





# W 2: Sub-Miniature Photoelectric Switch Range: Super-Small and Powerful

	<b>BGS Photoelectric proximity switch</b>
	<b>Energ. Photoelectric proximity switch</b>
	<b>Photoelectric reflex switch</b>



	<b>Through-beam photoelectric switch</b>
--	--

**C**onfined spaces in and around machinery - and yet the sensor must meet exacting requirements? The Series W 2 photoelectric switches and photoelectric proximity switches, in two specially developed housing configurations, fit into the smallest spaces and are suitable for virtually any task. Largely insensitive to ambient light and unwanted background reflections, these sensors reliably perform their tasks, even in arduous daily industrial use.

The W 2 range offers particular benefits:

- Small housing dimensions allow fitting very close to objects.
- Fast commissioning, easy connection, alignment - ready.
- Laser-like light spot dimensions enable precise detection, e.g. for positioning tasks.

- Even transparent objects or product with reflective surfaces can be detected reliably and accurately.

The following W 2 options are available:

- Photoelectric proximity switches with background suppression and scanning distances of 15 mm and 30 mm.
- Energetic photoelectric proximity switches with "V" optics and scanning distances of 9 mm, 18 mm and 55 mm.
- Energetic photoelectric proximity switches with scanning distances of 34 mm and 115 mm.
- Photoelectric reflex switches with a scanning range of 1.5 m.
- Through-beam photoelectric proximity switches with scanning ranges of 0.5 m and 1.2 m.

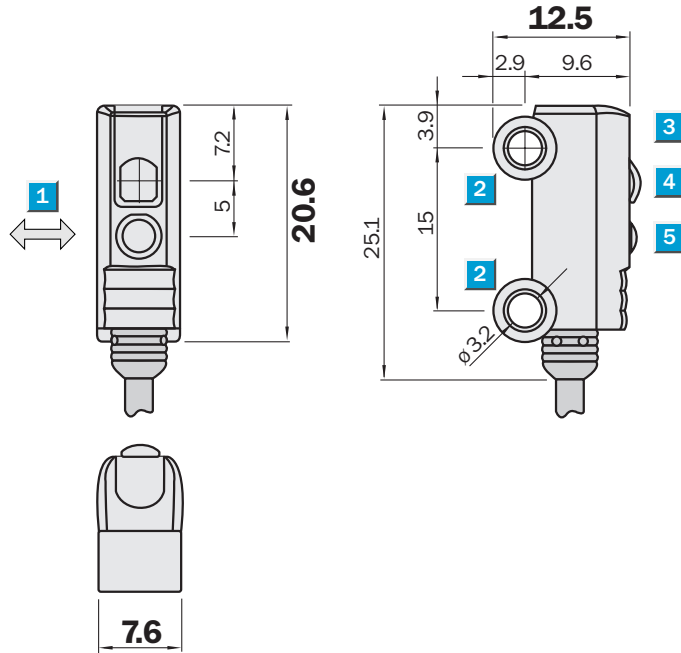
# Photoelectric proximity switch, WT 2 Slim, BGS, red light

**Scanning distance**  
1 ... 15/30 mm

Photoelectric proximity switch

- A focused, laser-like light spot makes the most precise detection jobs possible
- Insensitive to interference from critical backgrounds
- Sturdy housing with metal sleeves for M3 bolts

## Dimensional drawing

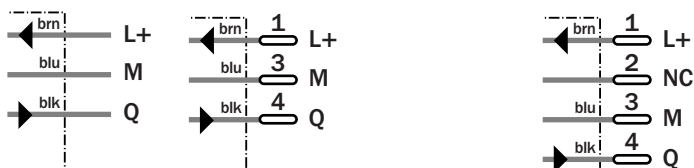
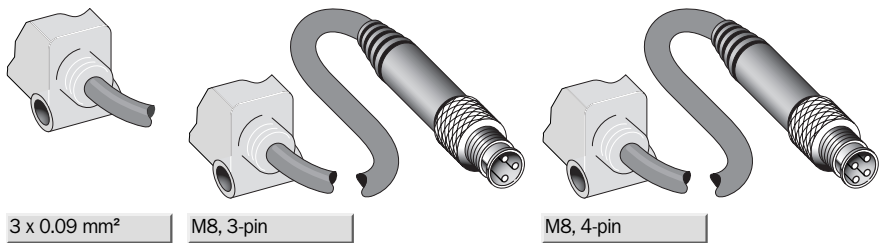


- 1 Standard direction of material being scanned
- 2 Mounting hole  $\varnothing 3.2$  mm
- 3 LED signal strength indicator
- 4 Optical axis, receiver
- 5 Optical axis, sender



## Connection type

WT2S-F131	WT2S-F211	WT2S-P411
WT2S-N111	WT2S-P211	WT2S-P431
WT2S-N131	WT2S-P231	
WT2S-P111		
WT2S-P131		



**Accessories**

Connector, M8, 3-pin
Connector, M8, 4-pin
Mounting systems

Technical specifications		WT2S-	F131	F211	N111	N131	P111	P131	P211	P231	P411	P431
Scanning distance typ. max.	1 ... 30 mm <sup>1)</sup>											
	1 ... 15 mm <sup>1)</sup>											
Light source, light type	Pin Point LED, Red light <sup>2)</sup>											
Light spot diameter	Approx. 1.0 mm at 15 mm distance											
	Approx. 1.2 mm at 8 mm distance											
	Approx. 2.5 mm at 15 mm distance											
Supply voltage V <sub>s</sub>	DC 10 ... 30 V <sup>3)</sup>											
Ripple	< 5 V <sub>ss</sub> <sup>4)</sup>											
Power consumption	< 20 mA <sup>5)</sup>											
Switching outputs	PNP, Q											
	NPN, Q											
Switching mode	Dark-switching											
	Light-switching											
Output current I <sub>a</sub> max	< 50 mA											
Response time	< 0.6 ms <sup>6)</sup>											
Switching frequency	800 Hz <sup>7)</sup>											
Connection type	Cable, PVC, 2 m <sup>8)</sup>											
	Cable with plug, M8, 3-pin, PVC, 200 mm <sup>8)</sup>											
	Cable with plug, M8, 4-pin, PVC, 200 mm <sup>8)</sup>											
VDE protection class	⊠											
Circuit protection	V <sub>s</sub> connections reverse-polarity protected / Output Q and Q not short-circuit protected / Interference suppression											
Enclosure rating	IP 67											
Ambient temperature operation	-20 °C ... +50 °C											
Ambient temperature storage	-40 °C ... +75 °C											
Weight	18 g											
	20 g											
Housing material	ABS, PMMA											

<sup>1)</sup> Object with 90% remission (based on standard white to DIN 5033)

<sup>2)</sup> Average service life 75,000 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

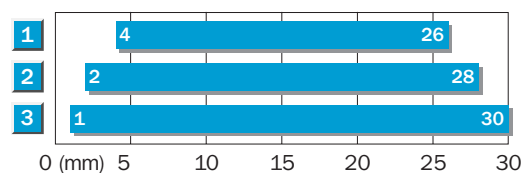
<sup>6)</sup> Signal transit time with resistive load

<sup>7)</sup> With light/dark ratio 1:1

<sup>8)</sup> Do not bend below 0 °C

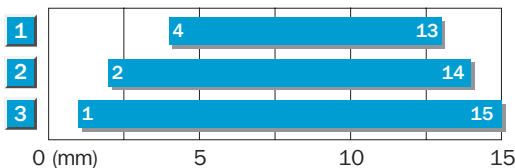
### Scanning distance and light spot diameter

#### Scanning distance 1 ... 30 mm



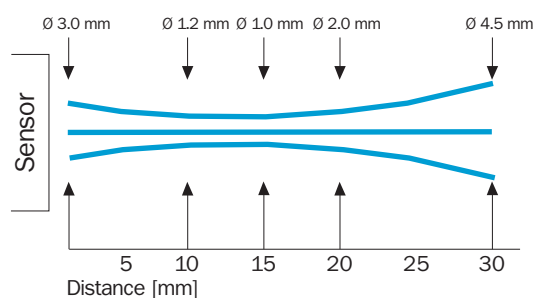
- 1 Scanning distance on black, 6 % remission
- 2 Scanning distance on grey, 18 % remission
- 3 Scanning distance on white, 90 % remission

#### Scanning distance 1 ... 15 mm

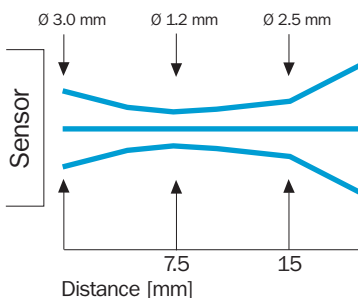


- 1 Scanning distance on black, 6 % remission
- 2 Scanning distance on grey, 18 % remission
- 3 Scanning distance on white, 90 % remission

