

W 9-2: A Versatile, Complete and Compact Series



Depending on the job, the most suitable sensor can be selected from the W 9-2 series.

Overview of the sensors:

- WT 9-2, with adjustable background suppression, max. scanning distance 250 mm,
- WT 9-2, energetic, max. scanning distance 450 mm,
- WT 9-2, V model, max. scanning distance 20 mm,
- WL 9-2, basic model, max. scanning range 4 m,
- WL 9-2, Teach-In model, max. scanning range 4 m,
- WL 9-2, focus, max. scanning range 0.4 m,
- WS/WE 9-2, max. scanning range 7 m.

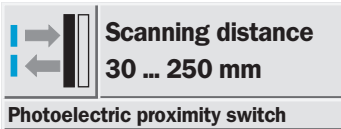
The W 9-2 series is as versatile as the tasks in automation. The standardized, compact housing model makes it possible to use high-performance sensors that operate reliably even in cramped mounting conditions. All W 9-2 models have red light transmitters as a standard feature. The sensor can be aligned on the object quickly and precisely using the visible light spot. In the models with Teach-In function, the sensor optimizes its sensitivity automatically to the given operating conditions at the push of a button.

There are multifaceted applications in the targeted main branches thanks to this great variety of products:

- Storage and handling engineering
- Packaging industry
- Electronics industry
- Elevator construction.

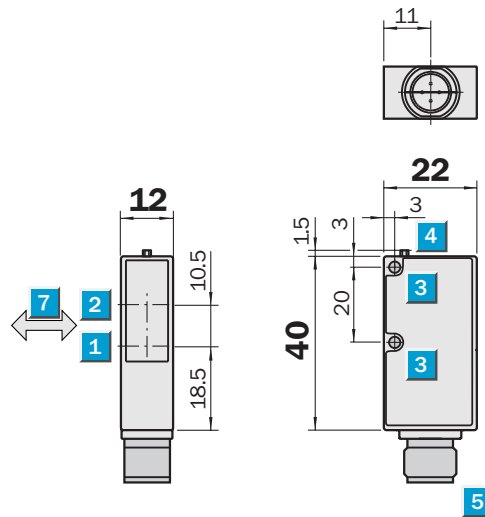
	Photoelectric proximity switches HGA
	Photoelectric proximity switches ener.
	Photoelectric proximity switches V
	Photoelectric reflex switches
	Through-beam photoelectric switches

SICK



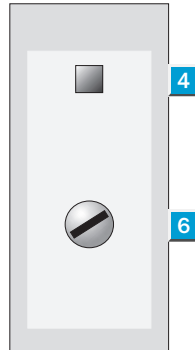
- LED light source, visible red light
- Background suppression
- Scanning distance adjustable
- Switching frequency 1500/s
- Outputs short-circuit protected

Dimension illustration



Setting options

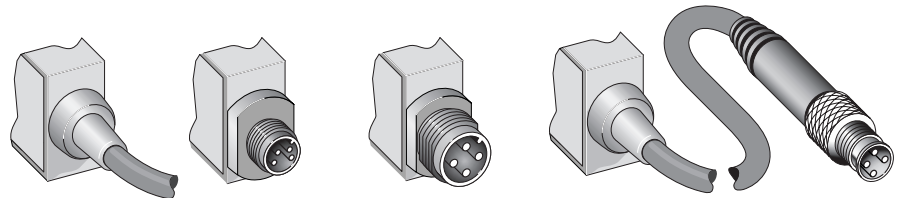
WT 9-2P130	WT 9-2P330
WT 9-2P430	WT 9-2P630
WT 9-2N130	
WT 9-2N430	



- 1 Axis of the sender optics
- 2 Axis of the receiver optics
- 3 Mounting hole Ø 3.2 mm
- 4 LED signal strength indicator
- 5 Plug M 12 or M 8, 4 pin, 2 m connection cable or 120 mm cable with plug M 12, 4 pin
- 6 Scanning distance adjuster
- 7 Standard direction of the material to be scanned

Connection type

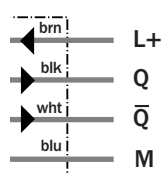
WT 9-2P130	WT 9-2P330	WT 9-2P430	WT 9-2P630
WT 9-2N130		WT 9-2N430	



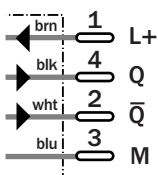
Accessories

- Connectors
- Mounting systems

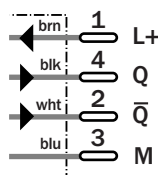
4 x 0.14 mm²



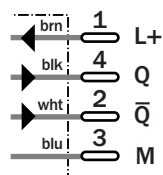
4 pin, M 8



4 pin, M 12



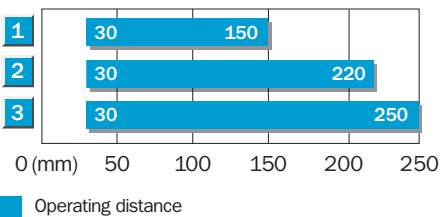
4 pin, M 12 with 120 mm cable



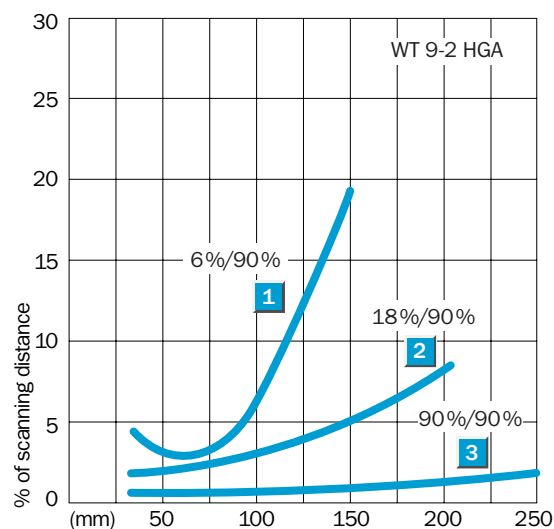
Technical data		WT 9-2	P130	P430	N130	N430	P330	P630				
Scanning distance adjustable ¹⁾	30 ... 250 mm											
Scanning range	5 ... 250 mm											
Supply voltage V_s ²⁾	DC 10 ... 30 V											
Ripple ³⁾	$\leq 5 V_{pp}$											
Current consumption ⁴⁾	$\leq 40 \text{ mA}$											
Light source	LED, visible red light ⁵⁾											
Light spot diameter	15 x 15 mm at a distance of 200 mm											
Switching outputs Q and $\bar{Q}$	PNP											
	NPN											
Signal voltage HIGH	$V_s - 2.9 \text{ V}$											
	V_s											
Signal voltage LOW ⁶⁾	Approx. 0 V											
	$\leq 1.5 \text{ V}$											
Output current I_A max.	$\leq 100 \text{ mA}$											
Response time ⁷⁾	$\leq 333 \mu\text{s}$											
Switching frequency max. ⁸⁾	1500/s											
Connection technology	Connection cable, 2 m											
	Cable, 120 mm, with plug M 12, 4 pin											
	Plug M 12, 4 pin											
	Plug M 8, 4 pin											
VDE protection class M 12 ⁹⁾	☐											
VDE protection class M 8	III											
Protection type	IP 67											
Protection circuits ¹⁰⁾	A, B, C											
Ambient temperature ¹¹⁾	Operation $-40 \dots +60 \text{ }^\circ\text{C}$											
	Storage $-40 \dots +75 \text{ }^\circ\text{C}$											
Weight												
with connection cable 2 m/120 mm	Approx. 80 g											
with equipment plug M 12/M 8, 4 pin	Approx. 20 g											

