

## MH15 Cylindrical Photoelectric Sensors

Short and flush: A short housing for flush mounting

The MH15 photoelectric sensor series concentrates on the essential.

The MH15, offers the following optical variants in both Axial (straight) and Radial (90°) housing forms.

- MHSE15 through-beam system: 5.0/4.0 m,
- MHL15 photoelectric reflex sensor: 5.0 m/4.5 m (PL80A), with polarizing filter,
- MHTB15 photoelectrical proximity sensor with background suppression and adjustable sensing range:
  - axial: 300 mm (90% remission)
- MHT15 photoelectric proximity sensor, energetic, scanning ranges:
  - axial: 100 mm and 350 mm
  - radial: 90 mm and 250 mm each at 90 % reflectance, sensitivity can be set.

Variable, fast and inexpensive:

- Shortest housing = short build-in depth, simple handling
- Options for axial (straight) or radial 90°: ideal for clever integration of MH15 into the mechanical system
- Flush mounting via new mounting accessories (included): fast and inexpensive mounting
- Unlimited access to M18 hole mounting.

The MH15 can be used in a wide variety of applications, particularly the conveyor/mechanical handling and packaging industries.



### Further benefits

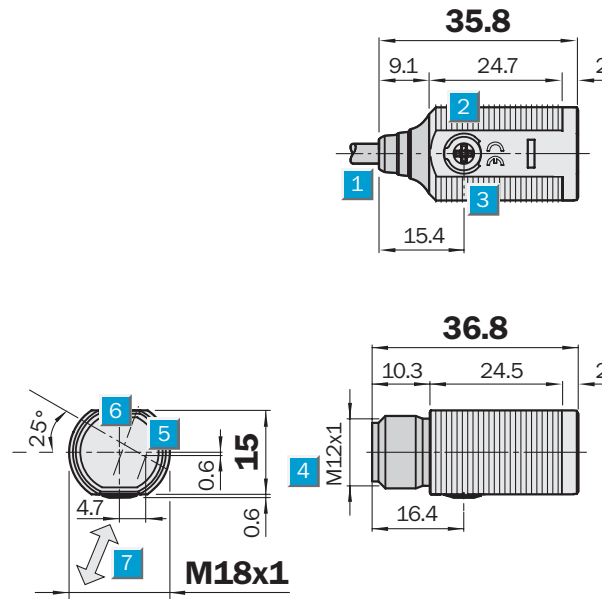
- Reliable detection of objects.
- Shortest housing for cylindrical photoelectric sensors: functional design for clever, space-saving solutions.
- Flush mounting via innovative accessories: fast and inexpensive.

**Scanning distance**  
3 ... 300 mm

Photoelectric proximity sensors, BGS

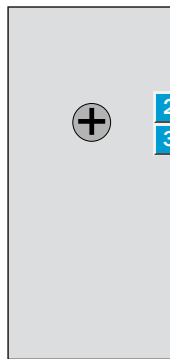
- Large scanning distance, adjustable
- Precise background suppression, object detection irrespective of colour and background materials
- 2 x anti-interference: reliable operation when mounted adjacent or opposite each other
- Small and visible light spot
- Optical axis axial

## Dimensional drawing



## Adjustments possible

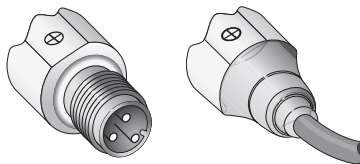
All types



- 1 Connector cable 2 m
- 2 Yellow LED indicator: light reception
- 3 Sensitivity control 270°
- 4 Plug M12, 3-pin
- 5 Optical axis sender
- 6 Optical axis receiver
- 7 Standard direction of the material being scanned

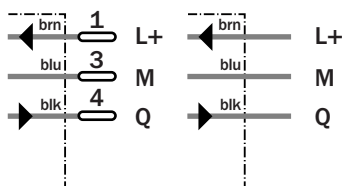
## Connection types

MHTB15-N3267	MHTB15-N2267
MHTB15-N3367	MHTB15-N2367
MHTB15-P3267	MHTB15-P2267
MHTB15-P3367	MHTB15-P2367



3-pin, M12

3 x 0.14 mm<sup>2</sup>



IP 69K

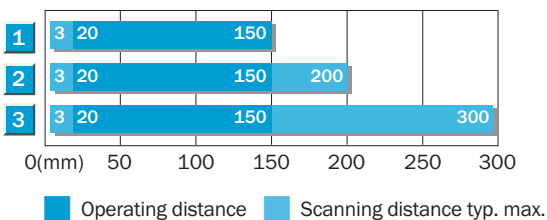
## Accessories

- Cables and connectors
- Mounting systems

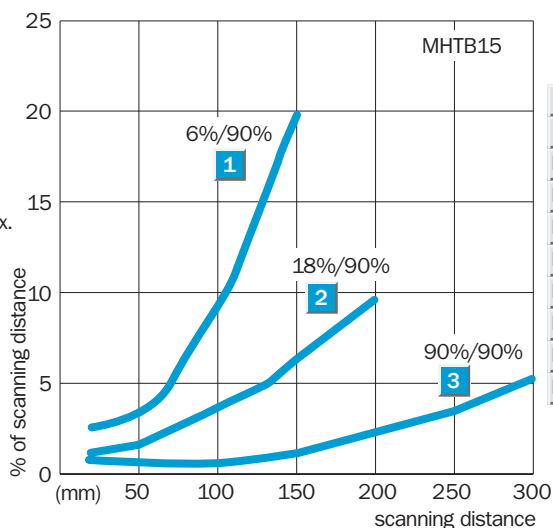
Technical data		MHTB15-	P2267	P3267	P2367	P3367	N2267	N3267	N2367	N3367
Scanning distance SD, typ. max. <sup>1)</sup>	3 ... 300 mm									
Operating distance SD <sup>1)</sup>	3 ... 300 mm (150 mm at 6% remission)									
Adjustment range min. /max. <sup>1)</sup>	20 mm ... 300 mm									
Sensitivity adjustable	Potentiometer 270°									
Light spot diameter	Approx. 7 mm at 100 mm/ Approx. 6 mm at 150 mm									
Light source <sup>2)</sup> , light type	Pin-Point LED, red light, 650 nm <sup>2)</sup>									
Optical axis	Axial									
Light reception indicator yellow LED	Lights: Light reception									
Supply voltage V <sub>s</sub>	10 ... 30 V DC <sup>3)</sup>									
Residual ripple <sup>4)</sup>	≤ 5 V <sub>PP</sub>									
Current consumption <sup>5)</sup>	≤ 30 mA									
Switching outputs	Q: PNP Q: NPN									
Signal voltage HIGH	V <sub>s</sub> - (< 2.9 V) V <sub>s</sub>									
Signal voltage LOW	Approx. 0 V ≤ 2.9 V									
Switching mode	Light-switching Dark-switching									
Output current I <sub>A</sub> max. <sup>6)</sup>	≤ 100 mA									
Response time <sup>7)</sup>	≤ 0.72 ms									
Max. switching frequency <sup>8)</sup>	700/s									
Connection type plug	M12, 3-pin									
cable <sup>9)</sup>	PVC, 2 m, 3 x 0.14 mm <sup>2</sup> , Ø 3.7 mm									
VDE protection class	⊠									
Enclosure rating	IP 67, IP 69K									
Circuit protection <sup>10)</sup>	A, B, C									
Ambient temperature T <sub>A</sub>	Operation -25 °C ... +55 °C Storage -25 °C ... +70 °C									
Weight with plug M12	Approx. 7 g									
with cable 2 m	Approx. 90 g									
Housing material	Housing: ABS/Optic: PMMA									

- <sup>1)</sup> Object with 90 % remission (based on standard white DIN 5033); 100 x 100 mm
- <sup>2)</sup> Average service life 100,000 h at T<sub>A</sub> = +25 °C
- <sup>3)</sup> Limit values, operation in short-circuit protected network, max. 8 A
- <sup>4)</sup> May not exceed or fall short of V<sub>s</sub> tolerances
- <sup>5)</sup> Without load
- <sup>6)</sup> If operating temperature > 50 °C reduced output current I<sub>A</sub> max. = 50 mA
- <sup>7)</sup> Signal transit time with resistive load
- <sup>8)</sup> With light/dark ratio 1:1
- <sup>9)</sup> Do not bend below 0 °C
- <sup>10)</sup> A = V<sub>s</sub> connections reverse-polarity protected  
B = Interference pulse suppression  
C = Outputs overcurrent and short-circuit protected

**Scanning distance**




- 1 Scanning distance on black, 6 % remission
- 2 Scanning distance on grey, 18 % remission
- 3 Scanning distance on white, 90 % remission



**Order information**

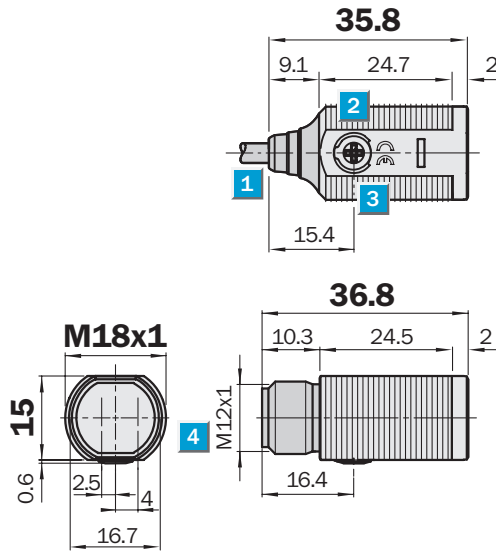
Type	Order no.
MHTB15-N2267	1047155
MHTB15-N3267	1047156
MHTB15-N2367	1046532
MHTB15-N3367	1046533
MHTB15-P2267	1047157
MHTB15-P3267	1047158
MHTB15-P2367	1046534
MHTB15-P3367	1046535