#### Light spot diameter at SD 1 ... 30 mm




#### Light spot diameter at SD 1 ... 30 mm



#### Ordering information

Type	Order No.
WT2S-F131	1 025 682
WT2S-F211	1 024 171
WT2S-N111	1 022 662
WT2S-N131	1 022 663
WT2S-P111	1 022 660
WT2S-P131	1 022 661
WT2S-P211	1 022 658
WT2S-P231	1 022 659
WT2S-P411	1 023 631
WT2S-P431	1 023 632

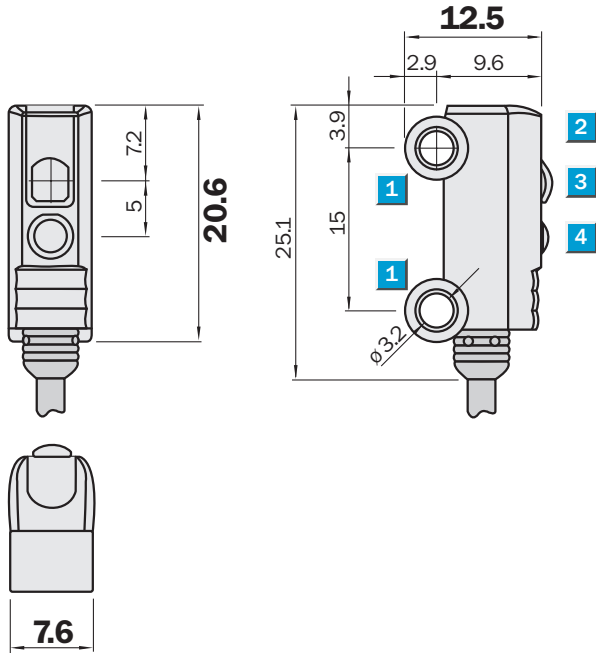
# Photoelectric proximity switch, WT 2 Slim, energetic, V optics, red light


**Scanning distance**  
**1 ... 55 mm**

Photoelectric proximity switch

- Precise, small light spot
- Extremely good size/performance ratio
- Sturdy housing with metal sleeves for M3 bolts

## Dimensional drawing



- 1 Mounting hole  $\varnothing$  3.2 mm
- 2 LED signal strength indicator
- 3 Optical axis, receiver
- 4 Optical axis, sender

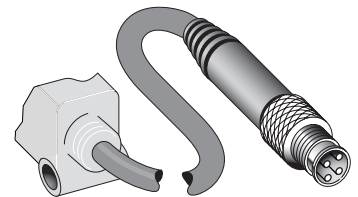
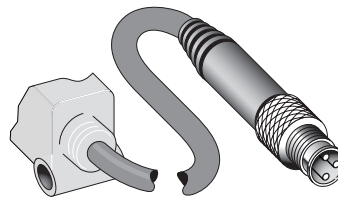
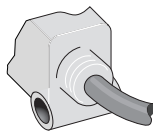


## Connection type

WT2S-N161  
WT2S-P161

WT2S-P261

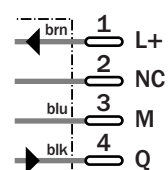
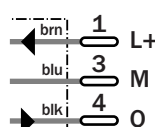
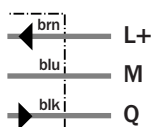
WT2S-P461



3 x 0.09 mm<sup>2</sup>

M8, 3-pin

M8, 4-pin



## Accessories

- Connector, M8, 3-pin
- Connector, M8, 4-pin
- Mounting systems

Technical specifications		WT2S-	N161	P161	P261	P461						
<b>Scanning distance typ. max.</b>	1 ... 55 mm <sup>1)</sup>											
<b>Light source, light type</b>	Pin Point LED, Red light <sup>2)</sup>											
Light spot diameter	Approx. 3.5 mm at 50 mm distance											
<b>Supply voltage V<sub>s</sub></b>	DC 10 ... 30 V <sup>3)</sup>											
Ripple	< 5 V <sub>ss</sub> <sup>4)</sup>											
Power consumption	< 20 mA <sup>5)</sup>											
<b>Switching outputs</b>	NPN, Q											
	PNP, Q											
Switching mode	Light-switching											
Output current I <sub>a</sub> max	< 50 mA											
Response time	< 0.6 ms <sup>6)</sup>											
Switching frequency	800 Hz <sup>7)</sup>											
<b>Connection type</b>	Cable, PVC, 2 m <sup>8)</sup>											
	Cable with plug, M8, 3-pin, PVC, 200 mm <sup>8)</sup>											
	Cable with plug, M8, 4-pin, PVC, 200 mm <sup>8)</sup>											
<b>VDE protection class</b>	⊕											
<b>Circuit protection</b>	V <sub>s</sub> connections reverse-polarity protected / Output Q and Q not short-circuit protected / Interference suppression											
<b>Enclosure rating</b>	IP 67											
<b>Ambient temperature operation</b>	-20 °C ... +50 °C											
<b>Ambient temperature storage</b>	-40 °C ... +75 °C											
<b>Weight</b>	18 g											
	20 g											
<b>Housing material</b>	ABS, PMMA											

<sup>1)</sup> Object with 90% remission (based on standard white to DIN 5033)

<sup>2)</sup> Average service life 75,000 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

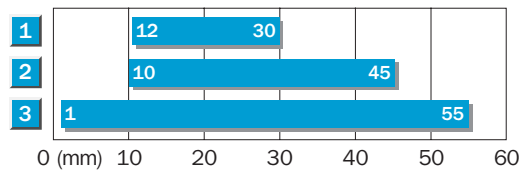
<sup>5)</sup> Without load

<sup>6)</sup> Signal transit time with resistive load

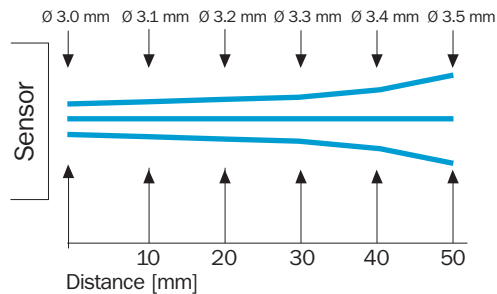
<sup>7)</sup> With light/dark ratio 1:1

<sup>8)</sup> Do not bend below 0 °C

### Scanning distance and light spot diameter




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



### Ordering information

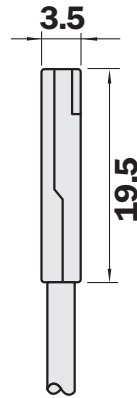
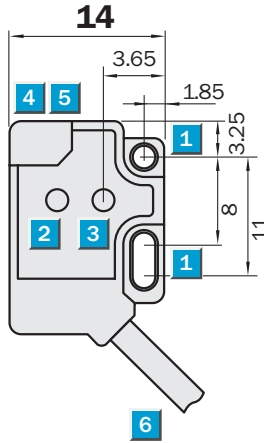
Type	Order No.
WT2S-N161	1 022 665
WT2S-P161	1 022 664
WT2S-P261	1 023 640
WT2S-P461	1 023 641

 **Scanning distance**  
1/2 ... 9/18 mm

**Photoelectric proximity switch**

- Detection of transparent and reflective objects
- Robust housing with metal-reinforced fixing holes
- Simple adjustment. Connect, align - ready
- No external amplifier required. Can be directly connected to the machine control system

**Dimensional drawing**

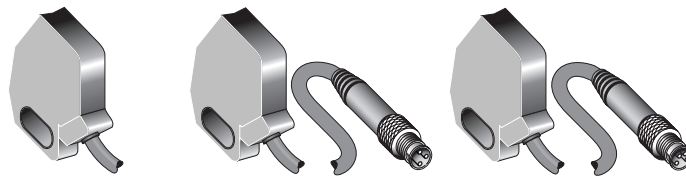


- 1 Mounting hole Ø 2.1 mm
- 2 Optical axis, sender
- 3 Optical axis, receiver
- 4 LED indicator orange; output active
- 5 LED indicator green; strength indicator
- 6 Connection



**Connection type**

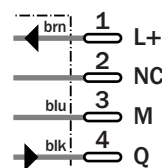
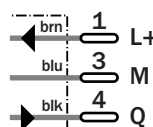
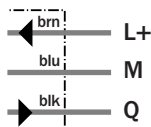
WT2F-N140	WT2F-P240	WT2F-P440
WT2F-N170	WT2F-P270	WT2F-P470
WT2F-P140		
WT2F-P170		