¹⁾ Object with 90 % reflectance (referred to standard white DIN 5033)
²⁾ Limit values
³⁾ Must be within V_s tolerances
⁴⁾ Without load
⁵⁾ Average service life at room temperature 100,000 h at $T_U = +25 \text{ }^\circ\text{C}$
⁶⁾ At $T_U = +25 \text{ }^\circ\text{C}$ and 100 mA output current
⁷⁾ With resistive load
⁸⁾ With light/dark ratio 1:1
⁹⁾ Withstand voltage 50 V
¹⁰⁾ A = supply connections reverse polarity protected
B = outputs short-circuit protected
C = interference suppression
¹¹⁾ Do not distort cable below $0 \text{ }^\circ\text{C}$

Scanning distance



- 1 Scanning range on black, 6 % reflectance
- 2 Scanning range on gray, 18 % reflectance
- 3 Scanning range on white, 90 % reflectance



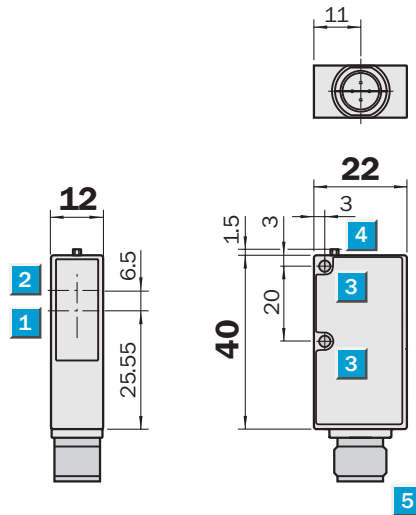
Ordering information

Type	Order no.
WT 9-2P130	1 018 293
WT 9-2P430	1 018 295
WT 9-2N130	1 018 294
WT 9-2N430	1 018 296
WT 9-2P330	1 019 026
WT 9-2P630	1 019 272

	Scanning distance 10 ... 450 mm
Photoelectric proximity switch	

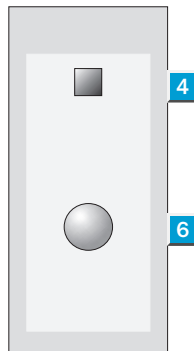
- Red-light emitter LED as alignment aid
- Scanning distance adjustable
- Switching frequency 800/s
- Outputs short-circuit protected
- Sensitivity adjustment using the Teach-In procedure

Dimension illustration



Setting options

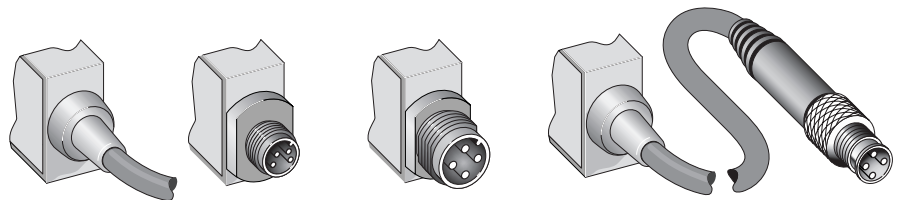
WT 9-2P151	WT 9-2P351
WT 9-2P451	WT 9-2P651
WT 9-2N151	
WT 9-2N451	



- 1 Axis of the receiver optics
- 2 Axis of the sender optics
- 3 Mounting hole Ø 3.2 mm
- 4 LED signal strength indicator
- 5 Plug M 12 or M 8, 4 pin, 2 m connection cable or 120 mm cable with plug M 12, 4 pin
- 6 Teach-In button

Connection type

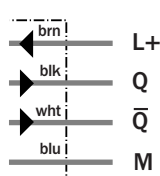
WT 9-2P151	WT 9-2P351	WT 9-2P451	WT 9-2P651
WT 9-2N151		WT 9-2N451	



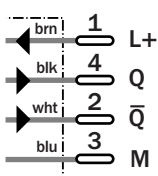
Accessories

Connectors
Mounting systems

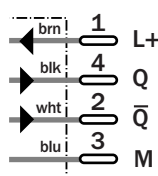
4 x 0.14 mm²



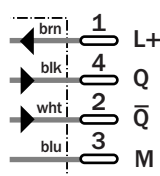
4 pin, M 8



4 pin, M 12



4 pin, M 12 with 120 mm cable



Technical data		WT 9-2	P151	P451	N151	N451	P351	P651				
Scanning distance adjustable ¹⁾	10 ... 450 mm											
Supply voltage V_S ²⁾	DC 10 ... 30 V											
Ripple ³⁾	$\leq 5 V_{PP}$											
Current consumption ⁴⁾	$\leq 30 \text{ mA}$											
Light source	LED, visible red light ⁵⁾											
Light spot diameter	80 x 80 mm at a distance of 500 mm											
Switching outputs Q and $\bar{Q}$	PNP											
	NPN											
Signal voltage HIGH	$V_S - 2.9 \text{ V}$											
	V_S											
Signal voltage LOW ⁶⁾	Approx. 0 V											
	$\leq 2.9 \text{ V}$											
Output current I_A max.	$\leq 100 \text{ mA}$											
Response time ⁷⁾	$\leq 625 \mu\text{s}$											
Switching frequency max. ⁸⁾	800/s											
Connection technology	Connection cable, 2 m											
	Cable, 120 mm, with plug M 12, 4 pin											
	Plug M 12, 4 pin											
	Plug M 8, 4 pin											
VDE protection class M 12 ⁹⁾	☐											
VDE protection class M 8	III											
Protection type	IP 67											
Protection circuits ¹⁰⁾	A, B, C											
Ambient temperature ¹¹⁾	Operation $-40 \dots +60 \text{ }^\circ\text{C}$											
	Storage $-40 \dots +75 \text{ }^\circ\text{C}$											
Weight												
with connection cable 2 m/120 mm	Approx. 80 g											
with equipment plug M 12/M 8, 4 pin	Approx. 20 g											

- ¹⁾ Object with 90 % reflectance (referred to standard white DIN 5033)
²⁾ Limit values
³⁾ Must be within V_S tolerances
⁴⁾ Without load

- ⁵⁾ Average service life at room temperature 100,000 h at $T_U = +25 \text{ }^\circ\text{C}$
⁶⁾ At $T_U = +25 \text{ }^\circ\text{C}$ and 100 mA output current

- ⁷⁾ With resistive load
⁸⁾ With light/dark ratio 1:1
⁹⁾ Withstand voltage 50 V

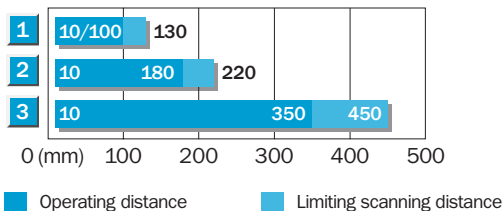
- ¹⁰⁾ A = supply connections reverse polarity protected
B = outputs short-circuit protected
C = interference suppression
¹¹⁾ Do not distort cable below $0 \text{ }^\circ\text{C}$

Teach-In function

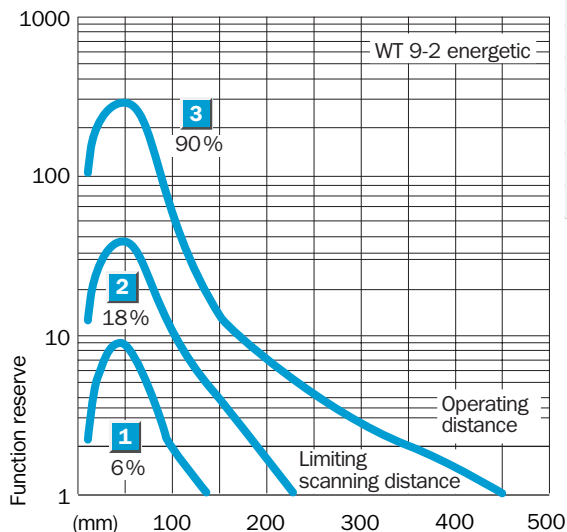
- **Programming via Teach-In button.**
- **Simple programming:**
Position object in the beam and push the button:
finished;
LED confirms the Teach-In procedure.
- **Teach-In values can be stored.**

- **Two operating modes:**
Default setting: short Teach-In time ($< 8 \text{ s}$);
for standard applications;
approx. double reserve via switching threshold;
LED lights continuously.
Precise setting: long Teach-In time ($> 8 \text{ s}$);
for precise applications;
small switching hysteresis;
LED blinks.