**Scanning distance**  
 10 ... 350 mm

Photoelectric proximity sensors

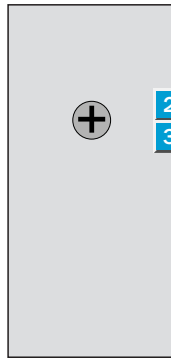
- Large scanning distance
- Adjustable sensitivity
- LED indicator: Light reception and operation reserve
- Optical axis axial
- Mounting accessories

## Dimensional drawing



## Adjustments possible

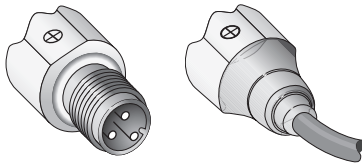
All types



- 1 Connector cable 2 m
- 2 Sensitivity control 270°
- 3 Yellow LED indicator,
  - lights continuously: Light reception > reserve factor 1.3
  - blinks: Light reception > reserve factor 1.3, but light reception > switching threshold 1
- 4 M12 plug, 3-pin

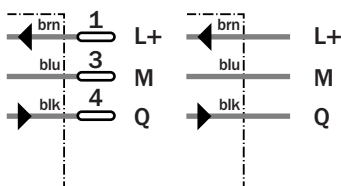
## Connection type

MHT15-N3247	MHT15-N2247
MHT15-N3347	MHT15-N2347
MHT15-P3247	MHT15-P2247
MHT15-P3347	MHT15-P2347



3-pin, M12

3 x 0.14 mm<sup>2</sup>



IP 69K

## Accessories

- Cables and connectors
- Mounting systems

<b>Technical data</b>	MHT15-	P2247	P3247	P2347	P3347	N2247	N3247	N2347	N3347		
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<b>Scanning distance SD</b> , typ. max. <sup>1)</sup>	10 ... 350 mm										
<b>Operating distance SD</b> <sup>1)</sup>	10 ... 250 mm										
Light spot diameter	Approx. 50 mm at 350 mm										
Angle of dispersion sender	Approx. 4.5°										
<b>Light source</b> <sup>2)</sup> , <b>light type</b>	LED infrared, 950 nm										
<b>Optical axis</b>	Axial										
<b>Sensitivity adjustable</b>	Potentiometer 270°										
<b>Light reception indicator</b>	Yellow LED: lights continuously: Reserve factor > 1.3 Blinks: reserve factor > 1.0 ... < 1.3										
<b>Supply voltage V<sub>S</sub></b>	10 ... 30 V DC <sup>3)</sup>										
Residual ripple <sup>4)</sup>	≤ 5 V <sub>PP</sub>										
Current consumption <sup>5)</sup>	≤ 30 mA										
<b>Switching outputs</b>	Q: PNP Q: NPN										
Signal voltage HIGH	V <sub>S</sub> - 2.9 V V <sub>S</sub>										
Signal voltage LOW	Approx. 0 V ≤ 2.9 V										
<b>Switching mode</b>	Light-switching Dark-switching										
<b>Output current I<sub>A</sub> max.</b>	≤ 100 mA										
Response time <sup>6)</sup>	≤ 1.25 ms										
Max. switching frequency <sup>7)</sup>	400/s										
<b>Connection type</b> plug	M12, 3-pin										
cable <sup>8)</sup>	PVC, 2 m, 3 x 0.14 mm <sup>2</sup> , Ø 3.7 mm										
<b>VDE protection class</b>	⊕										
<b>Enclosure rating</b>	IP 67, IP 69K										
<b>Circuit protection</b> <sup>9)</sup>	A, B, C										
<b>Ambient temperature T<sub>A</sub></b>	Operation -25 °C ... +55 °C Storage -25 °C ... +70 °C										
<b>Weight</b> with plug	Approx. 7 g										
with cable 2 m	Approx. 90 g										
<b>Housing material</b>	Housing: ABS Optic: PMMA										

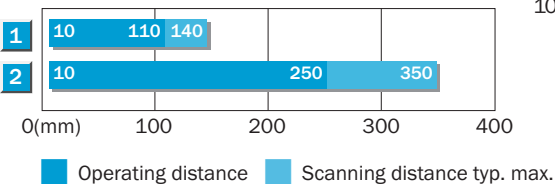
<sup>1)</sup> Object with 90 % remission (based on standard white DIN 5033); 100 x 100 mm  
<sup>2)</sup> Average service life 100,000 h at T<sub>A</sub> = +25 °C

<sup>3)</sup> Limit values  
<sup>4)</sup> May not exceed or fall short of V<sub>S</sub> tolerances  
<sup>5)</sup> Without load

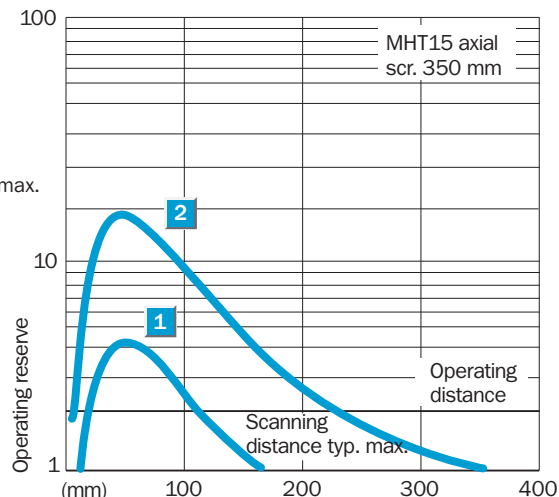
<sup>6)</sup> Signal transit time with resistive load  
<sup>7)</sup> With light/dark ratio 1:1  
<sup>8)</sup> Do not bend below 0 °C

<sup>9)</sup> A = V<sub>S</sub> connections reverse-polarity protected  
B = Interference pulse suppression  
C = Outputs overcurrent and short-circuit protected

### Scanning distance




- 1 Scanning distance on grey, 18 % remission
- 2 Scanning distance on white, 90 % remission



### Order information

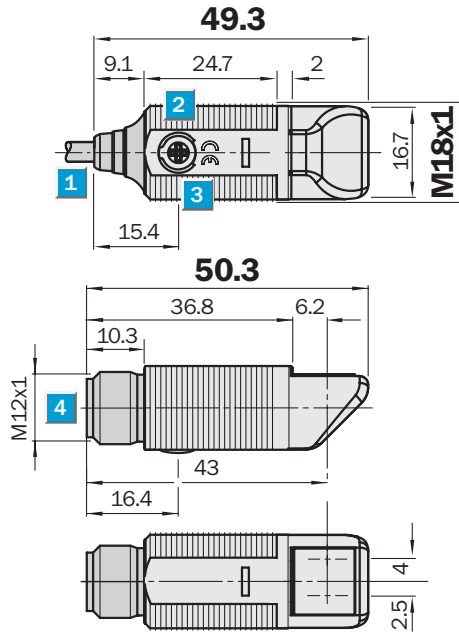
Type	Order no.
MHT15-N2247	1026106
MHT15-N3247	1026107
MHT15-N2347	1026108
MHT15-N3347	1026109
MHT15-P2247	1026110
MHT15-P3247	1026111
MHT15-P2347	1026112
MHT15-P3347	1026113


**Scanning distance**  
 15 ... 250 mm

Photoelectric proximity sensors

- Large scanning distance
- Adjustable sensitivity
- LED indicator: Light reception and operation reserve
- Optical axis radial 90°
- Mounting accessories

**Dimensional drawing**



**Adjustments possible**

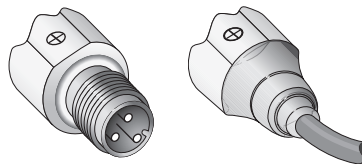
All types



- 1 Connector cable 2 m
- 2 Sensitivity control 270°
- 3 Yellow LED indicator,
  - lights continuously: Light reception > reserve factor 1.3
  - blinks: Light reception > reserve factor 1.3, but light reception > switching threshold 1
- 4 M12 plug, 3-pin

