	NPN NO		●		●			
	NPN NC							
	PNP NO	●		●	●		●	
	PNP NC							●
No-load supply current	≤ 15 mA		●			●	●	
	≤ 20 mA	●		●	●			●
Switching frequency	0 ... 800 Hz							●
	0 ... 1000 Hz	●	●	●	●	●	●	
Operating current	0 ... 100 mA	●	●	●	●	●	●	
	0 ... 200 mA							●
Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)	●	●	●		●	●	●
	-40 ... 70 °C (-40 ... 158 °F)				●			
Connection type	Device 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	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]	20	40	40	35	50	50	50
Diameter D [mm]				18			
Thread length l <sub>t</sub> [mm]	17	37	37	20	39	39	39
Cap length l <sub>1</sub> [mm]				0			
Connector area l <sub>c</sub> [mm]		0		15		11	
LED position				Pos. C		Pos. A	

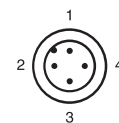
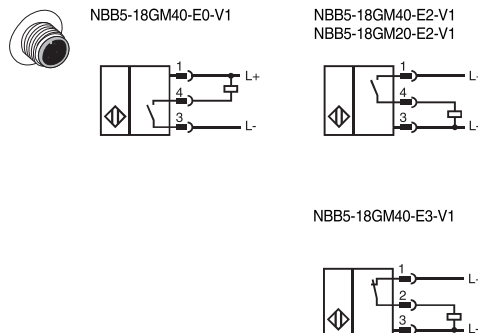
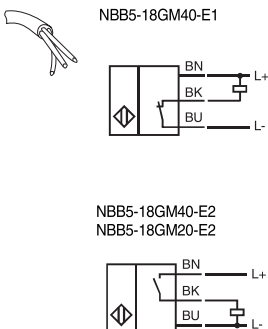


**Accessories** This and more accessories can be found in chapter 10

See pages from 972 ... for cordsets See pages 1068 ... for mounting aids

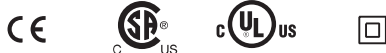
- V1-G-2M-PUR** Cable socket, M12, 4-pin, PUR cable
- BF 18** Mounting flange, 18 mm
- V1-W-BK** 4-pin, M12 female field-attachable connector
- V1-G-BK** 4-pin, M12 female field-attachable connector
- EXG-18** Quick mounting bracket with dead stop
- V1-W-2M-PUR** Cable socket, M12, 4-pin, PUR cable
- BF 18-F** Mounting flange with dead stop, 18 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

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	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
Operating current	0 ... 200 mA
Short-circuit protection	pulsing
Indication of the switching state	LED, yellow
Housing material	brass, nickel-plated
Protection degree	IP67

### Properties

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

### Further Products

In this series, we offer additionally:

#### NBB5-18GM50-E2-T-V1

Technical data like NBB5-18GM50-E2-V1 but:  
Ambient temperature: -25 ... 100 °C (-13 ... 212 °F)  
Connection type: Device connector M12 x 1 , 3-pin

#### Model Number

	NBB5-18GM50-E0	NBB5-18GM50-E2	NBB5-18GM50-E3	NBB5-18GM60-A0	NBB5-18GM60-A2	NBB5-18GM50-E0-V1	NBB5-18GM50-E2-V1	NBB5-18GM50-E3-V1	NBB5-18GM60-A0-V1	NBB5-18GM60-A2-V1
Switching element function										
Ambient temperature										
Connection type										

#### Approvals and Certificates

Protection class	II									
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]	50	60	65	70
Diameter D [mm]		18		
Thread length l <sub>t</sub> [mm]	47	60	50	60
Cap length l <sub>1</sub> [mm]		0		
Connector area l <sub>c</sub> [mm]	0		15	10
LED position			Pos. C	

#### Accessories

This and more accessories can be found in chapter 10

See pages from 972 ... for cordsets

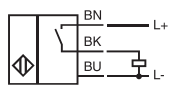
See pages 1068 ... for mounting aids

- EXG-18** Quick mounting bracket with dead stop
- V1-G-BK** 4-pin, M12 female field-attachable connector
- BF 18** Mounting flange, 18 mm
- 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