Scanning distance

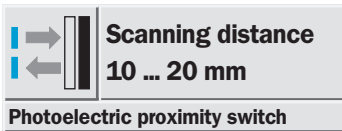


- 1 Scanning range on black, 6 % reflectance
- 2 Scanning range on gray, 18 % reflectance
- 3 Scanning range on white, 90 % reflectance



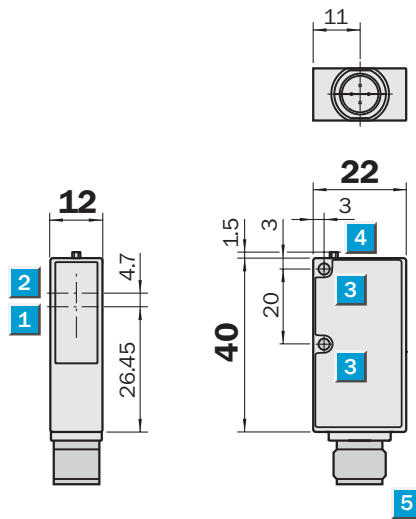
Ordering information

Type	Order no.
WT 9-2P151	1 018 297
WT 9-2P451	1 018 299
WT 9-2N151	1 018 298
WT 9-2N451	1 018 300
WT 9-2P351	1 019 027
WT 9-2P651	1 019 273



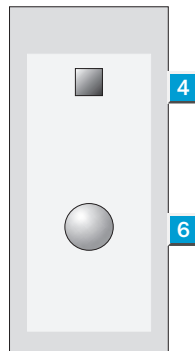
- Red-light emitter LED as alignment aid
- Scanning distance adjustable
- Switching frequency 800/s
- Outputs short-circuit protected
- Sensitivity adjustment using the Teach-In procedure

Dimension illustration



Setting options

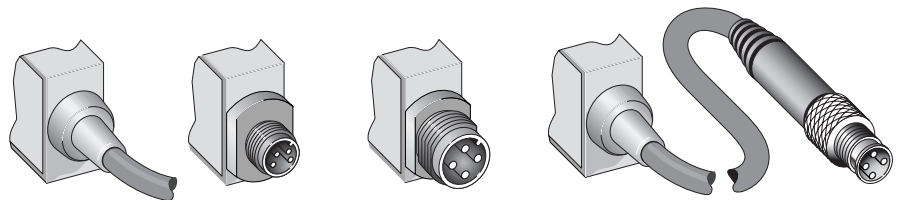
WT 9-2P141	WT 9-2P341
WT 9-2P441	WT 9-2P641
WT 9-2N141	
WT 9-2N441	



- 1 Axis of the receiver optics
- 2 Axis of the receiver optics
- 3 Mounting hole Ø 3.2 mm
- 4 LED signal strength indicator
- 5 Plug M 12 or M 8, 4 pin, 2 m connection cable or 120 mm cable with plug M 12, 4 pin
- 6 Teach-In button

Connection type

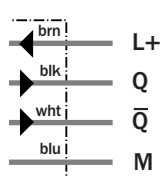
WT 9-2P141	WT 9-2P341	WT 9-2P441	WT 9-2P641
WT 9-2N141		WT 9-2N441	



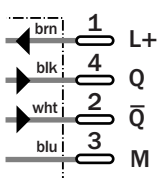
Accessories

Connectors
Mounting systems

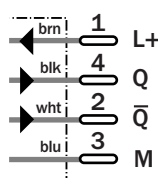
4 x 0.14 mm²



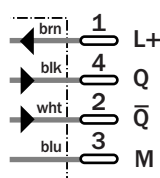
4 pin, M 8



4 pin, M 12



4 pin, M 12 with 120 mm cable



Technical data		WT 9-2	P141	P441	N141	N441	P341	P641				
Scanning distance adjustable ¹⁾	10 ... 20 mm											
Supply voltage V_S ²⁾	DC 10 ... 30 V											
Ripple ³⁾	$\leq 5 V_{PP}$											
Current consumption ⁴⁾	$\leq 30 \text{ mA}$											
Light source	LED, visible red light ⁵⁾											
Light spot diameter	3 mm at a distance of 20 mm											
Switching outputs Q and $\bar{Q}$	PNP											
	NPN											
Signal voltage HIGH	$V_S - 2.9 \text{ V}$											
	V_S											
Signal voltage LOW ⁶⁾	Approx. 0 V											
	$\leq 2.9 \text{ V}$											
Output current I_A max.	$\leq 100 \text{ mA}$											
Response time ⁷⁾	$\leq 625 \mu\text{s}$											
Switching frequency max. ⁸⁾	800/s											
Connection technology	Connection cable, 2 m											
	Cable, 120 mm, with plug M 12, 4 pin											
	Plug M 12, 4 pin											
	Plug M 8, 4 pin											
VDE protection class M 12 ⁹⁾	☐											
VDE protection class M 8	III											
Protection type	IP 67											
Protection circuits ¹⁰⁾	A, B, C											
Ambient temperature ¹¹⁾	Operation $-40 \dots +60 \text{ }^\circ\text{C}$											
	Storage $-40 \dots +75 \text{ }^\circ\text{C}$											
Weight												
with connection cable 2 m/120 mm	Approx. 80 g											
with equipment plug M 12/M 8, 4 pin	Approx. 20 g											

¹⁾ Object with 90 % reflectance (referred to standard white DIN 5033)

²⁾ Limit values

³⁾ Must be within V_S tolerances

⁴⁾ Without load

⁵⁾ Average service life at room temperature 100,000 h at $T_U = +25 \text{ }^\circ\text{C}$

⁶⁾ At $T_U = +25 \text{ }^\circ\text{C}$ and 100 mA output current

⁷⁾ With resistive load

⁸⁾ With light/dark ratio 1:1

⁹⁾ Withstand voltage 50 V

¹⁰⁾ A = supply connections reverse polarity protected

B = outputs short-circuit protected

C = interference suppression

¹¹⁾ Do not distort cable below $0 \text{ }^\circ\text{C}$

Teach-In function

■ Programming via Teach-In button.

■ Simple programming:

Position object in the beam and push the button: finished;

LED confirms the Teach-In procedure.

■ Teach-In values can be stored.

■ Two operating modes:

Default setting: short Teach-In time ($< 8 \text{ s}$);

for standard applications;

approx. double reserve via switching threshold;

LED lights continuously.

Precise setting: long Teach-In time ($> 8 \text{ s}$);

for precise applications;

small switching hysteresis;

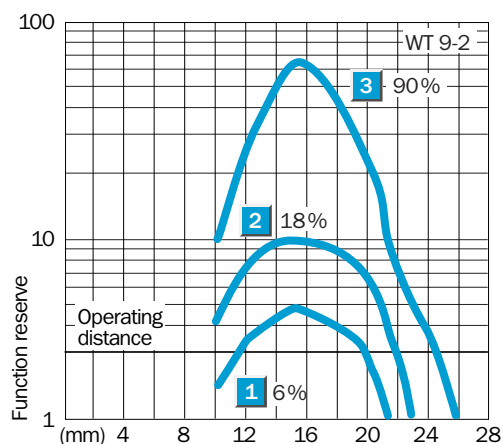
LED blinks.