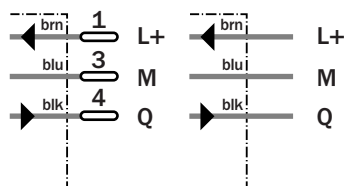
**Connection type**

MHT15-N3249	MHT15-N2249
MHT15-N3349	MHT15-N2349
MHT15-P3249	MHT15-P2249
MHT15-P3349	MHT15-P2349



3-pin, M12

3 x 0.14 mm<sup>2</sup>



IP 69K

**Accessories**

Cables and connectors

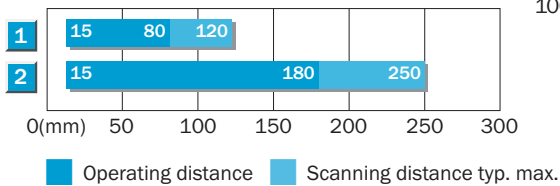
Mounting systems

<b>Technical data</b>	MHT15-	P2249	P3249	P2349	P3349	N2249	N3249	N2349	N3349		
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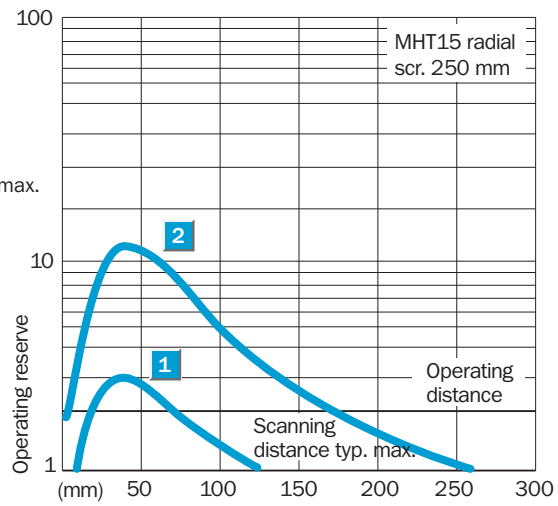
<b>Scanning distance SD</b> , typ. max. <sup>1)</sup>	15 ... 250 mm										
<b>Operating distance SD</b> <sup>1)</sup>	15 ... 180 mm										
Light spot diameter	Approx. 40 mm at 250 mm										
Angle of dispersion sender	Approx. 4.5°										
<b>Light source</b> <sup>2)</sup> , <b>light type</b>	LED infrared, 950 nm										
<b>Optical axis</b>	Radial (90°)										
<b>Sensitivity adjustable</b>	Potentiometer 270°										
<b>Light reception indicator</b>	Yellow LED: lights continuously: Reserve factor > 1.3 Blinks: reserve factor > 1.0 ... < 1.3										
<b>Supply voltage V<sub>S</sub></b>	10 ... 30 V DC <sup>3)</sup>										
Residual ripple <sup>4)</sup>	≤ 5 V <sub>PP</sub>										
Current consumption <sup>5)</sup>	≤ 30 mA										
<b>Switching outputs</b>	Q: PNP Q: NPN										
Signal voltage HIGH	V <sub>S</sub> - 2.9 V V <sub>S</sub>										
Signal voltage LOW	Approx. 0 V ≤ 2.9 V										
<b>Switching mode</b>	Light-switching Dark-switching										
<b>Output current I<sub>A</sub> max.</b>	≤ 100 mA										
Response time <sup>6)</sup>	≤ 1.25 ms										
Max. switching frequency <sup>7)</sup>	400/s										
<b>Connection type</b> plug	M12, 3-pin										
cable <sup>8)</sup>	PVC, 2 m, 3 x 0.14 mm <sup>2</sup> , Ø 3.7 mm										
<b>VDE protection class</b>	⊕										
<b>Enclosure rating</b>	IP 67, IP 69K										
<b>Circuit protection</b> <sup>9)</sup>	A, B, C										
<b>Ambient temperature T<sub>A</sub></b>	Operation -25 °C ... +55 °C Storage -25 °C ... +70 °C										
<b>Weight</b> with plug	Approx. 8 g										
with cable 2 m	Approx. 91 g										
<b>Housing material</b>	Housing: ABS Optic: PMMA										

<sup>1)</sup> Object with 90 % remission (based on standard white DIN 5033); 100 x 100 mm  
<sup>2)</sup> Average service life 100,000 h at T<sub>A</sub> = +25 °C  
<sup>3)</sup> Limit values  
<sup>4)</sup> May not exceed or fall short of V<sub>S</sub> tolerances  
<sup>5)</sup> Without load  
<sup>6)</sup> Signal transit time with resistive load  
<sup>7)</sup> With light/dark ratio 1:1  
<sup>8)</sup> Do not bend below 0 °C  
<sup>9)</sup> A = V<sub>S</sub> connections reverse-polarity protected  
 B = Interference pulse suppression  
 C = Outputs overcurrent and short-circuit protected

**Scanning distance**



- 1 Scanning distance on grey, 18 % remission
- 2 Scanning distance on white, 90 % remission



**Order information**

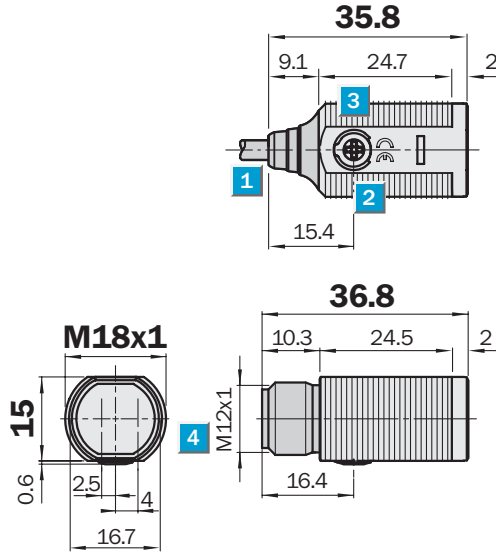
Type	Order no.
MHT15-N2249	1026114
MHT15-N3249	1026115
MHT15-N2349	1026116
MHT15-N3349	1026117
MHT15-P2249	1026118
MHT15-P3249	1026119
MHT15-P2349	1026120
MHT15-P3349	1026121

**Scanning distance**  
 10 ... 100 mm

Photoelectric proximity sensors

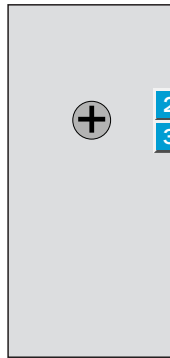
- Standard scanning distance
- Adjustable sensitivity
- LED indicator: Light reception and operation reserve
- Optical axis axial
- Mounting accessories

## Dimensional drawing



## Adjustments possible

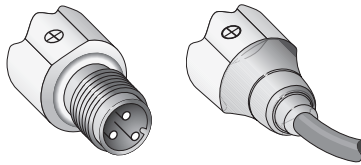
All types



- 1 Connector cable 2 m
- 2 Sensitivity control 270°
- 3 Yellow LED indicator,
  - lights continuously: Light reception > reserve factor 1.3
  - blinks: Light reception > reserve factor 1.3, but light reception > switching threshold 1
- 4 M12 plug, 3-pin

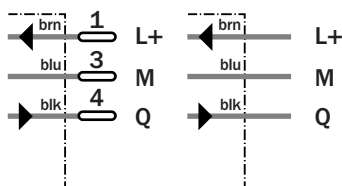
## Connection type

MHT15-N3217	MHT15-N2217
MHT15-N3317	MHT15-N2317
MHT15-P3217	MHT15-P2217
MHT15-P3317	MHT15-P2317



3-pin, M12

3 x 0.14 mm<sup>2</sup>



IP 69K

Accessories
Cables and connectors
Mounting systems



Technical data		MHT15-	P2217	P3217	P2317	P3317	N2217	N3217	N2317	N3317		
<b>Scanning distance SD</b> , typ. max. <sup>1)</sup>	10 ... 100 mm											
<b>Operating distance SD</b> <sup>1)</sup>	10 ... 90 mm											
Light spot diameter	Approx. 20 mm at 100 mm											
Angle of dispersion sender	Approx. 4.5°											
<b>Light source</b> <sup>2)</sup> , <b>light type</b>	LED infrared, 950 nm											
<b>Optical axis</b>	Axial											
<b>Sensitivity adjustable</b>	Potentiometer 270°											
<b>Light reception indicator</b>	Yellow LED: lights continuously: Reserve factor > 1.3 Blinks: reserve factor > 1.0 ... < 1.3											
<b>Supply voltage V<sub>s</sub></b>	10 ... 30 V DC <sup>3)</sup>											
Residual ripple <sup>4)</sup>	≤ 5 V <sub>pp</sub>											
Current consumption <sup>5)</sup>	≤ 30 mA											
<b>Switching outputs</b>	Q: PNP Q: NPN											
Signal voltage HIGH	V <sub>s</sub> - 2.9 V V <sub>s</sub>											
Signal voltage LOW	Approx. 0 V ≤ 2.9 V											
<b>Switching mode</b>	Light-switching Dark-switching											
<b>Output current I<sub>A</sub> max.</b>	≤ 100 mA											
Response time <sup>6)</sup>	≤ 1.25 ms											
Max. switching frequency <sup>7)</sup>	400/s											
<b>Connection type</b> plug	M12, 3-pin											
cable <sup>8)</sup>	PVC, 2 m, 3 x 0.14 mm <sup>2</sup> , Ø 3.7 mm											
<b>VDE protection class</b>	⊕											
<b>Enclosure rating</b>	IP 67, IP 69K											
<b>Circuit protection</b> <sup>9)</sup>	A, B, C											
<b>Ambient temperature T<sub>A</sub></b>	Operation -25 °C ... +55 °C Storage -25 °C ... +70 °C											
<b>Weight</b> with plug	Approx. 7 g											
with cable 2 m	Approx. 90 g											
<b>Housing material</b>	Housing: ABS Optic: PMMA											

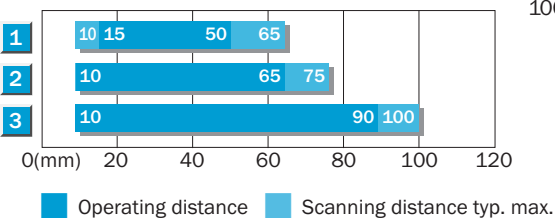
<sup>1)</sup> Object with 90 % remission (based on standard white DIN 5033); 100 x 100 mm  
<sup>2)</sup> Average service life 100,000 h at T<sub>A</sub> = +25 °C

<sup>3)</sup> Limit values  
<sup>4)</sup> May not exceed or fall short of V<sub>s</sub> tolerances  
<sup>5)</sup> Without load

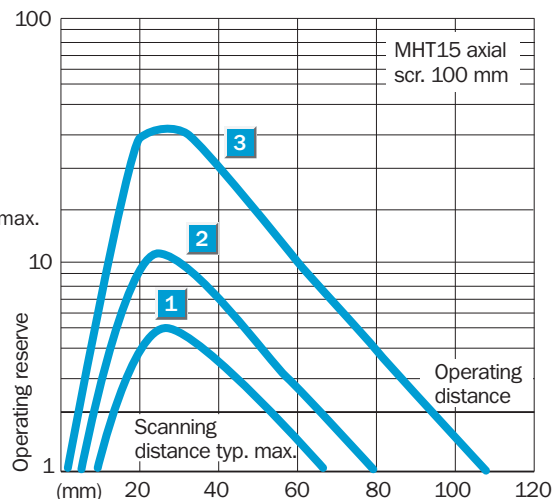
<sup>6)</sup> Signal transit time with resistive load  
<sup>7)</sup> With light/dark ratio 1:1  
<sup>8)</sup> Do not bend below 0 °C

<sup>9)</sup> A = V<sub>s</sub> connections reverse-polarity protected  
B = Interference pulse suppression  
C = Outputs overcurrent and short-circuit protected

### Scanning distance




- 1 Scanning distance on black, 6 % remission
- 2 Scanning distance on grey, 18 % remission
- 3 Scanning distance on white, 90 % remission