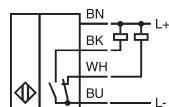
### Electrical Connection



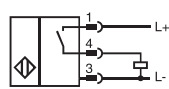
NBB5-18GM50-E2



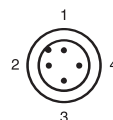
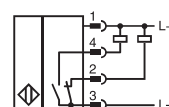
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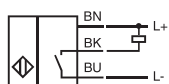
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NBB5-18GM50-E2-V1



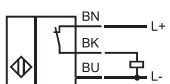
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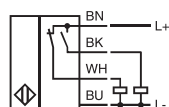
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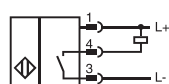
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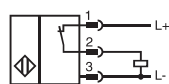
NBB5-18GM60-A2



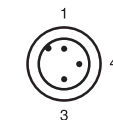
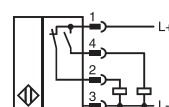
NBB5-18GM50-E0-V1



NBB5-18GM50-E3-V1



NBB5-18GM60-A2-V1



Date of issue 04/08/2015

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

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## 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

Type of voltage	DC
Operating voltage	10 ... 30 V
Reverse polarity protection	✓
Operating current	0 ... 200 mA
Short-circuit protection	pulsing
Indication of the switching state	LED, yellow
Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)
Housing material	PBT
Protection degree	IP68 / IP69K
Connection type	cabl PVC , 2 m



## Properties

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

### Model Number

		NBB5-18GK50-E0	NBB5-18GK50-E2	NBN8-18GK50-A2
Rated operating distance	5 mm	●	●	
	8 mm			●
Installation	flush	●	●	
	non-flush			●
Switching element function	NPN NO	●		
	PNP NO/NC			●
	PNP NO		●	
No-load supply current	≤ 15 mA	●	●	
	≤ 25 mA			●
Switching frequency	0 ... 500 Hz			●
	0 ... 1000 Hz	●	●	

### 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

	NBB5-18GK50-E0	NBB5-18GK50-E2	NBN8-18GK50-A2
Length L [mm]	52	52	53
Diameter D [mm]		18	
Thread length l <sub>t</sub> [mm]		49	
Cap length l <sub>1</sub> [mm]		1	
Connector area l <sub>c</sub> [mm]		0	
LED position		Pos. C	

## Accessories

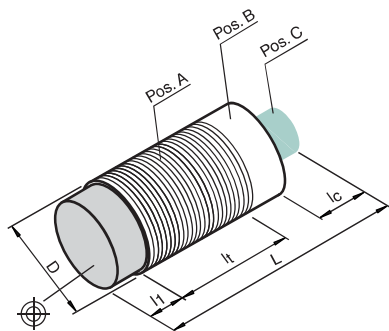
This and more accessories can be found in chapter 10

See pages from 972 ... for cordsets

See pages 1068 ... for mounting aids

BF 18

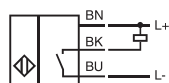
Mounting flange, 18 mm



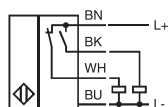
## Electrical Connection



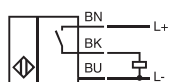
NBB5-18GK50-E0



NBN8-18GK50-A2



NBB5-18GK50-E2





### 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
Installation	flush
Type of voltage	DC
Operating voltage	10 ... 30 V
Reverse polarity protection	✓
Switching frequency	0 ... 500 Hz
Short-circuit protection	pulsing
Indication of the switching state	LED, yellow
Housing material	brass, nickel-plated
Protection degree	IP67

### Properties

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

#### Model Number

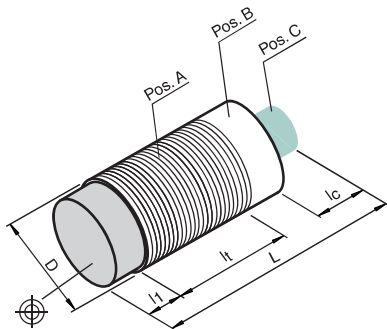
Switching element function	green = preferred type		NBB8-18GM30-E2	NBB8-18GM30-E3	NBB8-18GM50-E0	NBB8-18GM50-E2	NBB8-18GM60-A0	NBB8-18GM60-A2	NBB8-18GM30-E2-V1	NBB8-18GM30-E3-V1	NBB8-18GM50-E0-V1	NBB8-18GM50-E2-V1	NBB8-18GM60-A0-V1	NBB8-18GM60-A2-V1
	NPN	NO/NC												
	NPN	NO												
	PNP	NO/NC												
No-load supply current	≤ 15 mA													
	≤ 25 mA													
Operating current	0 ... 100 mA													
	0 ... 200 mA													
Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)													
	-40 ... 70 °C (-40 ... 158 °F)													
Connection type	Device 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	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	50	60	45	65	70
Diameter D [mm]	18					
Thread length l <sub>t</sub> [mm]	27	47	57	30	50	60
Cap length l <sub>1</sub> [mm]	0					
Connector area l <sub>c</sub> [mm]	0		15		10	
LED position	Pos.			C		B



