



## W9-3 Photoelectric Sensors

Best-in-class performance in VISTAL™ housing that is as tough as steel

**SICK**  
Sensor Intelligence.

## W9-3 – Performance in VISTAL™ housing

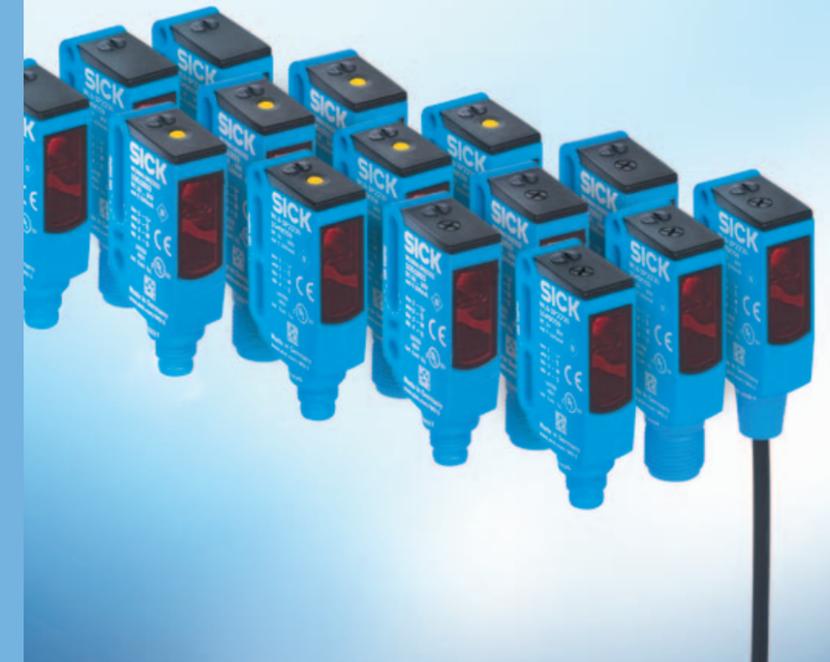
### BEST IN CLASS PERFORMANCE

- Pilot LED (2nd sender LED) provides best-in-class background suppression
- PinPoint LED creates a precise and highly visible light spot
- Autocollimation optics
- Continuous threshold adaption for clear material object detection



### WIDE VARIETY OF SENSOR TYPES

- Variable mounting with slotted holes for M3 or M4 screws
- Connection: M12, M8, cable, pigtailed
- Wide variety of optical options
- One sensor family to solve your varying application needs



### ROBUST VISTAL™ HOUSING TECHNOLOGY

- High strength fiberglass-reinforced plastic
- Inside out molding for the best leak proof protection
- Product labeled by laser marking

[www.sick.com/W9-3](http://www.sick.com/W9-3)

# W9-3 – wide variety on one view



	Scanning distance/range	Light spot diameter	Screws	Page
<b>PHOTOELECTRIC PROXIMITY SENSOR</b> Background suppression Red light	350 mm/200 mm <sup>1)</sup>	 $\varnothing 6 \text{ mm}$ at 0 mm $\varnothing 18 \text{ mm}$ at 400 mm Distance (mm)	M3 M4	6-7 22-23
<b>PHOTOELECTRIC PROXIMITY SENSOR</b> Background suppression Infrared	500 mm/250 mm <sup>1)</sup>	 $\varnothing 5 \text{ mm}$ at 0 mm $\varnothing 55 \text{ mm}$ at 500 mm Distance (mm)	M3 M4	8-9 24-25
<b>PHOTOELECTRIC PROXIMITY SENSOR - LONG RANGE</b> Background suppression Infrared	800 mm/400 mm <sup>1)</sup>	 $\varnothing 5 \text{ mm}$ at 0 mm $\varnothing 110 \text{ mm}$ at 800 mm Distance (mm)	M3	10-11
<b>PHOTOELECTRIC REFLEX SENSOR</b> Autocollimation Without Teach-in Red light	4.0 m/2.5 m <sup>2)</sup>	 $\varnothing 7 \text{ mm}$ at 0 mm $\varnothing 130 \text{ mm}$ at 4,000 mm Distance (mm)	M3	12-13
<b>PHOTOELECTRIC REFLEX SENSOR</b> Autocollimation With Teach-in Red light	5.0 m/3.0 m <sup>2)</sup>	 $\varnothing 7 \text{ mm}$ at 0 mm $\varnothing 160 \text{ mm}$ at 5,000 mm Distance (mm)	M3 M4	14-15 26-27
<b>PHOTOELECTRIC REFLEX SENSOR</b> Autocollimation Focused Red light	0.4 m/0.3 m <sup>2)</sup>	 $\varnothing 2 \text{ mm}$ at 35 mm $\varnothing 75 \text{ mm}$ at 400 mm Distance (mm)	M3	16-17
<b>GLASS PHOTOELECTRIC REFLEX SENSOR</b> Autocollimation For transparent objects Red light	5.0 m/3.0 m <sup>2)</sup>	 $\varnothing 7 \text{ mm}$ at 0 mm $\varnothing 160 \text{ mm}$ at 5,000 mm Distance (mm)	M3 M4	18-19 28-29
<b>THROUGH-BEAM PHOTOELECTRIC SENSOR</b> Red light	6.0 m/5.0 m	 $\varnothing 7 \text{ mm}$ at 0 mm $\varnothing 170 \text{ mm}$ at 6,000 mm Distance (mm)	M3 M4	20-21 30-31

<sup>1)</sup> At proximity types on white/on black  
<sup>2)</sup> At reflex types on PL80 max./recommended



Lochbild M3



Lochbild M4

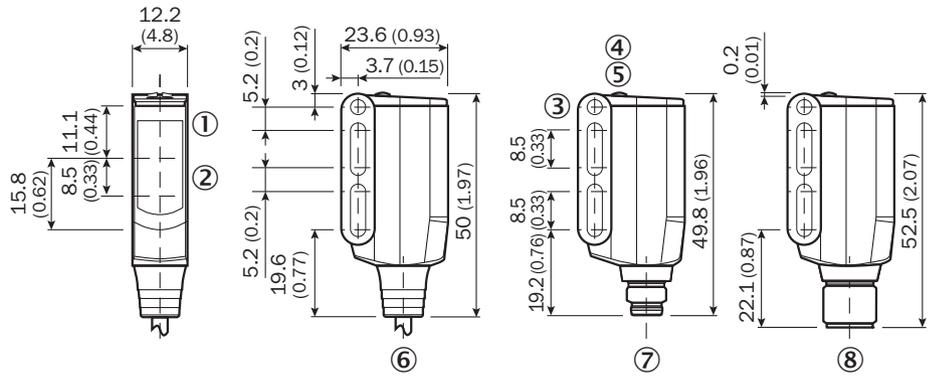
# Photoelectric proximity sensors WTB9-3, red light

**Scanning distance**  
20 ... 350 mm

Photoelectric proximity sensors

- VISTAL™ housing material is as tough as steel
- PinPoint LED creates a precise and highly visible light spot
- Pilot LED (2nd sender LED) provides best-in-class background suppression
- Variable mounting with M3 screws
- Multiple connection options

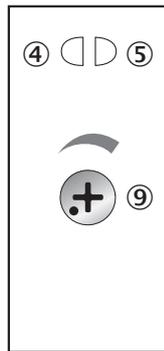
## Dimensional drawing



All dimensions in mm (inch)

## Adjustments

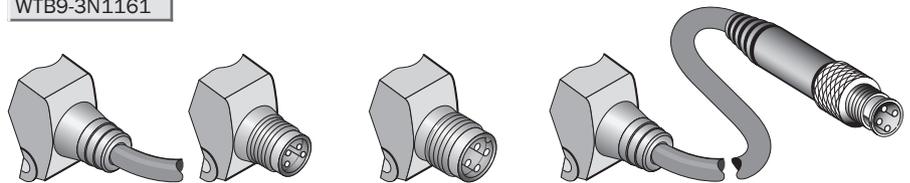
All types



- ① Center of optical axis receiver
- ② Center of optical axis sender
- ③ Mounting hole M3 (Ø 3.1 mm)
- ④ LED indicator yellow, light reception
- ⑤ LED indicator green, Betriebsspannung
- ⑥ Cable, PVC, 2 m / 5 m or 120 mm cable with plug M12, 4-pin
- ⑦ Plug M8, 4-pin
- ⑧ Plug M12, 4-pin
- ⑨ Scanning distance adjustment

## Connection types

WTB9-3P1161	WTB9-3P2261	WTB9-3P2461	WTB9-3P3461
WTB9-3P1261		WTB9-3N2461	
WTB9-3N1161			

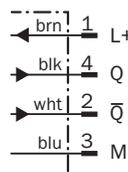
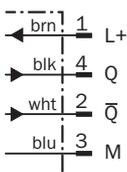
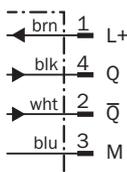
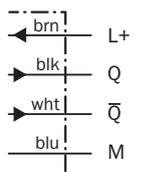


4 x 0.14 mm<sup>2</sup>

M8, 4-pin

M12, 4-pin

M12, 4-pin with 120 mm cable



## Accessories

Cables and connectors

Mounting systems

Technical data		WTB9-3	P1161	P1261	P2261	P2461	P3461	N1161	N2461			
<b>Scanning distance, typ. max.</b>	20 ... 350 mm <sup>1)</sup>											
<b>Operating distance</b>	20 ... 200 mm											
Scanning distance setting	Potentiometer, 5 turns											
<b>Light source, type of light</b>	PinPoint-LED, red light, 650 nm <sup>2)</sup>											
Light spot diameter	4.5 mm at 75 mm distance											
<b>Supply voltage V<sub>S</sub></b>	10 ... 30 V DC <sup>3)</sup>											
Ripple	< 5 V <sub>PP</sub> <sup>4)</sup>											
Current consumption	≤ 30 mA <sup>5)</sup>											
<b>Switching output</b>	PNP complementary											
	NPN complementary											
Switching mode	Q = light-switching											
Output current I <sub>A</sub> max.	≤ 100 mA <sup>6)</sup>											
Response time	< 0.333 ms <sup>7)</sup>											
Switching frequency, max.	1,500 Hz <sup>8)</sup>											
<b>Connection type</b>	Cable, PVC, 2 m <sup>9)</sup>											
	Cable, PVC, 5 m <sup>9)</sup>											
	Plug, M8, 4-pin											
	Plug, M12, 4-pin											
	Cable with plug, M12, 4-pin, 120 mm <sup>9)</sup>											
<b>Protection class</b>	⚡											
<b>Circuit protection</b>	A, B, C <sup>10)</sup>											
<b>Enclosure rating</b>	IP 66, IP 67, IP 69K											
<b>Ambient temperature</b>	Operation -40 °C ... +60 °C											
	Storage -40 °C ... +75 °C											
RoHS	✓											
<b>Weight</b>	With cable approx. 80 g											
	With plug approx. 13 g											
<b>Housing material</b>	VISTAL™ Tech., PA66, PMMA, PC + ABS											

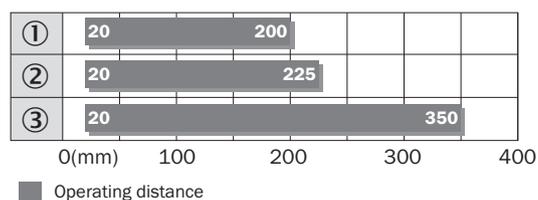
- 1) Object to be detected with 90% remission (referred to standard white DIN 5033)
- 2) Average service life 100,000 h when T<sub>A</sub> = +25 °C

- 3) Limit values, reverse polarity protected, operation in short-circuit protected network max. 8 A
- 4) May not exceed or fall short of V<sub>S</sub> tolerances
- 5) Without load

- 6) From T<sub>A</sub> 50 °C a max. load current of I<sub>L,max</sub> 50 mA is valid
- 7) Signal transit time with resistive load
- 8) With light/dark ratio 1 : 1
- 9) Do not bend below 0 °C

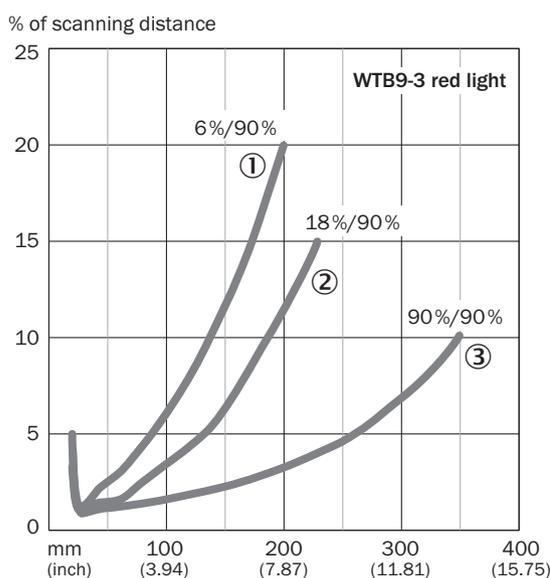
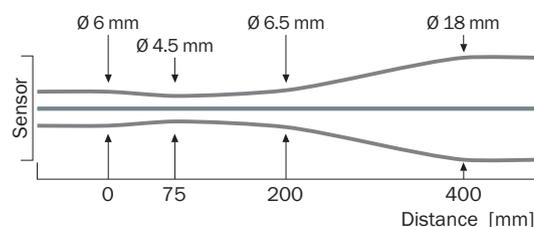
- 10) A = V<sub>S</sub>-supply connections reverse polarity protected
- B = Outputs Q and  $\bar{Q}$  short-circuit protected
- C = Interference pulse suppression

**Scanning distance**



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

**Light spot diameter**



**Ordering information**

Model name	Part No.
WTB9-3P1161	1049043
WTB9-3P1261	1049044
WTB9-3P2261	1049047
WTB9-3P2461	1049049
WTB9-3P3461	1049051
WTB9-3N1161	1049052
WTB9-3N2461	1049053

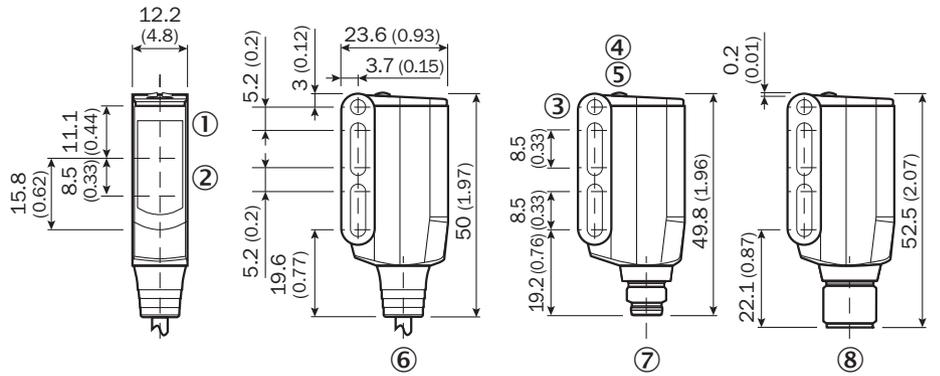
# Photoelectric proximity sensors WTB9-3, infrared