3 x 0.09 mm<sup>2</sup>

M8, 3-pin

M8, 4-pin



**Accessories**

Connector, M8, 3-pin
Connector, M8, 4-pin

Technical specifications		WT2F-	N140	N170	P140	P170	P240	P270	P440	P470
<b>Scanning distance typ. max.</b>	2 ... 18 mm <sup>1)</sup>									
	1 ... 9 mm <sup>1)</sup>									
<b>Operating distance</b>	2 ... 15 mm <sup>1)</sup>									
	1 ... 8 mm <sup>1)</sup>									
<b>Light source, light type</b>	LED, Red light, 660 nm <sup>2)</sup>									
<b>Supply voltage V<sub>s</sub></b>	DC 12 ... 24 V <sup>3)</sup>									
Ripple	≤ 5 V <sub>ss</sub> <sup>4)</sup>									
Power consumption	≤ 20 mA <sup>5)</sup>									
<b>Switching outputs</b>	NPN: open collector: Q									
	PNP: open collector: Q									
Switching mode	Light-switching									
Signal voltage PNP HIGH / LOW	V <sub>s</sub> - 1.8 V / approx. 0 V									
Signal voltage NPN HIGH / LOW	Approx. V <sub>s</sub> / < 1.8 V									
Output current I <sub>a</sub> max	≤ 50 mA									
Response time	≤ 0.5 ms <sup>6)</sup>									
Switching frequency	1,000 Hz <sup>7)</sup>									
<b>Connection type</b>	Cable, PVC, 2 m <sup>8)</sup>									
	Cable with plug, M8, 3-pin, PVC, 200 mm <sup>8)</sup>									
	Cable with plug, M8, 4-pin, PVC, 200 mm <sup>8)</sup>									
<b>VDE protection class</b>	◆									
<b>Circuit protection</b>	V <sub>s</sub> connections reverse-polarity protected / In-/outputs short-circuit protected / Outputs overcurrent and short-circuit protected									
<b>Enclosure rating</b>	IP 67									
<b>Ambient temperature operation</b>	-20 °C ... +50 °C									
<b>Ambient temperature storage</b>	-40 °C ... +75 °C									
<b>Weight</b>	ca. 20 g									
<b>Housing material</b>	PC / PBT, PC									

<sup>1)</sup> Object with 90% remission (based on standard white to DIN 5033)

<sup>2)</sup> Average service life 100,000 h

at T<sub>a</sub> = +25 °C

<sup>3)</sup> ± 10%

<sup>4)</sup> May not exceed or fall short of

V<sub>s</sub> tolerances

<sup>5)</sup> Without load

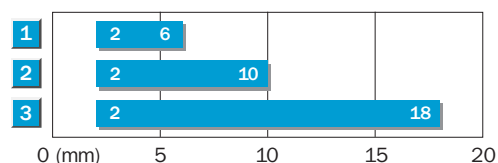
<sup>6)</sup> Signal transit time with resistive load

<sup>7)</sup> With light/dark ratio 1:1

<sup>8)</sup> Do not bend below 0 °C

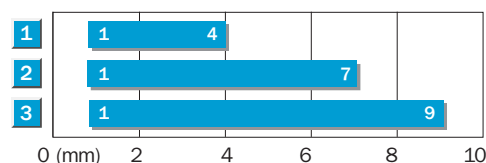
**Scanning distance and function reserve**

**Scanning distance 2 ... 18 mm**

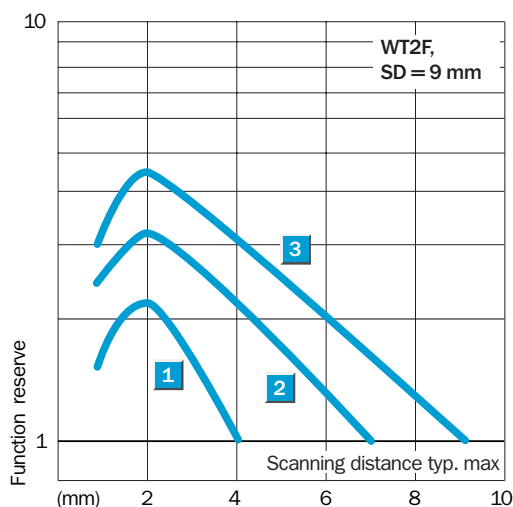
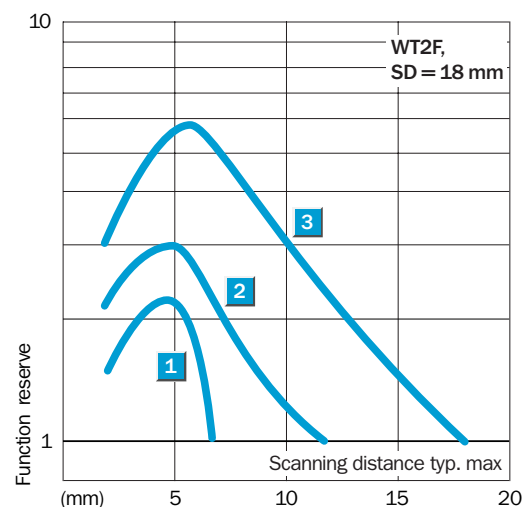


- 1 Scanning distance on black, 6 % remission
- 2 Scanning distance on grey, 18 % remission
- 3 Scanning distance on white, 90 % remission

**Scanning distance 1 ... 9 mm**




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



**Ordering information**

Type	Order No.
WT2F-N140	6 030 583
WT2F-N170	6 030 587
WT2F-P140	6 030 584
WT2F-P170	6 030 588
WT2F-P240	6 030 585
WT2F-P270	6 030 589
WT2F-P440	6 030 586
WT2F-P470	6 030 590

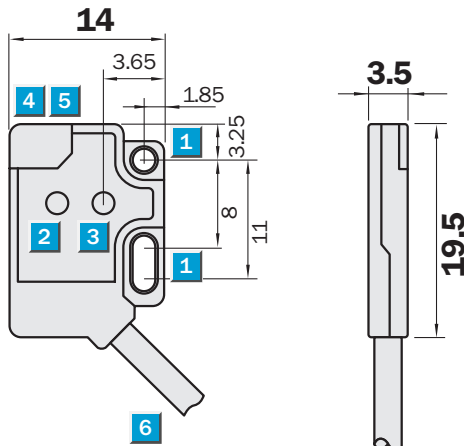
# Photoelectric proximity switch, WT 2 Flat, energetic, red light

 **Scanning distance**  
2/4 ... 34/115 mm

**Photoelectric proximity switch**

- Robust housing with metal-reinforced fixing holes
- Simple adjustment.  
Connect, align - ready
- No external amplifier required.  
Can be directly connected to the machine control system

## Dimensional drawing

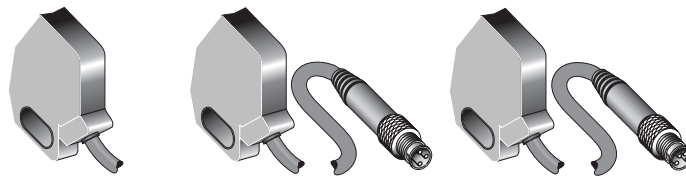


- 1 Mounting hole  $\varnothing$  2.1 mm
- 2 Optical axis, sender
- 3 Optical axis, receiver
- 4 LED indicator orange; output active
- 5 LED indicator green; strength indicator
- 6 Connection



## Connection type

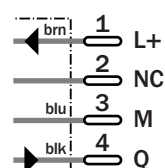
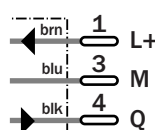
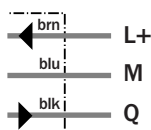
WT2F-N150	WT2F-P250	WT2F-P450
WT2F-N180	WT2F-P280	WT2F-P480
WT2F-P150		
WT2F-P180		



3 x 0.09 mm<sup>2</sup>

M8, 3-pin

M8, 4-pin



## Accessories

Connector, M8, 3-pin

Connector, M8, 4-pin

Technical specifications		WT2F-	N150	N180	P150	P180	P250	P280	P450	P480
<b>Scanning distance typ. max.</b>	2 ... 34 mm <sup>1)</sup>									
	4 ... 115 mm <sup>1)</sup>									
<b>Operating distance</b>	2 ... 30 mm <sup>1)</sup>									
	4 ... 100 mm <sup>1)</sup>									
<b>Light source, light type</b>	LED, Red light, 660 nm <sup>2)</sup>									
<b>Supply voltage V<sub>s</sub></b>	DC 12 ... 24 V <sup>3)</sup>									
Ripple	≤ 5 V <sub>ss</sub> <sup>4)</sup>									
Power consumption	≤ 20 mA <sup>5)</sup>									
<b>Switching outputs</b>	NPN: open collector: Q									
	PNP: open collector: Q									
Switching mode	Light-switching									
Signal voltage PNP HIGH / LOW	V <sub>s</sub> - 1.8 V / approx. 0 V									
Signal voltage NPN HIGH / LOW	Approx. V <sub>s</sub> / < 1.8 V									
Output current I <sub>a</sub> max	≤ 50 mA									
Response time	≤ 0.5 ms <sup>6)</sup>									
Switching frequency	1,000 Hz <sup>7)</sup>									
<b>Connection type</b>	Cable, PVC, 2 m <sup>8)</sup>									
	Cable with plug, M8, 3-pin, PVC, 200 mm <sup>8)</sup>									
	Cable with plug, M8, 4-pin, PVC, 200 mm <sup>8)</sup>									
<b>VDE protection class</b>	◆									
<b>Circuit protection</b>	V <sub>s</sub> connections reverse-polarity protected / In-/outputs short-circuit protected / Outputs overcurrent and short-circuit protected									
<b>Enclosure rating</b>	IP 67									
<b>Ambient temperature operation</b>	-20 °C ... +50 °C									
<b>Ambient temperature storage</b>	-40 °C ... +75 °C									
<b>Weight</b>	ca. 20 g									
<b>Housing material</b>	PC / PBT, PC									