### Order information

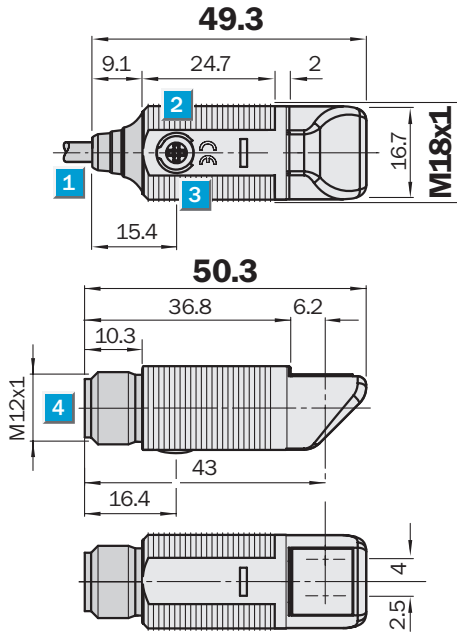
Type	Order no.
MHT15-N2217	1026090
MHT15-N3217	1026091
MHT15-N2317	1026092
MHT15-N3317	1026093
MHT15-P2217	1026094
MHT15-P3217	1026095
MHT15-P2317	1026096
MHT15-P3317	1026097


**Scanning distance**  
 5 ... 90 mm

Photoelectric proximity sensors

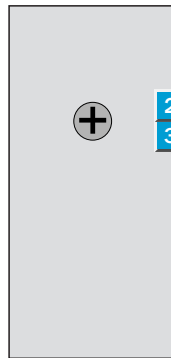
- Adjustable sensitivity
- LED indicator: Light reception and operation reserve
- Optical axis radial 90°
- Mounting accessories

**Dimensional drawing**



**Adjustments possible**

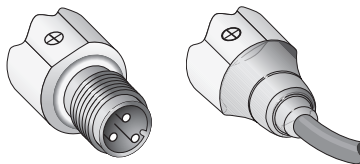
All types



- 1 Connector cable 2 m
- 2 Sensitivity control 270°
- 3 Yellow LED indicator,
  - lights continuously: Light reception > reserve factor 1.3
  - blinks: Light reception > reserve factor 1.3, but light reception > switching threshold 1
- 4 M12 plug, 3-pin

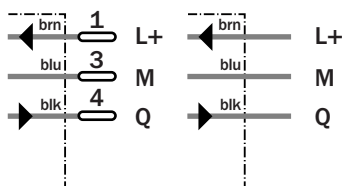
**Connection type**

MHT15-N3219	MHT15-N2219
MHT15-N3319	MHT15-N2319
MHT15-P3219	MHT15-P2219
MHT15-P3319	MHT15-P2319



3-pin, M12

3 x 0.14 mm<sup>2</sup>



IP 69K

**Accessories**

- Cables and connectors
- Mounting systems

Technical data		MHT15-	P2219	P3219	P2319	P3319	N2219	N3219	N2319	N3319		
<b>Scanning distance SD</b> , typ. max. <sup>1)</sup>	5 ... 90 mm											
<b>Operating distance SD</b> <sup>1)</sup>	5 ... 75 mm											
Light spot diameter	Approx. 25 mm at 90 mm											
Angle of dispersion sender	Approx. 5°											
<b>Light source</b> <sup>2)</sup> , <b>light type</b>	LED, infrared light, 950 nm											
<b>Optical axis</b>	Radial (90°)											
<b>Sensitivity adjustable</b>	Potentiometer 270°											
<b>Light reception indicator</b>	Yellow LED: lights continuously: Reserve factor > 1.3 Blinks: reserve factor > 1.0 ... < 1.3											
<b>Supply voltage V<sub>s</sub></b>	10 ... 30 V DC <sup>3)</sup>											
Residual ripple <sup>4)</sup>	≤ 5 V <sub>pp</sub>											
Current consumption <sup>5)</sup>	≤ 30 mA											
<b>Switching outputs</b>	Q: PNP Q: NPN											
Signal voltage HIGH	V <sub>s</sub> - 2.9 V V <sub>s</sub>											
Signal voltage LOW	Approx. 0 V ≤ 2.9 V											
<b>Switching mode</b>	Light-switching Dark-switching											
<b>Output current I<sub>A</sub> max.</b>	≤ 100 mA											
Response time <sup>6)</sup>	≤ 1.25 ms											
Max. switching frequency <sup>7)</sup>	400/s											
<b>Connection type</b> plug	M12, 3-pin											
cable <sup>8)</sup>	PVC, 2 m, 3 x 0.14 mm <sup>2</sup> , Ø 3.7 mm											
<b>VDE protection class</b>	⊕											
<b>Enclosure rating</b>	IP 67, IP 69K											
<b>Circuit protection</b> <sup>9)</sup>	A, B, C											
<b>Ambient temperature T<sub>A</sub></b>	Operation -25 °C ... +55 °C Storage -25 °C ... +70 °C											
<b>Weight</b> with plug	Approx. 8 g											
with cable 2 m	Approx. 91 g											
<b>Housing material</b>	Housing: ABS Optic: PMMA											

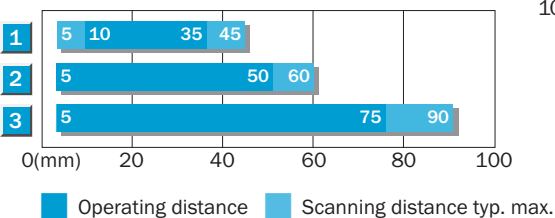
<sup>1)</sup> Object with 90 % remission (based on standard white DIN 5033); 100 x 100 mm  
<sup>2)</sup> Average service life 100,000 h at T<sub>A</sub> = +25 °C

<sup>3)</sup> Limit values  
<sup>4)</sup> May not exceed or fall short of V<sub>s</sub> tolerances  
<sup>5)</sup> Without load

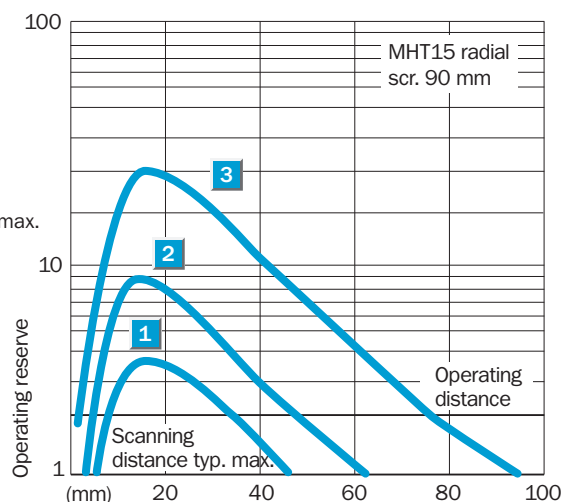
<sup>6)</sup> Signal transit time with resistive load  
<sup>7)</sup> With light/dark ratio 1:1  
<sup>8)</sup> Do not bend below 0 °C

<sup>9)</sup> A = V<sub>s</sub> connections reverse-polarity protected  
B = Interference pulse suppression  
C = Outputs overcurrent and short-circuit protected

### Scanning distance



- 1 Scanning distance on black, 6 % remission
- 2 Scanning distance on grey, 18 % remission
- 3 Scanning distance on white, 90 % remission



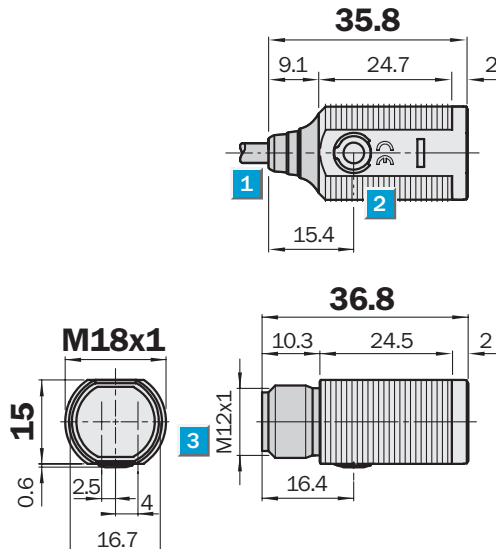
### Order information

Type	Order no.
MHT15-N2219	1026098
MHT15-N3219	1026099
MHT15-N2319	1026100
MHT15-N3319	1026101
MHT15-P2219	1026102
MHT15-P3219	1026103
MHT15-P2319	1026104
MHT15-P3319	1026105

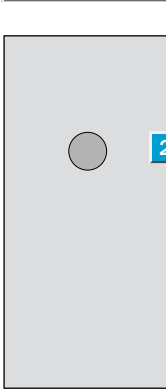
	Scanning range
	0.035 ... 5.0 m (PL80A)
Photoelectric reflex sensors	

- Polarizing filter for reliable detection of shiny surfaces
- LED indicator: Light reception and operation reserve
- Optical axis axial
- Mounting accessories

Dimensional drawing



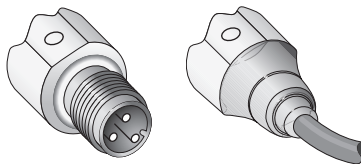
Adjustments possible



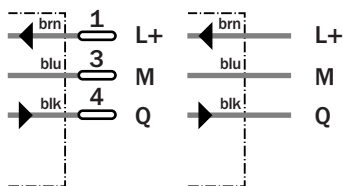
- 1 Connector cable 2 m
- 2 Yellow LED indicator,
  - lights continuously: Light reception > reserve factor 1.5
  - blinks: Light reception > reserve factor 1.5, but light reception > switching threshold 1
- 3 M12 plug, 3-pin