**Scanning distance**  
20 ... 500 mm

Photoelectric proximity sensors

- VISTAL™ housing material is as tough as steel
- PinPoint LED creates a precise light spot
- Pilot LED (2nd sender LED) provides best-in-class background suppression
- Variable mounting with M3 screws
- Multiple connection options

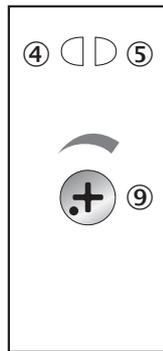
## Dimensional drawing



All dimensions in mm (inch)

## Adjustments

All types



- ① Center of optical axis receiver
- ② Center of optical axis sender
- ③ Mounting hole M3 (Ø 3.1 mm)
- ④ LED indicator yellow, light reception
- ⑤ LED indicator green, power on
- ⑥ Cable, PVC, 2 m
- ⑦ Plug M8, 4-pin
- ⑧ Plug M12, 4-pin
- ⑨ Scanning distance adjustment

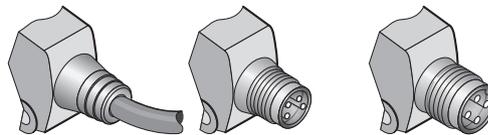


## Connection types

WTB9-3P1111

WTB9-3P2211

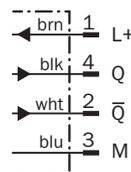
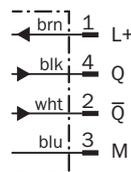
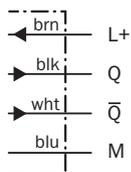
WTB9-3P2411



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

M8, 4-pin

M12, 4-pin



## Accessories

Cables and connectors

Mounting systems

Technical data		WTB9-3	P1111	P2211	P2411						
<b>Scanning distance, typ. max.</b>	20 ... 500 mm <sup>1)</sup>										
<b>Operating distance</b>	20 ... 250 mm										
Scanning distance setting	Potentiometer, 5 turns										
<b>Light source, type of light</b>	LED, infrared, 850 nm <sup>2)</sup>										
Light spot diameter	20 mm at 250 mm distance										
<b>Supply voltage V<sub>S</sub></b>	10 ... 30 V DC <sup>3)</sup>										
Ripple	< 5 V <sub>PP</sub> <sup>4)</sup>										
Current consumption	≤ 30 mA <sup>5)</sup>										
<b>Switching output</b>	PNP complementary										
Switching mode	Q = light-switching										
Output current I <sub>A</sub> max.	≤ 100 mA										
Response time	< 0.5 ms <sup>6)</sup>										
Switching frequency, max.	1,000 Hz <sup>7)</sup>										
<b>Connection type</b>	Cable, PVC, 2 m <sup>8)</sup>										
	Plug, M8, 4-pin										
	Plug, M12, 4-pin										
<b>Protection class</b>	⚡										
<b>Circuit protection</b>	A, B, C <sup>9)</sup>										
<b>Enclosure rating</b>	IP 66, IP 67, IP 69K										
<b>Ambient temperature</b>	Operation -40 °C ... +60 °C										
	Storage -40 °C ... +75 °C										
RoHS	✓										
<b>Weight</b>	With cable approx. 80 g										
	With plug approx. 13 g										
<b>Housing material</b>	VISTAL™ Tech., PA66, PMMA, PC + ABS										

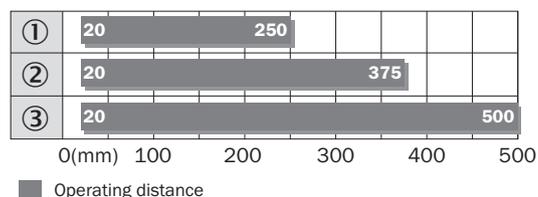
- 1) Object to be detected with 90% remission (referred to standard white DIN 5033)
- 2) Average service life 100,000 h when T<sub>A</sub> = +25 °C

- 3) Limit values, reverse polarity protected, operation in short-circuit protected network max. 8 A
- 4) May not exceed or fall short of V<sub>S</sub> tolerances

- 5) Without load
- 6) Signal transit time with resistive load
- 7) With light/dark ratio 1 : 1
- 8) Do not bend below 0 °C

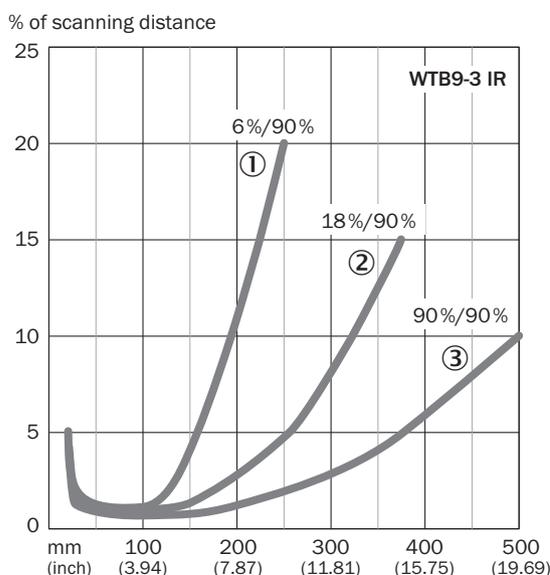
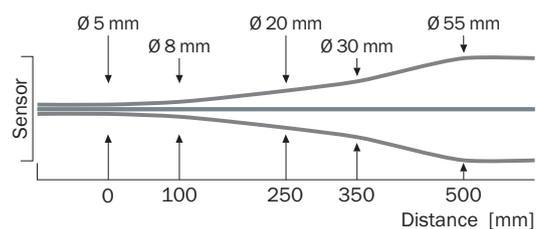
- 9) A = V<sub>S</sub>-supply connections reverse polarity protected
- B = Outputs Q and  $\bar{Q}$  short-circuit protected
- C = Interference pulse suppression

**Scanning distance**



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

**Light spot diameter**



**Ordering information**

Model name	Part No.
WTB9-3P1111	1049042
WTB9-3P2211	1049045
WTB9-3P2411	1049048

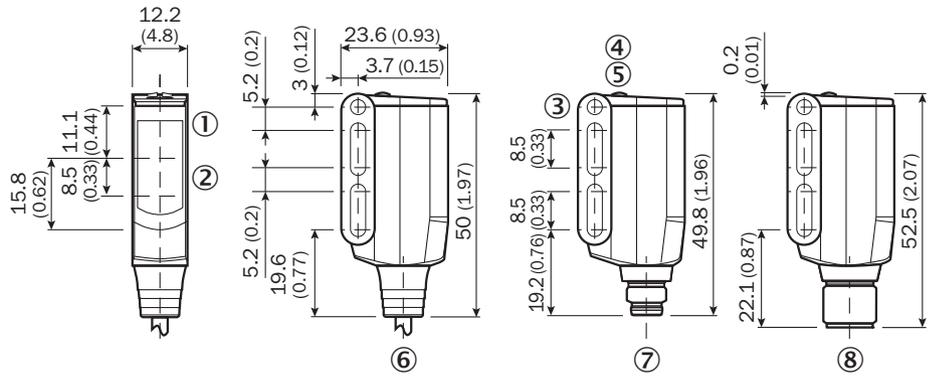
# Photoelectric proximity sensors WTB9-3, infrared, long range

**Scanning distance**  
20 ... 800 mm

Photoelectric proximity sensors

- VISTAL™ housing material is as tough as steel
- PinPoint LED creates a precise light spot
- Pilot LED (2nd sender LED) provides best-in-class background suppression
- Variable mounting with M3 screws
- Multiple connection options

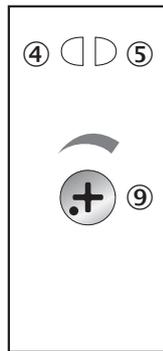
## Dimensional drawing



All dimensions in mm (inch)

## Adjustments

All types



- ① Center of optical axis receiver
- ② Center of optical axis sender
- ③ Mounting hole M3 (Ø 3.1 mm)
- ④ LED indicator yellow, light reception
- ⑤ LED indicator green, power on
- ⑥ Cable, PVC, 2 m
- ⑦ Plug M8, 4-pin
- ⑧ Plug M12, 4-pin
- ⑨ Scanning distance adjustment



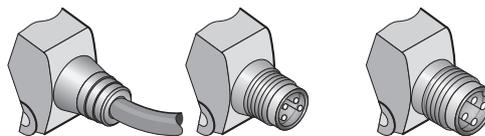
## Connection type

WTB9-3N1111S14

WTB9-3P2211S14

WTB9-3P2411S14

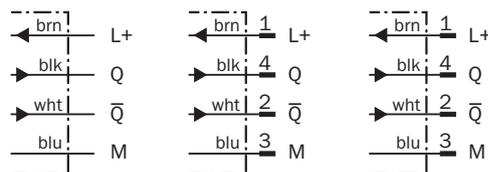
WTB9-3P1111S14



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

M8, 4-pin

M12, 4-pin



## Accessories

Cables and connectors

Mounting systems

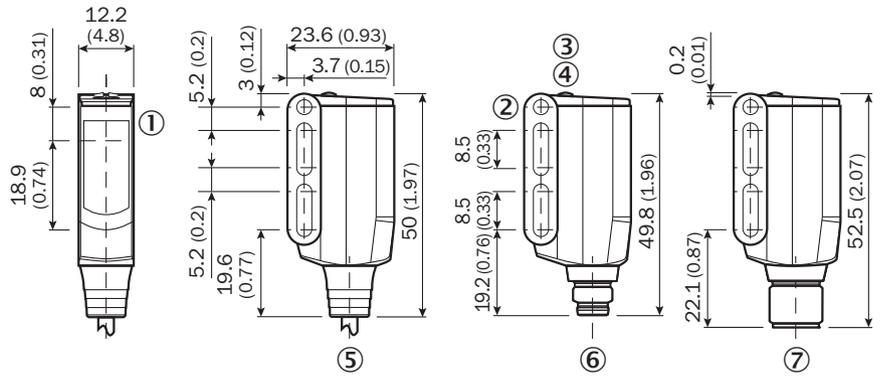


# Photoelectric reflex sensor WL9-3, red light, standard


**Scanning range**  
**0 ... 4 m**  
**Photoelectric reflex sensor**

- VISTAL™ housing material is as tough as steel
- PinPoint LED creates a precise and highly visible light spot
- Autocollimation optics
- Variable mounting with M3 screws
- Multiple connection options

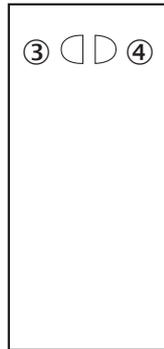
## Dimensional drawing



All dimensions in mm (inch)

## Adjustments

All types

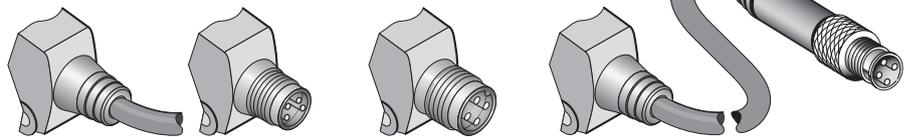


- ① Center of optical axis sender and receiver
- ② Mounting hole M3 (Ø 3.1 mm)
- ③ LED indicator yellow, light reception
- ④ LED indicator green, power on
- ⑤ Cable, PVC, 2 m or 120 mm cable with plug M12, 4-pin
- ⑥ Plug M8, 4-pin
- ⑦ Plug M12, 4-pin

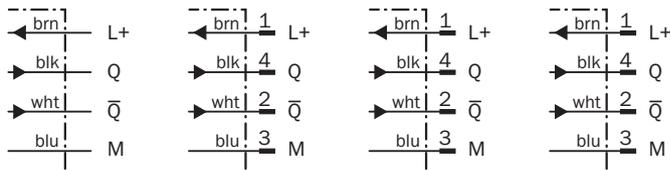


## Connection types

WL9-3P1130	WL9-3P2230	WL9-3P2430	WL9-3P3430
WL9-3N1130	WL9-3N2230	WL9-3N2430	



4 x 0.14 mm <sup>2</sup>	M8, 4-pin	M12, 4-pin	M12, 4-pin with 120 mm cable
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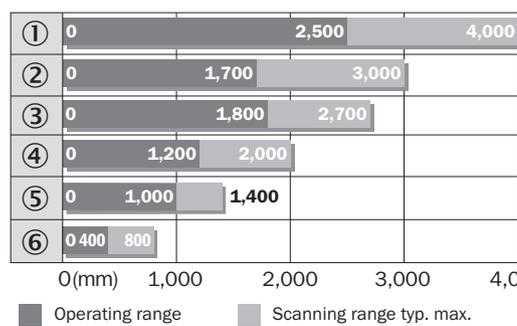
## Accessories

- Cables and connectors
- Mounting systems
- Reflectors

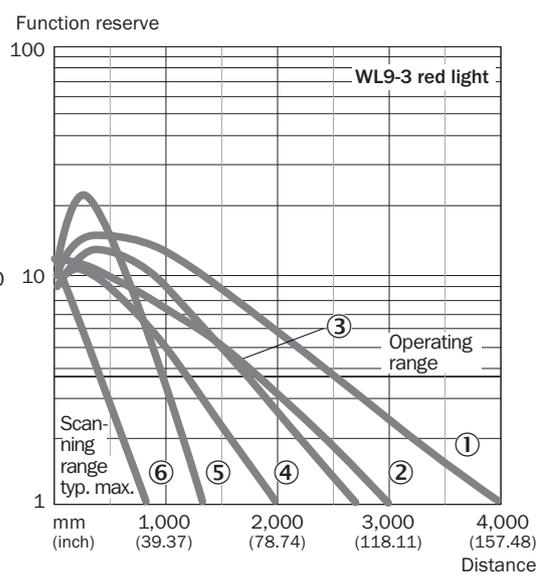
Technical data		WL9-3	P1130	P2230	P2430	P3430	N1130	N2230	N2430
<b>Scanning range typ. max.</b>	0 ... 4 m								
<b>Operating range, recommended</b>	0 ... 2.5 m								
Relating to	Reflector PL80A								
<b>Light source, type of light</b>	PinPoint-LED, red light, 650 nm <sup>1)</sup>								
Light spot diameter	45 mm at 1.5 m distance								
Polarization filter	✓								
<b>Supply voltage V<sub>S</sub></b>	10 ... 30 V DC <sup>2)</sup>								
Ripple	< 5 V <sub>PP</sub> <sup>3)</sup>								
Current consumption	≤ 30 mA <sup>4)</sup>								
<b>Switching output</b>	PNP complementary								
	NPN complementary								
Switching mode	Q = light-switching								
Output current I <sub>A</sub> max.	≤ 100 mA								
Response time	< 0.5 ms <sup>5)</sup>								
Switching frequency	1,000 Hz <sup>6)</sup>								
<b>Connection type</b>	Cable, PVC, 2 m <sup>7)</sup>								
	Plug, M8, 4-pin								
	Plug, M12, 4-pin								
	Cable with plug, M12, 4-pin, 120 mm <sup>7)</sup>								
<b>Protection class</b>	◊								
<b>Circuit protection</b>	A, B, C <sup>8)</sup>								
<b>Enclosure rating</b>	IP 66, IP 67, IP 69K								
<b>Ambient temperature</b>	Operation -40 °C ... +60 °C								
	Storage -40 °C ... +75 °C								
RoHS	✓								
<b>Weight</b>	With cable approx. 80 g								
	With plug approx. 13 g								
<b>Housing material</b>	VISTAL™ Tech., PA66, PMMA, PC + ABS								

