

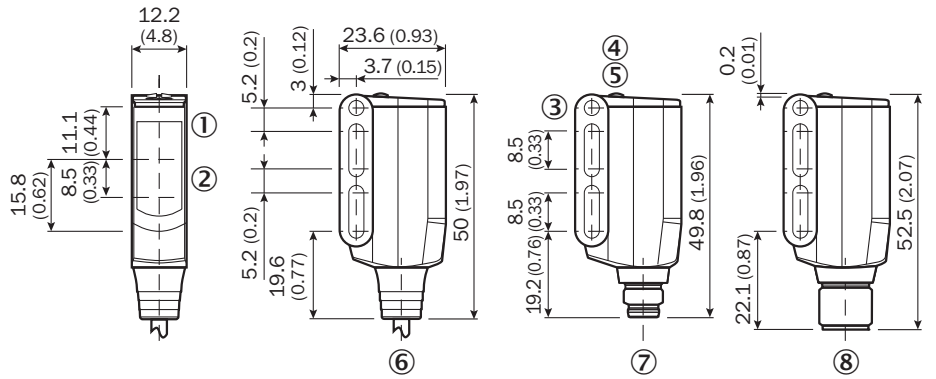
Photoelectric proximity sensors WTB9-3, infrared

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

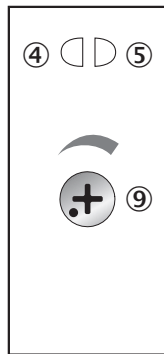
Dimensional drawing



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

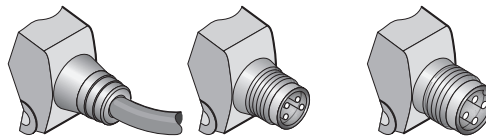


Connection types

WTB9-3P1111

WTB9-3P2211

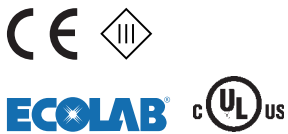
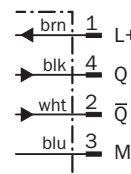
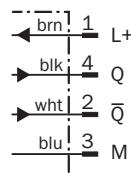
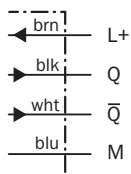
WTB9-3P2411



4 x 0.14 mm²

M8, 4-pin

M12, 4-pin



Accessories

Cables and connectors

Mounting systems

Technical data		WTB9-3	P1111	P2211	P2411						
Scanning distance, typ. max.	20 ... 500 mm ¹⁾										
Operating distance	20 ... 250 mm										
Scanning distance setting	Potentiometer, 5 turns										
Light source, type of light	LED, infrared, 850 nm ²⁾										
Light spot diameter	20 mm at 250 mm distance										
Supply voltage V_S	10 ... 30 V DC ³⁾										
Ripple	< 5 V _{PP} ⁴⁾										
Current consumption	≤ 30 mA ⁵⁾										
Switching output	PNP complementary										
Switching mode	Q = light-switching										
Output current I _A max.	≤ 100 mA										
Response time	< 0.5 ms ⁶⁾										
Switching frequency, max.	1,000 Hz ⁷⁾										
Connection type	Cable, PVC, 2 m ⁸⁾										
	Plug, M8, 4-pin										
	Plug, M12, 4-pin										
Protection class	⚡										
Circuit protection	A, B, C ⁹⁾										
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										

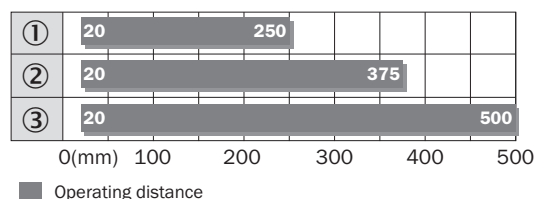
- 1) Object to be detected with 90% remission (referred to standard white DIN 5033)
- 2) Average service life 100,000 h when T_A = +25 °C

- 3) Limit values, reverse polarity protected, operation in short-circuit protected network max. 8 A
- 4) May not exceed or fall short of V_S 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

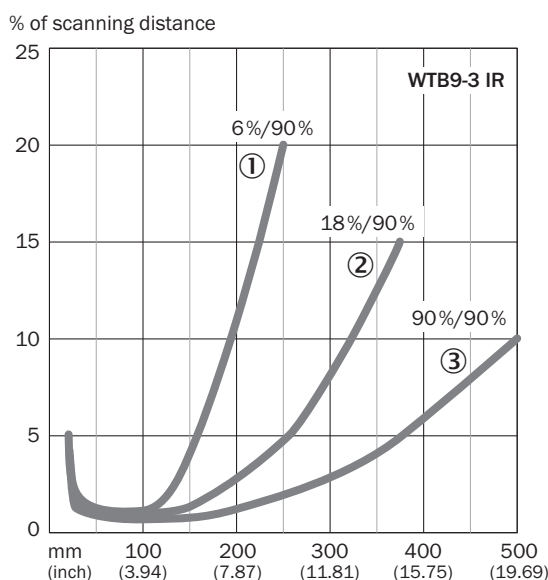
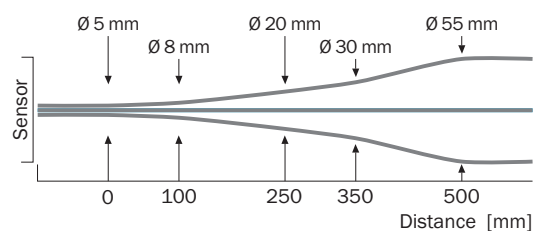
- 9) A = V_S-supply connections reverse polarity protected
- B = Outputs Q and \bar{Q} short-circuit protected
- C = Interference pulse suppression

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

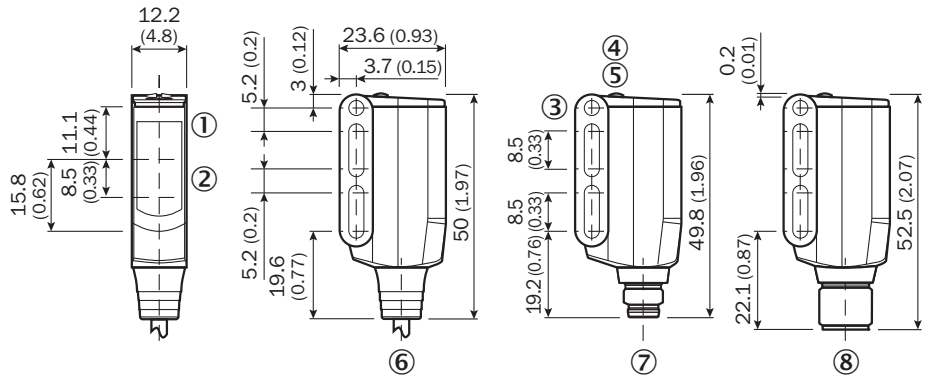
Photoelectric proximity sensors WTB9-3, infrared, long range

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

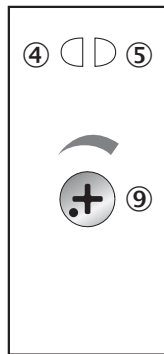
Dimensional drawing



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



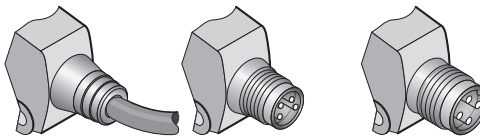
Connection type

WTB9-3N1111S14

WTB9-3P2211S14

WTB9-3P2411S14

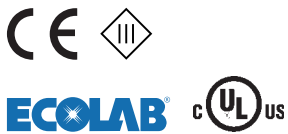
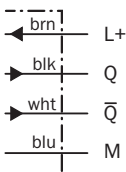
WTB9-3P1111S14



4 x 0.14 mm²

M8, 4-pin

M12, 4-pin



Accessories

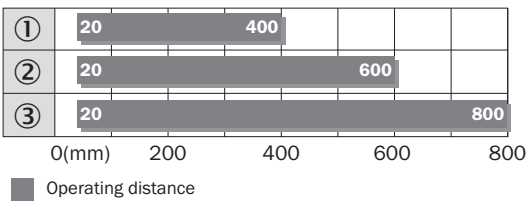
Cables and connectors

Mounting systems

Technical data		WTB9-3	N1111S14	P2211S14	P2411S14	P1111S14					
Scanning distance, typ. max.	20 ... 800 mm ¹⁾										
Operating distance	20 ... 400 mm										
Scanning distance setting	Potentiometer, 5 turns										
Light source, type of light	LED, infrared, 850 nm ²⁾										
Light spot diameter	40 mm at 400 mm distance										
Supply voltage V_S	10 ... 30 V DC ³⁾										
Ripple	< 5 V _{PP} ⁴⁾										
Current consumption	≤ 30 mA ⁵⁾										
Switching output	PNP complementary										
	NPN complementary										
Switching mode	Q = light-switching										
Output current I _A max.	≤ 100 mA										
Response time	< 2.5 ms ⁶⁾										
Switching frequency, max.	200 Hz ⁷⁾										
Connection type	Cable, PVC, 2 m ⁸⁾										
	Plug, M8, 4-pin										
	Plug, M12, 4-pin										
Protection class	⚡										
Circuit protection	A, B, C ⁹⁾										
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										