Scanning distance



■ Scanning distance

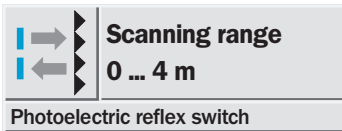
1	Scanning range on black, 6 % reflectance
2	Scanning range on gray, 18 % reflectance
3	Scanning range on white, 90 % reflectance



Ordering information

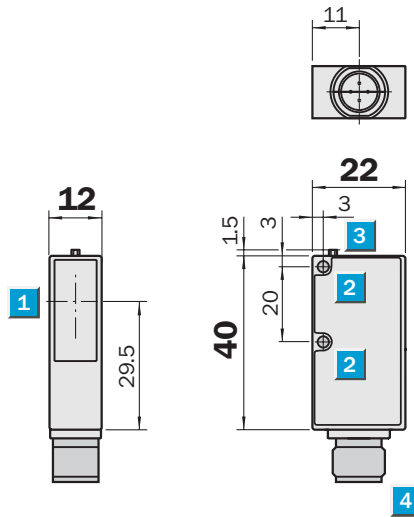
Type	Order no.
WT 9-2P141	1 018 301
WT 9-2P441	1 018 303
WT 9-2N141	1 018 302
WT 9-2N441	1 018 304
WT 9-2P341	1 019 274
WT 9-2P641	1 019 275

WL 9-2 Photoelectric Reflex Switch, Basic Type



- Red-light emitter LED as alignment aid
- Switching frequency 800/s
- Outputs short-circuit protected

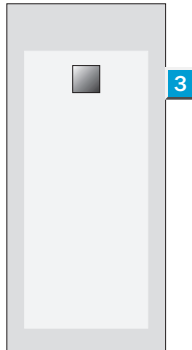
Dimension illustration



Without setting options

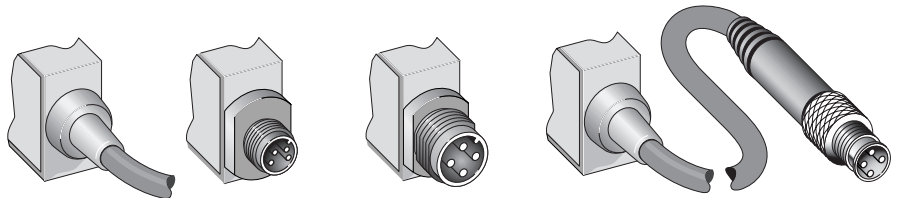
WL 9-2P130	WL 9-2P330
WL 9-2P430	WL 9-2P630
WL 9-2N130	WL 9-2N330
WL 9-2N430	

- 1 Middle of optic axis
- 2 Mounting hole Ø 3.2 mm
- 3 LED signal strength indicator
- 4 Plug M 12 or M 8, 4 pin, 2 m connection cable or 120 mm cable with plug M 12, 4 pin



Connection type

WL 9-2P130	WL 9-2P330	WL 9-2P430	WL 9-2P630
WL 9-2N130	WL 9-2N330	WL 9-2N430	



Accessories

- Connectors
- Mounting systems
- Reflectors

4 x 0.14 mm ²	4 pin, M 8	4 pin, M 12	4 pin, M 12 with 120 mm cable
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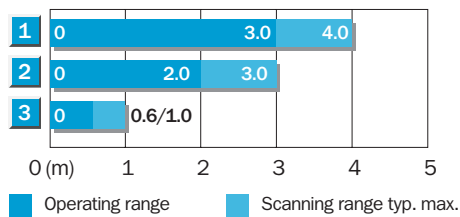
Technical data		WL 9-2	P130	P430	N130	N430	P330	P630	N330			
Scanning range typ. max./on reflector	4 m/PL 80 A											
Supply voltage V_s ¹⁾	DC 10 ... 30 V											
Ripple ²⁾	$\leq 5 V_{pp}$											
Current consumption ³⁾	$\leq 30 \text{ mA}$											
Light source	LED, visible red light ⁴⁾											
Angle of dispersion	2.5°											
Light spot diameter	120 x 120 mm at a distance of 3 m											
Switching outputs Q and $\bar{Q}$	PNP											
	NPN											
Signal voltage HIGH	$V_s - 2.9 \text{ V}$											
	V_s											
Signal voltage LOW ⁵⁾	Approx. 0 V											
	$\leq 2.9 \text{ V}$											
Output current I_A max.	$\leq 100 \text{ mA}$											
Response time ⁶⁾	$\leq 625 \mu\text{s}$											
Max. switching frequency ⁷⁾	800/s											
Connection technology	Connection cable, 2 m											
	Cable, 120 mm, with plug M 12, 4 pin											
	Plug M 12, 4 pin											
	Plug M 8, 4 pin											
VDE protection class M 12 ⁸⁾	☐											
VDE protection class M 8	III											
Protection type	IP 67											
Protection circuits ⁹⁾	A, B, C											
Ambient temperature ¹⁰⁾	Operation $-40 \dots +60 \text{ }^\circ\text{C}$											
	Storage $-40 \dots +75 \text{ }^\circ\text{C}$											
Weight												
with connection cable 2 m/120 mm	Approx. 80 g											
with equipment plug M 12/M 8, 4 pin	Approx. 20 g											

- ¹⁾ Limit values
²⁾ Must be within V_s tolerances
³⁾ Without load
⁴⁾ Average service life at room temperature 100,000 h at $T_U = +25 \text{ }^\circ\text{C}$

- ⁵⁾ At $T_U = +25 \text{ }^\circ\text{C}$ and 100 mA output current
⁶⁾ With resistive load
⁷⁾ With light/dark ratio 1:1
⁸⁾ Withstand voltage 50 V

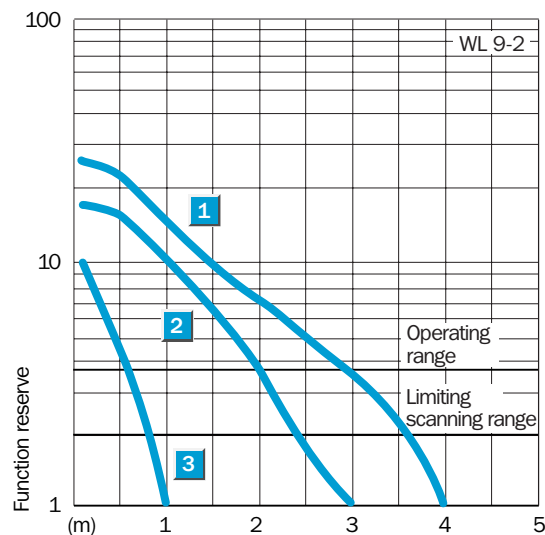
- ⁹⁾ A = supply connections reverse polarity protected
B = outputs short-circuit protected
C = interference suppression
¹⁰⁾ Do not distort cable below $0 \text{ }^\circ\text{C}$

Scanning range



Reflector type	Operating range
1 PL 80 A	0 ... 3 m
2 PL 40 A	0 ... 2 m
3 Reflective tape Diamond Grade*	0 ... 0.6 m

* 100 x 100 mm²



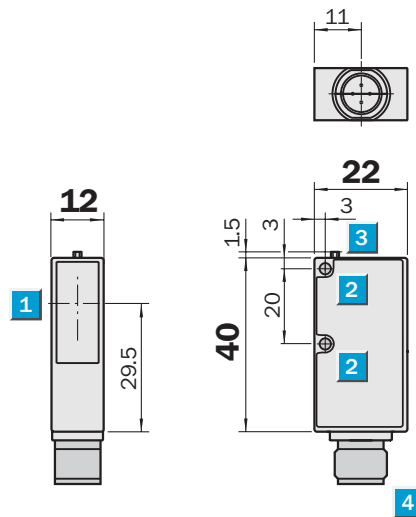
Ordering information

Type	Order no.
WL 9-2P130	1 018 281
WL 9-2P430	1 018 283
WL 9-2N130	1 018 282
WL 9-2N430	1 018 284
WL 9-2P330	1 019 024
WL 9-2P630	1 019 268
WL 9-2N330	1 019 511