- 1) Average service life 100,000 h when T<sub>A</sub> = +25 °C
- 2) Limit values, reverse polarity protected, operation in short-circuit protected network max. 8 A
- 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>-supply connections reverse polarity protected  
 B = Outputs Q and Q̄ short-circuit protected  
 C = Interference pulse suppression

**Scanning range**



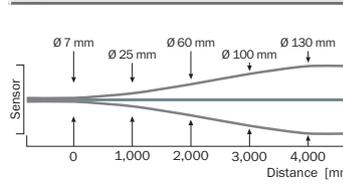
Reflector type	Operating range
① PL80A	0 ... 2,500 mm
② P250	0 ... 1,700 mm
③ PL40A	0 ... 1,800 mm
④ PL20A	0 ... 1,200 mm
⑤ PL10F	0 ... 1,000 mm
⑥ REF-IRF-56	0 ... 400 mm



**Ordering information**

Model name	Part No.
WL9-3P1130	1049055
WL9-3P2230	1049059
WL9-3P2430	1049062
WL9-3P3430	1049066
WL93N1130	1049069
WL9-3N2230	1049071
WL9-3N2430	1049073

**Light spot diameter**



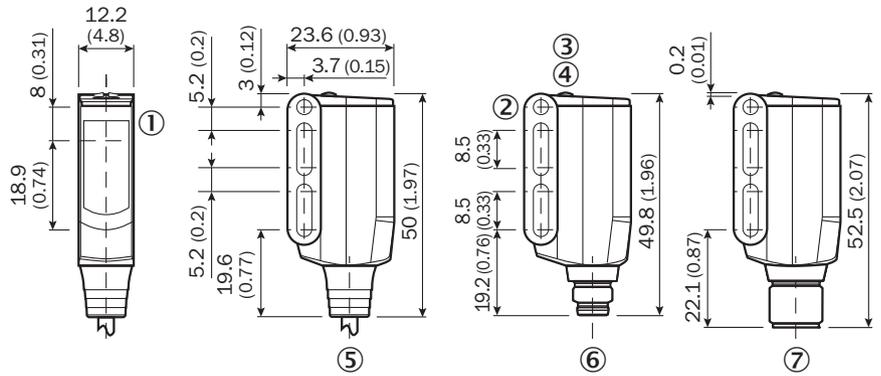
# Photoelectric reflex sensor WL9-3, red light, teach-in


**Scanning range**  
**0 ... 5 m**

Photoelectric reflex sensor

- VISTAL™ housing material is as tough as steel
- PinPoint LED creates a precise and highly visible light spot
- Autocollimation optics
- Variable mounting with M3 screws
- Multiple connection options

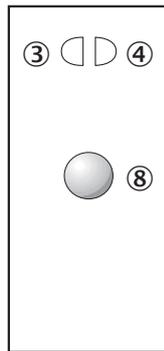
## Dimensional drawing



All dimensions in mm (inch)

## Adjustments

All types

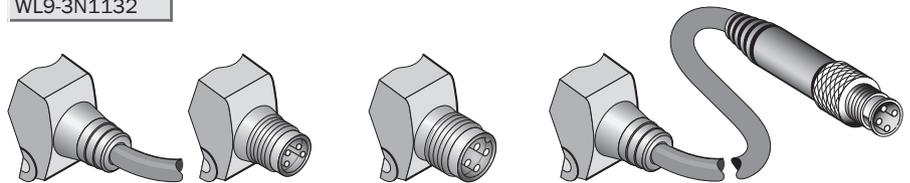


- ① Center of optical axis sender and receiver
- ② Mounting hole M3 (Ø 3.1 mm)
- ③ LED indicator yellow, light reception
- ④ LED indicator green, power on
- ⑤ Cable, PVC, 2 m / 5 m or 120 mm cable with plug M12, 4-pin
- ⑥ Plug M8, 4-pin
- ⑦ Plug M12, 4-pin
- ⑧ Teach-in button



## Connection types

WL9-3P1132	WL9-3P2232	WL9-3P2432	WL9-3P3432
WL9-3P1232		WL9-3N2432	
WL9-3N1132			

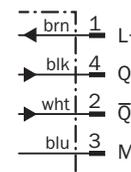
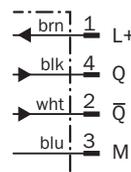
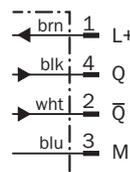
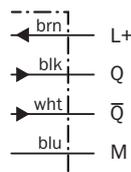


4 x 0.14 mm<sup>2</sup>

M8, 4-pin

M12, 4-pin

M12, 4-pin with 120 mm cable



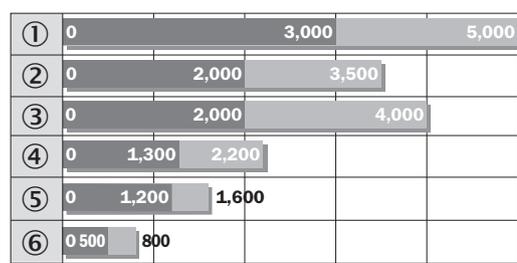
## Accessories

- Cables and connectors
- Mounting systems
- Reflectors

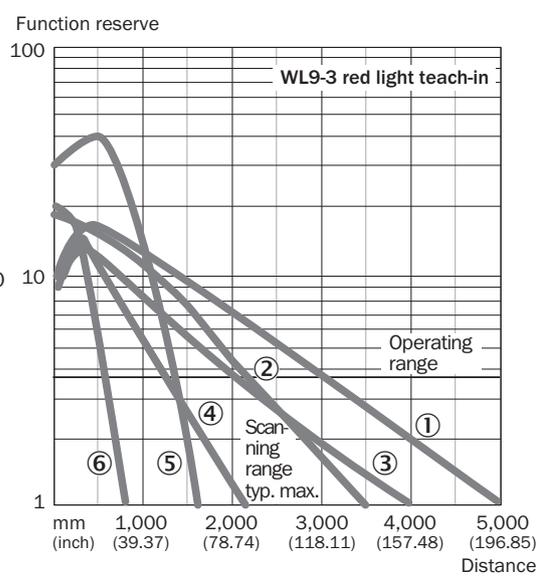
Technical data		WL9-3	P1132	P1232	P3432	P2232	N1132	P2432	N2432			
<b>Scanning range typ. max.</b>	0 ... 5 m											
<b>Operating range, recommended</b>	0 ... 3 m											
Relating to	Reflector PL80A											
Sensitivity setting	Teach-in button											
<b>Light source, type of light</b>	PinPoint-LED, red light, 650 nm <sup>1)</sup>											
Light spot diameter	45 mm at 1.5 m distance											
Polarization filter	✓											
<b>Supply voltage V<sub>S</sub></b>	10 ... 30 V DC <sup>2)</sup>											
Ripple	< 5 V <sub>PP</sub> <sup>3)</sup>											
Current consumption	≤ 30 mA <sup>4)</sup>											
<b>Switching output</b>	PNP complementary											
	NPN complementary											
Switching mode	Q = light-switching											
Output current I <sub>A</sub> max.	≤ 100 mA											
Response time	< 0.5 ms <sup>5)</sup>											
Switching frequency	1,000 Hz <sup>6)</sup>											
<b>Connection type</b>	Cable, PVC, 2 m <sup>7)</sup>											
	Cable, PVC, 5 m <sup>7)</sup>											
	Plug, M8, 4-pin											
	Plug, M12, 4-pin											
	Cable with plug, M12, 4-pin, 120 mm <sup>7)</sup>											
<b>Protection class</b>	⊕											
<b>Circuit protection</b>	A, B, C <sup>8)</sup>											
<b>Enclosure rating</b>	IP 66, IP 67, IP 69K											
<b>Ambient temperature</b>	Operation -40 °C ... +60 °C											
	Storage -40 °C ... +75 °C											
RoHS	✓											
<b>Weight</b>	With cable approx. 80 g											
	With plug approx. 13 g											
<b>Housing material</b>	VISTAL™ Tech., PA66, PMMA, PC + ABS											

- 1) Average service life 100,000 h when T<sub>A</sub> = +25 °C  
 2) Limit values, reverse polarity protected, operation in short-circuit protected network max. 8 A  
 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>-supply connections reverse polarity protected  
 B = Outputs Q and Q̄ short-circuit protected  
 C = Interference pulse suppression

**Scanning range**



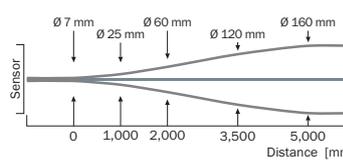
Reflector type	Operating range
1 PL80A	0 ... 3,000 mm
2 P250	0 ... 2,000 mm
3 PL40A	0 ... 2,000 mm
4 PL20A	0 ... 1,300 mm
5 PL10F	0 ... 1,200 mm
6 REF-IRF-56	0 ... 500 mm



**Ordering information**

Model name	Part No.
WL9-3P1132	1049056
WL9-3P1232	1049057
WL9-3P3432	1049067
WL9-3P2232	1049060
WL9-3N1132	1049070
WL9-3P2432	1049063
WL9-3N2432	1049074

**Light spot diameter**



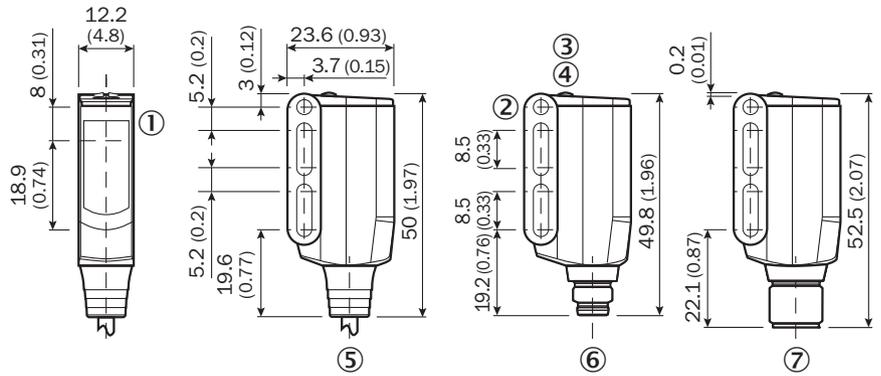
# Photoelectric reflex sensor WL9-3, red light, focused


**Scanning range**  
**0 ... 0.4 m**

Photoelectric reflex sensor

- VISTAL™ housing material is as tough as steel
- PinPoint LED creates a precise and highly visible light spot
- Autocollimation optics
- Variable mounting with M3 screws
- Multiple connection options

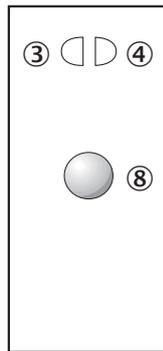
## Dimensional drawing



All dimensions in mm (inch)

## Adjustments

All types

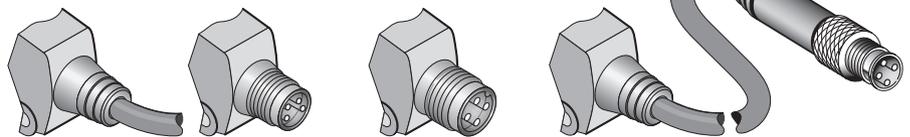


- ① Center of optical axis sender and receiver
- ② Mounting hole M3 (Ø 3.1 mm)
- ③ LED indicator yellow, light reception
- ④ LED indicator green, power on
- ⑤ Cable, PVC, 2 m or 120 mm cable with plug M12, 4-pin
- ⑥ Plug M8, 4-pin
- ⑦ Plug M12, 4-pin
- ⑧ Teach-in button

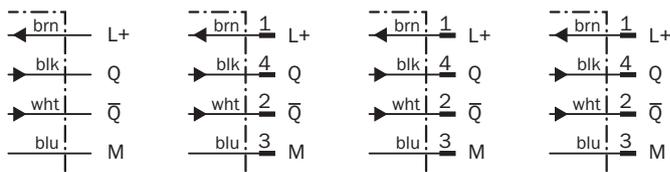


## Connection types

WL9-3P1162	WL9-3P2262	WL9-3P2462	WL9-3P3462
WL9-3N1162		WL9-3N2462	



4 x 0.14 mm <sup>2</sup>	M8, 4-pin	M12, 4-pin	M12, 4-pin with 120 mm cable
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## Accessories

- Cables and connectors
- Mounting systems
- Reflectors

Technical data		WL9-3	P3462	P1162	P2462	P2262	N2462	N1162				
<b>Scanning range typ. max.</b>	0 ... 0.4 m											
<b>Operating range, recommended</b>	0 ... 0.3 m											
Relating to	Reflector PL80A											
Sensitivity setting	Teach-in button											
<b>Light source, type of light</b>	PinPoint-LED, red light, 650 nm <sup>1)</sup>											
Light spot diameter	2.0 mm at 35 mm distance											
Polarization filter	✓											
<b>Supply voltage V<sub>S</sub></b>	10 ... 30 V DC <sup>2)</sup>											
Ripple	< 5 V <sub>pp</sub> <sup>3)</sup>											
Current consumption	≤ 30 mA <sup>4)</sup>											
<b>Switching output</b>	PNP complementary											
	NPN complementary											
Switching mode	Q = light-switching											
Output current I <sub>A</sub> max.	≤ 100 mA											
Response time	< 0.5 ms <sup>5)</sup>											
Switching frequency	1,000 Hz <sup>6)</sup>											
<b>Connection type</b>	Cable, PVC, 2 m <sup>7)</sup>											
	Plug, M8, 4-pin											
	Plug, M12, 4-pin											
	Cable with plug, M12, 4-pin, 120 mm <sup>7)</sup>											
<b>Protection class</b>	⚡											
<b>Circuit protection</b>	A, B, C <sup>8)</sup>											
<b>Enclosure rating</b>	IP 66, IP 67, IP 69K											
<b>Ambient temperature</b>	Operation -40 °C ... +60 °C											
	Storage -40 °C ... +75 °C											
RoHS	✓											
<b>Weight</b>	With cable approx. 80 g											
	With plug approx. 13 g											
<b>Housing material</b>	VISTAL™ Tech., PA66, PMMA, PC + ABS											