### Accessories

This and more accessories can be found in chapter 10

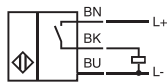
See pages from 972 ... for cordsets See pages 1068 ... for mounting aids

V1-G-BK	4-pin, M12 female field-attachable connector
V1-W-BK	4-pin, M12 female field-attachable connector
BF 18-F	Mounting flange with dead stop, 18 mm
BF 18	Mounting flange, 18 mm
V1-G-2M-PUR	Cable socket, M12, 4-pin, PUR cable
EXG-18	Quick mounting bracket with dead stop
V1-W-2M-PUR	Cable socket, M12, 4-pin, PUR cable

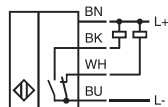
### Electrical Connection



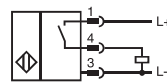
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NBB8-18GM50-E2



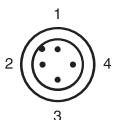
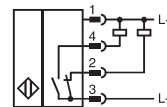
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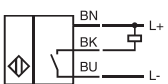
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NBB8-18GM50-E2-V1



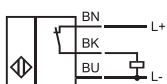
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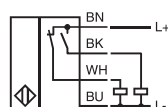
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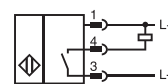
NBB8-18GM30-E3



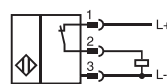
NBB8-18GM60-A2



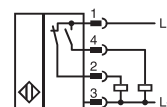
NBB8-18GM50-E0-V1



NBB8-18GM30-E3-V1



NBB8-18GM60-A2-V1



Date of issue 04/08/2015

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

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1  
.1.1

Proximity Sensors, Inductive Sensors, cylindrical



**Properties**

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

**Further Products**

In this series, we offer additionally:

**NBN8-18GM50-E2-T**

Technical data like NBN8-18GM50-E2 but:  
Ambient temperature: -25 ... 100 °C (-13 ... 212 °F)

**NBN8-18GM50-E2-T-V1**

Technical data like NBN8-18GM50-E2-V1 but:  
Ambient temperature: -25 ... 100 °C (-13 ... 212 °F)

**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
Installation	non-flush
Type of voltage	DC
Operating voltage	10 ... 30 V
Reverse polarity protection	✓
Switching frequency	0 ... 500 Hz
Operating current	0 ... 200 mA
Short-circuit protection	pulsing
Indication of the switching state	LED, yellow

**Model Number**

		NBN8-18GK50-E0	NBN8-18GK50-E2	NBN8-18GM50-E0	NBN8-18GM50-E2	NBN8-18GM50-E0-V1	NBN8-18GM50-E2-V1
Switching element function	NPN	●		●		●	
	NO		●		●		●
No-load supply current	≤ 15 mA	●	●				
	≤ 18 mA			●	●	●	●
Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)	●	●	●	●	●	●
	-40 ... 70 °C (-40 ... 158 °F)						●
Housing material	brass, nickel-plated			●	●	●	●
	PBT	●	●				
Protection degree	IP67	●	●	●	●	●	●
	IP68 / IP69K	●	●				
Connection type	Device 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	Products with a maximum operating voltage of ≤36 V do not bear a CCC marking because they do not require approval.						

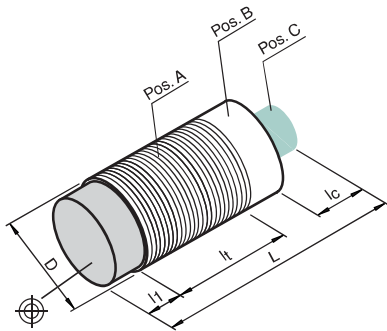
**Dimensions**

Length L [mm]	52	52	50	50	65	65
Diameter D [mm]				18		
Thread length l <sub>t</sub> [mm]	49	49	37	37	40	40
Cap length l <sub>1</sub> [mm]		1			10	
Connector area l <sub>c</sub> [mm]			0			15
LED position						Pos. C