Connection type

MHL15-N3236	MHL15-N2236
MHL15-N3336	MHL15-N2336
MHL15-P3236	MHL15-P2236
MHL15-P3336	MHL15-P2336



3-pin, M12      3 x 0.14 mm<sup>2</sup>



IP 69K

<b>Accessories</b>
Cables and connectors
Mounting systems
Reflectors

Technical data		MHL15-	P2236	P3236	P2336	P3336	N2236	N3236	N2336	N3336		
<b>Scanning range SR</b> , typ. max./reflect.	0.035 ... 5.0 m (PL80A)											
<b>Operating range</b>	0.035 ... 3.5 m (PL80A)											
Light spot diameter	Approx. 80 mm at 3.5 m											
Angle of dispersion sender	Approx. 1.5°											
<b>Optical axis</b>	Axial											
<b>Light source</b> <sup>1)</sup> , <b>light type</b>	LED, red light, with pol. filter, 650 nm											
<b>Light reception indicator</b>	Yellow LED: lights continuously: Reserve factor > 1.5 Blinks: reserve factor > 1.0 ... < 1.5											
<b>Supply voltage V<sub>s</sub></b>	10 ... 30 V DC <sup>2)</sup>											
Residual ripple <sup>3)</sup>	≤ 5 V <sub>pp</sub>											
Current consumption <sup>4)</sup>	≤ 30 mA											
<b>Switching outputs</b>	Q: PNP Q: NPN											
Signal voltage HIGH	V <sub>s</sub> - 2.9 V V <sub>s</sub>											
Signal voltage LOW	Approx. 0 V ≤ 2.9 V											
<b>Switching mode</b>	Light-switching Dark-switching											
<b>Output current I<sub>A</sub> max.</b>	≤ 100 mA											
Response time <sup>5)</sup>	≤ 1.25 ms											
Max. switching frequency <sup>6)</sup>	400/s											
<b>Connection type</b> plug	M12, 3-pin											
cable <sup>7)</sup>	PVC, 2 m, 3 x 0.14 mm <sup>2</sup> , Ø 3.7 mm											
<b>VDE protection class</b>	◊											
<b>Enclosure rating</b>	IP 67, IP 69K											
<b>Circuit protection</b> <sup>8)</sup>	A, B, C											
<b>Ambient temperature T<sub>A</sub></b>	Operation -25 °C ... +55 °C Storage -25 °C ... +70 °C											
<b>Weight</b> with plug	Approx. 7 g											
with cable 2 m	Approx. 90 g											
<b>Housing material</b>	Housing: ABS Optic: PMMA											

<sup>1)</sup> Average service life 100,000 h at T<sub>A</sub> = +25 °C

<sup>2)</sup> Limit values

<sup>3)</sup> May not exceed or fall short of V<sub>s</sub> tolerances

<sup>4)</sup> Without load

<sup>5)</sup> Signal transit time with resistive load

<sup>6)</sup> With light/dark ratio 1:1

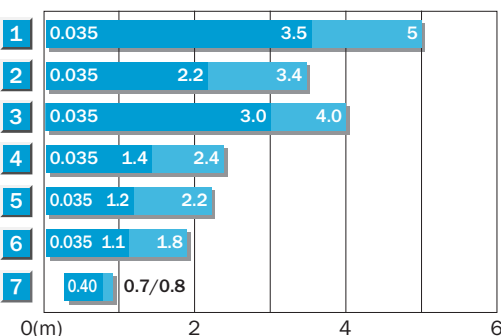
<sup>7)</sup> Do not bend below 0 °C

<sup>8)</sup> A = V<sub>s</sub> connections reverse-polarity protected

B = Interference pulse suppression

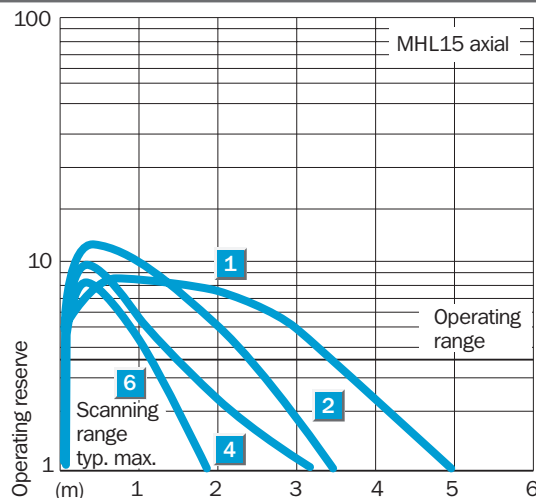
C = Outputs overcurrent and short-circuit protected

### Scanning range and operating reserve



■ Operating range ■ Scanning range typ. max.

Reflector type	Operating range
1 PL80A	0.035 ... 3.5 m
2 P250	0.035 ... 2.2 m
3 C110	0.035 ... 3.0 m
4 PL50A/PL40A	0.035 ... 1.4 m
5 PL30A/PL31A	0.035 ... 1.2 m
6 PL20A	0.035 ... 1.1 m
7 Reflective tape Diamond Grade 50 mm x 50 mm	0.40 ... 0.7 m



### Order information

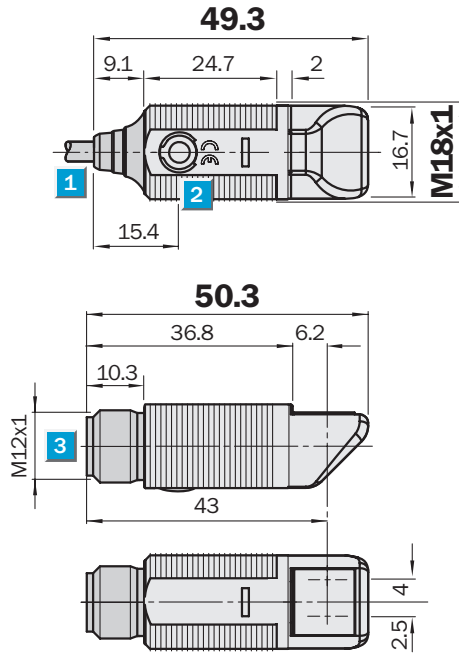
Type	Order no.
MHL15-N2236	1026122
MHL15-N3236	1026123
MHL15-N2336	1026124
MHL15-N3336	1026125
MHL15-P2236	1026126
MHL15-P3236	1026127
MHL15-P2336	1026128
MHL15-P3336	1026129

**Scanning range**  
 0.035 ... 4.5 m  
 (PL80A)

Photoelectric reflex sensors

- Polarizing filter for reliable detection of shiny surfaces
- LED indicator: Light reception and operation reserve
- Optical axis radial 90°
- Mounting accessories

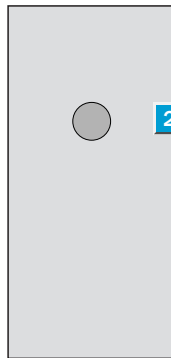
**Dimensional drawing**



**Adjustments possible**

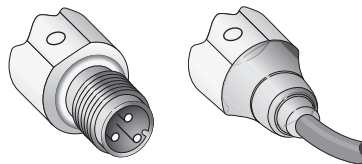
All types

- 1 Connector cable 2 m
- 2 Yellow LED indicator,
  - lights continuously: Light reception > reserve factor 1.5
  - blinks: Light reception > reserve factor 1.5, but light reception > switching threshold 1
- 3 M12 plug, 3-pin



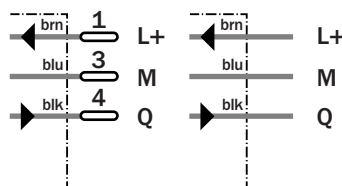
**Connection type**

MHL15-N3238	MHL15-N2238
MHL15-N3338	MHL15-N2338
MHL15-P3238	MHL15-P2238
MHL15-P3338	MHL15-P2338



3-pin, M12

3 x 0.14 mm<sup>2</sup>



IP 69K

**Accessories**

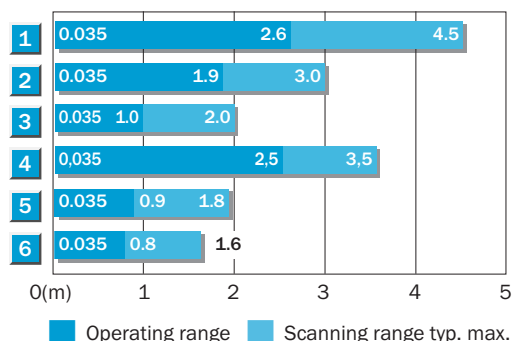
Cables and connectors
Mounting systems
Reflectors

<b>Technical data</b>	MHL15-	P2238	P3238	P2338	P3338	N2238	N3238	N2338	N3338		
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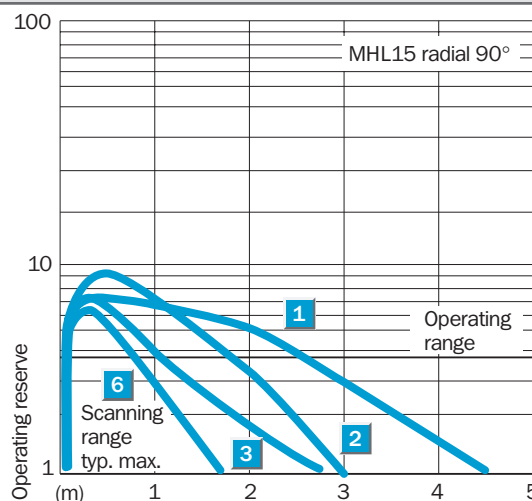
<b>Scanning range SR</b> , typ. max./reflect.	0.035 ... 4.5 m (PL80A)										
<b>Operating range</b>	0.035 ... 2.6 m (PL80A)										
Light spot diameter	Approx. 60 mm at 2.6 m										
Angle of dispersion sender	Approx. 1.5°										
<b>Optical axis</b>	Radial (90°)										
<b>Light source</b> <sup>1)</sup> , <b>light type</b>	LED, red light, with pol. filter, 650 nm										
<b>Light reception indicator</b>	Yellow LED: lights continuously: Reserve factor > 1.5 Blinks: reserve factor > 1.0 ... < 1.5										
<b>Supply voltage V<sub>s</sub></b>	10 ... 30 V DC <sup>2)</sup>										
Residual ripple <sup>3)</sup>	≤ 5 V <sub>pp</sub>										
Current consumption <sup>4)</sup>	≤ 30 mA										
<b>Switching outputs</b>	Q: PNP Q: NPN										
Signal voltage HIGH	V <sub>s</sub> - 2.9 V V <sub>s</sub>										
Signal voltage LOW	Approx. 0 V ≤ 2.9 V										
<b>Switching mode</b>	Light-switching Dark-switching										
<b>Output current I<sub>A</sub> max.</b>	≤ 100 mA										
Response time <sup>5)</sup>	≤ 1.25 ms										
Max. switching frequency <sup>6)</sup>	400/s										
<b>Connection type</b>	plug M12, 3-pin cable <sup>7)</sup> PVC, 2 m, 3 x 0.14 mm <sup>2</sup> , Ø 3.7 mm										
<b>VDE protection class</b>	◊										
<b>Enclosure rating</b>	IP 67, IP 69K										
<b>Circuit protection</b> <sup>8)</sup>	A, B, C										
<b>Ambient temperature T<sub>A</sub></b>	Operation -25 °C ... +55 °C Storage -25 °C ... +70 °C										
<b>Weight</b>	with plug Approx. 8 g with cable 2 m Approx. 91 g										
<b>Housing material</b>	Housing: ABS Optic: PMMA										