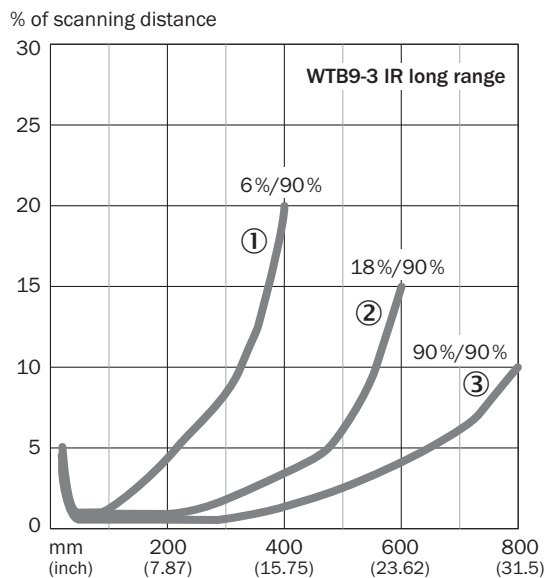
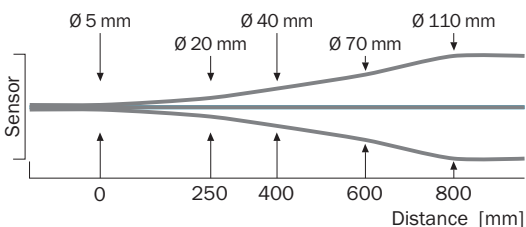
- 1) Object to be detected with 90% remission (referred to standard white DIN 5033)
- 2) Average service life 100,000 h when T_A = +25 °C
- 3) Limit values, reverse polarity protected, operation in short-circuit protected network max. 8 A
- 4) May not exceed or fall short of V_S tolerances
- 5) Without 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_S-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.
WTB9-3N1111S14	1050948
WTB9-3P2211S14	1052171
WTB9-3P2411S14	1052172
WTB9-3P1111S14	1052173

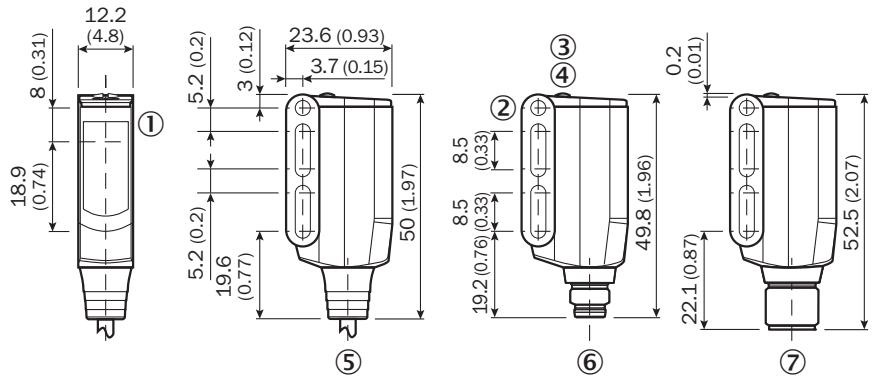
Photoelectric reflex sensor WL9-3, red light, standard


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

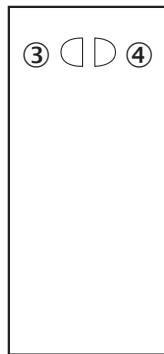
Dimensional drawing



All dimensions in mm (inch)

Adjustments

All types

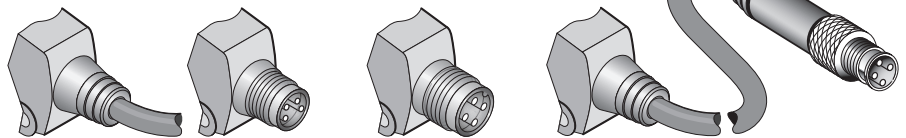


- ① Center of optical axis sender and receiver
- ② Mounting hole M3 (Ø 3.1 mm)
- ③ LED indicator yellow, light reception
- ④ LED indicator green, power on
- ⑤ Cable, PVC, 2 m or 120 mm cable with plug M12, 4-pin
- ⑥ Plug M8, 4-pin
- ⑦ Plug M12, 4-pin



Connection types

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

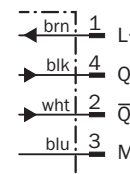
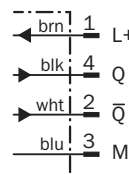
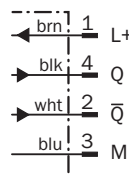
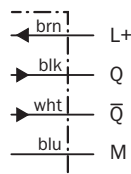


4 x 0.14 mm²

M8, 4-pin

M12, 4-pin

M12, 4-pin with 120 mm cable



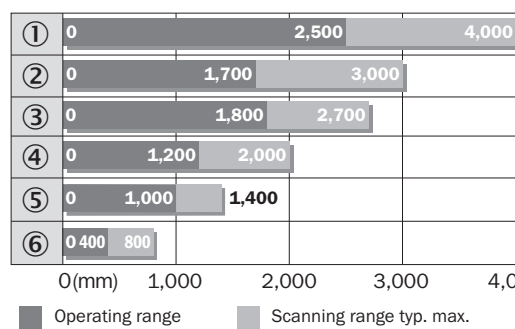
Accessories

- Cables and connectors
- Mounting systems
- Reflectors

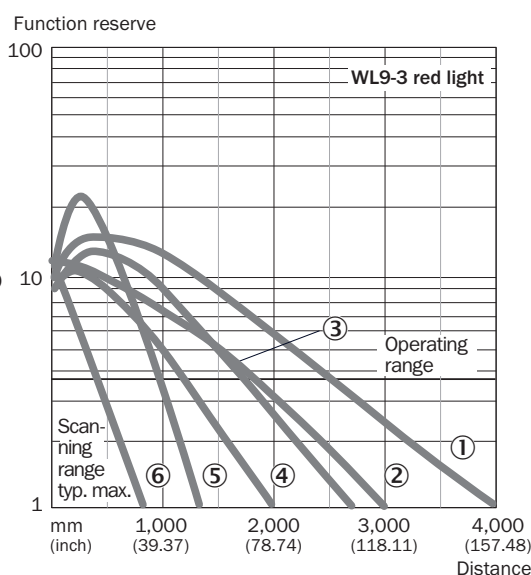
Technical data		WL9-3	P1130	P2230	P2430	P3430	N1130	N2230	N2430
Scanning range typ. max.	0 ... 4 m								
Operating range, recommended	0 ... 2.5 m								
Relating to	Reflector PL80A								
Light source, type of light	PinPoint-LED, red light, 650 nm ¹⁾								
Light spot diameter	45 mm at 1.5 m distance								
Polarization filter	✓								
Supply voltage V_S	10 ... 30 V DC ²⁾								
Ripple	< 5 V _{PP} ³⁾								
Current consumption	≤ 30 mA ⁴⁾								
Switching output	PNP complementary								
	NPN complementary								
Switching mode	Q = light-switching								
Output current I _A max.	≤ 100 mA								
Response time	< 0.5 ms ⁵⁾								
Switching frequency	1,000 Hz ⁶⁾								
Connection type	Cable, PVC, 2 m ⁷⁾								
	Plug, M8, 4-pin								
	Plug, M12, 4-pin								
	Cable with plug, M12, 4-pin, 120 mm ⁷⁾								
Protection class	⚡								
Circuit protection	A, B, C ⁸⁾								
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_A = +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_S 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_S-supply connections reverse polarity protected
 B = Outputs Q and Q̄ short-circuit protected
 C = Interference pulse suppression

Scanning range **Ordering information**

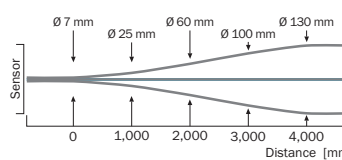


Reflector type	Operating range
① PL80A	0 ... 2,500 mm
② P250	0 ... 1,700 mm
③ PL40A	0 ... 1,800 mm
④ PL20A	0 ... 1,200 mm
⑤ PL10F	0 ... 1,000 mm
⑥ REF-IRF-56	0 ... 400 mm




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



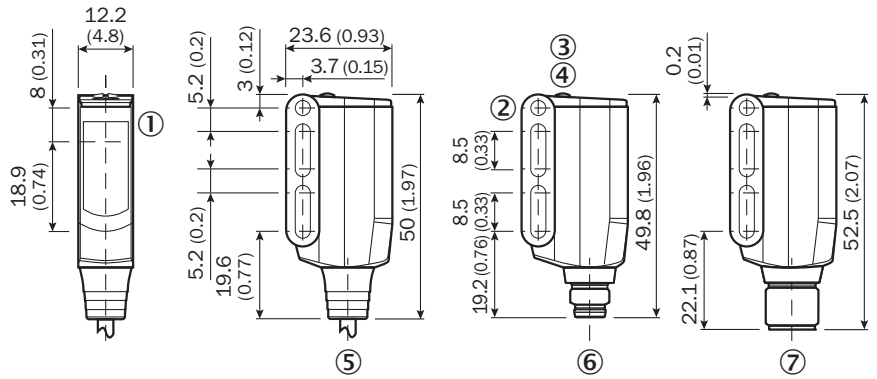
Photoelectric reflex sensor WL9-3, red light, teach-in


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

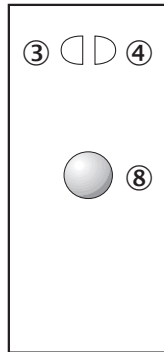
Dimensional drawing



All dimensions in mm (inch)

Adjustments

All types

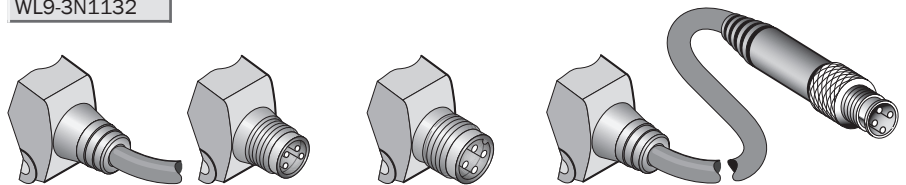


- ① Center of optical axis sender and receiver
- ② Mounting hole M3 (Ø 3.1 mm)
- ③ LED indicator yellow, light reception
- ④ LED indicator green, power on
- ⑤ Cable, PVC, 2 m / 5 m or 120 mm cable with plug M12, 4-pin
- ⑥ Plug M8, 4-pin
- ⑦ Plug M12, 4-pin
- ⑧ Teach-in button