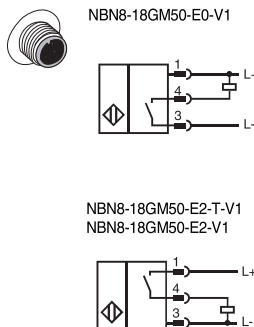
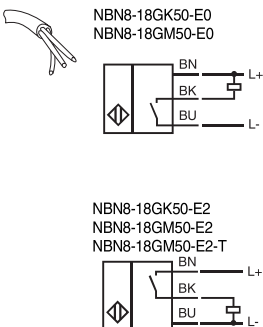
**Accessories**

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

- V1-W-BK** 4-pin, M12 female field-attachable connector
- BF 18** Mounting flange, 18 mm
- V1-G-2M-PUR** Cable socket, M12, 4-pin, PUR cable
- V1-G-BK** 4-pin, M12 female field-attachable connector
- 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)





### 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	12 mm
Installation	non-flush
Type of voltage	DC
Operating voltage	10 ... 30 V
Reverse polarity protection	✓
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

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

#### Model Number

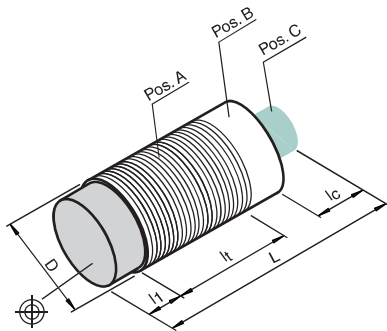
		green = preferred type	NBN12-18GM35-E2	NBN12-18GM50-E2	NBN12-18GM50-A0	NBN12-18GM50-A2	NBN12-18GM35-E2-V1	NBN12-18GM50-E2-V1	NBN12-18GM50-A0-V1	NBN12-18GM50-A2-V1
Switching element function	NPN	NO/NC			●				●	
	PNP	NO/NC				●				●
No-load supply current	≤ 12 mA		●	●	●	●	●	●	●	●
	≤ 20 mA									
Switching frequency	0 ... 200 Hz			●				●		
	0 ... 300 Hz		●				●			
	0 ... 1000 Hz				●	●			●	●
Operating current	0 ... 100 mA		●				●		●	●
	0 ... 200 mA			●	●	●		●	●	●
Connection type	Device 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	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]	35.5	50	65
Diameter D [mm]		18	
Thread length l <sub>t</sub> [mm]	22.5	37	25
Cap length l <sub>1</sub> [mm]		10	
Connector area l <sub>c</sub> [mm]		0	15
LED position			Pos. C



### Accessories

This and more accessories can be found in chapter 10

See pages from 972 ... for cordsets

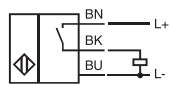
See pages 1068 ... for mounting aids

- BF 18** Mounting flange, 18 mm
- V1-W-BK** 4-pin, M12 female field-attachable connector
- BF 18-F** Mounting flange with dead stop, 18 mm
- V1-G-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

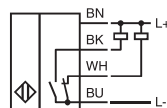
### Electrical Connection



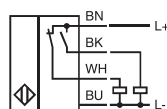
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NBN12-18GM50-E2



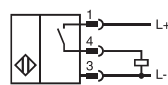
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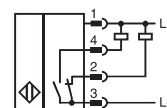
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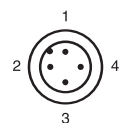
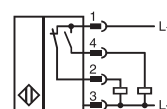
NBN12-18GM35-E2-V1  
NBN12-18GM50-E2-V1



NBN12-18GM50-A0-V1



NBN12-18GM50-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.com](http://www.pepperl-fuchs.com)

### General Data

Rated operating distance	12 mm
Installation	flush
Type of voltage	DC
Operating voltage	10 ... 30 V
No-load supply current	≤ 10 mA
Reverse polarity protection	✓
Switching frequency	0 ... 500 Hz
Operating current	0 ... 200 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

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

### Model Number

		NEB12-18GM50-E2	NEB12-18GM50-E2-V1	NEB12-18GM50-E3-V1
Switching element function	green = preferred type PNP NO PNP NC	●	●	●
Connection type	Device connector M12 x 1, 4-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]	53	69	
Diameter D [mm]		18	
Thread length $l_t$ [mm]	53	53	53
Cap length $l_1$ [mm]		0	
Connector area $l_c$ [mm]	0	14	
LED position		Pos. C	