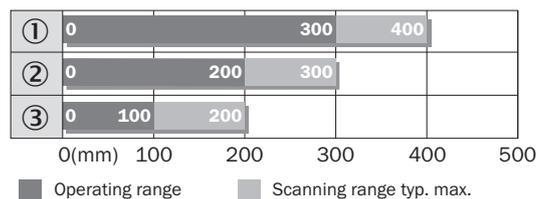
- 1) Average service life 100,000 h when T<sub>A</sub> = +25 °C
- 2) Limit values, reverse polarity protected, operation in short-circuit protected network max. 8 A

- 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

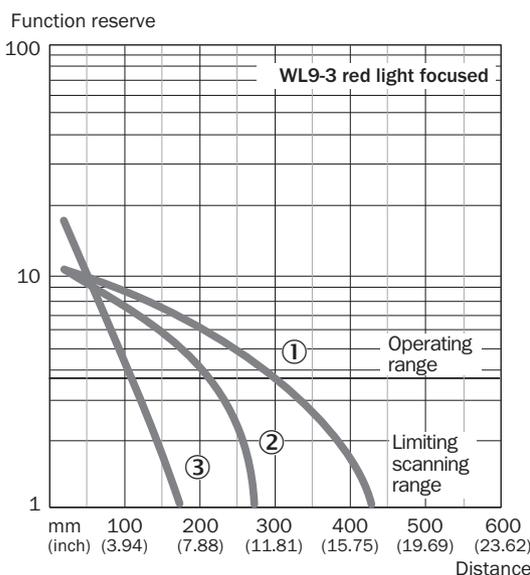
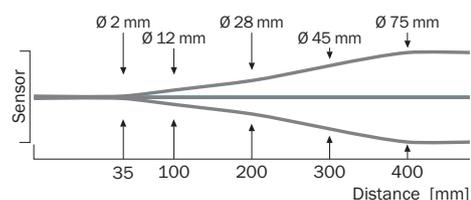
- 8) A = V<sub>S</sub>-supply connections reverse polarity protected
- B = Outputs Q and  $\bar{Q}$  short-circuit protected
- C = Interference pulse suppression

**Scanning range**



Reflector type	Operating range
① PL80A	0 ... 300 mm
② PL40A	0 ... 200 mm
③ REF-IRF-56	0 ... 100 mm

**Light spot diameter**



**Ordering information**

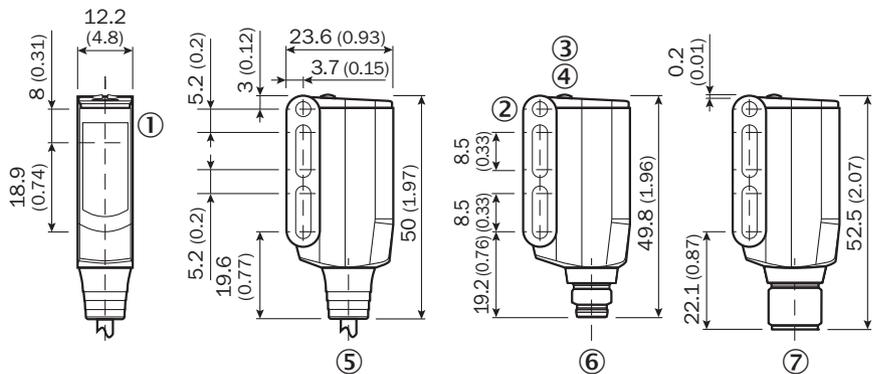
Model name	Part No.
WL9-3P3462	1049065
WL9-3P1162	1049054
WL9-3P2462	1049061
WL9-3P2262	1049058
WL9-3N2462	1049072
WL9-3N1162	1049068

# Photoelectric reflex sensor WL9G-3, for transparent objects, red light

**Scanning range**  
**0 ... 5 m**  
**Photoelectric reflex sensor**

- VISTAL™ housing material is as tough as steel
- Continuous threshold adaption for clear material object detection
- PinPoint LED creates a precise and highly visible light spot
- Variable mounting with M3 screws
- Multiple connection options

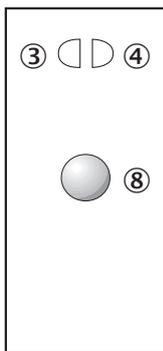
## Dimensional drawing



All dimensions in mm (inch)

## Adjustments

All types

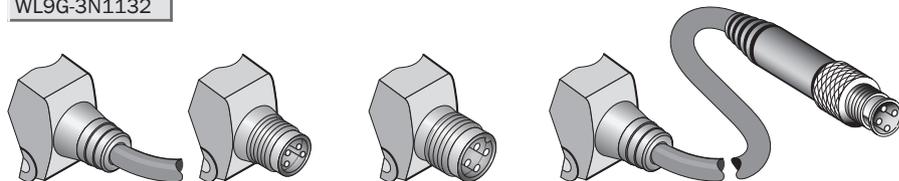


- ① Center of optical axis sender and receiver
- ② Mounting hole M3 (Ø 3.1 mm)
- ③ LED indicator yellow, light reception
- ④ LED indicator green, power on
- ⑤ Cable, PVC, 2 m or 120 mm cable with plug M12, 4-pin
- ⑥ Plug M8, 4-pin
- ⑦ Plug M12, 4-pin
- ⑧ Teach-in button

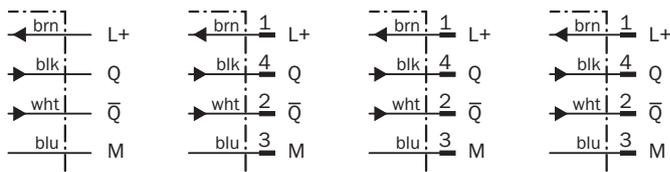


## Connection types

WL9G-3P1132	WL9G-3P2232	WL9G-3P2432	WL9G-3P3432
WL9G-3N1132			



4 x 0.14 mm <sup>2</sup>	M8, 4-pin	M12, 4-pin	M12, 4-pin with 120 mm cable
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<b>Accessories</b>
Cables and connectors
Mounting systems
Reflectors

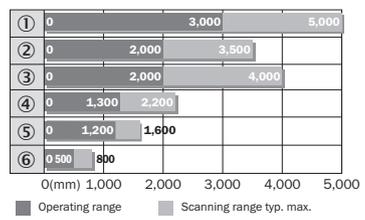
Technical data		WL9G-3	P1132	P2232	P2432	P3432	N1132					
Scanning range typ. max.	0 ... 5 m											
Operating range, recommended	0 ... 3 m											
Relating to	Reflector PL80A											
Sensitivity setting	Teach-in button											
Light source, type of light	PinPoint-LED, red light, 650 nm <sup>1)</sup>											
Light spot diameter	45 mm at 1.5 m distance											
Polarization filter	✓											
Supply voltage V <sub>S</sub>	10 ... 30 V DC <sup>2)</sup>											
Ripple	< 5 V <sub>pp</sub> <sup>3)</sup>											
Current consumption	≤ 30 mA <sup>4)</sup>											
Switching output	PNP complementary											
	NPN complementary											
Switching mode	Q = light-switching											
Output current I <sub>A</sub> max.	≤ 100 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>											
	Plug, M8, 4-pin											
	Plug, M12, 4-pin											
	Cable with plug, M12, 4-pin, 120 mm <sup>7)</sup>											
Protection class	⚡											
Circuit protection	A, B, C <sup>8)</sup>											
Enclosure rating	IP 66, IP 67, IP 69K											
Ambient temperature	Operation -40 °C ... +60 °C											
	Storage -40 °C ... +75 °C											
RoHS	✓											
Weight	With cable approx. 80 g											
	With plug approx. 13 g											
Housing material	VISTAL™ Tech., PA66, PMMA, PC + ABS											

- 1) Average service life 100,000 h when T<sub>A</sub> = +25 °C
- 2) Limit values, reverse polarity protected, operation in short-circuit protected network max. 8 A
- 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>-supply connections reverse polarity protected  
 B = Outputs Q and Q̄ short-circuit protected  
 C = Interference pulse suppression

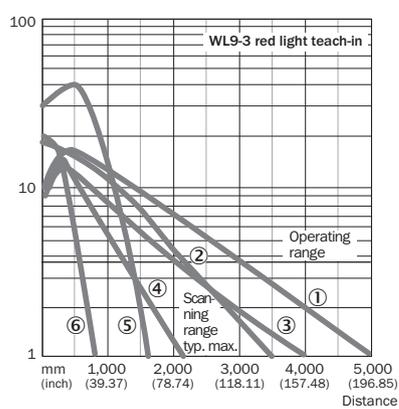
Teach-in function	
<b>Programming via teach-in button</b>	
<b>Glass mode with dust compensation</b>	Align sensor to reflector without an object into the beam Press teach-in button > 2 s until the yellow signal LED is on Sensor is in operation
<b>Standard operation with threshold</b>	Align sensor to reflector without an object into the beam Press teach-in button approx. 8 s until the yellow signal LED starts to flash Sensor is in operation

Ordering information	
Model name	Part No.
WL9G-3P1132	1049081
WL9G-3P2232	1049082
WL9G-3P2432	1049083
WL9G-3P3432	1049084
WL9G-3N1132	1049085

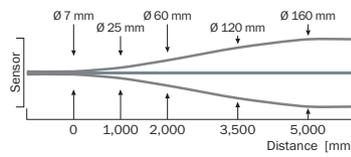
**Scanning range**



Reflector type	Operating range
① PL80A	0 ... 3,000 mm
② P250F	0 ... 2,000 mm
③ PL40A	0 ... 2,000 mm
④ PL20F	0 ... 1,300 mm
⑤ PL10F	0 ... 1,200 mm
⑥ REF-IRF-56	0 ... 500 mm



**Light spot diameter**



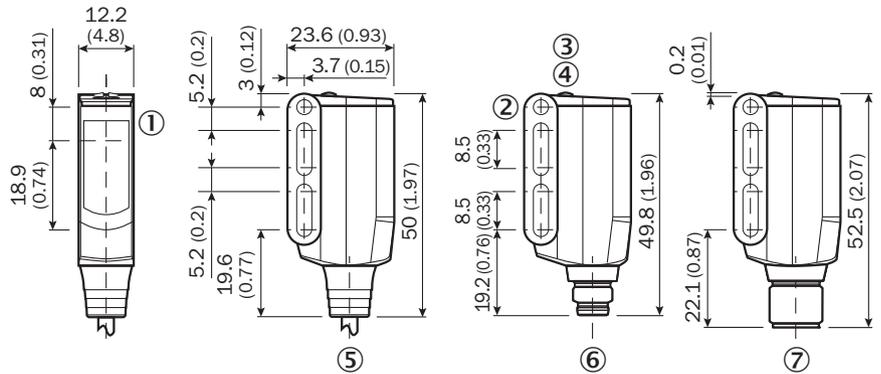
# Through-beam photoelectric sensor WS/WE9-3, red light

**Scanning range**  
0 ... 10 m

Through-beam photoelectric sensor

- VISTAL™ housing material is as tough as steel
- PinPoint LED creates a precise and highly visible light spot
- Variable mounting with M3 screws
- Multiple connection options

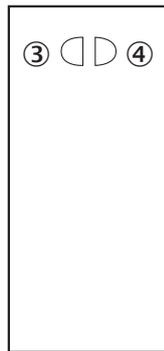
## Dimensional drawing



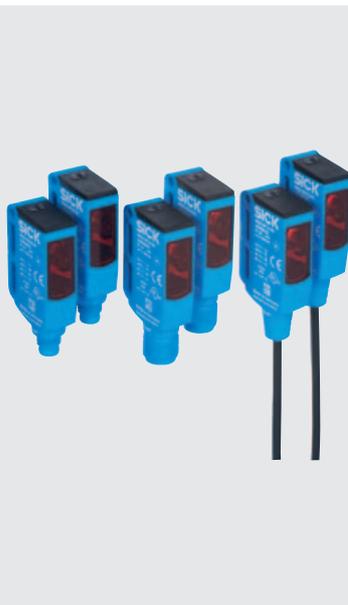
All dimensions in mm (inch)

## Adjustments

All types



- ① Center of optical axis sender and receiver
- ② Mounting hole M3 (Ø 3.1 mm)
- ③ LED indicator yellow, light reception
- ④ LED indicator green, power on
- ⑤ Cable, PVC, 2 m or 120 mm cable with plug M12, 4-pin
- ⑥ Plug M8, 4-pin
- ⑦ Plug M12, 4-pin

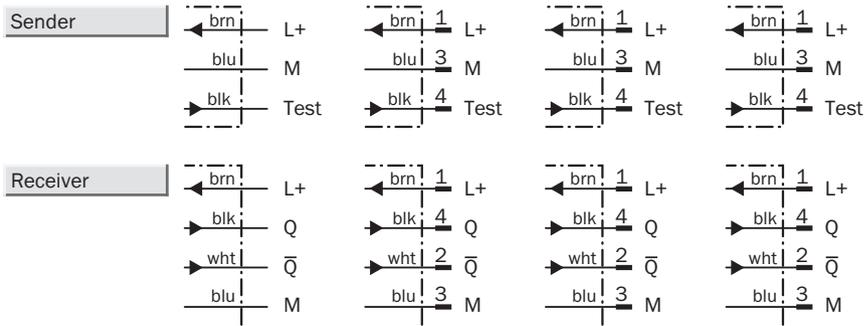


## Connection types

WSE9-3P1130	WSE9-3P2230	WSE9-3P2430	WSE9-3P3430
WSE9-3N1130		WSE9-3N2430	



4 x 0.14 mm <sup>2</sup>	M8, 4-pin	M12, 4-pin	M12, 4-pin with 120 mm cable
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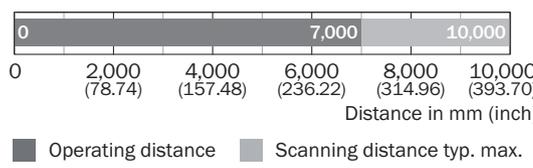
<b>Accessories</b>
Cables and connectors
Mounting systems