1) Average service life 100,000 h at T<sub>A</sub> = +25 °C  
2) Limit values  
3) May not exceed or fall short of V<sub>s</sub> tolerances  
4) Without load  
5) Signal transit time with resistive load  
6) With light/dark ratio 1:1  
7) Do not bend below 0 °C  
8) A = V<sub>s</sub> connections reverse-polarity protected  
B = Interference pulse suppression  
C = Outputs overcurrent and short-circuit protected

### Scanning range and operating reserve



Reflector type	Operating range
1 PL80A	0.035 ... 2.6 m
2 P250	0.035 ... 1.9 m
3 PL50A/PL40A	0.035 ... 1.0 m
4 C110	0.035 ... 2.5 m
5 PL30A/PL31A	0.035 ... 0.9 m
6 PL20A	0.035 ... 0.8 m



### Order information

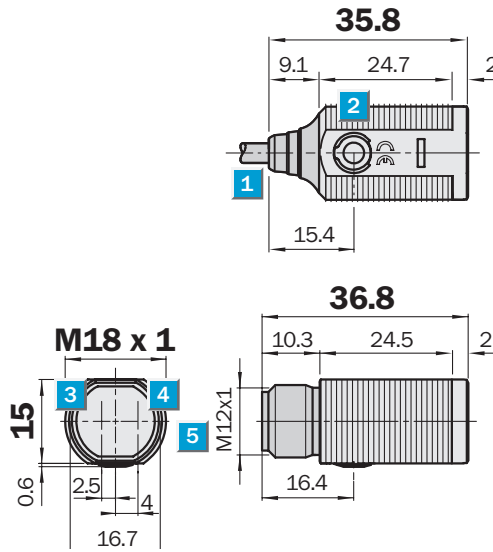
Type	Order no.
MHL15-N2238	1026130
MHL15-N3238	1026131
MHL15-N2338	1026132
MHL15-N3338	1026133
MHL15-P2238	1026134
MHL15-P3238	1026135
MHL15-P2338	1026136
MHL15-P3338	1026137

**Scanning range**  
0 ... 5.0 m

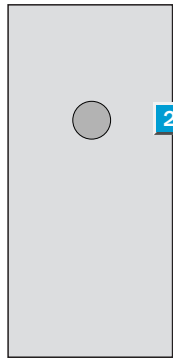
Through-beam photoelectric sensors

- Large range
- LED indicator: Light reception
- Optical axis axial
- Mounting accessories

**Dimensional drawing**



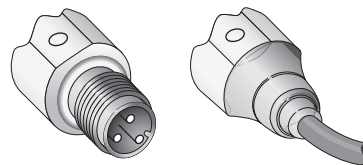
**Adjustments possible**  
All types



- 1 Connector cable 2 m
- 2 Yellow LED indicator (only receiver MHE15):  
- lights continuously:  
Light reception > switching threshold 1
- 3 Axis of sender
- 4 Axis of receiver
- 5 M12 plug, 3-pin

**Connection type**

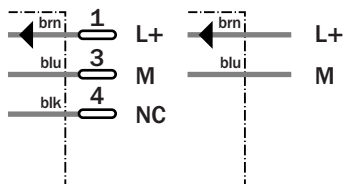
MHSE15-N3236	MHSE15-N2236
MHSE15-N3336	MHSE15-N2336
MHSE15-P3236	MHSE15-P2236
MHSE15-P3336	MHSE15-P2336



IP 69K

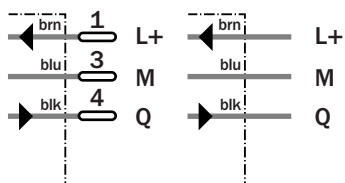
**Sender MHS15**

3-pin, M12	2 x 0.14 mm <sup>2</sup>
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**Receiver MHE15**

3-pin, M12	3 x 0.14 mm <sup>2</sup>
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**Accessories**

Cables and connectors
Mounting systems



Technical data		MHSE15-	P2236	P3236	P2336	P3336	N2236	N3236	N2336	N3336		
Scanning range SR, typ. max.	0 ... 5.0 m											
Operating range	0 ... 3.8 m											
Light spot diameter	Approx. 65 mm at 4.0 m											
Angle of dispersion sender	Approx. 1.5°											
Optical axis	Axial											
Light source <sup>1)</sup> , light type	LED, red light, 650 nm											
Light reception indicator	Yellow LED: lights continuously: Light reception > switching threshold 1											
Supply voltage V <sub>s</sub>	10 ... 30 V DC <sup>2)</sup>											
Residual ripple <sup>3)</sup>	≤ 5 V <sub>pp</sub>											
Current consumption <sup>4)</sup>	≤ 30 mA											
Switching outputs	Q: PNP											
	Q: NPN											
Signal voltage HIGH	V <sub>s</sub> - 2.9 V											
	V <sub>s</sub>											
Signal voltage LOW	Approx. 0 V											
	≤ 2.9 V											
Switching mode	Light-switching											
	Dark-switching											
Output current I <sub>A</sub> max.	≤ 100 mA											
Response time <sup>5)</sup>	≤ 1.4 ms											
Max. switching frequency <sup>6)</sup>	350/s											
Connection type	plug M12, 3-pin											
	cable <sup>7)</sup> sender PVC, 2 m, 2 x 0.14 mm <sup>2</sup> , Ø 3.7 mm											
	cable <sup>7)</sup> receiver PVC, 2 m, 3 x 0.14 mm <sup>2</sup> , Ø 3.7 mm											
VDE protection class	⊠											
Enclosure rating	IP 67, IP 69K											
Circuit protection <sup>8)</sup>	A, B, C											
Ambient temperature T <sub>A</sub>	Operation -25 °C ... +55 °C											
	Storage -25 °C ... +70 °C											
Weight	with plug Sender/receiver each approx. 7 g											
	with cable 2 m Sender/receiver each approx. 90 g											
Housing material	Housing: ABS											
	Optic: PMMA											

<sup>1)</sup> Average service life 100,000 h at T<sub>A</sub> = +25 °C

<sup>2)</sup> Limit values

<sup>3)</sup> May not exceed or fall short of V<sub>s</sub> tolerances

<sup>4)</sup> Without load

<sup>5)</sup> Signal transit time with resistive load

<sup>6)</sup> With light/dark ratio 1:1

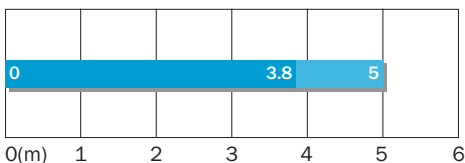
<sup>7)</sup> Do not bend below 0 °C

<sup>8)</sup> A = V<sub>s</sub> connections reverse-polarity protected

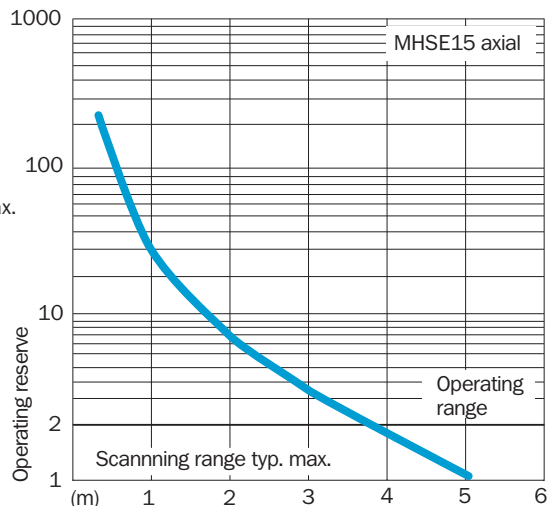
B = Interference pulse suppression

C = Outputs overcurrent and short-circuit protected

### Operating range and operating reserve



■ Operating range    ■ Scanning range typ. max.