<sup>1)</sup> Object with 90% remission (based on standard white to DIN 5033)  
<sup>2)</sup> Average service life 100,000 h

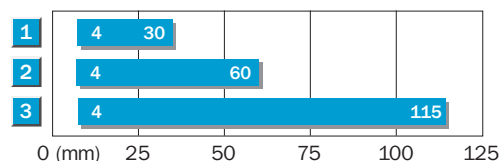
at T<sub>a</sub> = +25°C  
<sup>3)</sup> ± 10%  
<sup>4)</sup> May not exceed or fall short of

V<sub>s</sub> tolerances  
<sup>5)</sup> Without load  
<sup>6)</sup> Signal transit time with resistive load

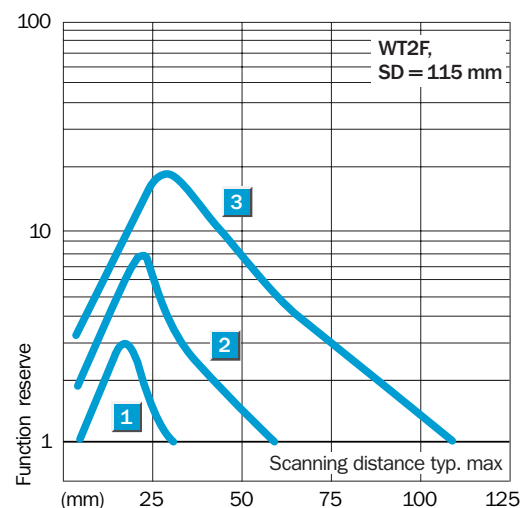
<sup>7)</sup> With light/dark ratio 1:1  
<sup>8)</sup> Do not bend below 0 °C

**Scanning distance and function reserve**

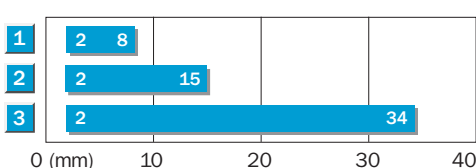
**Scanning distance 4 ... 115 mm**



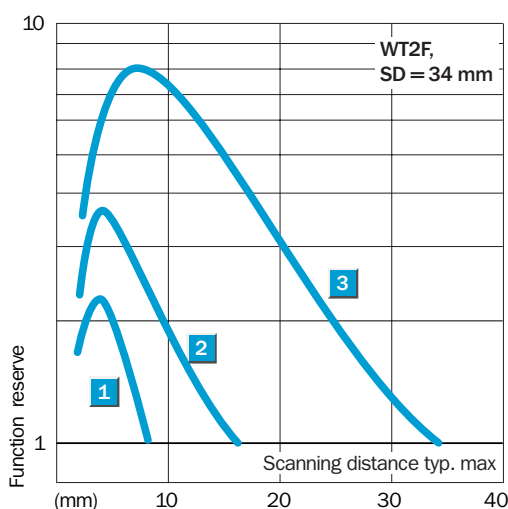
- 1 Scanning distance on black, 6 % remission
- 2 Scanning distance on grey, 18 % remission
- 3 Scanning distance on white, 90 % remission



**Scanning distance 2 ... 34 mm**




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



**Ordering information**

Type	Order No.
WT2F-N150	6 030 576
WT2F-N180	6 030 572
WT2F-P150	6 030 580
WT2F-P180	6 030 573
WT2F-P250	6 030 581
WT2F-P280	6 030 574
WT2F-P450	6 030 582
WT2F-P480	6 030 575

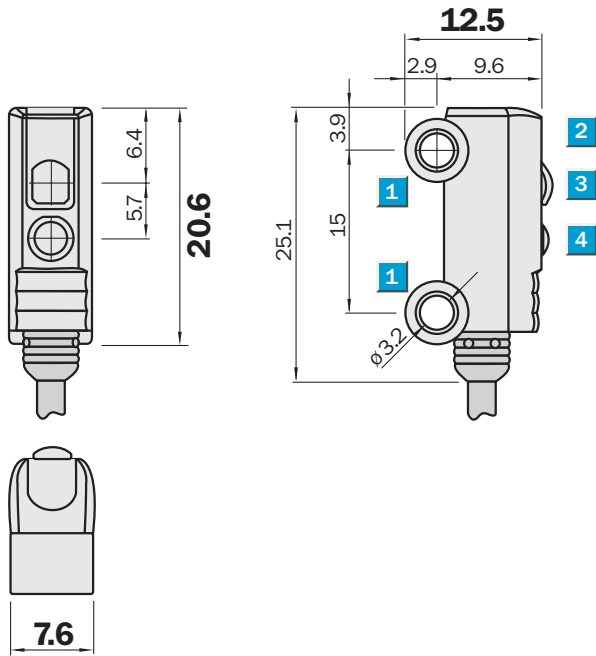
# Photoelectric reflex switch, WL 2 Slim, red light


**Scanning range**  
**0.04 ... 0.8 m**

Photoelectric reflex switch

- Extremely good size /performance ratio
- Easy and fast alignment using ball joint bracket
- Sturdy housing with metal sleeves for M3 bolts

## Dimensional drawing

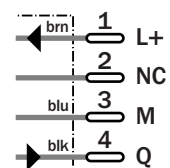
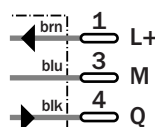
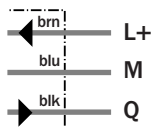
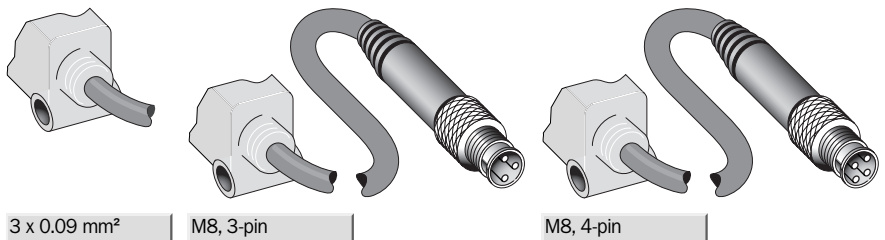


- 1 Mounting hole  $\varnothing 3.2$  mm
- 2 LED signal strength indicator
- 3 Optical axis, receiver
- 4 Optical axis, sender



## Connection type

WL2S-E111	WL2S-F211	WL2S-F411
WL2S-F111	WL2S-P211	
WL2S-N111		
WL2S-P111		



## Accessories

- Connector, M8, 3-pin
- Connector, M8, 4-pin
- Mounting systems
- Reflectors

Technical specifications		WL2S-	E111	F111	F211	F411	N111	P111	P211
Scanning range typ. max.	0.04 ... 0.8 m								
Scanning range, recommended	0.04 ... 0.4 m								
Relating to	Reflector PL 20 A								
Light source, light type	Pin Point LED, Red light <sup>1)</sup>								
Light spot diameter	10 mm at 100 mm distance								
Supply voltage V <sub>s</sub>	DC 10 ... 30 V <sup>2)</sup>								
Ripple	< 5 V <sub>ss</sub> <sup>3)</sup>								
Power consumption	< 20 mA <sup>4)</sup>								
Switching outputs	NPN, Q								
	PNP, Q								
Switching mode	Dark-switching								
	Light-switching								
Output current I <sub>a</sub> max	< 50 mA								
Response time	< 0.6 ms <sup>5)</sup>								
Switching frequency	800 Hz <sup>6)</sup>								
Connection type	Cable, PVC, 2 m <sup>7)</sup>								
	Cable with plug, M8, 3-pin, PVC, 200 mm <sup>7)</sup>								
	Cable with plug, M8, 4-pin, PVC, 2 m <sup>7)</sup>								
VDE protection class	◆								
Circuit protection	V <sub>s</sub> connections reverse-polarity protected / Output Q and Q not short-circuit protected / Interference suppression								
Enclosure rating	IP 67								
Ambient temperature operation	-20 °C ... +50 °C								
Ambient temperature storage	-40 °C ... +75 °C								
Weight	18 g								
	20 g								
Housing material	ABS, PMMA								