	Scanning range 0 ... 4 m
Photoelectric reflex switch	

- Red-light emitter LED as alignment aid
- Switching frequency 800/s
- Outputs short-circuit protected
- Sensitivity adjustment using the Teach-In procedure

Dimension illustration

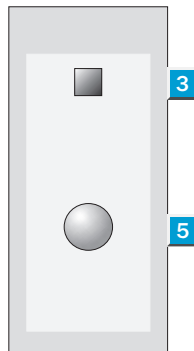


Setting options

WL 9-2P131
WL 9-2P431
WL 9-2N131
WL 9-2N431

WL 9-2P331
WL 9-2P631

- 1 Middle of optic axis
- 2 Mounting hole Ø 3.2 mm
- 3 LED signal strength indicator
- 4 Plug M 12 or M 8, 4 pin, 2 m connection cable or 120 mm cable with plug M 12, 4 pin
- 5 Teach-In button



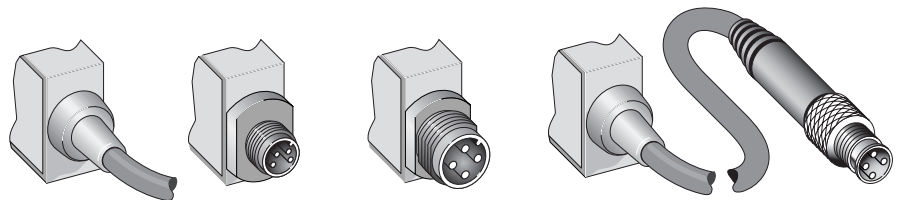
Connection type

WL 9-2P131
WL 9-2N131

WL 9-2P331

WL 9-2P431
WL 9-2N431

WL 9-2P631



Accessories

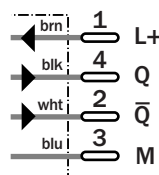
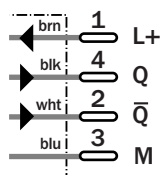
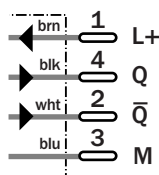
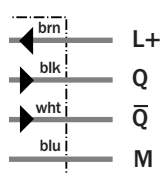
Connectors
Mounting systems
Reflectors

4 x 0.14 mm²

4 pin, M 8

4 pin, M 12

4 pin, M 12 with 120 mm cable



Technical data		WL 9-2	P131	P431	N131	N431	P331	P631				
Scanning range typ. max./on reflector	4 m/PL 80 A											
Supply voltage V_s ¹⁾	DC 10 ... 30 V											
Ripple ²⁾	$\leq 5 V_{pp}$											
Current consumption ³⁾	$\leq 30 \text{ mA}$											
Light source	LED, visible red light ⁴⁾											
Angle of dispersion	2.5°											
Light spot diameter	120 x 120 mm at a distance of 3 m											
Switching outputs Q and $\bar{Q}$	PNP											
	NPN											
Signal voltage HIGH	$V_s - 2.9 \text{ V}$											
	V_s											
Signal voltage LOW ⁵⁾	Approx. 0 V											
	$\leq 2.9 \text{ V}$											
Output current I_A max.	$\leq 100 \text{ mA}$											
Response time ⁶⁾	$\leq 625 \mu\text{s}$											
Max. switching frequency ⁷⁾	800/s											
Connection technology	Connection cable, 2 m											
	Cable, 120 mm, with plug M 12, 4 pin											
	Plug M 12, 4 pin											
	Plug M 8, 4 pin											
VDE protection class M 12 ⁸⁾	☐											
VDE protection class M 8	III											
Protection type	IP 67											
Protection circuits ⁹⁾	A, B, C											
Ambient temperature ¹⁰⁾	Operation $-40 \dots +60 \text{ }^\circ\text{C}$											
	Storage $-40 \dots +75 \text{ }^\circ\text{C}$											
Weight												
with connection cable 2 m/120 mm	Approx. 80 g											
with equipment plug M 12/M 8, 4 pin	Approx. 20 g											

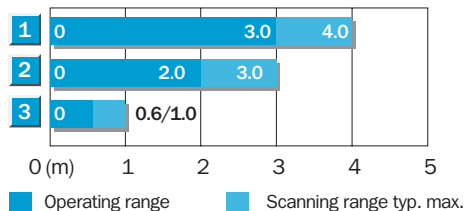
¹⁾ Limit values
²⁾ Must be within V_s tolerances
³⁾ Without load
⁴⁾ Average service life at room temperature 100,000 h at $T_U = +25 \text{ }^\circ\text{C}$
⁵⁾ At $T_U = +25 \text{ }^\circ\text{C}$ and 100 mA output current
⁶⁾ With resistive load
⁷⁾ With light/dark ratio 1:1
⁸⁾ Withstand voltage 50 V
⁹⁾ A = supply connections reverse polarity protected
B = outputs short-circuit protected
C = interference suppression
¹⁰⁾ Do not distort cable below 0 °C

Teach-In function

- **Programming via Teach-In button.**
- **Simple programming:**
Position reflector in the beam and push the button:
finished;
LED confirms the Teach-In procedure.
- **Teach-In values can be stored.**

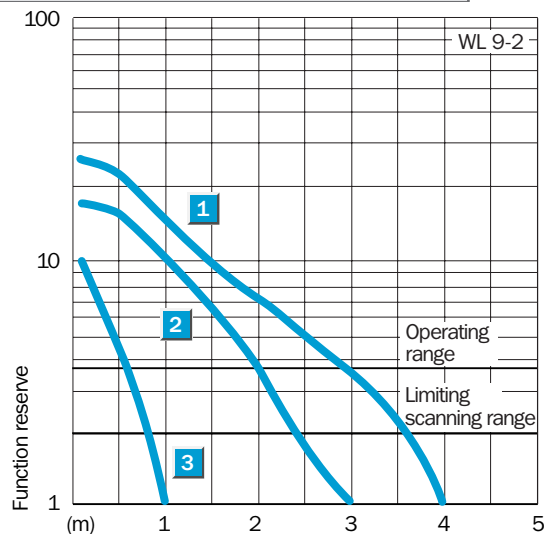
- **Two operating modes:**
Default setting: short Teach-In time ($< 8 \text{ s}$);
for standard applications;
approx. double reserve via switching threshold;
LED lights continuously.
Precise setting: long Teach-In time ($> 8 \text{ s}$);
for precise applications;
small switching hysteresis;
LED blinks.

Scanning range



Reflector type	Operating range
1 PL 80 A	0 ... 3 m
2 PL 40 A	0 ... 2 m
3 Reflective tape Diamond Grade*	0 ... 0.6 m

* 100 x 100 mm²



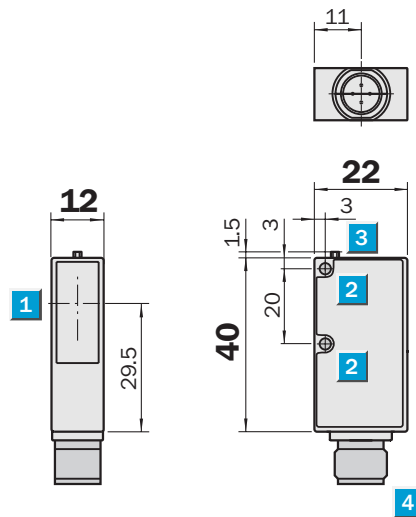
Ordering information

Type	Order no.
WL 9-2P131	1 018 285
WL 9-2P431	1 018 287
WL 9-2N131	1 018 286
WL 9-2N431	1 018 288
WL 9-2P331	1 019 025
WL 9-2P631	1 019 269