Connection types

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

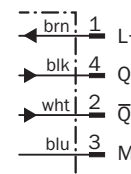
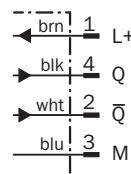
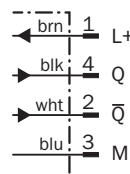
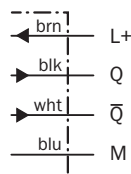


4 x 0.14 mm²

M8, 4-pin

M12, 4-pin

M12, 4-pin with 120 mm cable



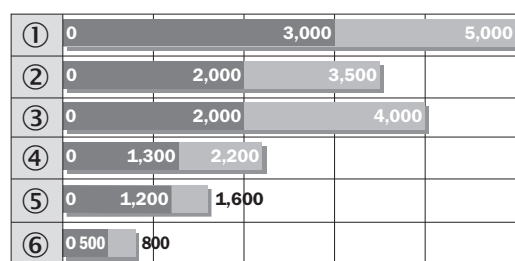
Accessories

- Cables and connectors
- Mounting systems
- Reflectors

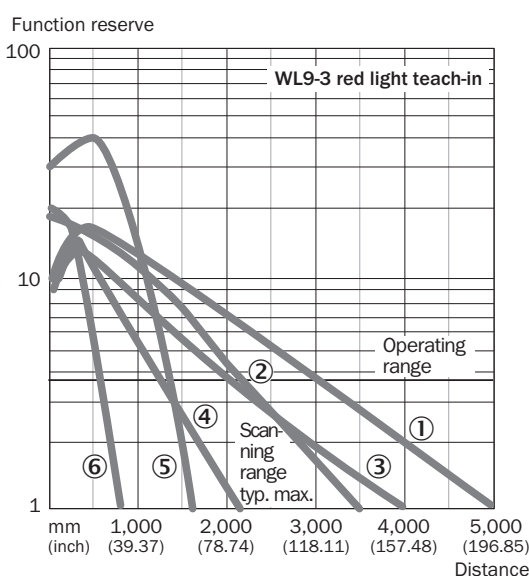
Technical data		WL9-3	P1132	P1232	P3432	P2232	N1132	P2432	N2432			
Scanning range typ. max.	0 ... 5 m											
Operating range, recommended	0 ... 3 m											
Relating to	Reflector PL80A											
Sensitivity setting	Teach-in button											
Light source, type of light	PinPoint-LED, red light, 650 nm ¹⁾											
Light spot diameter	45 mm at 1.5 m distance											
Polarization filter	✓											
Supply voltage V_S	10 ... 30 V DC ²⁾											
Ripple	< 5 V _{PP} ³⁾											
Current consumption	≤ 30 mA ⁴⁾											
Switching output	PNP complementary											
	NPN complementary											
Switching mode	Q = light-switching											
Output current I _A max.	≤ 100 mA											
Response time	< 0.5 ms ⁵⁾											
Switching frequency	1,000 Hz ⁶⁾											
Connection type	Cable, PVC, 2 m ⁷⁾											
	Cable, PVC, 5 m ⁷⁾											
	Plug, M8, 4-pin											
	Plug, M12, 4-pin											
	Cable with plug, M12, 4-pin, 120 mm ⁷⁾											
Protection class	⚡											
Circuit protection	A, B, C ⁸⁾											
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_A = +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_S 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_S-supply connections reverse polarity protected
 B = Outputs Q and Q̄ short-circuit protected
 C = Interference pulse suppression

Scanning range



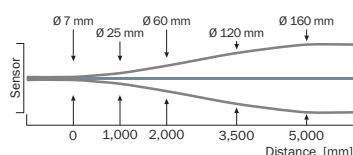
Reflector type	Operating range
① PL80A	0 ... 3,000 mm
② P250	0 ... 2,000 mm
③ PL40A	0 ... 2,000 mm
④ PL20A	0 ... 1,300 mm
⑤ PL10F	0 ... 1,200 mm
⑥ REF-IRF-56	0 ... 500 mm



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



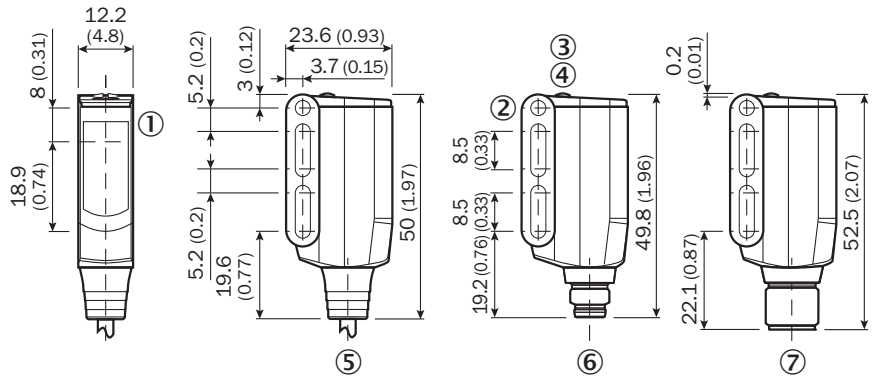
Photoelectric reflex sensor WL9-3, red light, focused

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

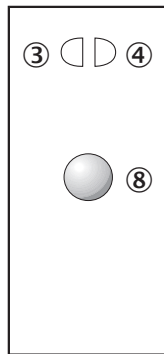
Dimensional drawing



All dimensions in mm (inch)

Adjustments

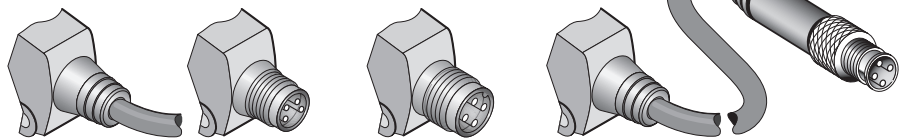
All types



- 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	

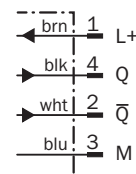
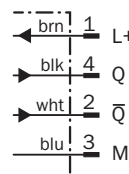
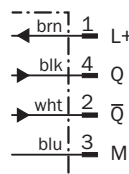
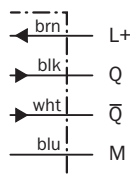


4 x 0.14 mm²

M8, 4-pin

M12, 4-pin

M12, 4-pin with 120 mm cable



Accessories

- Cables and connectors
- Mounting systems
- Reflectors

Technical data		WL9-3	P3462	P1162	P2462	P2262	N2462	N1162				
Scanning range typ. max.	0 ... 0.4 m											
Operating range, recommended	0 ... 0.3 m											
Relating to	Reflector PL80A											
Sensitivity setting	Teach-in button											
Light source, type of light	PinPoint-LED, red light, 650 nm ¹⁾											
Light spot diameter	2.0 mm at 35 mm distance											
Polarization filter	✓											
Supply voltage V_S	10 ... 30 V DC ²⁾											
Ripple	< 5 V _{pp} ³⁾											
Current consumption	≤ 30 mA ⁴⁾											
Switching output	PNP complementary											
	NPN complementary											
Switching mode	Q = light-switching											
Output current I _A max.	≤ 100 mA											
Response time	< 0.5 ms ⁵⁾											
Switching frequency	1,000 Hz ⁶⁾											
Connection type	Cable, PVC, 2 m ⁷⁾											
	Plug, M8, 4-pin											
	Plug, M12, 4-pin											
	Cable with plug, M12, 4-pin, 120 mm ⁷⁾											
Protection class	⚡											
Circuit protection	A, B, C ⁸⁾											
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											

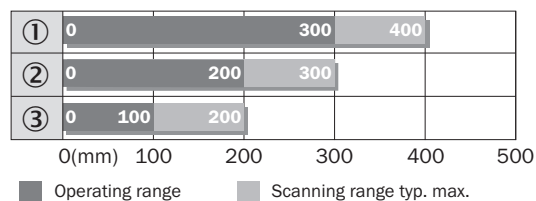
- 1) Average service life 100,000 h when T_A = +25 °C
- 2) Limit values, reverse polarity protected, operation in short-circuit protected network max. 8 A

- 3) May not exceed or fall short of V_S 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

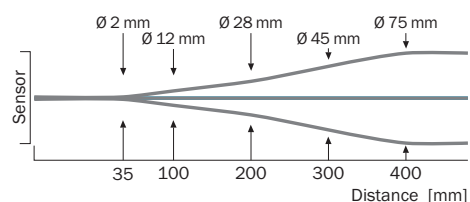
- 8) A = V_S-supply connections reverse polarity protected
- B = Outputs Q and \bar{Q} short-circuit protected
- C = Interference pulse suppression

Scanning range

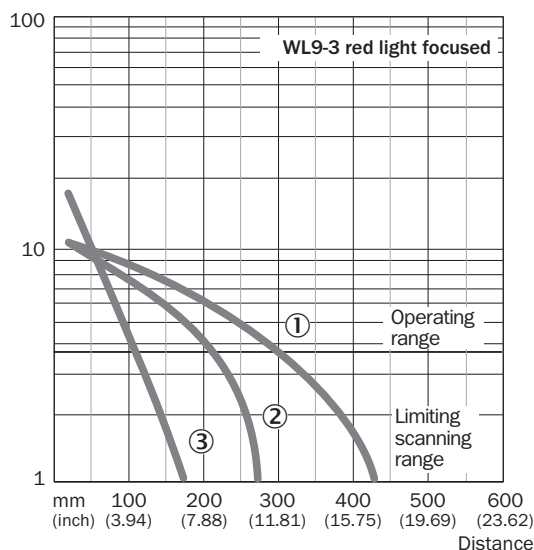


	Reflector type	Operating range
①	PL80A	0 ... 300 mm
②	PL40A	0 ... 200 mm
③	REF-IRF-56	0 ... 100 mm