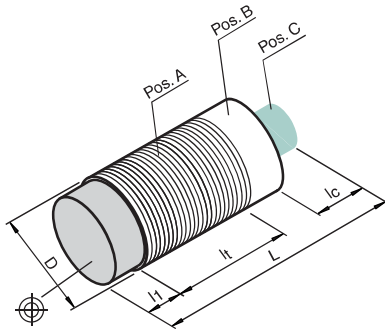
## Accessories

This and more accessories can be found in chapter 10

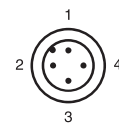
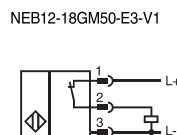
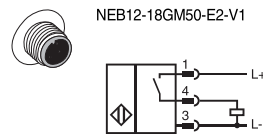
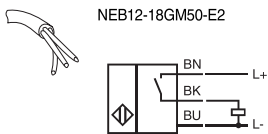
See pages from 972 ... for cordsets

See pages 1068 ... for mounting aids

<b>BF 18</b>	Mounting flange, 18 mm
<b>V1-G-BK</b>	4-pin, M12 female field-attachable connector
<b>V1-W-BK</b>	4-pin, M12 female field-attachable connector
<b>V1-G-2M-PUR</b>	Cable socket, M12, 4-pin, PUR cable
<b>V1-W-2M-PUR</b>	Cable socket, M12, 4-pin, PUR cable
<b>EXG-18</b>	Quick mounting bracket with dead stop



## 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	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
Operating current	0 ... 200 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
Connection type	Device connector M12 x 1 , 4-pin



### Properties

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

#### Model Number

Switching element function	green = preferred type		NEN20-18GM50-E2-V1	NEN20-18GM50-E3-V1
	PNP	NO		
	PNP	NC		

#### 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.

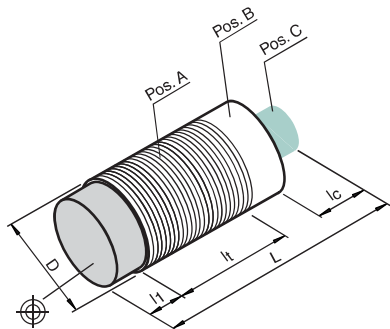
#### Dimensions

Length L [mm]	69
Diameter D [mm]	18
Thread length l <sub>t</sub> [mm]	43
Cap length l <sub>1</sub> [mm]	10
Connector area l <sub>c</sub> [mm]	14
LED position	Pos. C

### Accessories

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

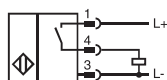
- BF 18** Mounting flange, 18 mm
- V1-G-BK** 4-pin, M12 female field-attachable connector
- V1-W-BK** 4-pin, M12 female field-attachable connector
- V1-G-2M-PUR** Cable socket, M12, 4-pin, PUR cable
- V1-W-2M-PUR** Cable socket, M12, 4-pin, PUR cable
- EXG-18** Quick mounting bracket with dead stop



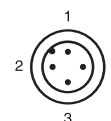
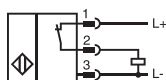
### Electrical Connection



NEN20-18GM50-E2-V1



NEN20-18GM50-E3-V1



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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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

Type of voltage	AC
Operating voltage	20 ... 253 V
Reverse polarity protection	tolerant
Switching frequency	0 ... 20 Hz
Operating current	5 ... 200 mA
Operating voltage display	LED, green
Indication of the switching state	LED, yellow
Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)
Housing material	brass, nickel-plated
Protection degree	IP67
Connection type	cable PVC , 2 m

### Properties

- Ø18 mm housing
- Up to 8 mm, flush and non-flush mountable versions
- AC, 2-wire switching output
- Cable version

#### Model Number

			NBB5-18GM60-WS	NBB5-18GM60-WO	NBN8-18GM60-WS	NBN8-18GM60-WO
Rated operating distance	green = preferred type 5 mm 8 mm		●	●	●	●
Installation	flush non-flush		●	●	●	●
Switching element function	AC NO AC NC		●	●	●	●