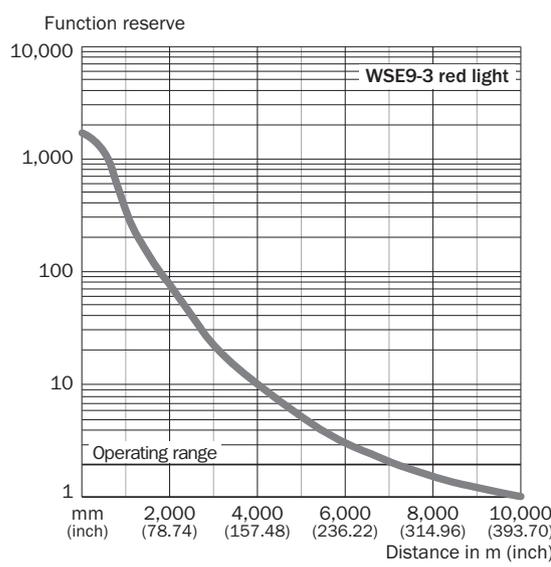
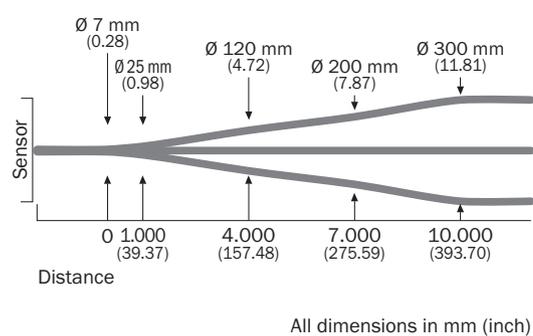
Technical data		WSE9-3	P1130	P2230	P2430	P3430	N1130	N2430				
Scanning range typ. max.	0 ... 10 m											
Operating range, recommended	0 ... 7 m											
Light source, type of light	PinPoint-LED, red light, 650 nm <sup>1)</sup>											
Light spot diameter	25 mm at 1.0 m distance											
Supply voltage V <sub>S</sub>	10 ... 30 V DC <sup>2)</sup>											
Ripple	< 5 V <sub>pp</sub> <sup>3)</sup>											
Current consumption	Sender: ≤ 30 mA <sup>4)</sup> Receiver: ≤ 20 mA <sup>4)</sup>											
Switching output	PNP complementary NPN complementary											
Switching mode	Q = light-switching											
Test input	Sender OFF at 0 V											
Output current I <sub>A</sub> max.	≤ 100 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> Plug, M8, 4-pin Plug, M12, 4-pin Cable with plug, M12, 4-pin, 120 mm <sup>7)</sup>											
Protection class	◇◇											
Circuit protection	A, B, C <sup>8)</sup>											
Enclosure rating	IP 66, IP 67, IP 69K											
Ambient temperature	Operation -40 °C ... +60 °C Storage -40 °C ... +75 °C											
RoHS	✓											
Weight	With cable approx. 80 g With plug approx. 13 g											
Housing material	VISTAL™ Tech., PA66, PMMA, PC + ABS											

- 1) Average service life 100,000 h when T<sub>A</sub> = +25 °C
- 2) Limit values, reverse polarity protected, operation in short-circuit protected network max. 8 A
- 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>-supply connections reverse polarity protected  
B = Outputs Q and Q̄ short-circuit protected  
C = Interference pulse suppression

**Scanning range and functional reserves**



**Light spot diameter**



**Ordering information**

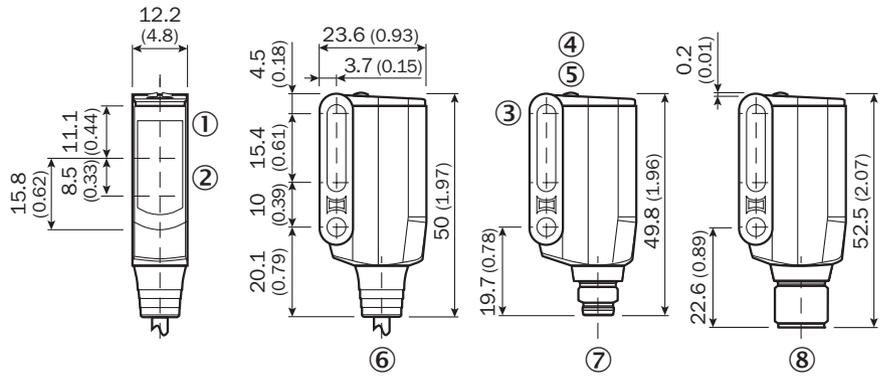
Model name	Part No.
WSE9-3P1130	1049075
WSE9-3P2230	1049076
WSE9-3P2430	1049077
WSE9-3P3430	1049078
WSE9-3N1130	1049079
WSE9-3N2430	1049080

**Scanning distance**  
20 ... 350 mm

Photoelectric proximity sensors

- VISTAL™ housing material is as tough as steel
- PinPoint LED creates a precise and highly visible light spot
- Pilot LED (2nd sender LED) provides best-in-class background suppression
- Variable mounting with M4 screws
- Multiple connection options

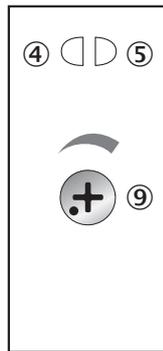
**Dimensional drawing**



All dimensions in mm (inch)

**Adjustments**

All types

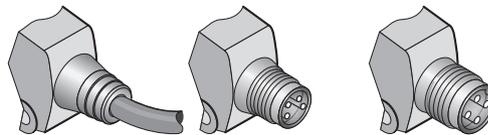


- ① Center of optical axis receiver
- ② Center of optical axis sender
- ③ Mounting hole M4 (Ø 4.1 mm)
- ④ LED indicator yellow, light reception
- ⑤ LED indicator green, power on
- ⑥ Cable, PVC, 2 m
- ⑦ Plug M8, 4-pin
- ⑧ Plug M12, 4-pin
- ⑨ Scanning distance adjustment



**Connection types**

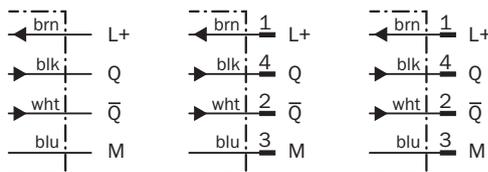
WTB9M4-3P1161	WTB9M4-3P2261	WTB9M4-3P2461
WTB9M4-3N1161	WTB9M4-3N2261	



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

M8, 4-pin

M12, 4-pin



**Accessories**

Cables and connectors

Mounting systems

Technical data		WTB9M4-3	P1161	P2261	P2461	N1161	N2261						
<b>Scanning distance, typ. max.</b>	20 ... 350 mm <sup>1)</sup>												
<b>Operating distance</b>	20 ... 200 mm												
Scanning distance setting	Potentiometer, 5 turns												
<b>Light source, type of light</b>	PinPoint-LED, red light, 650 nm <sup>2)</sup>												
Light spot diameter	4.5 mm at 75 mm distance												
<b>Supply voltage V<sub>S</sub></b>	10 ... 30 V DC <sup>3)</sup>												
Ripple	< 5 V <sub>PP</sub> <sup>4)</sup>												
Current consumption	≤ 30 mA <sup>5)</sup>												
<b>Switching output</b>	PNP complementary												
	NPN complementary												
Switching mode	Q = light-switching												
Output current I <sub>A</sub> max.	≤ 100 mA <sup>6)</sup>												
Response time	< 0.333 ms <sup>7)</sup>												
Switching frequency, max.	1,500 Hz <sup>8)</sup>												
<b>Connection type</b>	Cable, PVC, 2 m <sup>9)</sup>												
	Plug, M8, 4-pin												
	Plug, M12, 4-pin												
<b>Protection class</b>	⚡												
<b>Circuit protection</b>	A, B, C <sup>10)</sup>												
<b>Enclosure rating</b>	IP 66, IP 67, IP 69K												
<b>Ambient temperature</b>	Operation -40 °C ... +60 °C												
	Storage -40 °C ... +75 °C												
RoHS	✓												
<b>Weight</b>	With cable approx. 80 g												
	With plug approx. 13 g												
<b>Housing material</b>	VISTAL™ Tech., PA66, PMMA, PC + ABS												

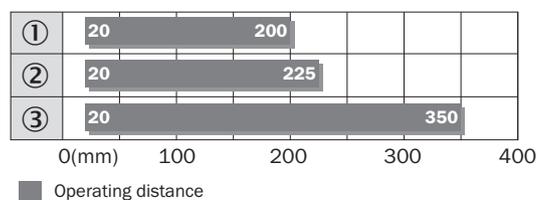
- 1) Object to be detected with 90% remission (referred to standard white DIN 5033)
- 2) Average service life 100,000 h when T<sub>A</sub> = +25 °C

- 3) Limit values, reverse polarity protected, operation in short-circuit protected network max. 8 A
- 4) May not exceed or fall short of V<sub>S</sub> tolerances
- 5) Without load

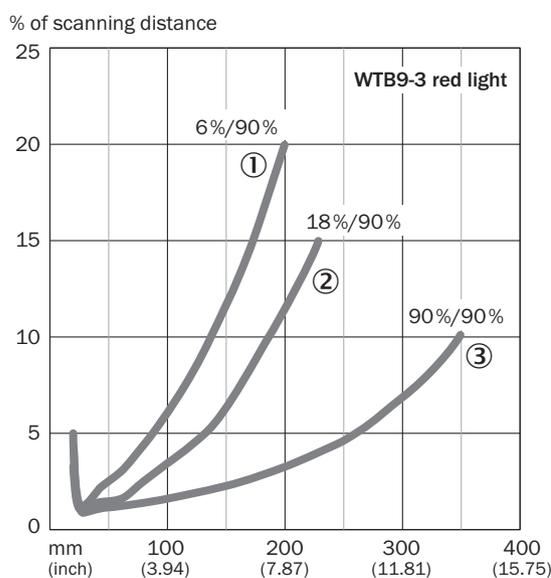
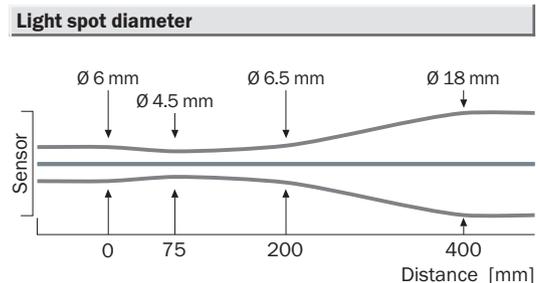
- 6) From T<sub>A</sub> 50 °C a max. load current of I<sub>L,max</sub> 50 mA is valid
- 7) Signal transit time with resistive load
- 8) With light/dark ratio 1 : 1
- 9) Do not bend below 0 °C

- 10) A = V<sub>S</sub>-supply connections reverse polarity protected
- B = Outputs Q and  $\bar{Q}$  short-circuit protected
- C = Interference pulse suppression

**Scanning distance**



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



**Ordering information**

Model name	Part No.
WTB9M4-3P1161	1051887
WTB9M4-3P2261	1051889
WTB9M4-3P2461	1051891
WTB9M4-3N1161	1051882
WTB9M4-3N2261	1051885

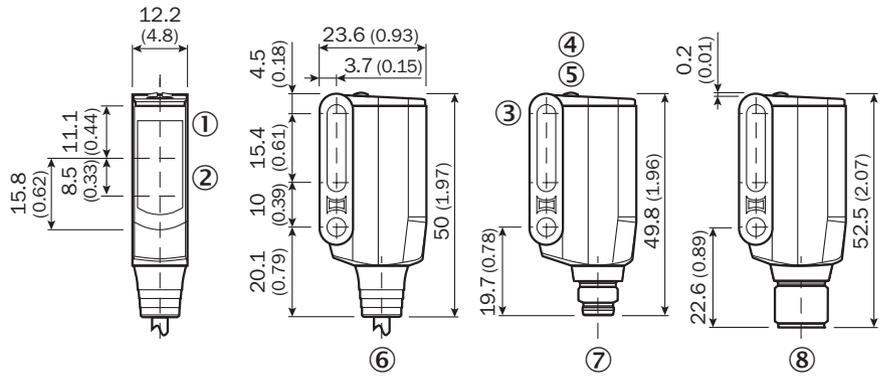
# Photoelectric proximity sensors WTB9M4-3, infrared

**Scanning distance**  
20 ... 500 mm

Photoelectric proximity sensors

- VISTAL™ housing material is as tough as steel
- PinPoint LED creates a precise light spot
- Pilot LED (2nd sender LED) provides best-in-class background suppression
- Variable mounting with M4 screws
- Multiple connection options

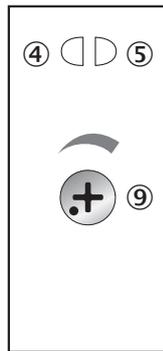
## Dimensional drawing



All dimensions in mm (inch)

## Adjustments

All types



- ① Center of optical axis receiver
- ② Center of optical axis sender
- ③ Mounting hole M4 (Ø 4.1 mm)
- ④ LED indicator yellow, light reception
- ⑤ LED indicator green, power on
- ⑥ Cable, PVC, 2 m
- ⑦ Plug M8, 4-pin
- ⑧ Plug M12, 4-pin
- ⑨ Scanning distance adjustment

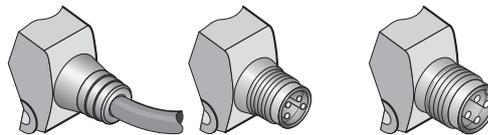


## Connection types

WTB9M4-3P1111

WTB9M4-3P2211

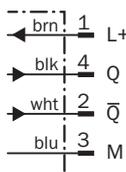
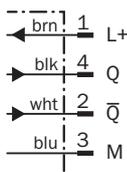
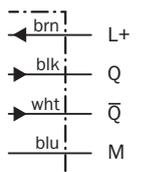
WTB9M4-3P2411