	Scanning range 0 ... 0.4 m
Photoelectric reflex switch	

- LED light source, visible red light
- Switching frequency 800/s
- Outputs short-circuit protected
- Sensitivity adjustment using the Teach-In procedure

Dimension illustration

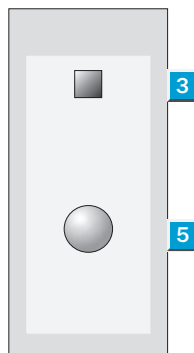


Setting options

WL 9-2P121
WL 9-2P421
WL 9-2N121
WL 9-2N421

WL 9-2P321
WL 9-2P621

- 1 Middle of optic axis
- 2 Mounting hole Ø 3.2 mm
- 3 LED signal strength indicator
- 4 Plug M 12 or M 8, 4 pin, 2 m connection cable or 120 mm cable with plug M 12, 4 pin
- 5 Teach-In button



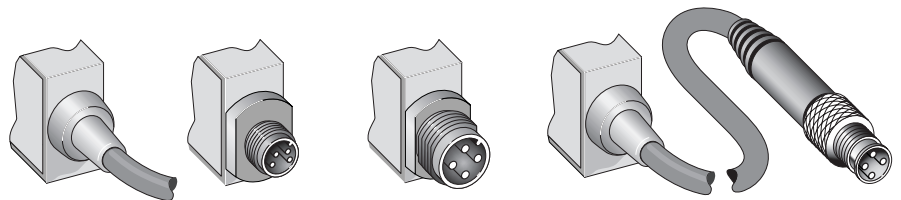
Connection type

WL 9-2P121
WL 9-2N121

WL 9-2P321

WL 9-2P421
WL 9-2N421

WL 9-2P621



Accessories

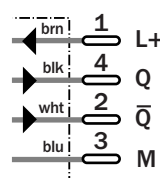
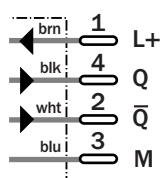
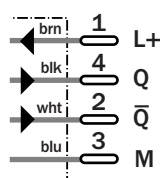
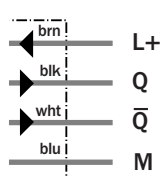
Connectors
Mounting systems
Reflectors

4 x 0.14 mm²

4 pin, M 8

4 pin, M 12

4 pin, M 12 with 120 mm cable



Technical data		WL 9-2	P121	P421	N121	N421	P321	P621				
Scanning range typ. max./on reflector	0.4 m/PL 80 A											
Supply voltage V_s ¹⁾	DC 10 ... 30 V											
Ripple ²⁾	$\leq 5 V_{pp}$											
Current consumption ³⁾	$\leq 30 \text{ mA}$											
Light source	LED, visible red light ⁴⁾											
Light spot diameter	1.5 x 1.5 mm at a distance of 35 mm											
Switching outputs Q and $\bar{Q}$	PNP											
	NPN											
Signal voltage HIGH	$V_s - 2.9 \text{ V}$											
	V_s											
Signal voltage LOW ⁵⁾	Approx. 0 V											
	$\leq 2.9 \text{ V}$											
Output current I_A max.	$\leq 100 \text{ mA}$											
Response time ⁶⁾	$\leq 625 \mu\text{s}$											
Max. switching frequency ⁷⁾	800/s											
Connection technology	Connection cable, 2 m											
	Cable, 120 mm, with plug M 12, 4 pin											
	Plug M 12, 4 pin											
	Plug M 8, 4 pin											
VDE protection class M 12 ⁸⁾	☐											
VDE protection class M 8	III											
Protection type	IP 67											
Protection circuits ⁹⁾	A, B, C											
Ambient temperature ¹⁰⁾	Operation $-40 \dots +60 \text{ }^\circ\text{C}$											
	Storage $-40 \dots +75 \text{ }^\circ\text{C}$											
Weight												
with connection cable 2 m/120 mm	Approx. 80 g											
with equipment plug M 12/M 8, 4 pin	Approx. 20 g											

¹⁾ Limit values

²⁾ Must be within V_s tolerances

³⁾ Without load

⁴⁾ Average service life at room temperature 100,000 h at $T_U = +25 \text{ }^\circ\text{C}$

⁵⁾ At $T_U = +25 \text{ }^\circ\text{C}$ and 100 mA output current

⁶⁾ With resistive load

⁷⁾ With light/dark ratio 1:1

⁸⁾ Withstand voltage 50 V

⁹⁾ A = supply connections reverse polarity protected

B = outputs short-circuit protected

C = interference suppression

¹⁰⁾ Do not distort cable below $0 \text{ }^\circ\text{C}$

Teach-In function

■ Programming via Teach-In button.

■ Simple programming:

Position reflector in the beam and push the button:
finished;
LED confirms the Teach-In procedure.

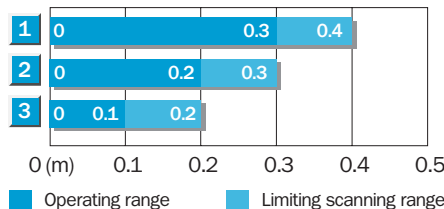
■ Teach-In values can be stored.

■ Two operating modes:

Default setting: short Teach-In time ($< 8 \text{ s}$);
for standard applications;
approx. double reserve via switching threshold;
LED lights continuously.

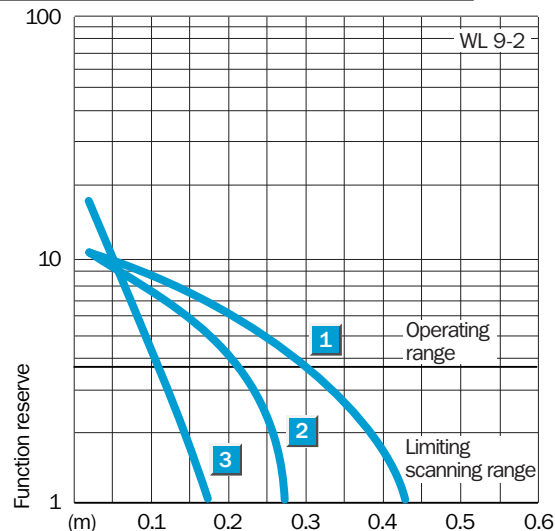
Precise setting: long Teach-In time ($> 8 \text{ s}$);
for precise applications;
small switching hysteresis;
LED blinks.

Scanning range



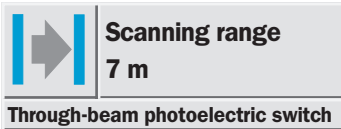
Reflector type	Operating range
1 PL 80 A	0 ... 0.3 m
2 PL 40 A	0 ... 0.2 m
3 Reflective tape Diamond Grade*	0 ... 0.1 m

* 100 x 100 mm²



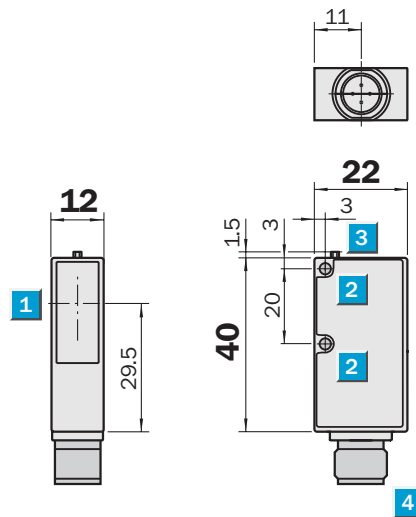
Ordering information

Type	Order no.
WL 9-2P121	1 018 289
WL 9-2P421	1 018 291
WL 9-2N121	1 018 290
WL 9-2N421	1 018 292
WL 9-2P321	1 019 270
WL 9-2P621	1 019 271



- Red-light emitter LED as alignment aid
- Switching frequency 200/s
- Outputs short-circuit protected
- Test input