<sup>1)</sup> Average service life 75,000 h at T<sub>a</sub> = +25 °C

<sup>2)</sup> Limit values

<sup>3)</sup> May not exceed or fall short

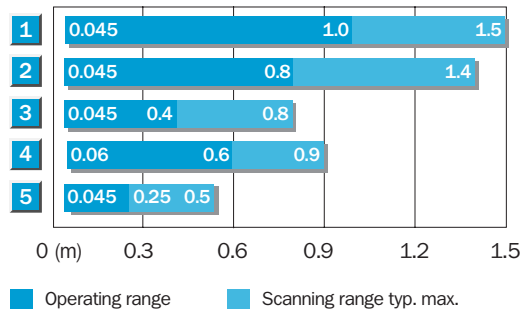
<sup>4)</sup> Without load

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

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

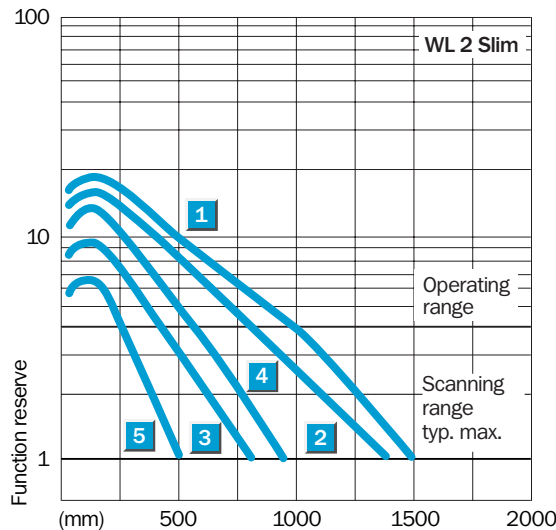
<sup>7)</sup> Do not bend below 0 °C

**Scanning range and function reserve**



Reflector Type	Operating range
1 PL 40 A	0.045 ... 1.0 m
2 PL 30 A	0.045 ... 0.8 m
3 PL 20 A	0.045 ... 0.4 m
4 PL 22	0.06 ... 0.6 m
5 PL 10 F *)	0.045 ... 0.25 m

\*) With reflector arrangement along the sensor axis



**Ordering information**

Type	Order No.
WL2S-E111	1 022 667
WL2S-F111	1 022 666
WL2S-F211	1 023 868
WL2S-F411	1 023 644
WL2S-N111	1 023 870
WL2S-P111	1 023 869
WL2S-P211	1 024 249

# Through-beam photoelectric switch, WS/WE 2 Slim, red light

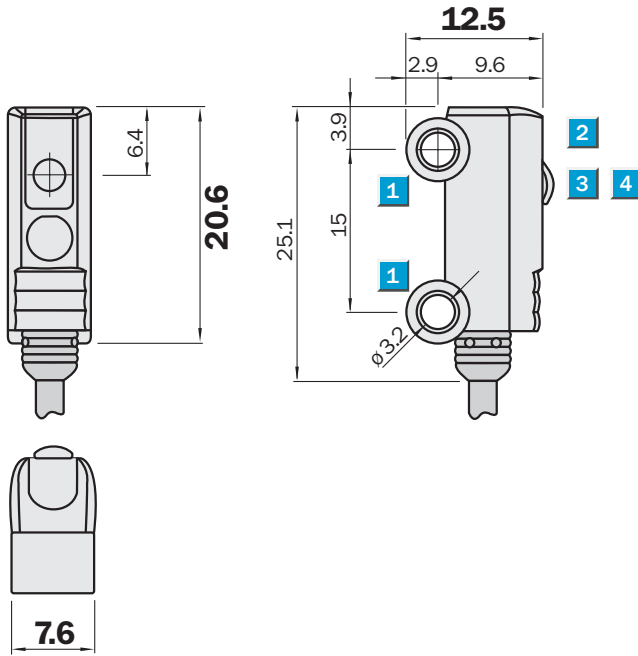


**Scanning range**  
0 ... 1.2 m

Through-beam photoelectric

- Excellent size/performance ratio
- Sturdy housing with metal sleeves for M3 bolts

## Dimensional drawing

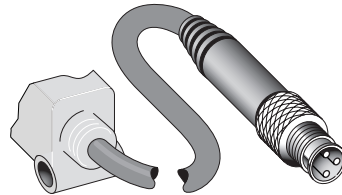
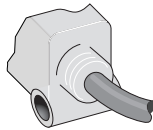


- 1 Mounting hole  $\phi$  3.2 mm
- 2 LED signal strength indicator
- 3 Optical axis, receiver
- 4 Optical axis, sender

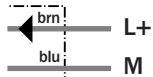
## Connection type

WS/WE2S-E113  
WS/WE2S-F113

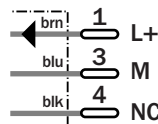
WS/WE2S-F213



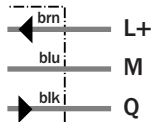
Sender 2 x 0.09 mm<sup>2</sup>



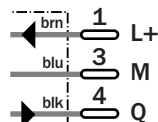
M8, 3-pin



Receiver 3 x 0.09 mm<sup>2</sup>



M8, 3-pin



## Accessories

Connector, M8, 3-pin  
Mounting systems

Technical specifications		WS/WE2S-	E113	F113	F213							
<b>Scanning range typ. max.</b>	0 ... 1.2 m											
<b>Scanning range, recommended</b>	0 ... 1 m											
<b>Light source, light type</b>	Pin Point LED, Red light <sup>1)</sup>											
Light spot diameter	10 mm at 100 mm distance											
<b>Supply voltage V<sub>s</sub></b>	DC 10 ... 30 V <sup>2)</sup>											
Ripple	< 5 V <sub>ss</sub> <sup>3)</sup>											
Power consumption, sender	< 20 mA <sup>4)</sup>											
Power consumption, receiver	< 10 mA <sup>4)</sup>											
<b>Switching outputs</b>	NPN, Q											
	PNP, Q											
Switching mode	Dark-switching											
Output current I <sub>a</sub> max	< 50 mA											
Response time	< 2.5 ms <sup>5)</sup>											
Switching frequency	200 Hz <sup>6)</sup>											
<b>Connection type</b>	Cable, PVC, 2 m <sup>7)</sup>											
	Cable with plug, M8, 3-pin, PVC, 200 mm <sup>7)</sup>											
<b>VDE protection class</b>	⊠											
<b>Circuit protection</b>	V <sub>s</sub> connections reverse-polarity protected / Output Q and Q not short-circuit protected / Interference suppression											
<b>Enclosure rating</b>	IP 67											
<b>Ambient temperature operation</b>	-20 °C ... +50 °C											
<b>Ambient temperature storage</b>	-40 °C ... +75 °C											
<b>Weight</b>	36 g											
	40 g											
<b>Housing material</b>	ABS, PMMA											

<sup>1)</sup> Average service life 75,000 h at T<sub>a</sub> = +25 °C

<sup>2)</sup> Limit values

<sup>3)</sup> May not exceed or fall short of

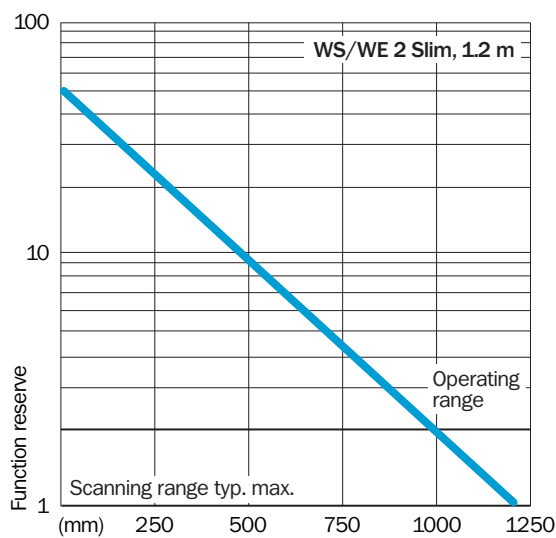
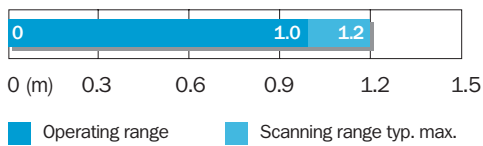
V<sub>s</sub> tolerances  
<sup>4)</sup> Without load

<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

**Scanning distance and function reserve**



Ordering information	
Type	Order No.
WS/WE2S-E113	1 022 669
WS/WE2S-F113	1 022 668
WS/WE2S-F213	1 023 650