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

M8, 4-pin

M12, 4-pin



## Accessories

Cables and connectors

Mounting systems

Technical data		WTB9M4-3	P1111	P2211	P2411						
<b>Scanning distance, typ. max.</b>	20 ... 500 mm <sup>1)</sup>										
<b>Operating distance</b>	20 ... 250 mm										
Scanning distance setting	Potentiometer, 5 turns										
<b>Light source, type of light</b>	LED, infrared, 850 nm <sup>2)</sup>										
Light spot diameter	20 mm at 250 mm distance										
<b>Supply voltage V<sub>S</sub></b>	10 ... 30 V DC <sup>3)</sup>										
Ripple	< 5 V <sub>PP</sub> <sup>4)</sup>										
Current consumption	≤ 30 mA <sup>5)</sup>										
<b>Switching output</b>	PNP complementary										
Switching mode	Q = light-switching										
Output current I <sub>A</sub> max.	≤ 100 mA										
Response time	< 0.5 ms <sup>6)</sup>										
Switching frequency, max.	1,000 Hz <sup>7)</sup>										
<b>Connection type</b>	Cable, PVC, 2 m <sup>8)</sup>										
	Plug, M8, 4-pin										
	Plug, M12, 4-pin										
<b>Protection class</b>	⚡										
<b>Circuit protection</b>	A, B, C <sup>9)</sup>										
<b>Enclosure rating</b>	IP 66, IP 67, IP 69K										
<b>Ambient temperature</b>	Operation -40 °C ... +60 °C										
	Storage -40 °C ... +75 °C										
RoHS	✓										
<b>Weight</b>	With cable approx. 80 g										
	With plug approx. 13 g										
<b>Housing material</b>	VISTAL™ Tech., PA66, PMMA, PC + ABS										

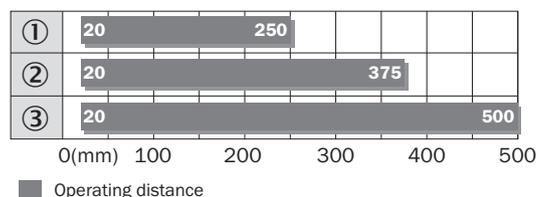
- 1) Object to be detected with 90% remission (referred to standard white DIN 5033)
- 2) Average service life 100,000 h when T<sub>A</sub> = +25 °C

- 3) Limit values, reverse polarity protected, operation in short-circuit protected network max. 8 A
- 4) May not exceed or fall short of V<sub>S</sub> tolerances

- 5) Without load
- 6) Signal transit time with resistive load
- 7) With light/dark ratio 1 : 1
- 8) Do not bend below 0 °C

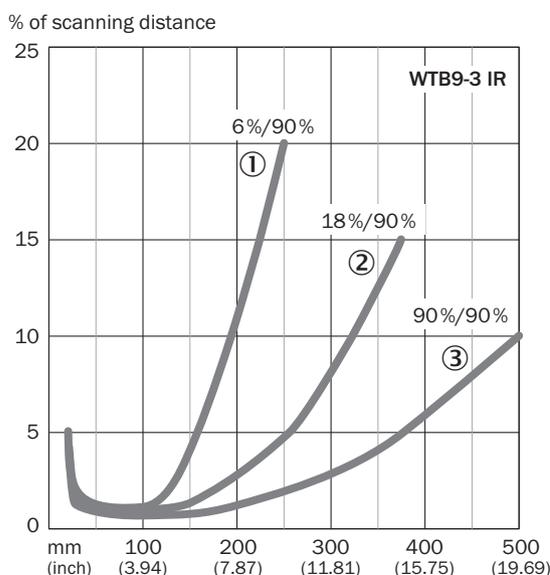
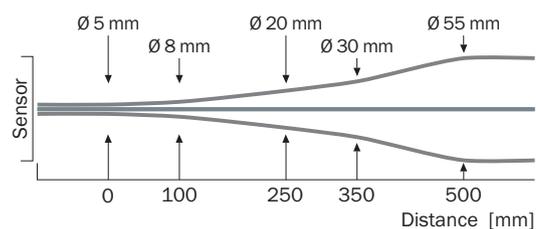
- 9) A = V<sub>S</sub>-supply connections reverse polarity protected
- B = Outputs Q and Q̄ short-circuit protected
- C = Interference pulse suppression

**Scanning distance**



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

**Light spot diameter**



**Ordering information**

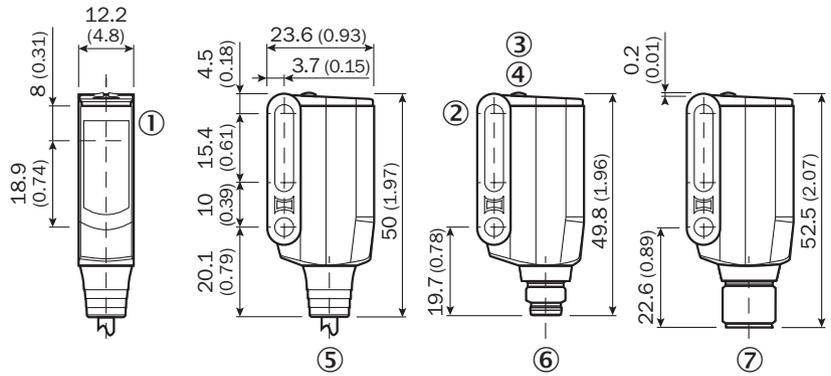
Model name	Part No.
WTB9M4-3P1111	1051886
WTB9M4-3P2211	1051888
WTB9M4-3P2411	1051890

**Scanning range**  
0 ... 5 m

Photoelectric reflex sensor

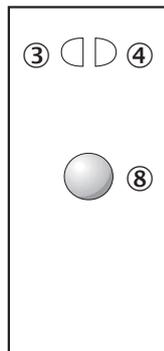
- VISTAL™ housing material is as tough as steel
- PinPoint LED creates a precise and highly visible light spot
- Autocollimation optics
- Variable mounting with M4 screws
- Multiple connection options

**Dimensional drawing**



All dimensions in mm (inch)

**Adjustments**  
All types

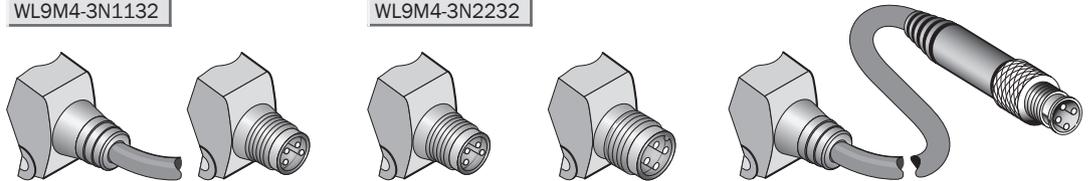


- ① Center of optical axis sender and receiver
- ② Mounting hole M4 (Ø 4.1 mm)
- ③ LED indicator yellow, light reception
- ④ LED indicator green, power on
- ⑤ Cable, PVC, 2 m or 120 mm cable with plug M12, 4-pin
- ⑥ Plug M8, 4-pin
- ⑦ Plug M12, 4-pin
- ⑧ Teach-in button

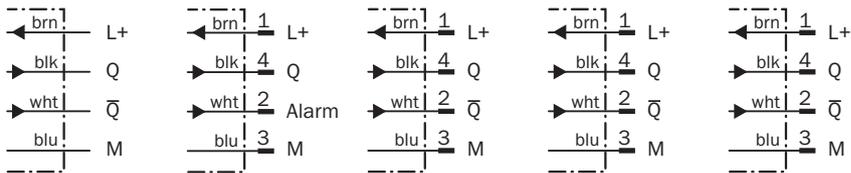


**Connection types**

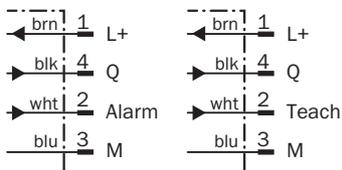
WL9M4-3P1132	WL9M4-3V2232	WL9M4-3P2232	WL9M4-3P2432	WL9M4-3P3432
WL9M4-3N1132		WL9M4-3N2232		



4 x 0.14 mm <sup>2</sup>	M8, 4-pin	M8, 4-pin	M12, 4-pin	M12, 4-pin with 120 mm cable
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WL9M4-3V1132	WL9M4-3P2234
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- Accessories**
- Cables and connectors
  - Mounting systems
  - Reflectors

Technical data		WL9M4-3	P1132	P2232	P2234	V1132	V2232	P2432	P3432	N1132	N2232
<b>Scanning range typ. max.</b>	0 ... 5 m										
<b>Operating range, recommended</b>	0 ... 3 m										
Relating to	Reflector PL80A										
Sensitivity setting	Teach-in button										
<b>Light source, type of light</b>	PinPoint-LED, red light, 650 nm <sup>1)</sup>										
Light spot diameter	45 mm at 1.5 m distance										
Polarization filter	✓										
<b>Supply voltage V<sub>S</sub></b>	10 ... 30 V DC <sup>2)</sup>										
Ripple	< 5 V <sub>PP</sub> <sup>3)</sup>										
Current consumption	≤ 30 mA <sup>4)</sup>										
<b>Switching output</b>	PNP complementary										
	PNP, VMA										
	NPN complementary										
<b>Switching mode</b>	Q = light-switching										
	Q = dark-switching										
<b>Output current I<sub>A</sub> max.</b>	≤ 100 mA										
<b>Response time</b>	< 0.5 ms <sup>5)</sup>										
<b>Switching frequency</b>	1,000 Hz <sup>6)</sup>										
<b>Connection type</b>	Cable, PVC, 2 m <sup>7)</sup>										
	Plug, M8, 4-pin										
	Plug, M12, 4-pin										
	Cable with plug, M12, 4-pin, 120 mm <sup>7)</sup>										
<b>Protection class</b>	⚡										
<b>Circuit protection</b>	A, B, C <sup>8)</sup>										
<b>Enclosure rating</b>	IP 66, IP 67, IP 69K										
<b>Ambient temperature</b>	Operation -40 °C ... +60 °C										
	Storage -40 °C ... +75 °C										
RoHS	✓										
<b>Weight</b>	With cable approx. 80 g										
	With plug approx. 13 g										
<b>Housing material</b>	VISTAL™ Tech., PA66, PMMA, PC + ABS										

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

2) Limit values, reverse polarity protected, operation in short-circuit protected network max. 8 A

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

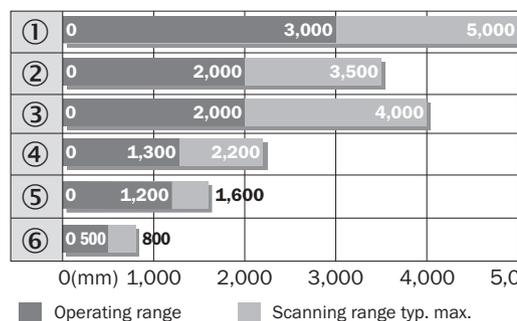
7) Do not bend below 0 °C

8) A = V<sub>S</sub>-supply connections reverse polarity protected

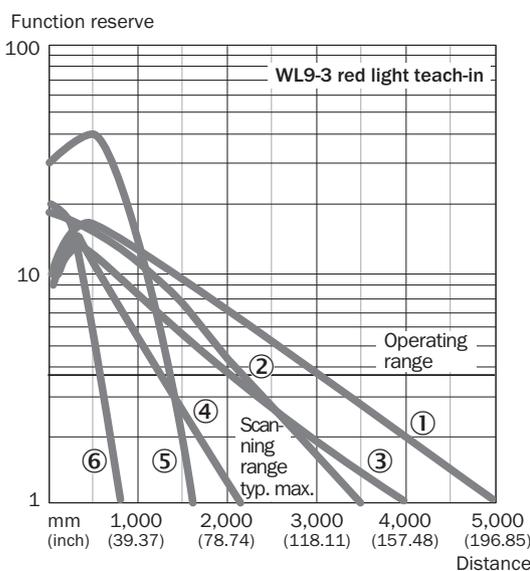
B = Outputs Q and Q̄ short-circuit protected

C = Interference pulse suppression

**Scanning range**



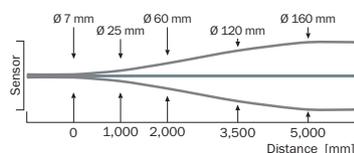
Reflector type	Operating range
① PL80A	0 ... 3,000 mm
② P250	0 ... 2,000 mm
③ PL40A	0 ... 2,000 mm
④ PL20A	0 ... 1,300 mm
⑤ PL10F	0 ... 1,200 mm
⑥ REF-IRF-56	0 ... 500 m



**Ordering information**

Model name	Part No.
WL9M4-3P1132	1051894
WL9M4-3P2232	1051895
WL9M4-3P2234	1051906
WL9M4-3V1132	1051908
WL9M4-3V2232	1051909
WL9M4-3P2432	1051896
WL9M4-3P3432	1051907
WL9M4-3N1132	1051892
WL9M4-3N2232	1051893

**Light spot diameter**



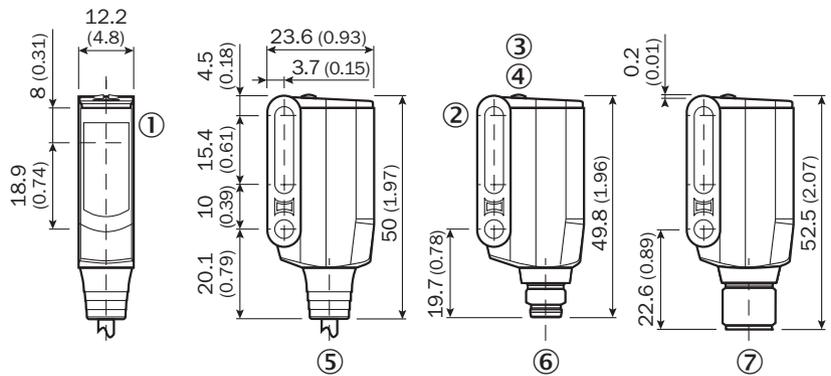
# Photoelectric reflex sensor WL9M4G-3, for transparent objects, red light


**Scanning range**  
**0 ... 5 m**

Photoelectric reflex sensor

- VISTAL™ housing material is as tough as steel
- Continuous threshold adaption for clear material object detection
- PinPoint LED creates a precise and highly visible light spot
- Variable mounting with M4 screws
- Multiple connection options

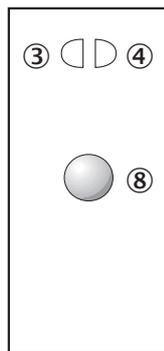
## Dimensional drawing



All dimensions in mm (inch)

## Adjustments

All types



- ① Center of optical axis sender and receiver
- ② Mounting hole M4 (Ø 4.1 mm)
- ③ LED indicator yellow, light reception
- ④ LED indicator green, power on
- ⑤ Cable, PVC, 2 m or 120 mm cable with plug M12, 4-pin
- ⑥ Plug M8, 4-pin
- ⑦ Plug M12, 4-pin
- ⑧ Teach-in button