Light spot diameter




Function reserve



Ordering information

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

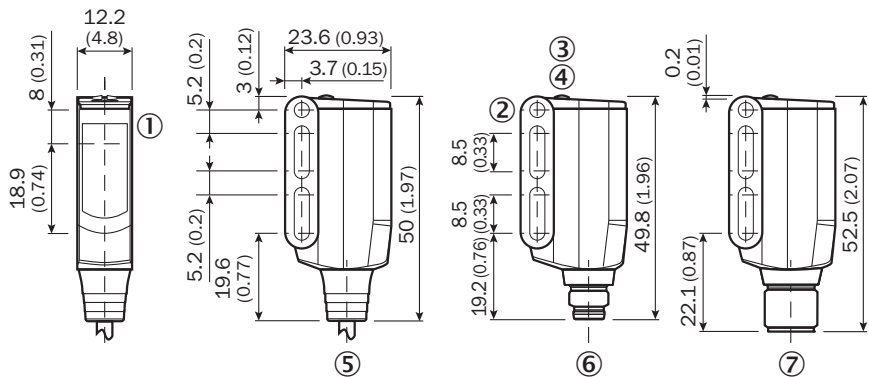
Photoelectric reflex sensor WL9G-3, for transparent objects, red light


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

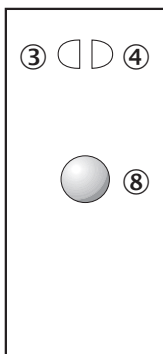
Dimensional drawing



All dimensions in mm (inch)

Adjustments

All types

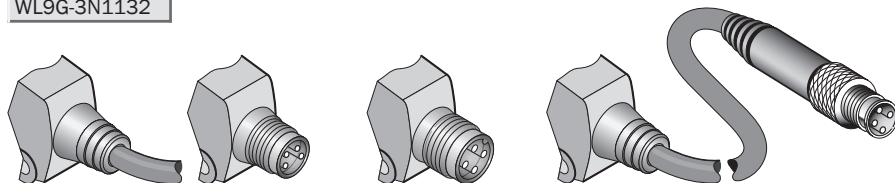


- ① Center of optical axis sender and receiver
- ② Mounting hole M3 (Ø 3.1 mm)
- ③ LED indicator yellow, light reception
- ④ LED indicator green, power on
- ⑤ Cable, PVC, 2 m or 120 mm cable with plug M12, 4-pin
- ⑥ Plug M8, 4-pin
- ⑦ Plug M12, 4-pin
- ⑧ Teach-in button

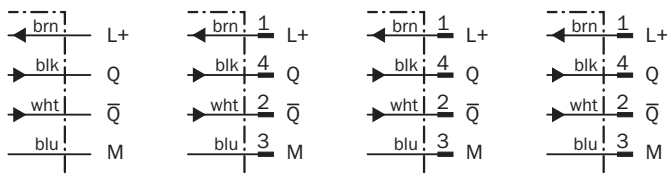


Connection types

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



4 x 0.14 mm ²	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		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 ¹⁾											
Light spot diameter	45 mm at 1.5 m distance											
Polarization filter	✓											
Supply voltage V _S	10 ... 30 V DC ²⁾											
Ripple	< 5 V _{pp} ³⁾											
Current consumption	≤ 30 mA ⁴⁾											
Switching output	PNP complementary											
	NPN complementary											
Switching mode	Q = light-switching											
Output current I _A max.	≤ 100 mA											
Response time	< 0.5 ms ⁵⁾											
Switching frequency	1,000 Hz ⁶⁾											
Connection type	Cable, PVC, 2 m ⁷⁾											
	Plug, M8, 4-pin											
	Plug, M12, 4-pin											
	Cable with plug, M12, 4-pin, 120 mm ⁷⁾											
Protection class	⚡											
Circuit protection	A, B, C ⁸⁾											
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_A = +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_S tolerances
- 4) Without load
- 5) Signal transit time with resistive load

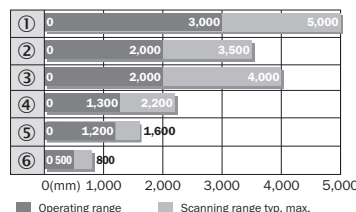
- 6) With light/dark ratio 1 : 1
- 7) Do not bend below 0 °C

- 8) A = V_S-supply connections reverse polarity protected
- B = Outputs Q and \bar{Q} short-circuit protected
- C = Interference pulse suppression

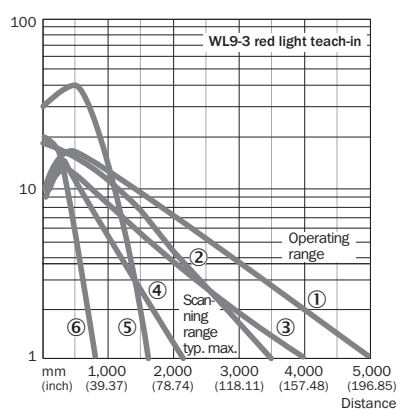
Teach-in function	
Programming via teach-in button	
Glass mode with dust compensation	Align sensor to reflector without an object into the beam Press teach-in button > 2 s until the yellow signal LED is on Sensor is in operation
Standard operation with threshold	Align sensor to reflector without an object 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.
WL9G-3P1132	1049081
WL9G-3P2232	1049082
WL9G-3P2432	1049083
WL9G-3P3432	1049084
WL9G-3N1132	1049085

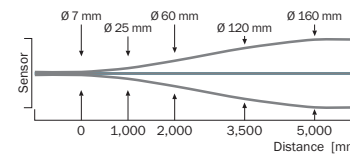
Scanning range



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



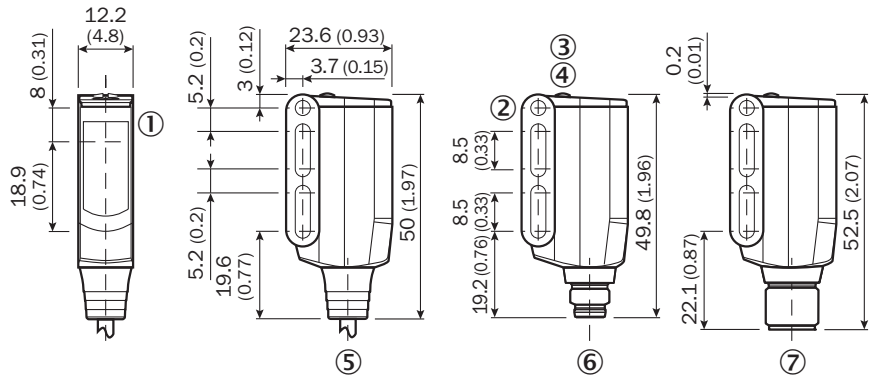
Through-beam photoelectric sensor WS/WE9-3, red light

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

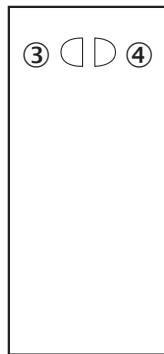
Dimensional drawing



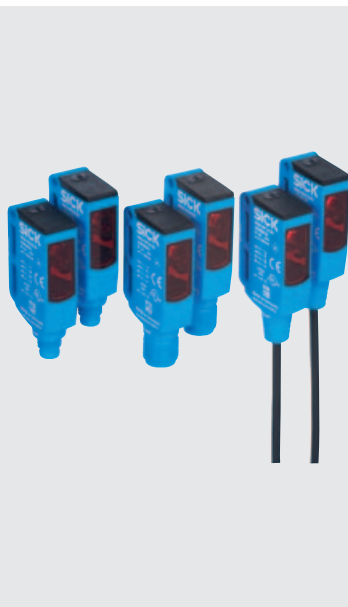
All dimensions in mm (inch)

Adjustments

All types

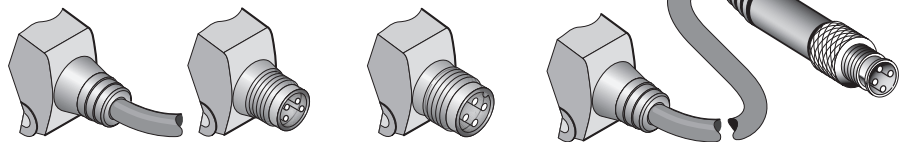


- ① Center of optical axis sender and receiver
- ② Mounting hole M3 (Ø 3.1 mm)
- ③ LED indicator yellow, light reception
- ④ LED indicator green, power on
- ⑤ Cable, PVC, 2 m or 120 mm cable with plug M12, 4-pin
- ⑥ Plug M8, 4-pin
- ⑦ Plug M12, 4-pin



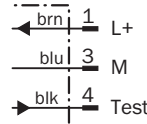
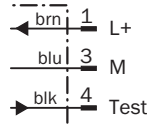
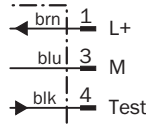
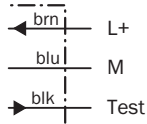
Connection types

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

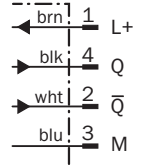
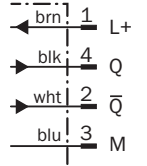
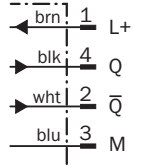
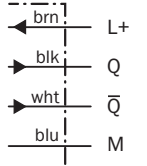