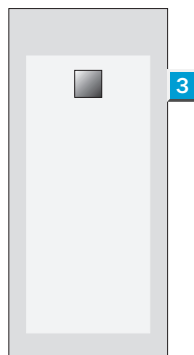
Dimension illustration



No setting options

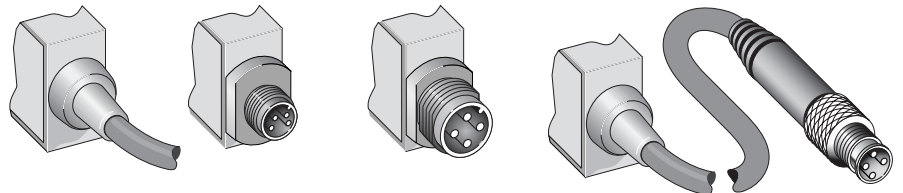
WS/WE 9-2P130	WS/WE 9-2P330
WS/WE 9-2P430	WS/WE 9-2P630
WS/WE 9-2N130	
WS/WE 9-2N430	

- 1 Middle of optic axis
- 2 Mounting hole Ø 3.2 mm
- 3 LED signal strength indicator
- 4 Plug M 12 or M 8, 4 pin, 2 m connection cable or 120 mm cable with plug M 12, 4 pin



Connection type

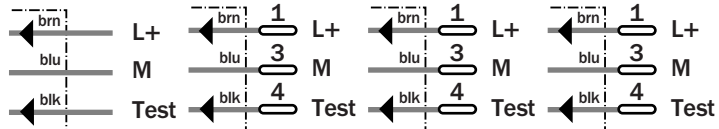
WS/WE 9-2P130	WS/WE 9-2P330	WS/WE 9-2P430	WS/WE 9-2P630
WS/WE 9-2N130		WS/WE 9-2N430	



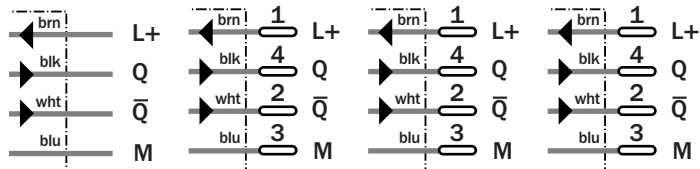
Accessories

- Connectors
- Mounting systems

Sender



Receiver



Technical data		WS/WE 9-2	P130	P430	N130	N430	P330	P630				
Scanning range typ. max.	7 m											
Suggested operating range	5 m											
Supply voltage V_s ¹⁾	DC 10 ... 30 V											
Ripple ²⁾	$\leq 5 V_{pp}$											
Current consumption ³⁾	$\leq 15 \text{ mA (WE)}; \leq 60 \text{ mA (WS)}$											
Light source	LED, visible red light ⁴⁾											
Angle of dispersion	15°											
Angle of reception	6°											
Light spot diameter	1000 mm at a distance of 5 m											
Switching outputs Q and $\bar{Q}$	PNP											
	NPN											
Signal voltage HIGH	$V_s - 2.9 \text{ V}$											
	V_s											
Signal voltage LOW ⁵⁾	Approx. 0 V											
	$\leq 2.9 \text{ V}$											
Output current I_A max.	$\leq 100 \text{ mA}$											
Response time ⁶⁾	$\leq 2.5 \text{ ms}$											
Max. switching frequency ⁷⁾	200/s											
Test input TE	V_s or unswitched, sender active											
	0 V, sender inactive											
Connection technology	Connection cable, 2 m											
	Cable, 120 mm, with plug M 12, 4 pin											
	Plug M 12, 4 pin											
	Plug M 8, 4 pin											
VDE protection class M 12 ⁸⁾	☐											
VDE protection class M 8	III											
Protection type	IP 67											
Protection circuits ⁹⁾	A, B, C											
Ambient temperature ¹⁰⁾	Operation $-40 \dots +60 \text{ }^\circ\text{C}$											
	Storage $-40 \dots +75 \text{ }^\circ\text{C}$											
Weight												
with connection cable 2 m/120 mm	Approx. 80 g											
with equipment plug M 12/M 8, 4 pin	Approx. 20 g											

¹⁾ Limit values²⁾ Must be within V_s tolerances³⁾ Without load⁴⁾ Average service life at room temperature 100,000 h⁵⁾ At $T_U = +25 \text{ }^\circ\text{C}$ and 100 mA

output current

⁶⁾ With resistive load⁷⁾ With light/dark ratio 1:1⁸⁾ Withstand voltage 50 V⁹⁾ A = supply connections reverse

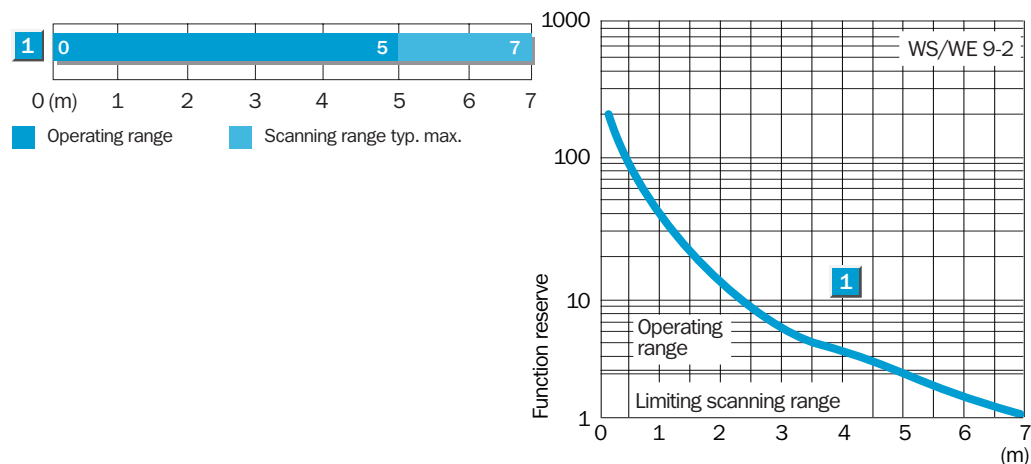
polarity protected

B = outputs short-circuit protected

C = interference suppression

¹⁰⁾ Do not distort cable below 0 °C

Scanning range



Ordering Information

Type	Order no.
WS/WE 9-2P130	1 019 259
WS/WE 9-2P430	1 019 261
WS/WE 9-2N130	1 019 260
WS/WE 9-2N430	1 019 262
WS/WE 9-2P330	1 019 383
WS/WE 9-2P630	1 019 382

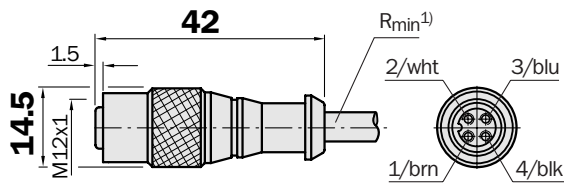
Dimension illustrations and ordering information

SENSICK circular screwing system M 12, 4 pin, enclosure rating IP 67

M 12 cable receptacles, 4 pin, straight

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

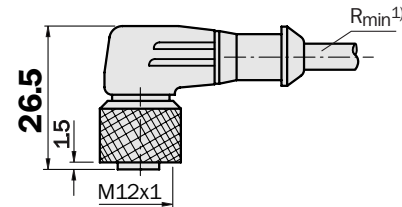
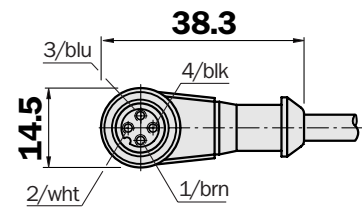
Type	Order no.	Pins	Cable length
DOL-1204-G02M	6 009 382	4	2 m
DOL-1204-G05M	6 009 866	4	5 m
DOL-1204-G10M	6 010 543	4	10 m
DOL-1204-G15M	6 010 753	4	15 m