### Order information

Type	Order no. <sup>10)</sup>
MHSE15-N2236	1026138
MHSE15-N3236	1026139
MHSE15-N2336	1026140
MHSE15-N3336	1026141
MHSE15-P2236	1026142
MHSE15-P3236	1026143
MHSE15-P2336	1026144
MHSE15-P3336	1026145

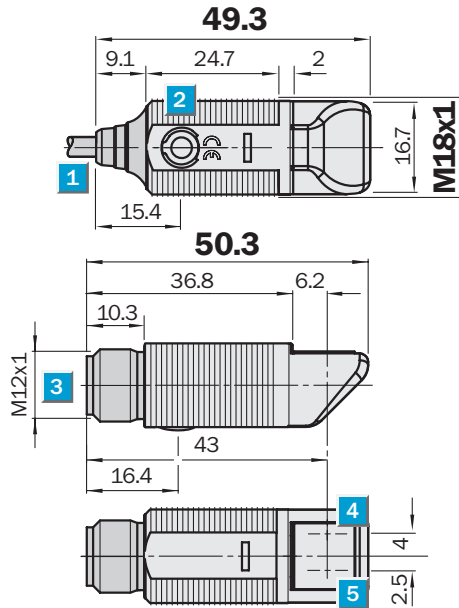
<sup>10)</sup> Order no. includes sender and receiver (pair)

**Scanning range**  
0 ... 4.0 m

Through-beam photoelectric sensors

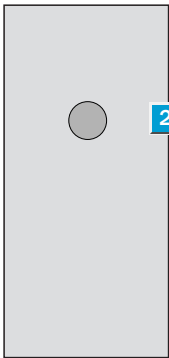
- Large range
- LED indicator: Light reception
- Optical axis radial 90°
- Mounting accessories

**Dimensional drawing**



**Adjustments possible**

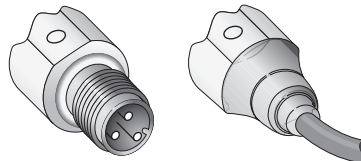
All types



- 1** Connector cable 2 m
- 2** Yellow LED indicator (only receiver MHE15):  
- lights continuously:  
Light reception > switching threshold 1
- 3** M12 plug, 3-pin
- 4** Axis of sender
- 5** Axis of receiver

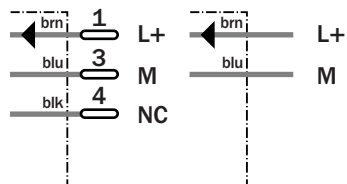
**Connection type**

MHSE15-N3238	MHSE15-N2238
MHSE15-N3338	MHSE15-N2338
MHSE15-P3238	MHSE15-P2238
MHSE15-P3338	MHSE15-P2338



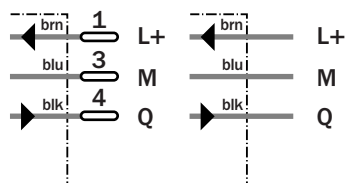
**Sender MHS15**

3-pin, M12	2 x 0.14 mm <sup>2</sup>
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**Receiver MHE15**

3-pin, M12	3 x 0.14 mm <sup>2</sup>
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IP 69K

**Accessories**

Cables and connectors
Mounting systems

Technical data		MHSE15-	P2238	P3238	P2338	P3338	N2238	N3238	N2338	N3338		
<b>Scanning range SR</b> , typ. max.	0 ... 4.0 m											
<b>Operating range</b>	0 ... 2.8 m											
Light spot diameter	Approx. 50 mm at 3 m											
Angle of dispersion sender	Approx. 1.5°											
<b>Optical axis</b>	Radial (90°)											
<b>Light source</b> <sup>1)</sup> , <b>light type</b>	LED, red light, 650 nm											
<b>Light reception indicator</b>	Yellow LED: lights continuously: Light reception > switching threshold 1											
<b>Supply voltage</b> V <sub>s</sub>	10 ... 30 V DC <sup>2)</sup>											
Residual ripple <sup>3)</sup>	≤ 5 V <sub>pp</sub>											
Current consumption <sup>4)</sup>	≤ 30 mA											
<b>Switching outputs</b>	Q: PNP											
	Q: NPN											
Signal voltage HIGH	V <sub>s</sub> - 2.9 V											
	V <sub>s</sub>											
Signal voltage LOW	Approx. 0 V											
	≤ 2.9 V											
<b>Switching mode</b>	Light-switching											
	Dark-switching											
<b>Output current</b> I <sub>A</sub> max.	≤ 100 mA											
Response time <sup>5)</sup>	≤ 1.4 ms											
Max. switching frequency <sup>6)</sup>	350/s											
<b>Connection type</b>	plug M12, 3-pin											
	cable <sup>7)</sup> sender PVC, 2 m, 2 x 0.14 mm <sup>2</sup> , Ø 3.7 mm											
	cable <sup>7)</sup> receiver PVC, 2 m, 3 x 0.14 mm <sup>2</sup> , Ø 3.7 mm											
<b>VDE protection class</b>	⊠											
<b>Enclosure rating</b>	IP 67, IP 69K											
<b>Circuit protection</b> <sup>8)</sup>	A, B, C											
<b>Ambient temperature</b> T <sub>A</sub>	Operation -25 °C ... +55 °C											
	Storage -25 °C ... +70 °C											
<b>Weight</b>	with plug Sender/receiver each approx. 8 g											
	with cable 2 m Sender/receiver each approx. 91 g											
<b>Housing material</b>	Housing: ABS											
	Optic: PMMA											

<sup>1)</sup> Average service life 100,000 h at T<sub>A</sub> = +25 °C

<sup>2)</sup> Limit values

<sup>3)</sup> May not exceed or fall short of V<sub>s</sub> tolerances

<sup>4)</sup> Without load

<sup>5)</sup> Signal transit time with resistive load

<sup>6)</sup> With light/dark ratio 1:1

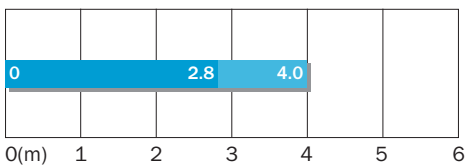
<sup>7)</sup> Do not bend below 0 °C

<sup>8)</sup> A = V<sub>s</sub> connections reverse-polarity protected

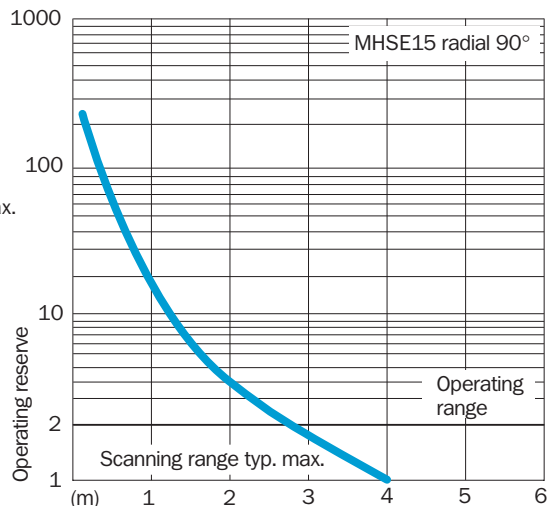
B = Interference pulse suppression

C = Outputs overcurrent and short-circuit protected

### Operating range and operating reserve



■ Operating range    ■ Scanning range typ. max.



### Order information

Type	Order no. <sup>10)</sup>
MHSE15-N2238	1026146
MHSE15-N3238	1026147
MHSE15-N2338	1026148
MHSE15-N3338	1026149
MHSE15-P2238	1026150
MHSE15-P3238	1026151
MHSE15-P2338	1026152
MHSE15-P3338	1026153

<sup>10)</sup> Order no. includes sender and receiver (pair)

Dimensional drawings and order information

SENSICK screw-in system M12, 4-pin, Enclosure rating IP 67

Female connector M12, 4-pin, straight<sup>2)</sup>

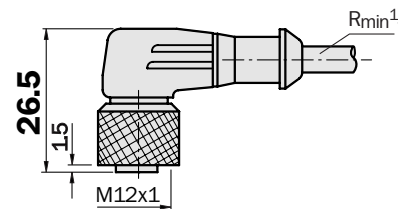
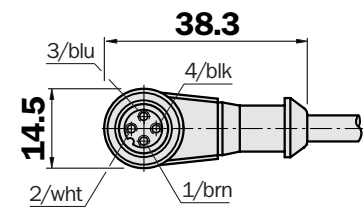
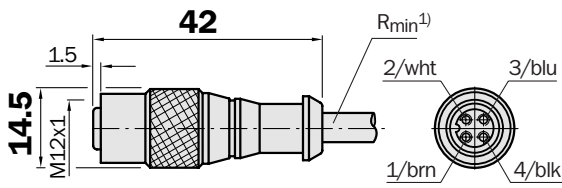
Cable diameter 5 mm, 4 x 0.25 mm<sup>2</sup>, sheath PVC

Type	Order no.	Contacts	Cable length
DOL-1204-G02M	6009382	4	2 m
DOL-1204-G05M	6009866	4	5 m
DOL-1204-G10M	6010543	4	10 m
DOL-1204-G15M	6010753	4	15 m

Female connector M12, 4-pin, right angle<sup>2)</sup>

Cable diameter 5 mm, 4 x 0.25 mm<sup>2</sup>, sheath PVC

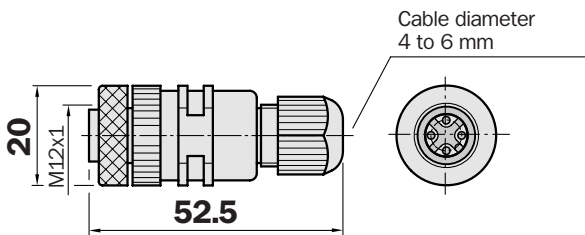
Type	Order no.	Contacts	Cable length
DOL-1204-W02M	6009383	4	2 m
DOL-1204-W05M	6009867	4	5 m
DOL-1204-W10M	6010541	4	10 m



- <sup>1)</sup> Minimum bend radius in dynamic use  
 $R_{min} = 20 \times \text{cable diameter}$
- <sup>2)</sup> Max. tightening torque 0.5 Nm

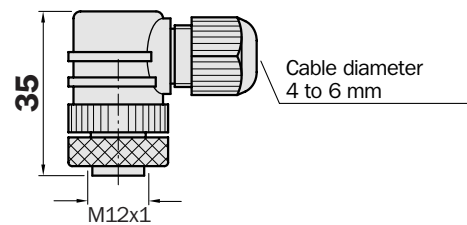
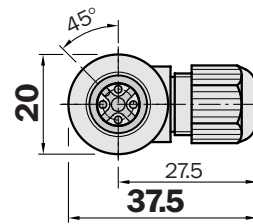
Female connector M12, 4-pin, straight

Type	Order no.	Contacts	Can be adapted for cables $\varnothing$ 4.5 to 6.5 mm
DOS-1204-G	6007302	4	