4 x 0.14 mm ²	M8, 4-pin	M12, 4-pin	M12, 4-pin with 120 mm cable
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Sender



Receiver

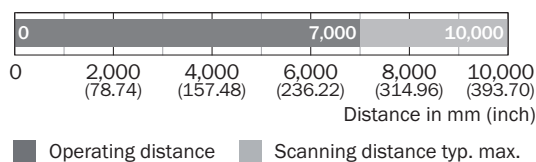


Accessories
Cables and connectors
Mounting systems

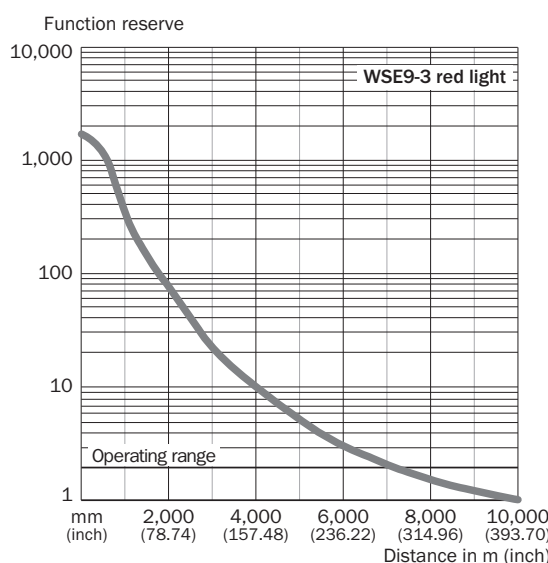
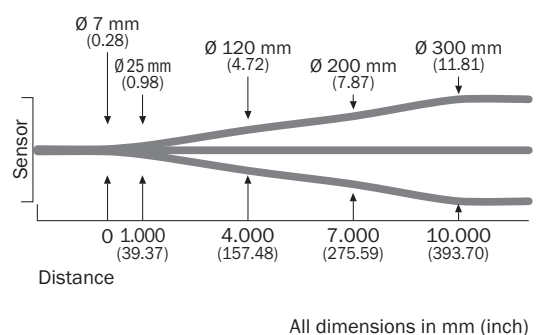
Technical data		WSE9-3	P1130	P2230	P2430	P3430	N1130	N2430				
Scanning range typ. max.	0 ... 10 m											
Operating range, recommended	0 ... 7 m											
Light source, type of light	PinPoint-LED, red light, 650 nm ¹⁾											
Light spot diameter	25 mm at 1.0 m distance											
Supply voltage V _S	10 ... 30 V DC ²⁾											
Ripple	< 5 V _{pp} ³⁾											
Current consumption	Sender: ≤ 30 mA ⁴⁾ Receiver: ≤ 20 mA ⁴⁾											
Switching output	PNP complementary NPN complementary											
Switching mode	Q = light-switching											
Test input	Sender OFF at 0 V											
Output current I _A max.	≤ 100 mA											
Response time	< 0.5 ms ⁵⁾											
Switching frequency	1,000 Hz ⁶⁾											
Connection type	Cable, PVC, 2 m ⁷⁾ Plug, M8, 4-pin Plug, M12, 4-pin Cable with plug, M12, 4-pin, 120 mm ⁷⁾											
Protection class	◇◇											
Circuit protection	A, B, C ⁸⁾											
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_A = +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_S 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_S-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



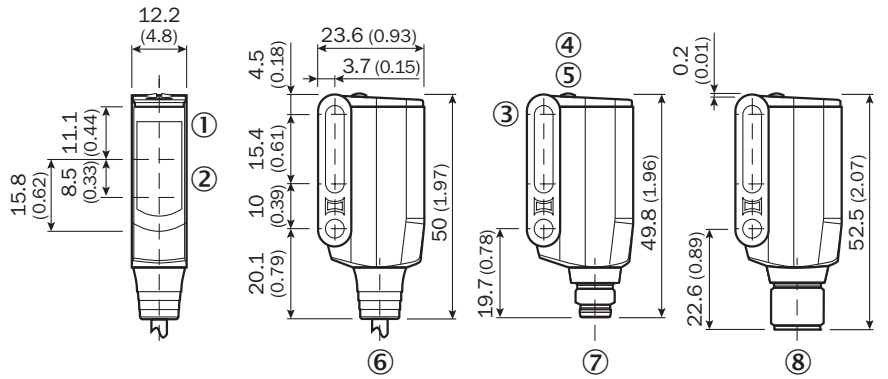
Model name	Part No.
WSE9-3P1130	1049075
WSE9-3P2230	1049076
WSE9-3P2430	1049077
WSE9-3P3430	1049078
WSE9-3N1130	1049079
WSE9-3N2430	1049080

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

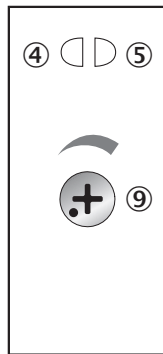
Dimensional drawing



All dimensions in mm (inch)

Adjustments

All types

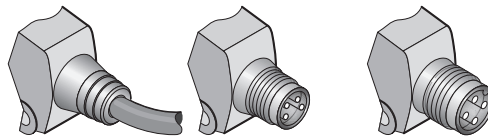


- ① Center of optical axis receiver
- ② Center of optical axis sender
- ③ Mounting hole M4 (Ø 4.1 mm)
- ④ LED indicator yellow, light reception
- ⑤ LED indicator green, power on
- ⑥ Cable, PVC, 2 m
- ⑦ Plug M8, 4-pin
- ⑧ Plug M12, 4-pin
- ⑨ Scanning distance adjustment



Connection types

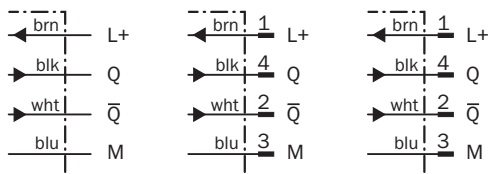
WTB9M4-3P1161	WTB9M4-3P2261	WTB9M4-3P2461
WTB9M4-3N1161	WTB9M4-3N2261	



4 x 0.14 mm²

M8, 4-pin

M12, 4-pin



Accessories

Cables and connectors

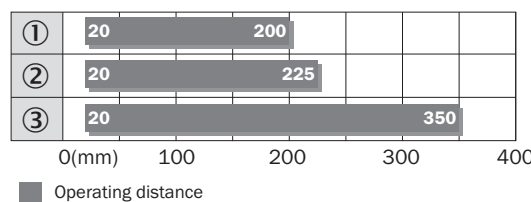
Mounting systems

Technical data	WTB9M4-3	P1161	P2261	P2461	N1161	N2261						
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Scanning distance, typ. max.	20 ... 350 mm ¹⁾											
Operating distance	20 ... 200 mm											
Scanning distance setting	Potentiometer, 5 turns											
Light source, type of light	PinPoint-LED, red light, 650 nm ²⁾											
Light spot diameter	4.5 mm at 75 mm distance											
Supply voltage V_S	10 ... 30 V DC ³⁾											
Ripple	< 5 V _{PP} ⁴⁾											
Current consumption	≤ 30 mA ⁵⁾											
Switching output	PNP complementary											
	NPN complementary											
Switching mode	Q = light-switching											
Output current I _A max.	≤ 100 mA ⁶⁾											
Response time	< 0.333 ms ⁷⁾											
Switching frequency, max.	1,500 Hz ⁸⁾											
Connection type	Cable, PVC, 2 m ⁹⁾											
	Plug, M8, 4-pin											
	Plug, M12, 4-pin											
Protection class	⚡											
Circuit protection	A, B, C ¹⁰⁾											
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											

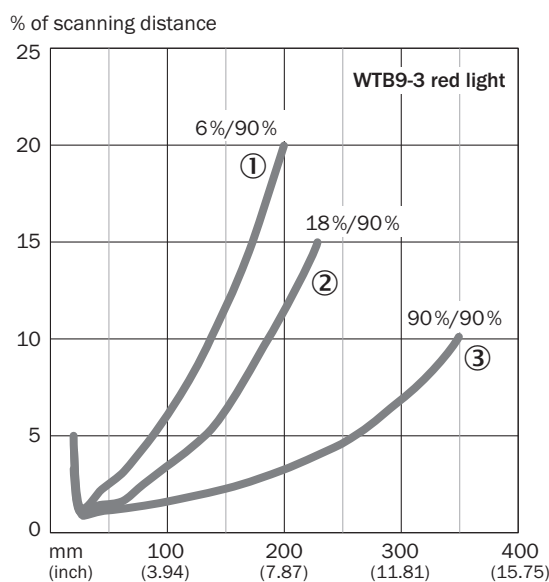
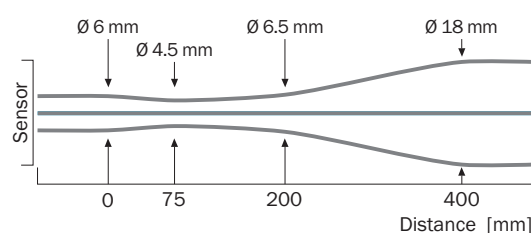
- 1) Object to be detected with 90% remission (referred to standard white DIN 5033)
- 2) Average service life 100,000 h when T_A = +25 °C
- 3) Limit values, reverse polarity protected, operation in short-circuit protected network max. 8 A
- 4) May not exceed or fall short of V_S tolerances
- 5) Without load
- 6) From T_A 50 °C a max. load current of I_{L,max} 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_S-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.
WTB9M4-3P1161	1051887
WTB9M4-3P2261	1051889
WTB9M4-3P2461	1051891
WTB9M4-3N1161	1051882
WTB9M4-3N2261	1051885