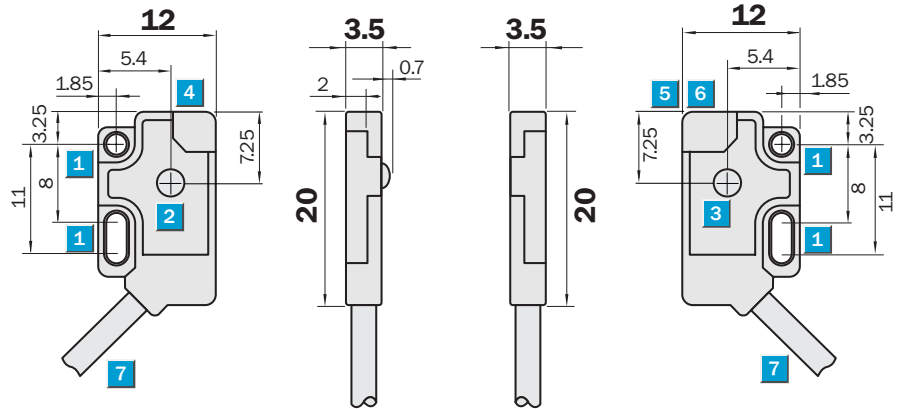
# Through-beam photoelectric switch, WS/WE 2 Flat, red light

**Scanning range**  
0 ... 0.5 m

Through-beam photoelectric

- Robust housing with metal-reinforced fixing holes
- Simple adjustment.  
Connect, align - ready
- No external amplifier required.  
Can be directly connected to the machine control system

## Dimensional drawing

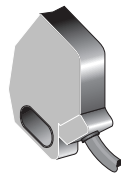


- 1 Mounting hole Ø 2.1 mm
- 2 Optical axis, sender
- 3 Optical axis, receiver
- 4 LED indicator green; supply voltage
- 5 LED indicator orange; output active
- 6 LED indicator green; strength indicator
- 7 Connection

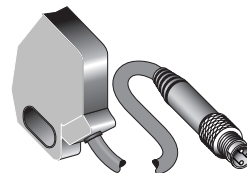
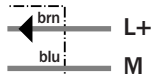


## Connection type

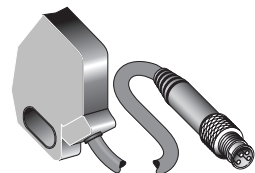
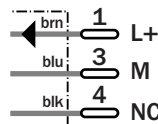
WS/WE2F-E110	WS/WE2F-F210	WS/WE2F-F410
WS/WE2F-F110	WS/WE2F-P210	
WS/WE2F-N110		



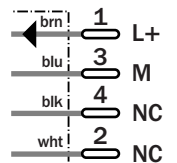
Sender 2 x 0.09 mm<sup>2</sup>



Sender M8, 3-pin



Sender M8, 4-pin



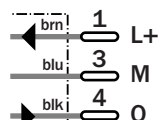
## Accessories

- Connector, M8, 3-pin
- Connector, M8, 4-pin

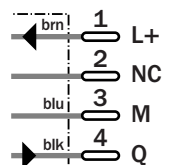
Receiver 3 x 0.09 mm<sup>2</sup>



Receiver M8, 3-pin



Receiver M8, 4-pin



Technical specifications		WS/WE2F-	E110	F110	F210	F410	N110	P210				
Scanning range typ. max.	0 ... 0.5 m											
Scanning range, recommended	0 ... 0.4 m											
Light source, light type	LED, Red light, 660 nm <sup>1)</sup>											
Supply voltage V <sub>s</sub>	DC 12 ... 24 V <sup>2)</sup>											
Ripple	≤ 5 Vss <sup>3)</sup>											
Power consumption, sender	≤ 10 mA											
Power consumption, receiver	≤ 15 mA <sup>4)</sup>											
Switching outputs	NPN: open collector: Q											
	PNP: open collector: Q											
Switching mode	Dark-switching											
	Light-switching											
Signal voltage PNP HIGH / LOW	V <sub>s</sub> - 1.8 V / approx. 0 V											
Signal voltage NPN HIGH / LOW	Approx. V <sub>s</sub> / < 1.8 V											
Output current I <sub>a</sub> max	≤ 50 mA											
Response time	≤ 0.5 ms <sup>5)</sup>											
Switching frequency	1,000 Hz <sup>6)</sup>											
Connection type	Cable, PVC, 2 m <sup>7)</sup>											
	Cable with plug, M8, 3-pin, PVC, 200 mm <sup>7)</sup>											
	Cable with plug, M8, 4-pin, PVC, 200 mm <sup>7)</sup>											
VDE protection class	◆											
Circuit protection	V <sub>s</sub> connections reverse-polarity protected / In-/outputs short-circuit protected / Outputs overcurrent and short-circuit protected											
Enclosure rating	IP 67											
Ambient temperature operation	-20 °C ... +50 °C											
Ambient temperature storage	-40 °C ... +75 °C											
Weight	ca. 35 g											
	ca. 20 g											
Housing material	PC / PBT, PC											

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

<sup>2)</sup> ± 10%

<sup>3)</sup> May not exceed or fall short of

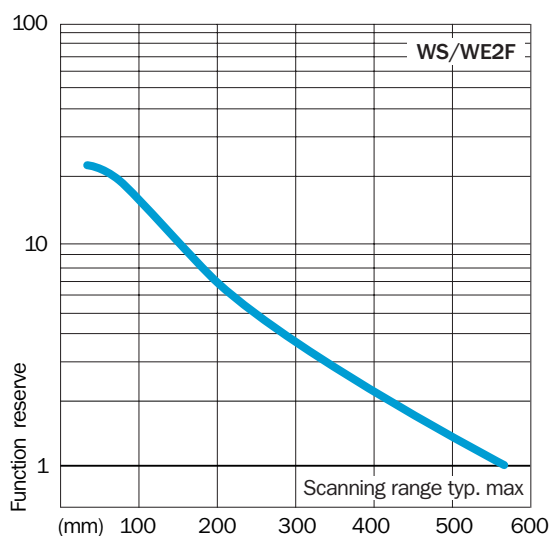
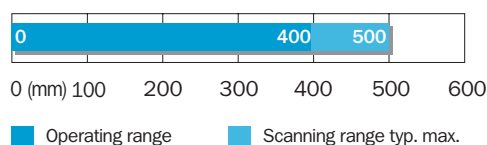
V<sub>s</sub> tolerances  
<sup>4)</sup> Without load

<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

### Scanning distance and function reserve



### Ordering information

Type	Order No.
WS/WE2F-E110	6 030 554
WS/WE2F-F110	6 030 569
WS/WE2F-F210	6 030 570
WS/WE2F-F410	6 030 571
WS/WE2F-N110	6 030 540
WS/WE2F-P210	6 030 566

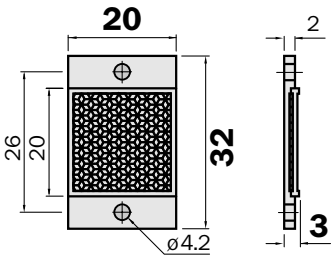
## Dimensional drawings and order informations

### Reflectors

Plastic design for temperatures up to 65 °C

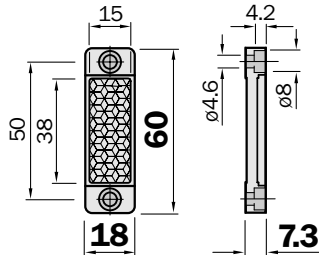
#### Reflector, 20 x 20 mm<sup>2</sup>, micro triple