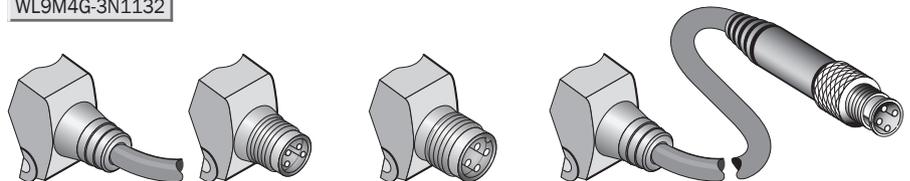
## Connection types

WL9M4G-3P1132  
 WL9M4G-3N1132

WL9M4G-3P2232

WL9M4G-3P2432

WL9M4G-3P3432

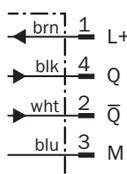
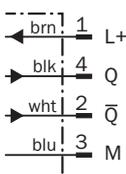
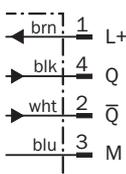
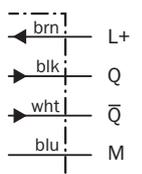


4 x 0.14 mm<sup>2</sup>

M8, 4-pin

M12, 4-pin

M12, 4-pin with 120 mm cable



## Accessories

- Cables and connectors
- Mounting systems
- Reflectors

Technical data		WL9M4G-3	P1132	P2232	P2432	P3432	N1132					
Scanning range typ. max.	0 ... 5 m											
Operating range, recommended	0 ... 3 m											
Relating to	Reflector PL80A											
Sensitivity setting	Teach-in button											
Light source, type of light	PinPoint-LED, red light, 650 nm <sup>1)</sup>											
Light spot diameter	45 mm at 1.5 m distance											
Polarization filter	✓											
Supply voltage V <sub>S</sub>	10 ... 30 V DC <sup>2)</sup>											
Ripple	< 5 V <sub>pp</sub> <sup>3)</sup>											
Current consumption	≤ 30 mA <sup>4)</sup>											
Switching output	PNP complementary											
	NPN complementary											
Switching mode	Q = light-switching											
Output current I <sub>A</sub> max.	≤ 100 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>											
	Plug, M8, 4-pin											
	Plug, M12, 4-pin											
	Cable with plug, M12, 4-pin, 120 mm <sup>7)</sup>											
Protection class	⚡											
Circuit protection	A, B, C <sup>8)</sup>											
Enclosure rating	IP 66, IP 67, IP 69K											
Ambient temperature	Operation -40 °C ... +60 °C											
	Storage -40 °C ... +75 °C											
RoHS	✓											
Weight	With cable approx. 80 g											
	With plug approx. 13 g											
Housing material	VISTAL™ Tech., PA66, PMMA, PC + ABS											

- 1) Average service life 100,000 h when T<sub>A</sub> = +25 °C
- 2) Limit values, reverse polarity protected, operation in short-circuit protected network max. 8 A

- 3) May not exceed or fall short of V<sub>S</sub> tolerances
- 4) Without load
- 4) 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>-supply connections reverse polarity protected
- B = Outputs Q and Q̄ short-circuit protected
- C = Interference pulse suppression

**Teach-in function**

**Programming via teach-in button**

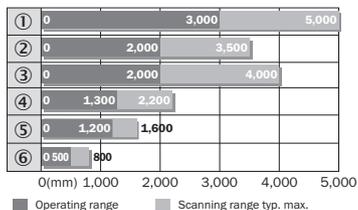
**Glass mode with dust compensation** Align sensor to reflector without an object into the beam  
 Press teach-in button > 2 s until the yellow signal LED is on  
 Sensor is in operation

**Standard operation with threshold** Align sensor to reflector without an object into the beam  
 Press teach-in button approx. 8 s until the yellow signal LED starts to flash  
 Sensor is in operation

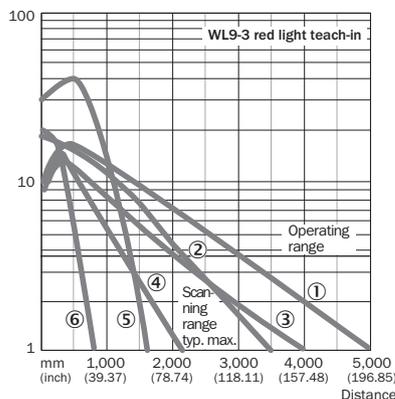
**Ordering information**

Model name	Part No.
WL9M4G-3P1132	1051898
WL9M4G-3P2232	1051899
WL9M4G-3P2432	1051900
WL9M4G-3P3432	1051910
WL9M4G-3N1132	1051897

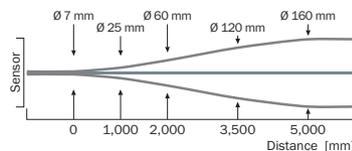
**Scanning range**



Reflector type	Operating range
① PL80A	0 ... 3,000 mm
② P250F	0 ... 2,000 mm
③ PL40A	0 ... 2,000 mm
④ PL20F	0 ... 1,300 mm
⑤ PL10F	0 ... 1,200 mm
⑥ REF-IRF-56	0 ... 500 mm



**Light spot diameter**

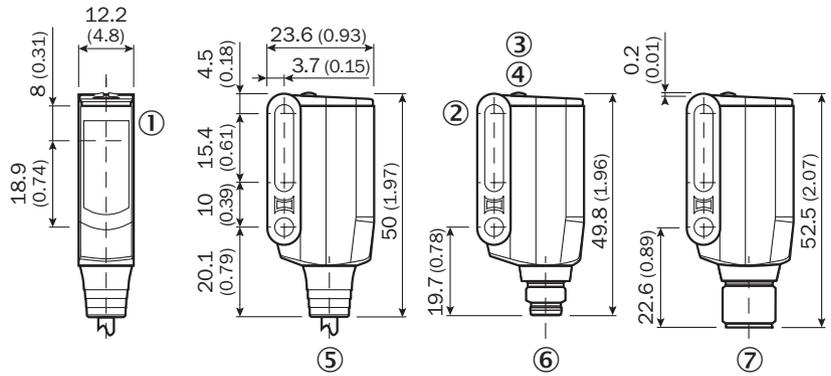


**Scanning range**  
0 ... 10 m

Through-beam photoelectric sensor

- VISTAL™ housing material is as tough as steel
- PinPoint LED creates a precise and highly visible light spot
- Variable mounting with M4 screws
- Multiple connection options

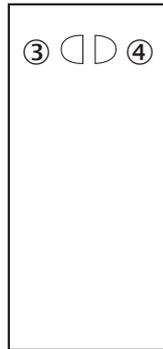
### Dimensional drawing



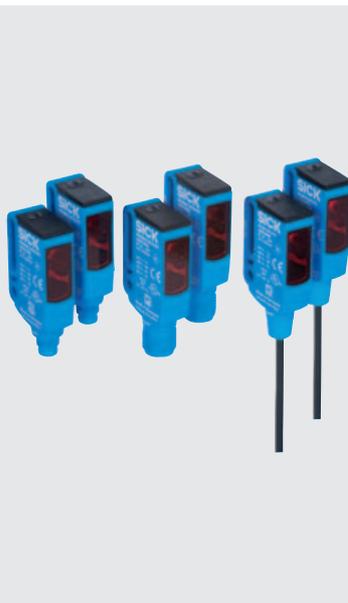
All dimensions in mm (inch)

### Adjustments

All types

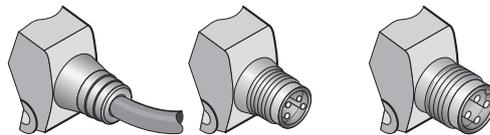


- ① Center of optical axis sender and receiver
- ② Mounting hole M4 (Ø 4.1 mm)
- ③ LED indicator yellow, light reception
- ④ LED indicator green, power on
- ⑤ Cable, PVC, 2 m
- ⑥ Plug M8, 4-pin
- ⑦ Plug M12, 4-pin



### Connection types

WSE9M4-3P1130	WSE9M4-3P2230	WSE9M4-3P2430
WSE9M4-3N1130	WSE9M4-3N2230	WSE9M4-3N2430

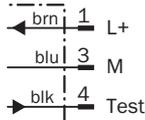
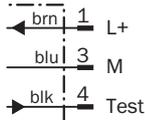
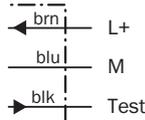


4 x 0.14 mm<sup>2</sup>

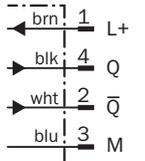
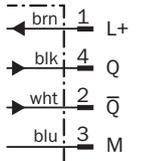
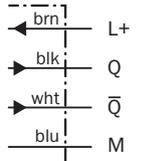
M8, 4-pin

M12, 4-pin

Sender



Receiver



### Accessories

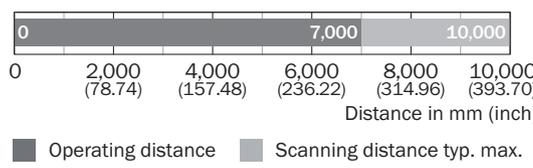
Cables and connectors

Mounting systems

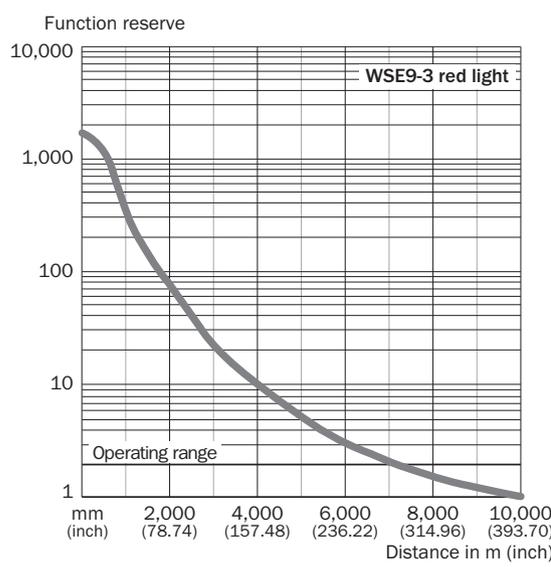
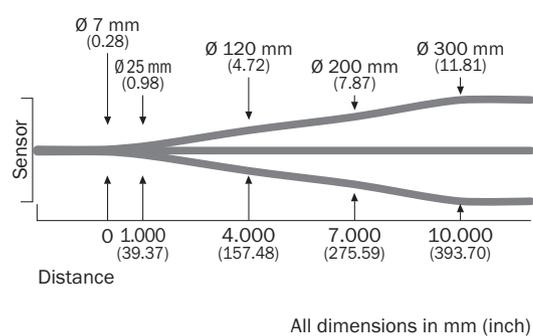
Technical data		WSE9M4-3	P1130	P2230	P2430	N1130	N2230	N2430				
Scanning range typ. max.	0 ... 10 m											
Operating range, recommended	0 ... 7 m											
Light source, type of light	PinPoint-LED, red light, 650 nm <sup>1)</sup>											
Light spot diameter	25 mm at 1.0 m distance											
Supply voltage V <sub>S</sub>	10 ... 30 V DC <sup>2)</sup>											
Ripple	< 5 V <sub>pp</sub> <sup>3)</sup>											
Current consumption	Sender: ≤ 30 mA <sup>4)</sup> Receiver: ≤ 20 mA <sup>4)</sup>											
Switching output	PNP complementary NPN complementary											
Switching mode	Q = light-switching											
Test input	Sender OFF at 0 V											
Output current I <sub>A</sub> max.	≤ 100 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> Plug, M8, 4-pin Plug, M12, 4-pin											
Protection class	⚡											
Circuit protection	A, B, C <sup>8)</sup>											
Enclosure rating	IP 66, IP 67, IP 69K											
Ambient temperature	Operation -40 °C ... +60 °C Storage -40 °C ... +75 °C											
RoHS	✓											
Weight	With cable approx. 80 g With plug approx. 13 g											
Housing material	VISTAL™ Tech., PA66, PMMA, PC + ABS											

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

**Scanning range and functional reserves** **Ordering information**



**Light spot diameter**



Model name	Part No.
WSE9M4-3P1130	1051911
WSE9M4-3P2230	1051912
WSE9M4-3P2430	1051913
WSE9M4-3N1130	1051914
WSE9M4-3N2230	1052938
WSE9M4-3N2430	1051915

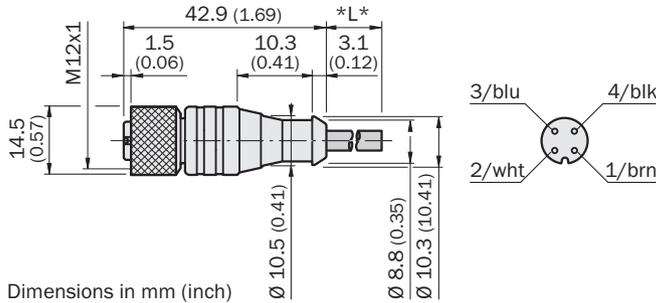
## Dimensional drawings and ordering information

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

#### Female connector M12, 4-pin, straight

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

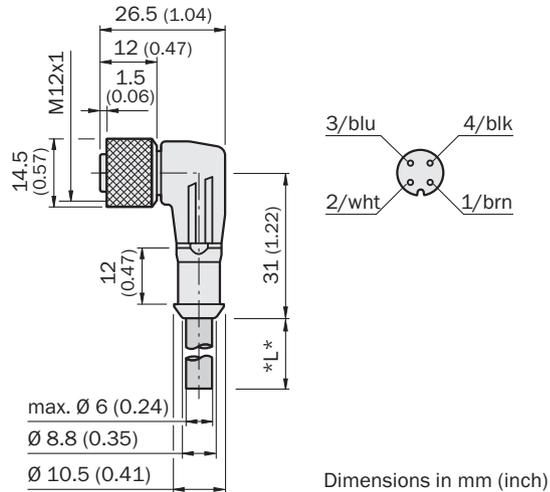
Model name	Part No.	Contacts	Cable length
DOL-1204-G02M	6009382	4	2 m
DOL-1204-G05M	6009866	4	5 m



#### Female connector M12, 4-pin, right angle

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

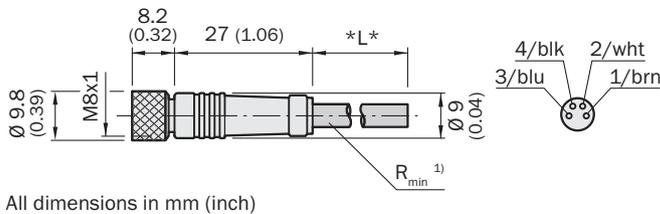
Model name	Part No.	Contacts	Cable length
DOL-1204-W02M	6009383	4	2 m
DOL-1204-W05M	6009867	4	5 m