#### Approvals and Certificates

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

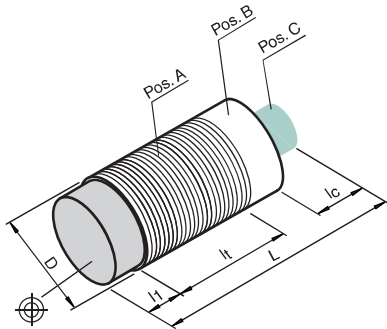
#### Dimensions

Length L [mm]				60
Diameter D [mm]				18
Thread length l <sub>t</sub> [mm]		60		50
Cap length l <sub>1</sub> [mm]		0		10
Connector area l <sub>c</sub> [mm]				0
LED position				Pos. C

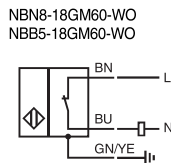
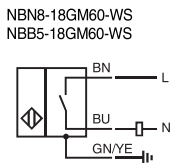
### Accessories

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

- BF 18**                      Mounting flange, 18 mm
- EXG-18**                    Quick mounting bracket with dead stop



### 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

Type of voltage	AC
Operating voltage	20 ... 253 V
No-load supply current	≤ 1.5 mA
Switching frequency	0 ... 25 Hz
Operating current	5 ... 200 mA
Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)
Housing material	PBT
Protection degree	IP68
Connection type	cable PVC , 2 m



### Properties

- Ø18 mm housing
- Up to 8 mm, flush and non-flush mountable versions
- AC, 2-wire switching output
- Cable version

#### Model Number

		NBB5-18GK-WS	NBB5-18GK-WO	NBN8-18GK-WS	NBN8-18GK-WO
Rated operating distance	5 mm 8 mm	●	●		●
Installation	flush	●	●		●
	non-flush			●	●
Switching element function	AC NO	●		●	
	AC NC		●		●

#### Approvals and Certificates

		NBB5-18GK-WS	NBB5-18GK-WO	NBN8-18GK-WS	NBN8-18GK-WO
UL approval	cULus Listed, General Purpose	●	●	●	●
CSA approval	cCSAus Listed, General Purpose	●	●	●	●
CCC approval	Certified by China Compulsory Certification (CCC)	●	●	●	●

#### Dimensions

	NBB5-18GK-WS	NBB5-18GK-WO	NBN8-18GK-WS	NBN8-18GK-WO
Length L [mm]	79			80
Diameter D [mm]		18		
Thread length $l_t$ [mm]	61			60
Cap length $l_1$ [mm]	0			0.5
Connector area $l_c$ [mm]		0		
LED position		-		

### Accessories

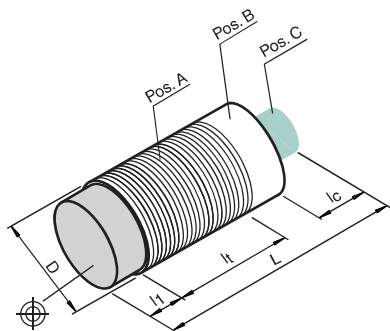
This and more accessories can be found in chapter 10

See pages from 972 ... for cordsets

See pages 1068 ... for mounting aids

BF 18

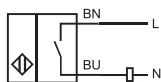
Mounting flange, 18 mm



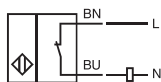
### Electrical Connection



NBB5-18GK-WS  
NBN8-18GK-WS



NBB5-18GK-WO  
NBN8-18GK-WO





Properties

- Ø18 mm housing
- Up to 15 mm, flush and non-flush mountable versions
- AC/DC, 2-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

Operating voltage	20 ... 250 V AC/20 ... 300 V DC
Reverse polarity protection	tolerant
Switching frequency	30 Hz
Operating current	4 ... 300 mA AC/DC
Short-circuit protection	✓
Operating voltage display	LED, green
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

		NBB8-18GM60-US	NBB8-18GM60-UO	NBN15-18GM60-US	NBN15-18GM60-UO	NBB8-18GM60-US-V12	NBB8-18GM60-UO-V12	NBN15-18GM60-US-V12	NBN15-18GM60-UO-V12	
Rated operating distance		green = preferred type								
	15 mm			●	●			●	●	
	8 mm	●	●			●	●			
Installation	flush	●	●			●	●			
	non-flush			●	●			●	●	
Switching element function	AC/DC NO	●	●	●	●	●	●	●	●	
	NC		●		●		●		●	
Type of voltage	UC	●	●	●	●	●	●	●	●	
Connection type	Device connector 1/2"-20 UN , 3-pin	●	●	●	●	●	●	●	●	
	cable PUR , 2 m	●	●	●	●					