Type	Order no.
PL10F	5311210



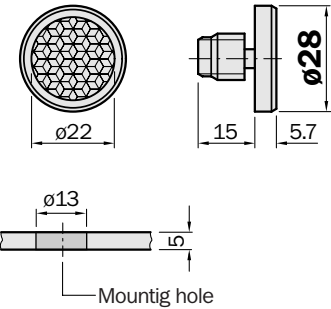
#### Reflector, 20 x 40 mm<sup>2</sup>

Type	Order no.
PL20A	1012719



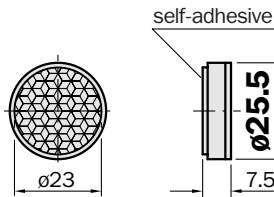
#### Reflector, Ø 22 mm, plug-in style

Type	Order no.
PL22-1	1003546



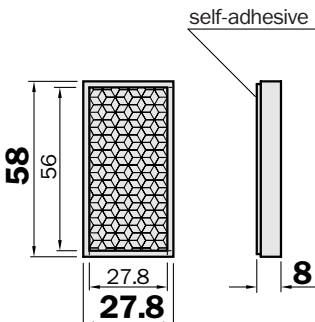
#### Reflector, Ø 22 mm, self-adhesive

Type	Order no.
PL22-2	1003621



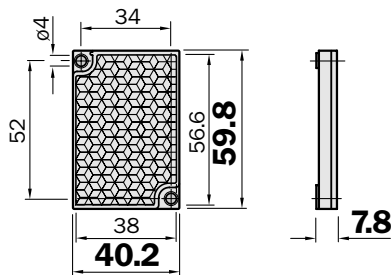
#### Reflector, 30 x 50 mm<sup>2</sup>

Type	Order no.
PL30A	1002314



#### Reflector, 40 x 60 mm<sup>2</sup>

Type	Order no.
PL40A	1012720

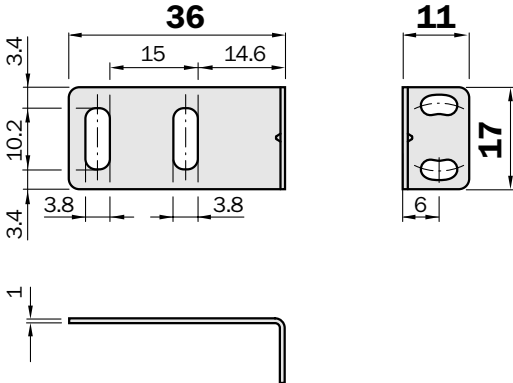


Dimensional drawings and order informations

Mounting systems

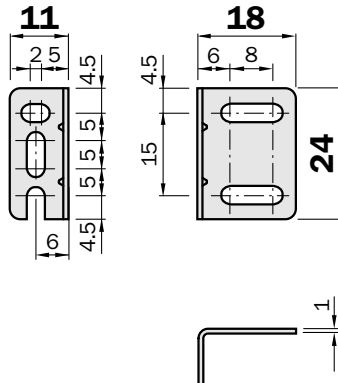
Mounting bracket floor mounting for W2 Slim

Type	Order no.
BEF-W2S-A	4034748



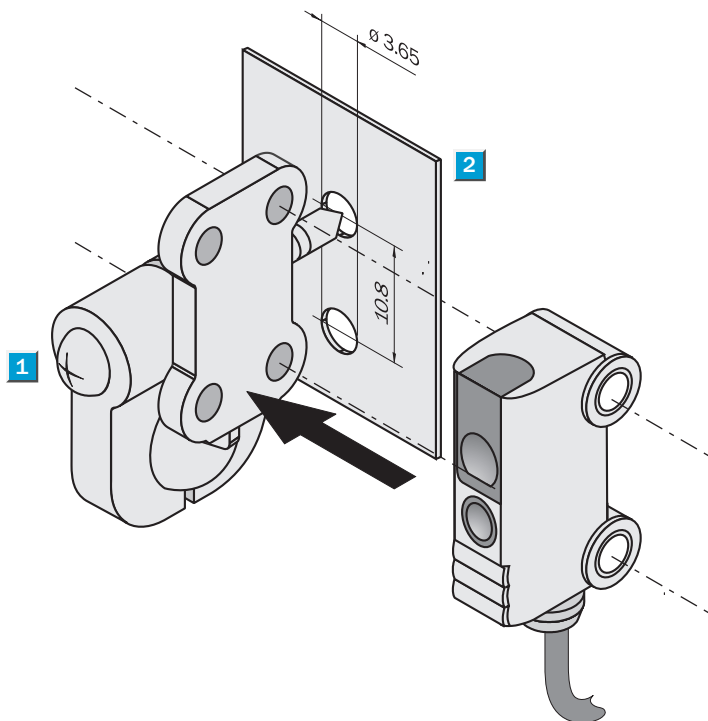
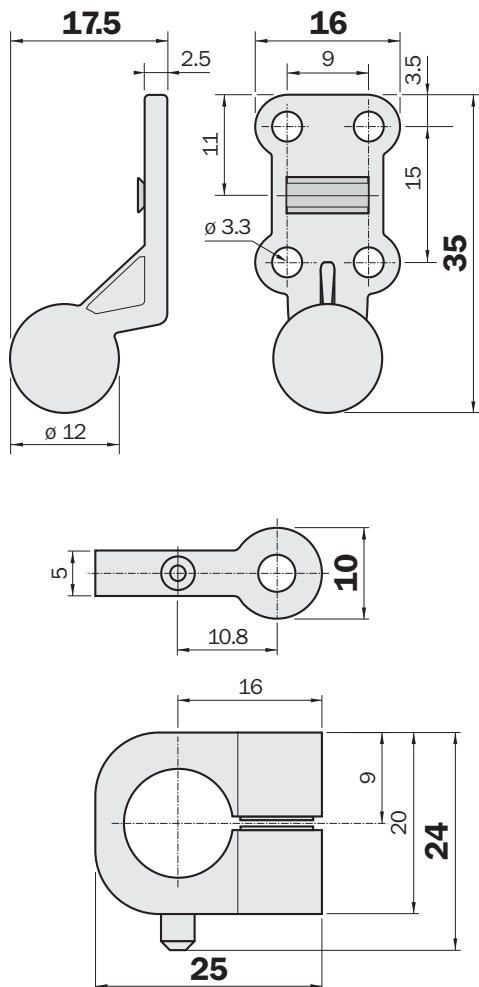
Mounting bracket wall mounting for W2 Slim

Type	Order no.
BEF-W2S-B	4034749



Ball joint bracket with self-grooving screw Ø 4 mm

Type	Order no.
BEF-GH-Mini01	2023160



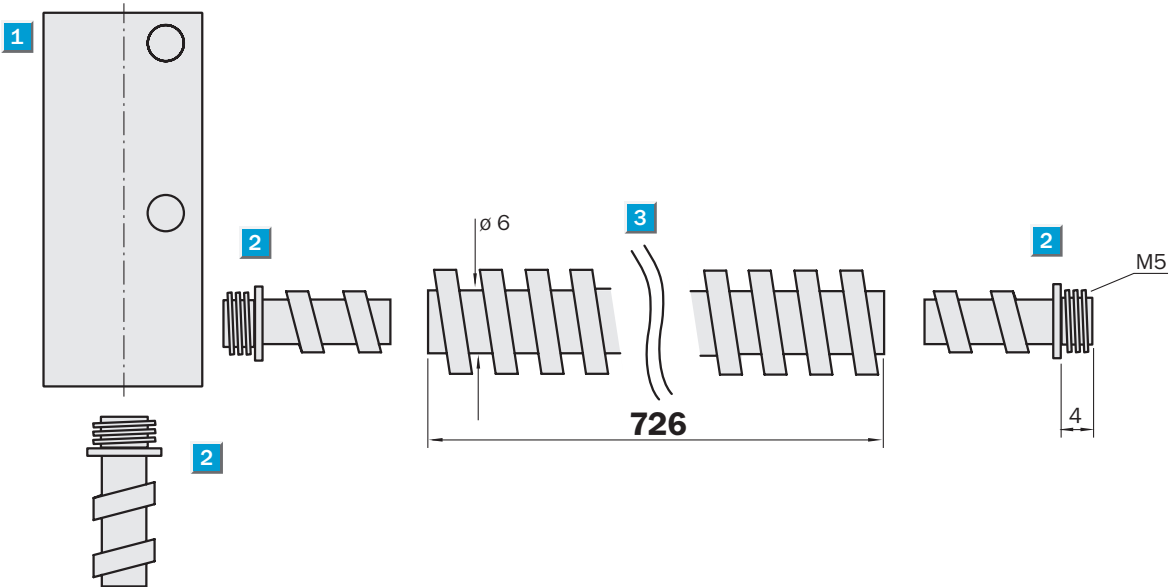
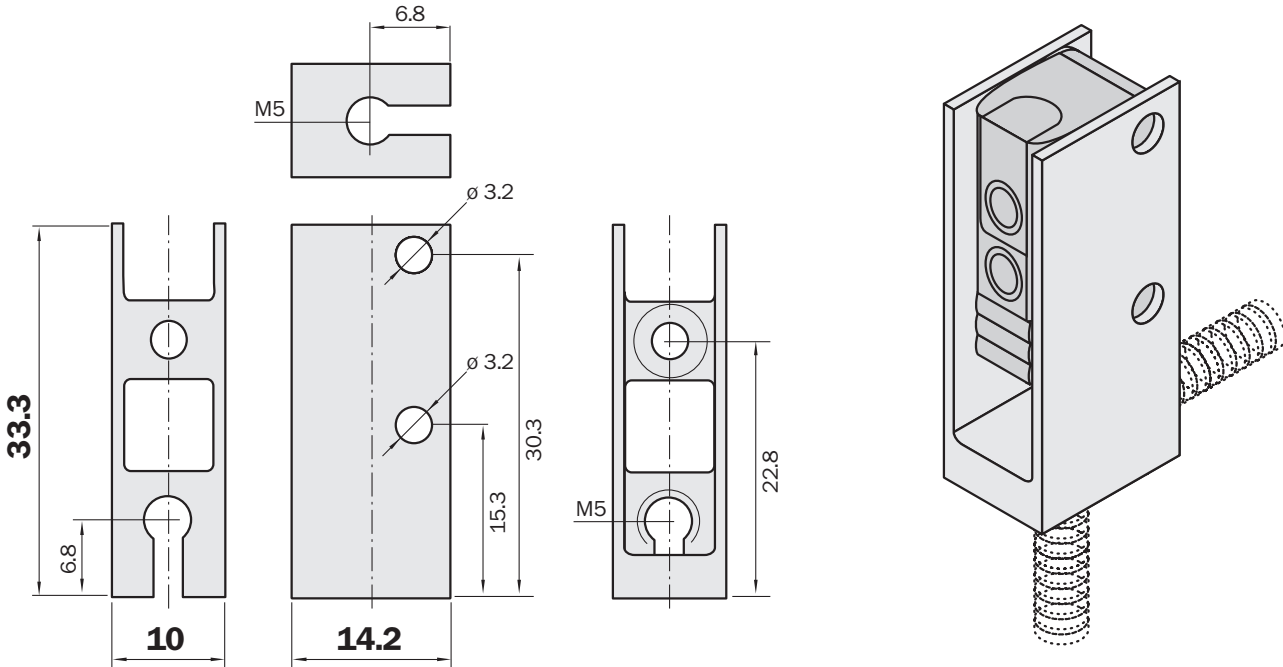
- 1 Self-grooving screw Ø 4 mm included with delivery
- 2 Equipment or machine part