#### Female connector M8, 4-pin, straight

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

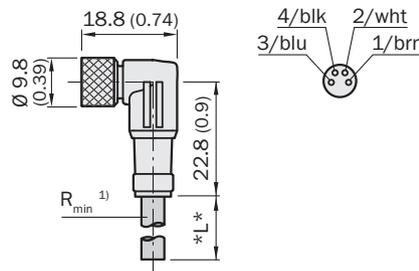
Model name	Part No.	Cable length
DOL-0804-G02M	6009870	2 m
DOL-0804-G05M	6009872	5 m



#### Female connector M8, 4-pin, right angle

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

Model name	Part No.	Cable length
DOL-0804-W02M	6009871	2 m
DOL-0804-W05M	6009873	5 m



1) Minimum bend radius in dynamic use  
 $R_{min} = 20 \times \text{cable diameter}$

2) Not suitable for sender in through-beam photoelectric sensors

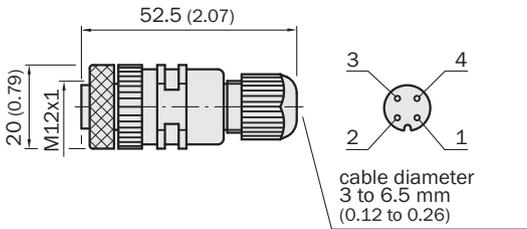
Dimensional drawings and ordering information

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

Female connector M12, 4-pin, straight

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

Model name	Part No.	Contacts	Can be self-made for cables Ø 4.5 to 6.5 mm
DOS-1204-G	6007302	4	

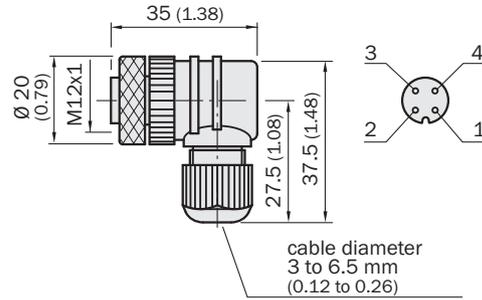


Dimensions in mm (inch)

Female connector M12, 4-pin, right angle

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

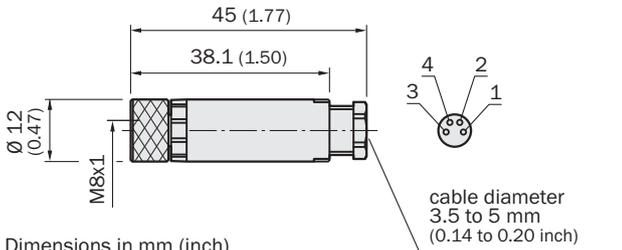
Model name	Part No.	Contacts	Can be self-made for cables Ø 4.5 to 6.5 mm
DOS-1204-W	6007303	4	



Dimensions in mm (inch)

Female connector M8, 4-pin, straight

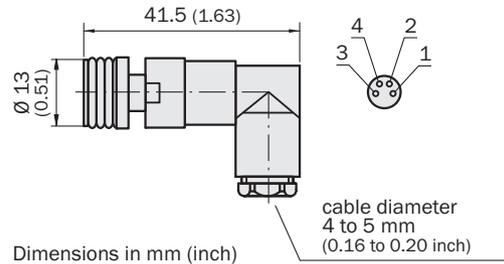
Model name	Part No.
DOS-0804-G	6009974



Dimensions in mm (inch)

Female connector M8, 4-pin, right angle

Model name	Part No.
DOS-0804-W	6009975



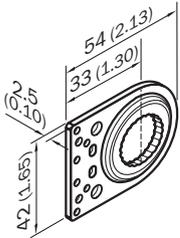
Dimensions in mm (inch)

## Dimensional drawings and ordering information

### Universal bar clamp systems

#### Plate N08(N) for universal bar clamp

Model name	Part No.
BEF-KHS-N08 <sup>1)</sup>	2051607

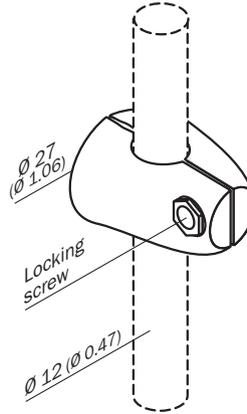


<sup>1)</sup> Plate: Steel, galvanized;  
Clamp: Die-cast zinc

All dimensions in mm (inch)

#### Universal bar clamp

Model name	Part No.
BEF-KHS-KH3 <sup>1)</sup>	5322626

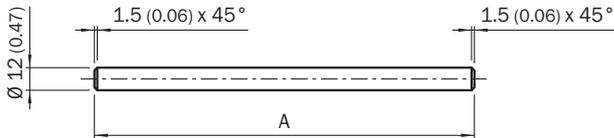


All dimensions in mm (inch)

<sup>1)</sup> Die-cast zinc

#### Mounting rod straight

Model name	Part No.	Size A
BEF-MS12G-A <sup>1)</sup>	4056054	200 mm

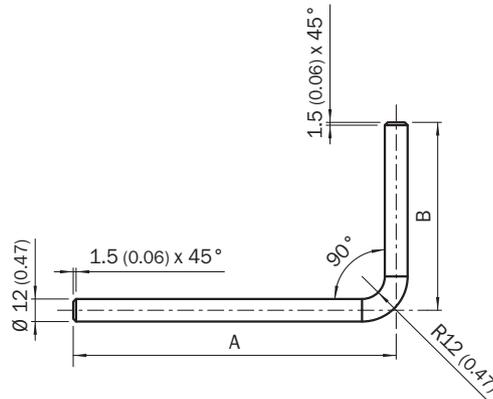


All dimensions in mm (inch)

<sup>1)</sup> Steel, galvanized

#### Mounting rod L-shape

Model name	Part No.	Size A	Size B
BEF-MS12L-B <sup>1)</sup>	4056053	250 mm	250 mm

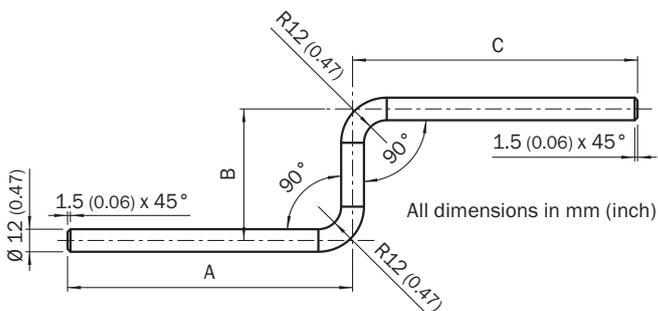


All dimensions in mm (inch)

<sup>1)</sup> Steel, galvanized

#### Mounting rod Z-shape

Model name	Part No.	Size A	Size B	Size C
BEF-MS12Z-A <sup>1)</sup>	4056056	150 mm	70 mm	150 mm



All dimensions in mm (inch)

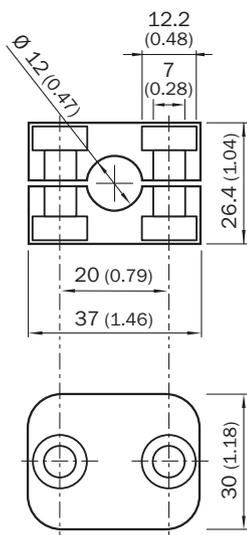
<sup>1)</sup> Steel, galvanized

Dimensional drawings and ordering information

Universal bar clamp systems

Rod mounting clamp

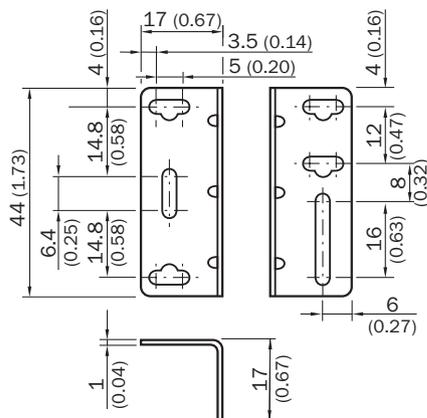
Model name	Part No.	Material
BEF-RMC-D12	5321878	Aluminium



All dimensions in mm (inch)

Mounting bracket

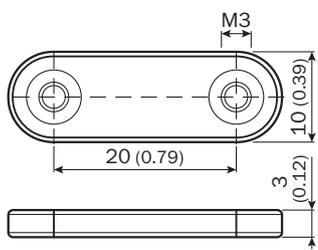
Model name	Part No.	Material
BEF-WN-W9-2	2022855	Steel, galvanised



All dimensions in mm (inch)

Fastening plate with threaded sleeve M3

Model name	Part no.	Material
BEF-GPM3-W9	4066039	Plastic (PMMA), Threaded sleeve: Brass



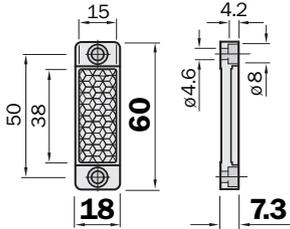
All dimensions in mm (inch)

## Dimensional drawings and ordering information

Plastic design for temperatures up to 65 °C

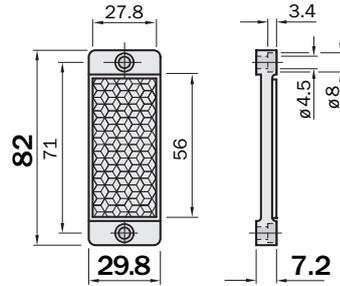
### Reflector, 20 x 40 mm

Model name	Part No.
PL20A	1012719



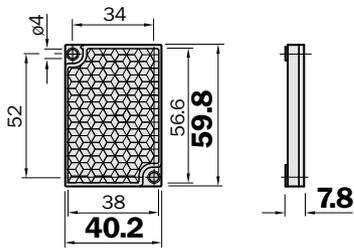
### Reflector, 30 x 50 mm

Model name	Part No.
PL30A	1002314



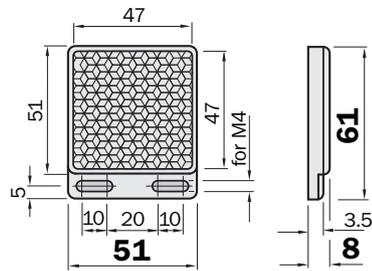
### Reflector, 40 x 60 mm

Model name	Part No.
PL40A	1012720



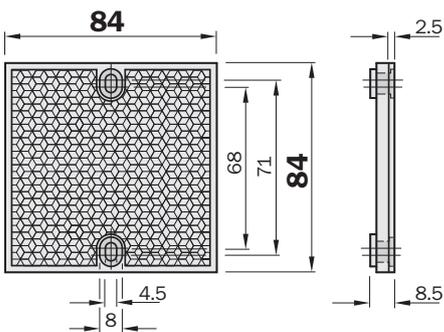
### Reflector, 47 x 47 mm<sup>2</sup>

Model name	Part No.
P250	5304812



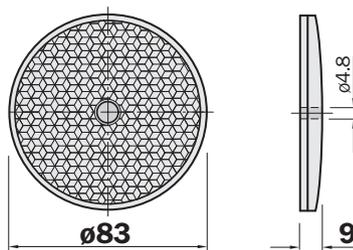
### Reflector, 80 x 80 mm

Model name	Part No.
PL80A	1003865



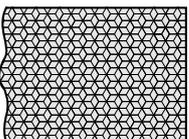
### Reflector Ø 83 mm, center hole mounting

Model name	Part No.
C110	5304549



### Reflective tape, self-adhesive

Model name	Part No.	Width	
REF-PLUS-R25	5319929	25 mm	Length of roll 22,8 m
REF-PLUS-R50	5319981	50 mm	Length of roll 22,8 m
REF-IRF-56	5314244	50 mm	Length 60 mm



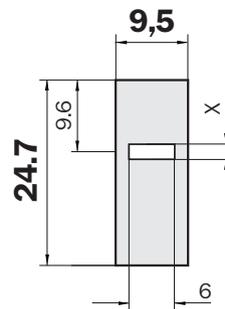
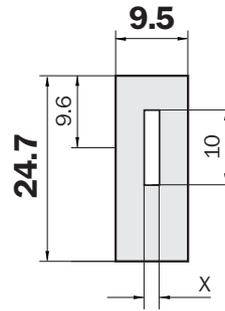
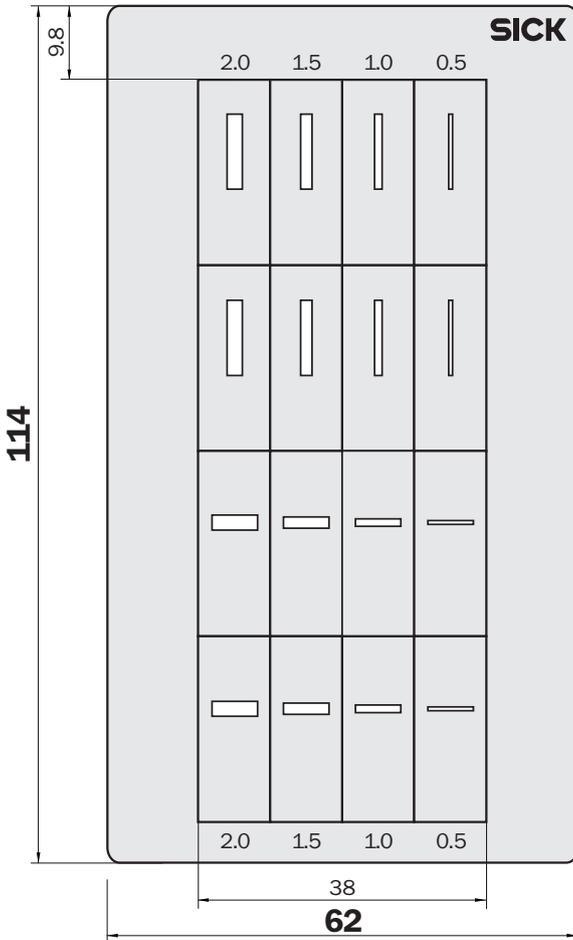
Dimensional drawings and ordering information

Slotted mask card

Slotted mask card for WS/WE9-3

Slot width X: 0.5 mm/1.0 mm/1.5 mm/2.0 mm

Model name	Part No.
BL-9-2	4033253







Worldwide presence with subsidiaries in the following countries:

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Israel  
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Japan  
Nederland  
Norge

Österreich  
Polska  
Republic of Korea  
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Sverige  
Taiwan  
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- Detecting volume, position, and contours of objects and surroundings with laser measurement systems

### Process automation

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- Gas flow measurements with maximum accuracy thanks to compact gas meters