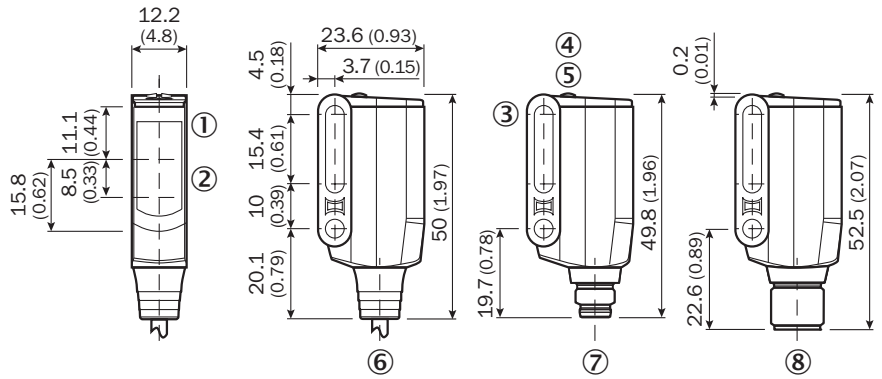
Photoelectric proximity sensors WTB9M4-3, infrared

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

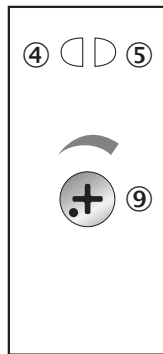
Dimensional drawing



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

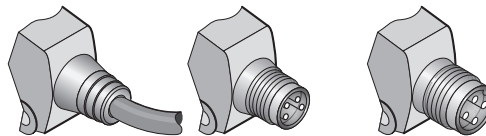


Connection types

WTB9M4-3P1111

WTB9M4-3P2211

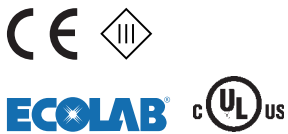
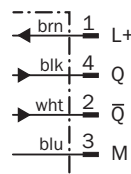
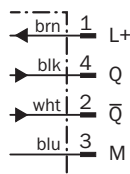
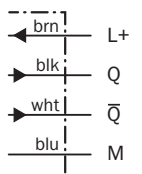
WTB9M4-3P2411



4 x 0.14 mm²

M8, 4-pin

M12, 4-pin



Accessories

Cables and connectors

Mounting systems

Technical data		WTB9M4-3	P1111	P2211	P2411						
Scanning distance, typ. max.	20 ... 500 mm ¹⁾										
Operating distance	20 ... 250 mm										
Scanning distance setting	Potentiometer, 5 turns										
Light source, type of light	LED, infrared, 850 nm ²⁾										
Light spot diameter	20 mm at 250 mm distance										
Supply voltage V_S	10 ... 30 V DC ³⁾										
Ripple	< 5 V _{PP} ⁴⁾										
Current consumption	≤ 30 mA ⁵⁾										
Switching output	PNP complementary										
Switching mode	Q = light-switching										
Output current I _A max.	≤ 100 mA										
Response time	< 0.5 ms ⁶⁾										
Switching frequency, max.	1,000 Hz ⁷⁾										
Connection type	Cable, PVC, 2 m ⁸⁾										
	Plug, M8, 4-pin										
	Plug, M12, 4-pin										
Protection class	⚡										
Circuit protection	A, B, C ⁹⁾										
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										

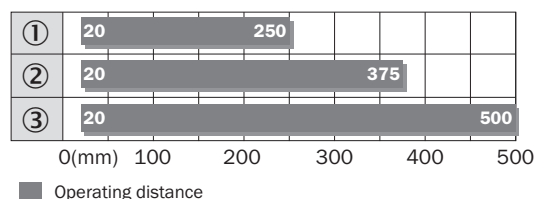
- 1) Object to be detected with 90% remission (referred to standard white DIN 5033)
- 2) Average service life 100,000 h when T_A = +25 °C

- 3) Limit values, reverse polarity protected, operation in short-circuit protected network max. 8 A
- 4) May not exceed or fall short of V_S 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

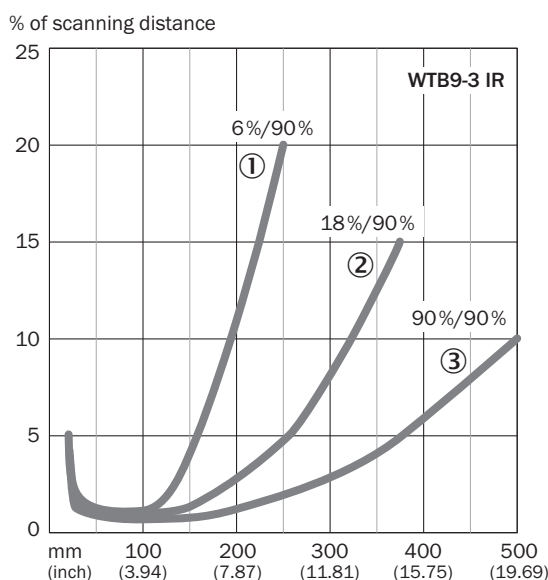
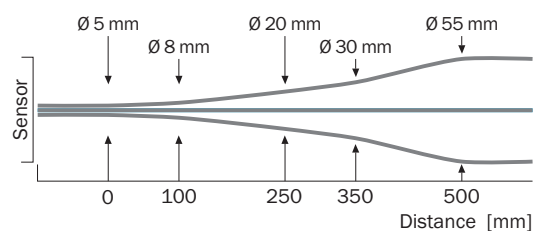
- 9) A = V_S-supply connections reverse polarity protected
- B = Outputs Q and Q̄ short-circuit protected
- C = Interference pulse suppression

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

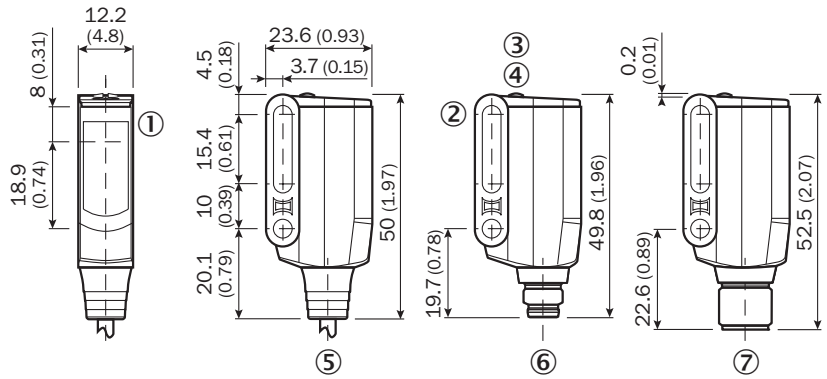
Photoelectric reflex sensor WL9M4-3, red light, teach-in

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 M4 screws
- Multiple connection options

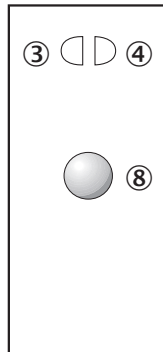
Dimensional drawing



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

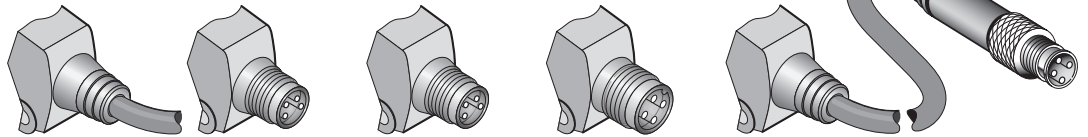
WL9M4-3P2232

WL9M4-3P2432

WL9M4-3P3432

WL9M4-3N1132

WL9M4-3N2232



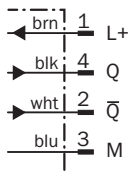
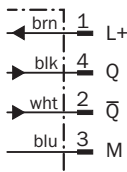
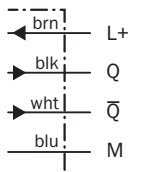
4 x 0.14 mm²

M8, 4-pin

M8, 4-pin

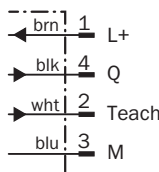
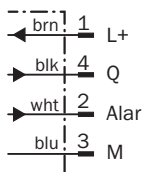
M12, 4-pin

M12, 4-pin with 120 mm cable



WL9M4-3V1132

WL9M4-3P2234



Accessories

Cables and connectors

Mounting systems

Reflectors

Technical data		WL9M4-3	P1132	P2232	P2234	V1132	V2232	P2432	P3432	N1132	N2232
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 ¹⁾										
Light spot diameter	45 mm at 1.5 m distance										
Polarization filter	✓										
Supply voltage V_S	10 ... 30 V DC ²⁾										
Ripple	< 5 V _{PP} ³⁾										
Current consumption	≤ 30 mA ⁴⁾										
Switching output	PNP complementary										
	PNP, VMA										
	NPN complementary										
Switching mode	Q = light-switching										
	Q = dark-switching										
Output current I_A max.	≤ 100 mA										
Response time	< 0.5 ms ⁵⁾										
Switching frequency	1,000 Hz ⁶⁾										
Connection type	Cable, PVC, 2 m ⁷⁾										
	Plug, M8, 4-pin										
	Plug, M12, 4-pin										
	Cable with plug, M12, 4-pin, 120 mm ⁷⁾										
Protection class	⚡										
Circuit protection	A, B, C ⁸⁾										
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_A = +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_S tolerances