Approvals and Certificates

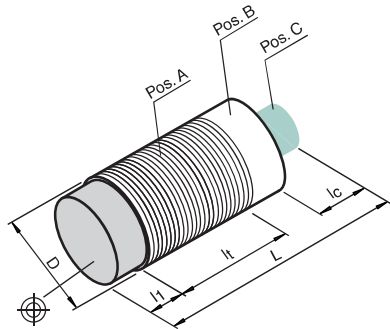
UL approval	cULus Listed, General Purpose	●	●	●	●	●	●	●	●
CSA approval	cCSAus Listed, General Purpose	●	●	●	●	●	●	●	●
CCC approval	Certified by China Compulsory Certification (CCC)	●	●	●	●	●	●	●	●

Dimensions

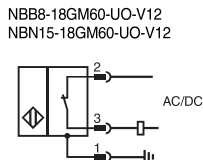
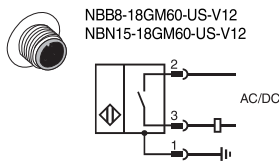
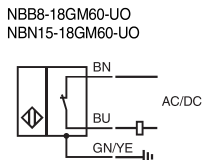
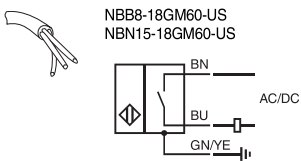
Length L [mm]	63		70	
Diameter D [mm]	18			
Thread length $l_t$ [mm]	62	52	60	50
Cap length $l_1$ [mm]	0			10
Connector area $l_c$ [mm]	0			10
LED position	Pos. A			

Accessories This and more accessories can be found in chapter 10

<b>BF 18</b>	Mounting flange, 18 mm	See pages from 972 ... for cordsets	See pages 1068 ... for mounting aids
<b>EXG-18</b>	Quick mounting bracket with dead stop		



Electrical Connection



Wire colors  
 1 GN (green)  
 2 RD/BK (red/black)  
 3 RD/WH (red/white)





### Properties

- Ø18 mm housing
- 1 ... 5 mm, flush mountable
- DC, 3-wire analog 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

Measurement range	1 ... 5 mm
Installation	flush
Switching element function	Analog current output
Type of voltage	DC
Operating voltage	10 ... 30 V
No-load supply current	≤ 12 mA
Linearity error	≤ ± 4 % of full-scale value
Load resistor	≤ 1000 Ω
Adjustment tolerance zero point	≤ ± 10 % of full-scale value
Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)
Housing material	brass, nickel-plated
Protection degree	IP67

#### Model Number

		green = preferred type		
Output type	0 ... 20 mA			
	4 ... 20 mA	●	●	
Slope of output characteristic	4 mA / mm	●		●
	5 mA / mm		●	
Connection type	Device 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	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]		60	70
Diameter D [mm]			18
Thread length l <sub>t</sub> [mm]		57	60
Cap length l <sub>1</sub> [mm]			0
Connector area l <sub>c</sub> [mm]		0	10
LED position		Pos. C	Pos. B

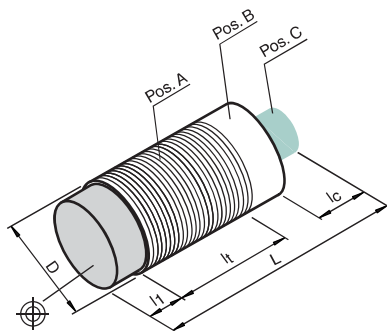
### Accessories

This and more accessories can be found in chapter 10

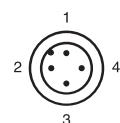
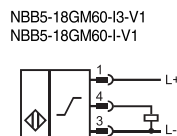
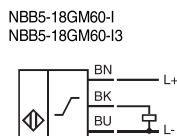
See pages from 972 ... for cordsets

See pages 1068 ... for mounting aids

<b>BF 18</b>	Mounting flange, 18 mm
<b>V1-G-BK</b>	4-pin, M12 female field-attachable connector
<b>V1-W-BK</b>	4-pin, M12 female field-attachable connector
<b>V1-G-2M-PUR</b>	Cable socket, M12, 4-pin, PUR cable
<b>V1-W-2M-PUR</b>	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)