Female connector M12, 4-pin, right angle

Type	Order no.	Contacts	Can be adapted for cables $\varnothing$ 4.5 to 6.5 mm
DOS-1204-W	6007303	4	

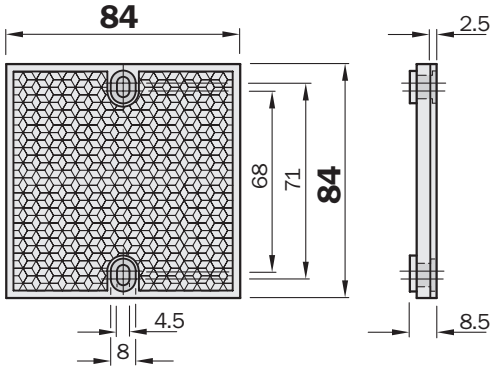


Dimensional drawings and order information

Reflectors for MHL15, plastic design for temperatures up to 65 °C

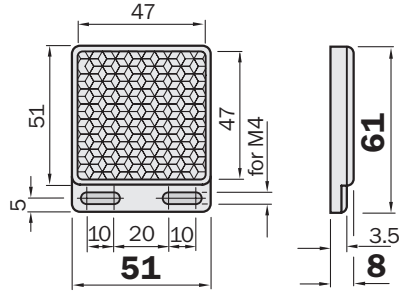
Reflector 80 x 80 mm

Type	Order no.
PL80A	1003865



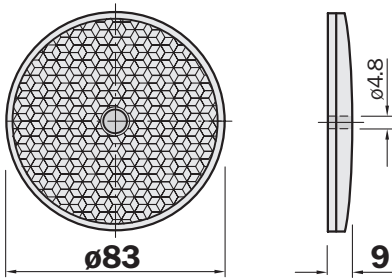
Reflector 47 x 47 mm

Type	Order no.
P250	5304812



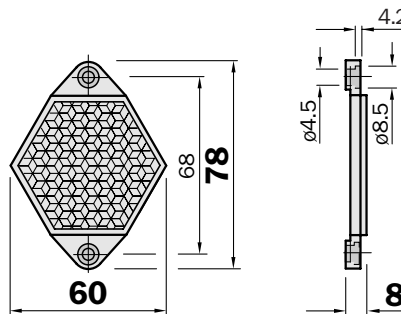
Reflector, diameter 83 mm, center hole mounting

Type	Order no.
C110	5304549



Reflector, 6-sided, width across flats 48 mm

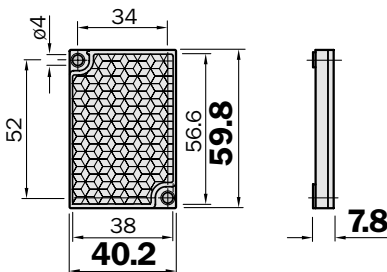
Type	Order no.
PL50A	1000132



Also available in heatable model:  
 Permanent heating: PL50HK,  
 Order no. 1001545  
 Controlled heating: PL50HS  
 Order no. 1009871

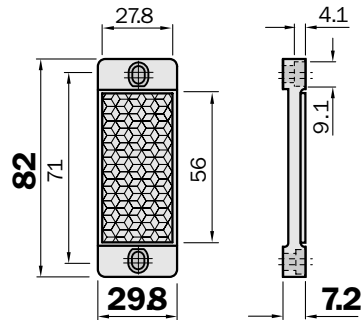
Reflector 38 x 56 mm

Type	Order no.
PL40A	1012720



Reflector 28 x 56 mm

Type	Order no.
PL30A	1002314

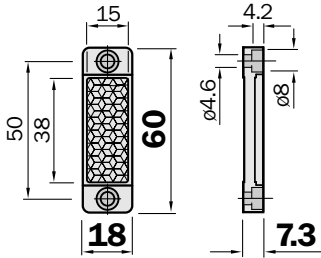


## Dimensional drawings and order information

### Reflectors for MHL15, plastic design for temperatures up to 65 °C

#### Reflector 15 x 38 mm

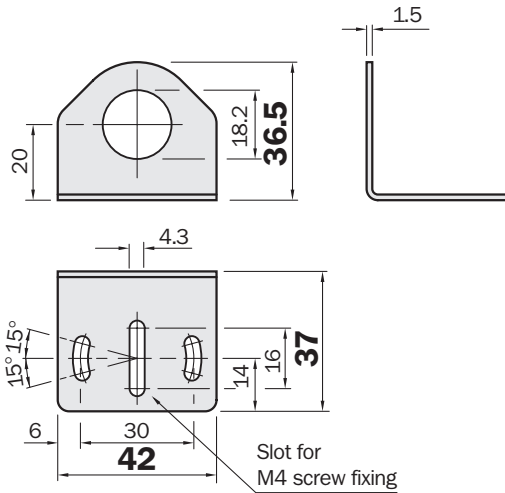
Type	Order no.
PL20A	1012719



## Mounting systems

#### Mounting bracket

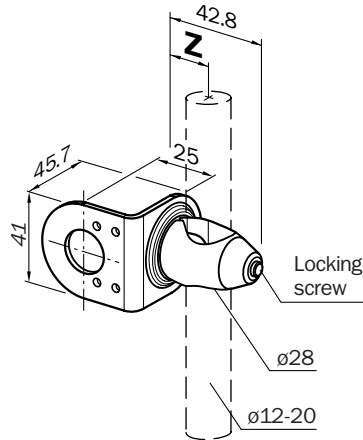
Type	Order no.
BEF-WN-M18	5308446



#### Universal bracket (rod mounting) for sensors

Distance Z: bar centre - inner plate surface

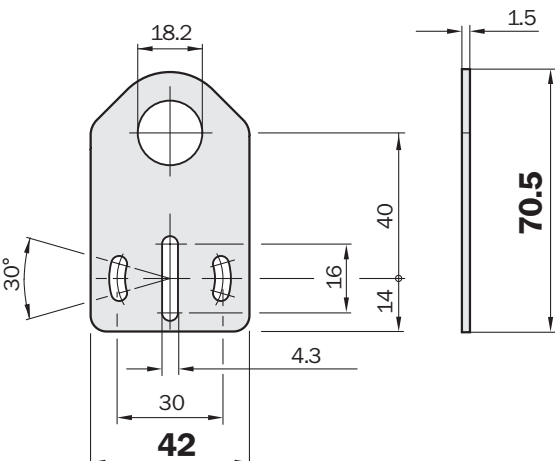
Type	Order no. *)	Bar- $\phi$ (mm)	Distance Z (mm)
BEF-KHS-H01	2022465	12	15.0
		14	16.4
		15	17.1
		18	19.2
		20	20.7



\*) Order no. includes bar support with mounting plate and mounting material

#### Mounting plate, steel, galvanised

Type	Order no.
BEF-WG-M18	5321870

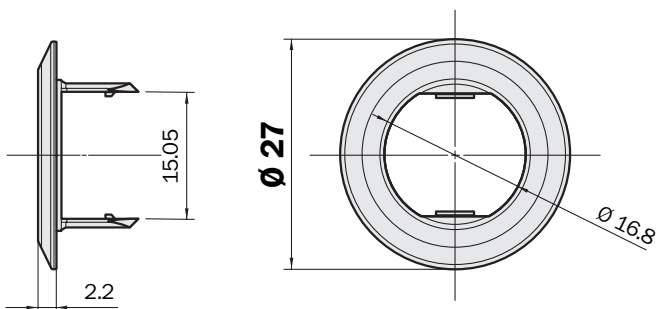


Dimensional drawings and order information

Mounting systems

Mounting ring for MH15

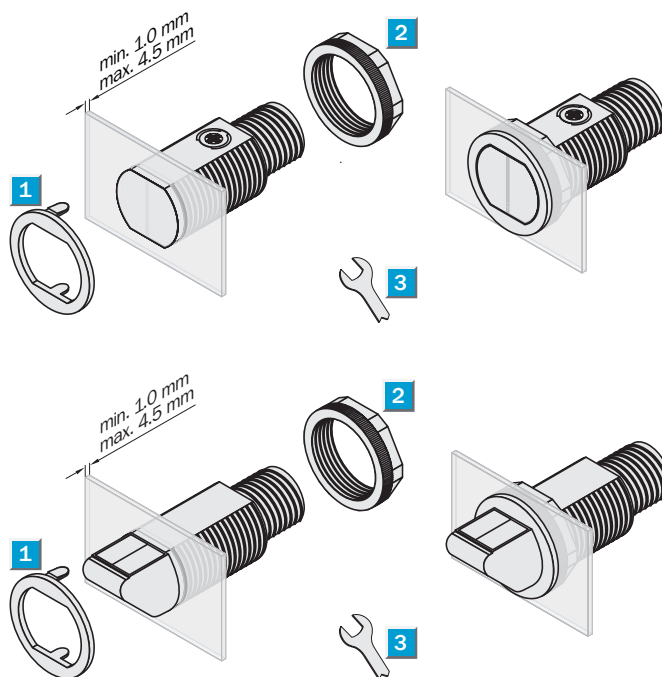
Type	Order no. **)
BEF-WN-MH15-1	4039533



\*\*) Supplied with MH15

Mounting kit for MH15 \*\*) for flush mounting, 2 x nuts M18

Description	Type	Order no. **)
1 x Mounting ring	BEF-WN-MH15-1	4039533
2 x nuts M18	Mutter-M18-MH15	4040270



- 1** Adapter BEF-WN-MH15-1 (4 039 533) for flush mounting \*\*)
- 2** 2 x locknuts M18-MH15 (4 040 270 \*\*) (SW22)
- 3** **Mounting Instructions for MH15**

MH15 mounting with a combination of 1 x mounting ring **1** and 1 x locknut M18 **2**: maximum torque 0.9 Nm

MH15 mounting with a combination of 2 x locknuts M18 **2** on both sides: maximum torque 2.0 Nm

\*\*) Supplied with MH15

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