4) Without load

5) Signal transit time with resistive load

6) With light/dark ratio 1 : 1

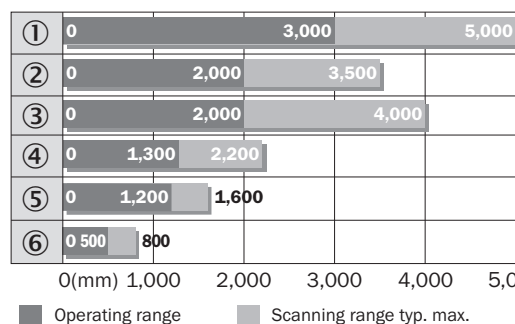
7) Do not bend below 0 °C

8) A = V_S-supply connections reverse polarity protected

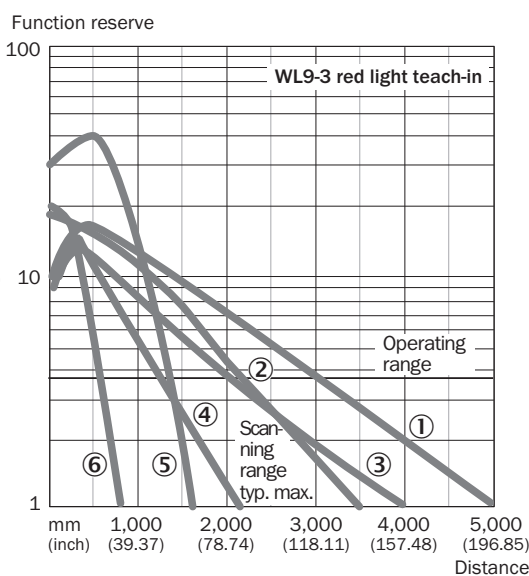
B = Outputs Q and Q̄ short-circuit protected

C = Interference pulse suppression

Scanning range



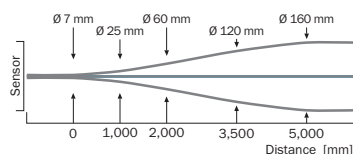
Reflector type	Operating range
① PL80A	0 ... 3,000 mm
② P250	0 ... 2,000 mm
③ PL40A	0 ... 2,000 mm
④ PL20A	0 ... 1,300 mm
⑤ PL10F	0 ... 1,200 mm
⑥ REF-IRF-56	0 ... 500 m




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

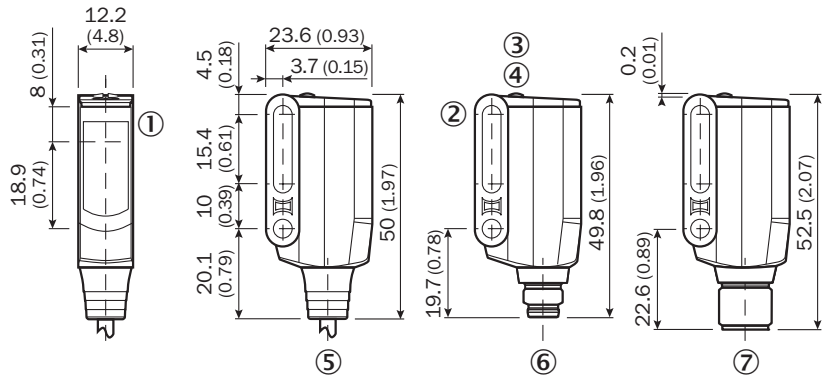
Light spot diameter




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

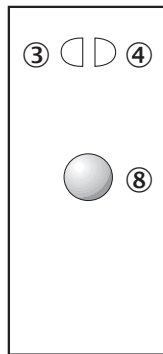
Dimensional drawing



All dimensions in mm (inch)

Adjustments

All types

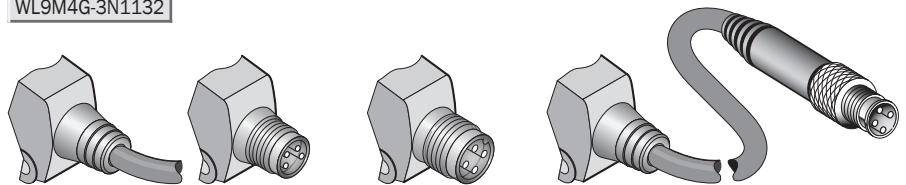


- ① Center of optical axis sender and receiver
- ② Mounting hole M4 (Ø 4.1 mm)
- ③ LED indicator yellow, light reception
- ④ LED indicator green, power on
- ⑤ Cable, PVC, 2 m or 120 mm cable with plug M12, 4-pin
- ⑥ Plug M8, 4-pin
- ⑦ Plug M12, 4-pin
- ⑧ Teach-in button



Connection types

WL9M4G-3P1132	WL9M4G-3P2232	WL9M4G-3P2432	WL9M4G-3P3432
WL9M4G-3N1132			

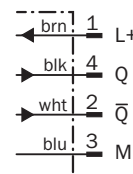
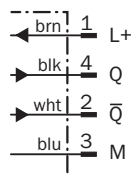
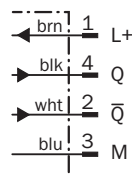
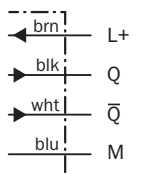


4 x 0.14 mm²

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 ¹⁾											
Light spot diameter	45 mm at 1.5 m distance											
Polarization filter	✓											
Supply voltage V _S	10 ... 30 V DC ²⁾											
Ripple	< 5 V _{PP} ³⁾											
Current consumption	≤ 30 mA ⁴⁾											
Switching output	PNP complementary											
	NPN complementary											
Switching mode	Q = light-switching											
Output current I _A max.	≤ 100 mA											
Response time	< 0.5 ms ⁵⁾											
Switching frequency	1,000 Hz ⁶⁾											
Connection type	Cable, PVC, 2 m ⁷⁾											
	Plug, M8, 4-pin											
	Plug, M12, 4-pin											
	Cable with plug, M12, 4-pin, 120 mm ⁷⁾											
Protection class	⚡											
Circuit protection	A, B, C ⁸⁾											
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_A = +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_S 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_S-supply connections reverse polarity protected
 B = Outputs Q and Q̄ short-circuit protected
 C = Interference pulse suppression

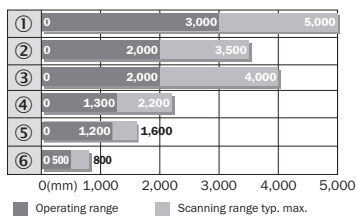
Teach-in function

- 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

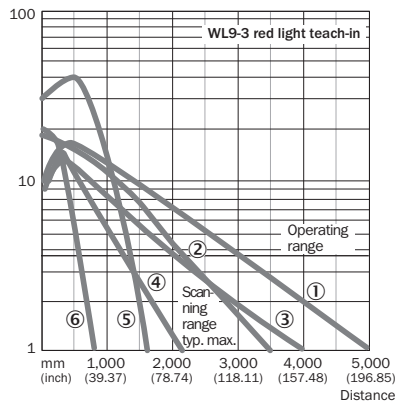
Ordering information

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

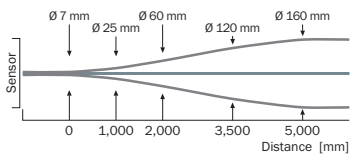
Scanning range



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



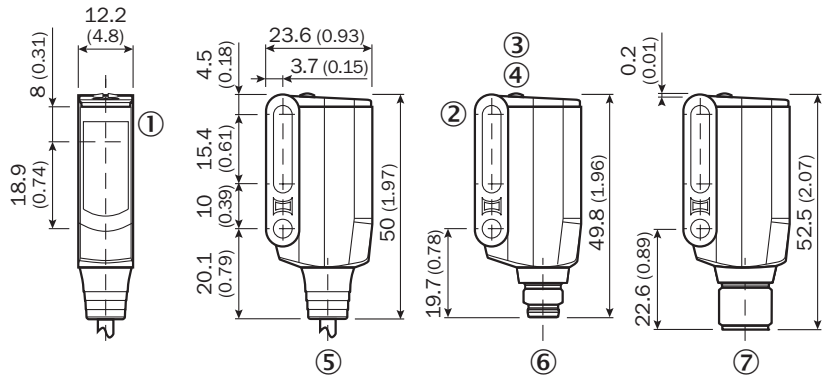
Through-beam photoelectric sensor WS/WE9M4-3, red light

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 M4 screws
- Multiple connection options

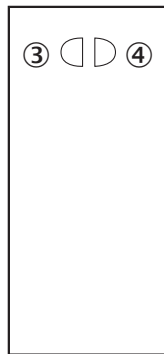
Dimensional drawing



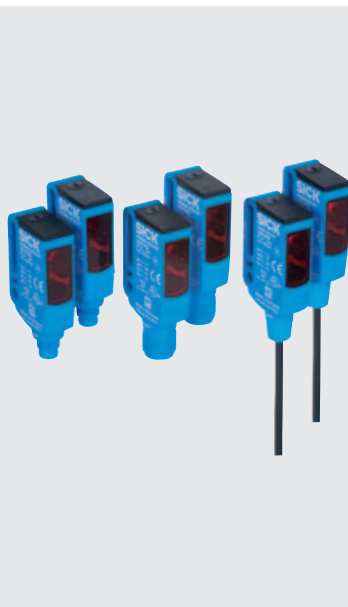
All dimensions in mm (inch)

Adjustments

All types

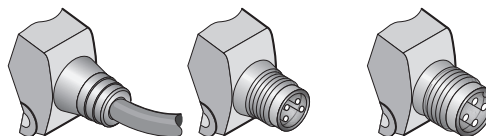


- ① Center of optical axis sender and receiver
- ② Mounting hole M4 (Ø 4.1 mm)
- ③ LED indicator yellow, light reception
- ④ LED indicator green, power on
- ⑤ Cable, PVC, 2 m
- ⑥ Plug M8, 4-pin
- ⑦ Plug M12, 4-pin