## Dimensional drawings and order informations

## Mounting systems

### Sensor and cable protector holder for W2 Slim with 2 m cable

Type	Order no.
BEF-W2S-C	2033270



- 1** Mounting bracket with protection against cable bending
- 2** Thread sheath for flexible metal tube
- 3** Flexible metal tube/cable protection

Provided with: one holder, two sheaths, one tube

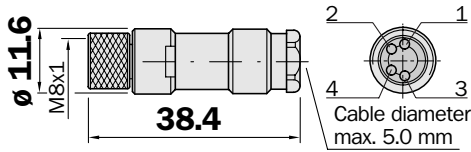
**Dimensional drawings and order informations**

**Connectors**

**SENSICK screw-in system M8, 3- or 4-pin, enclosure rating IP 67**

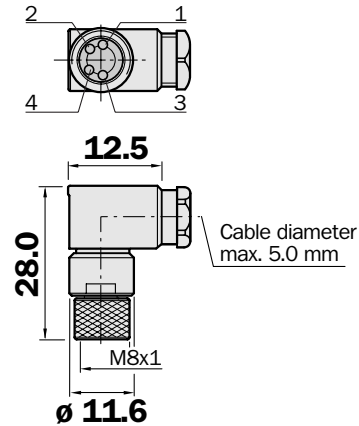
**Female connector M8, 3- or 4-pin, straight**

Type	Order no.	Contacts
DOS-0804-G	6009974	4



**Female connector M8, 3- or 4-pin, right angled**

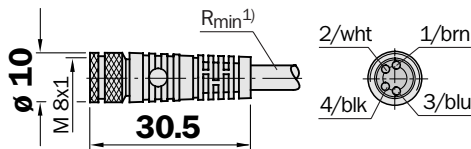
Type	Order no.	Contacts
DOS-0804-W	6009975	4



**Female connector M8, 3- or 4-pin, straight**

**3 x 0,34 mm<sup>2</sup> or 4 x 0,25 mm<sup>2</sup>, sheath PVC**

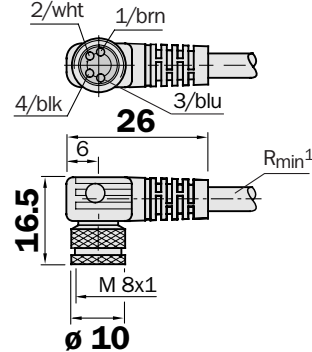
Type	Order no.	Contacts	Cable length
DOL-0803-G02M	6010785	3	2 m
DOL-0803-G05M	6022009	3	5 m
DOL-0803-G10M	6022011	3	10 m
DOL-0804-G02M	6009870	4	2 m
DOL-0804-G05M	6009872	4	5 m
DOL-0804-G10M	6010754	4	10 m



**Female connector M8, 3- or 4-pin, right angled**

**3 x 0,34 mm<sup>2</sup> or 4 x 0,25 mm<sup>2</sup>, sheath PVC**

Type	Order no.	Contacts	Cable length
DOL-0803-W02M	6008489	3	2 m
DOL-0803-W05M	6022010	3	5 m
DOL-0803-W10M	6022012	3	10 m
DOL-0804-W02M	6009871	4	2 m
DOL-0804-W05M	6009873	4	5 m
DOL-0804-W10M	6010755	4	10 m

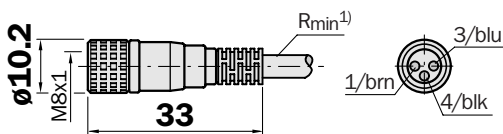


<sup>1)</sup> Minimum bend radius in dynamic use  
R<sub>min</sub> = 20 x cable diameter

**Female connector M8, 3-pin, straight**

**Cable diameter 4.5 mm, 3 x 0.25 mm<sup>2</sup>, sheath PUR, free of halogen**

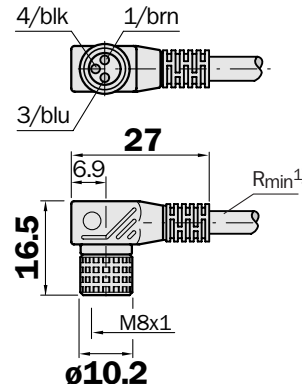
Type	Order no.	Cable length
DOL-0803-G05MB	7902080	5 m



**Female connector M8, 3-pin, right angled**

**Cable diameter 4.5 mm, 3 x 0.25 mm<sup>2</sup>, sheath PUR, free of halogen**

Type	Order no.	Cable length
DOL-0803-W05MB	7902081	5 m



**Australia**

Phone +61 3 9497 4100  
1800 33 48 02 - tollfree  
E-Mail sales@sick.com.au

**Belgium/Luxembourg**

Phone +32 (0)2 466 55 66  
E-Mail info@sick.be

**Brasil**

Phone +55 11 5091-4900  
E-Mail sac@sick.com.br

**Ceská Republika**

Phone +420 2 57 91 18 50  
E-Mail sick@sick.cz

**China**

Phone +852-2763 6966  
E-Mail ghk@sick.com.hk

**Danmark**

Phone +45 45 82 64 00  
E-Mail sick@sick.dk

**Deutschland**

Phone +49 (0)2 11 53 01-250  
E-Mail info@sick.de

**España**

Phone +34 93 480 31 00  
E-Mail info@sick.es

**France**

Phone +33 1 64 62 35 00  
E-Mail info@sick.fr

**Great Britain**

Phone +44 (0)1727 831121  
E-Mail info@sick.co.uk

**India**

Phone +91-22-2822 7084  
E-Mail info@sick-india.com

**Italia**

Phone +39 02 27 40 93 19  
E-Mail info@sick.it

**Japan**

Phone +81 (0)3 3358 1341  
E-Mail info@sick.jp

**Nederlands**

Phone +31 (0)30 229 25 44  
E-Mail info@sick.nl

**Norge**

Phone +47 67 81 50 00  
E-Mail austefjord@sick.no

**Österreich**

Phone +43 (0)22 36 62 28 8-0  
E-Mail office@sick.at

**Polska**

Phone +48 22 837 40 50  
E-Mail info@sick.pl

**Republic of Korea**

Phone +82-2 786 6321/4  
E-Mail kang@sickkorea.net

**Republika Slovenija**

Phone +386 (0)1-47 69 990  
E-Mail office@sick.si

**Russia**

Phone +7 95 775 05 30  
E-Mail info@sick-automation.ru

**Schweiz**

Phone +41 41 619 29 39  
E-Mail contact@sick.ch

**Singapore**

Phone +65 6744 3732  
E-Mail admin@sicksgp.com.sg

**Suomi**

Phone +358-9-25 15 800  
E-Mail sick@sick.fi

**Sverige**

Phone +46 8 680 64 50  
E-Mail info@sick.se

**Taiwan**

Phone +886 2 2365-6292  
E-Mail sickgrc@ms6.hinet.net

**Türkiye**

Phone +90 216 388 95 90 pbx  
E-Mail info@sick.com.tr

**USA/Canada/México**

Phone +1(952) 941-6780  
1 800-325-7425 - tollfree  
E-Mail info@sickusa.com

More representatives and agencies  
in all major industrial nations at  
[www.sick.com](http://www.sick.com)