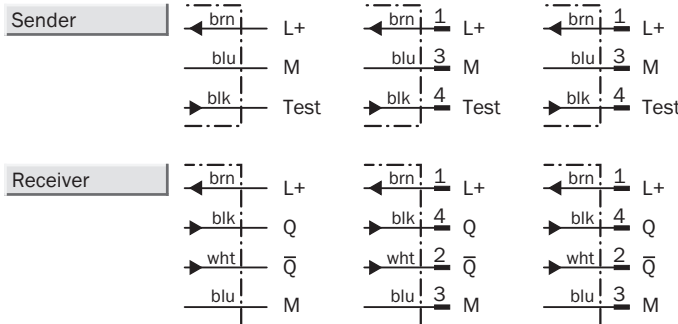


Connection types

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



4 x 0.14 mm² M8, 4-pin M12, 4-pin



Accessories

Cables and connectors

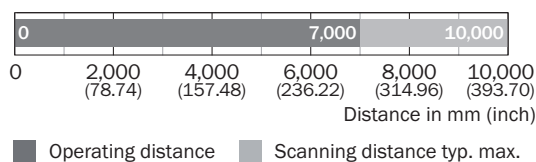
Mounting systems



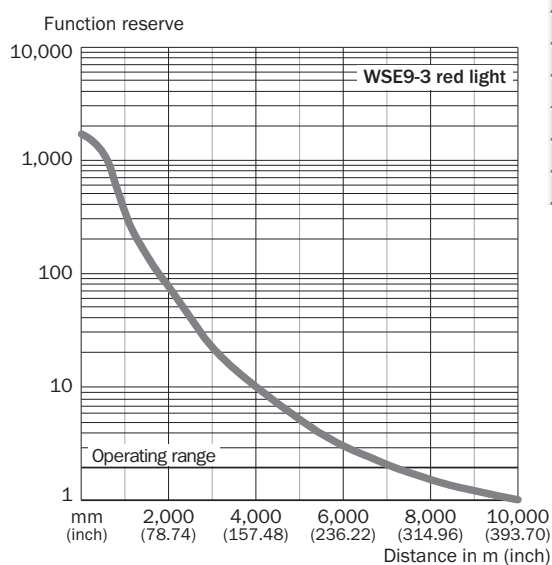
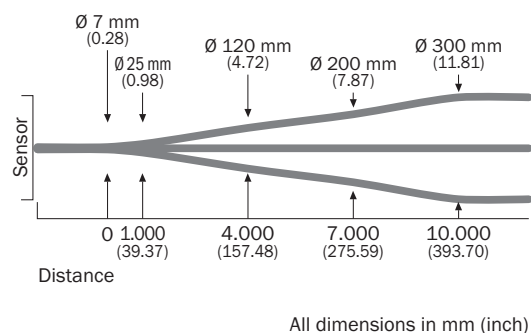
Technical data		WSE9M4-3	P1130	P2230	P2430	N1130	N2230	N2430				
Scanning range typ. max.	0 ... 10 m											
Operating range, recommended	0 ... 7 m											
Light source, type of light	PinPoint-LED, red light, 650 nm ¹⁾											
Light spot diameter	25 mm at 1.0 m distance											
Supply voltage V_S	10 ... 30 V DC ²⁾											
Ripple	< 5 V _{pp} ³⁾											
Current consumption	Sender: ≤ 30 mA ⁴⁾ Receiver: ≤ 20 mA ⁴⁾											
Switching output	PNP complementary NPN complementary											
Switching mode	Q = light-switching											
Test input	Sender OFF at 0 V											
Output current I _A max.	≤ 100 mA											
Response time	< 0.5 ms ⁵⁾											
Switching frequency	1,000 Hz ⁶⁾											
Connection type	Cable, PVC, 2 m ⁷⁾ Plug, M8, 4-pin Plug, M12, 4-pin											
Protection class	⚡											
Circuit protection	A, B, C ⁸⁾											
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_A = +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_S 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_S-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.
WSE9M4-3P1130	1051911
WSE9M4-3P2230	1051912
WSE9M4-3P2430	1051913
WSE9M4-3N1130	1051914
WSE9M4-3N2230	1052938
WSE9M4-3N2430	1051915

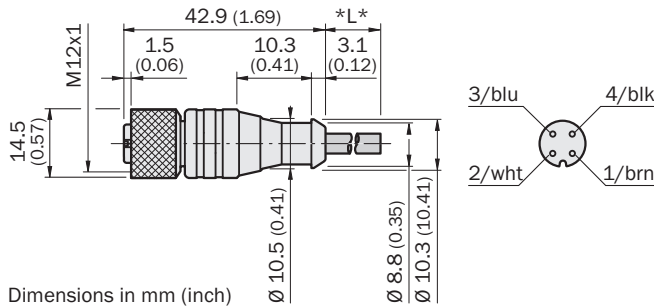
Dimensional drawings and ordering information

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 mm², sheath PVC

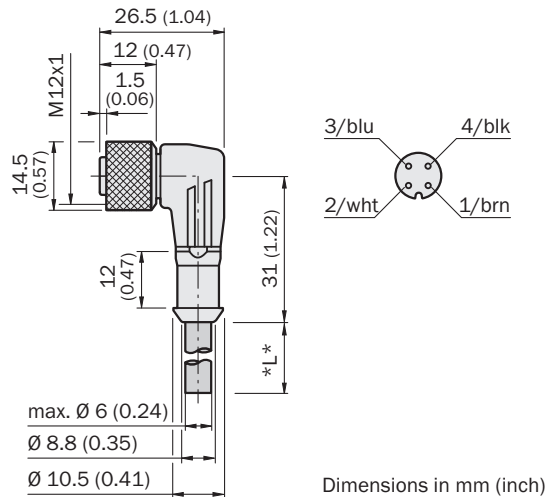
Model name	Part No.	Contacts	Cable length
DOL-1204-G02M	6009382	4	2 m
DOL-1204-G05M	6009866	4	5 m



Female connector M12, 4-pin, right angle

Cable diameter 5 mm, 4 x 0.25 mm², sheath PVC

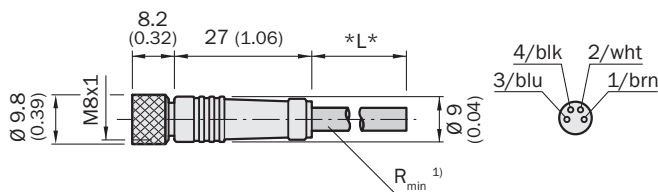
Model name	Part No.	Contacts	Cable length
DOL-1204-W02M	6009383	4	2 m
DOL-1204-W05M	6009867	4	5 m



Female connector M8, 4-pin, straight

Cable diameter 5 mm, 4 x 0.25 mm², sheath PVC

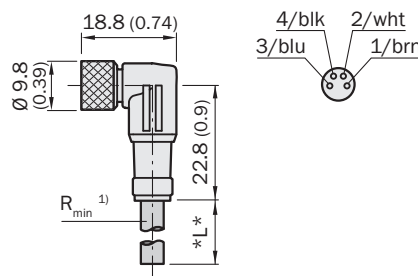
Model name	Part No.	Cable length
DOL-0804-G02M	6009870	2 m
DOL-0804-G05M	6009872	5 m



Female connector M8, 4-pin, right angle

Cable diameter 5 mm, 4 x 0.25 mm², 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

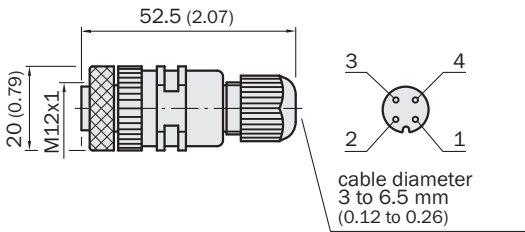
Dimensional drawings and ordering information

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 mm², 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	

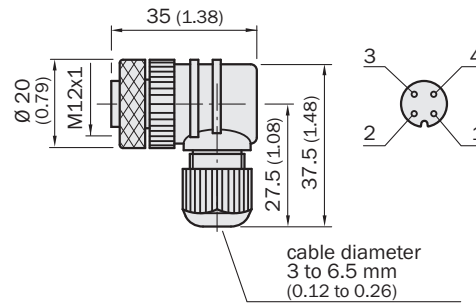


Dimensions in mm (inch)

Female connector M12, 4-pin, right angle

Cable diameter 5 mm, 4 x 0.25 mm², sheath PVC

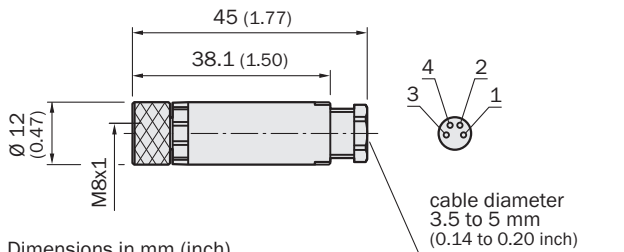
Model name	Part No.	Contacts	Can be self-made for cables Ø 4.5 to 6.5 mm
DOS-1204-W	6007303	4	



Dimensions in mm (inch)

Female connector M8, 4-pin, straight

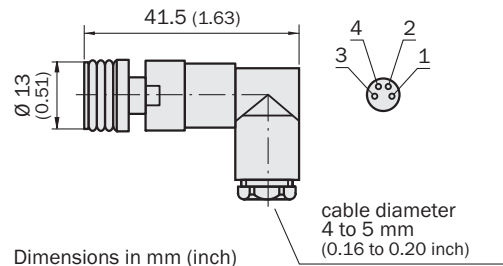
Model name	Part No.
DOS-0804-G	6009974



Dimensions in mm (inch)

Female connector M8, 4-pin, right angle

Model name	Part No.
DOS-0804-W	6009975



Dimensions in mm (inch)