M 12 cable receptacles, 4 pin, angled

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

Type	Order no.	Pins	Cable length
DOL-1204-W02M	6 009 383	4	2 m
DOL-1204-W05M	6 009 867	4	5 m
DOL-1204-W10M	6 010 541	4	10 m

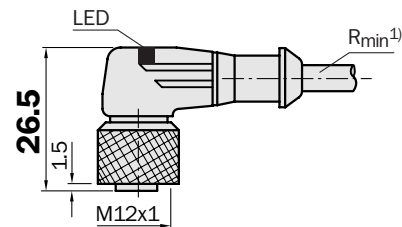
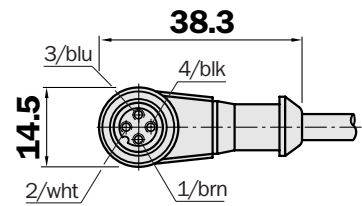


M 12 cable receptacles, 4 pin, angled

Cable diameter 5 mm, 4 x 0.34 mm², PUR/PVC coating

With LED for power and status indicators, PNP complementary²⁾

Type	Order no.	Pins	Cable length
DOL-1204-W05ME	6 020 398	4	5 m



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

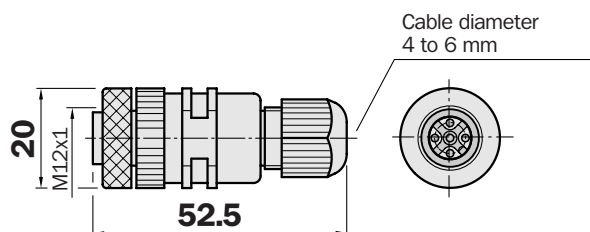
²⁾ Remark: Not suitable for sender in through-beam systems

Dimension illustrations and ordering information

SENSICK circular screwing system M 12, 4 pin, enclosure rating IP 67

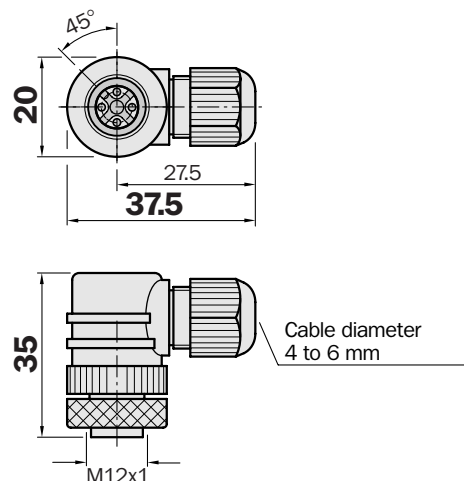
M 12 cable receptacles, 4 pin, straight

Type	Order no.	Pins	Can be self-made for cables Ø 4.5 to 6.5 mm
DOS-1204-G	6 007 302	4	



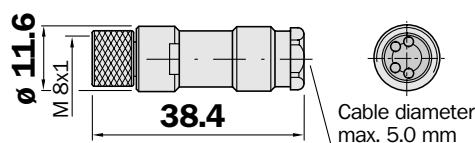
M 12 cable receptacles, 4 pin, angled

Type	Order no.	Pins	Can be self-made for cables Ø 4.5 to 6.5 mm
DOS-1204-W	6 007 303	4	



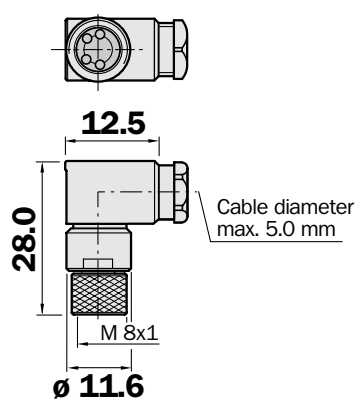
M 8 cable receptacle, 4 pin, straight

Type	Order no.
DOS-0804-G	6 009 974



M 8 cable receptacles, 4 pin, angled

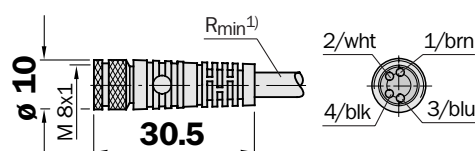
Type	Order no.
DOS-0804-W	6 009 975



M 8 cable receptacle, 4 pin, straight

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

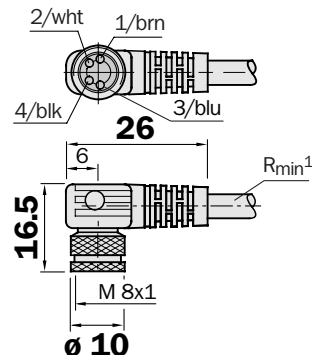
Type	Order no.	Cable length
DOL-0804-G02M	6 009 870	2 m
DOL-0804-G05M	6 009 872	5 m
DOL-0804-G10M	6 010 754	10 m



M 8 cable receptacles, 4 pin, angled

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

Type	Order no.	Cable length
DOL-0804-W02M	6 009 871	2 m
DOL-0804-W05M	6 009 873	5 m
DOL-0804-W10M	6 010 755	10 m



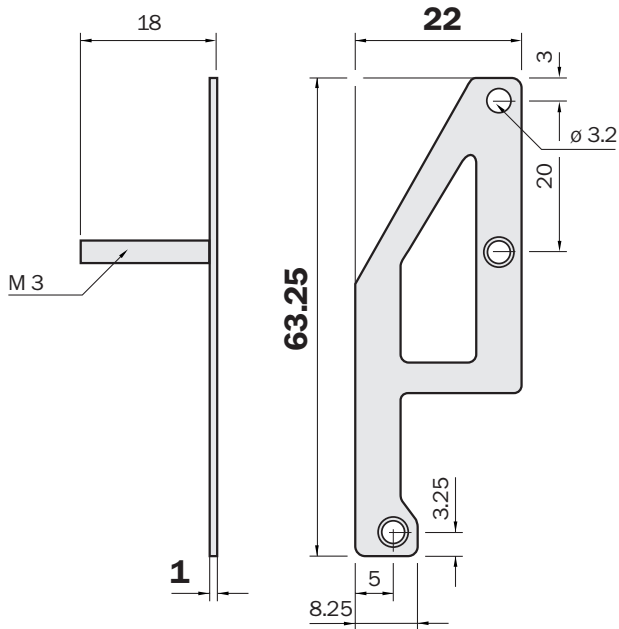
1) Minimum bending radius with dynamic use
 $R_{min} = 20 \times \text{cable diameter}$

Dimension illustrations and ordering information

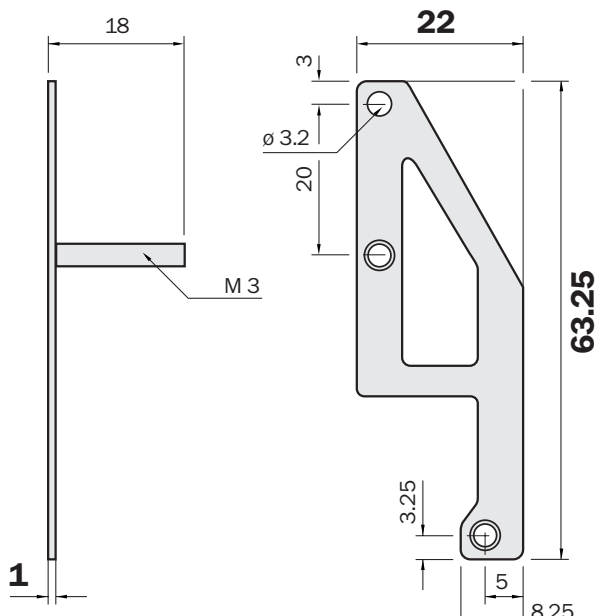
Dimension illustration adapter plate

Adapter set

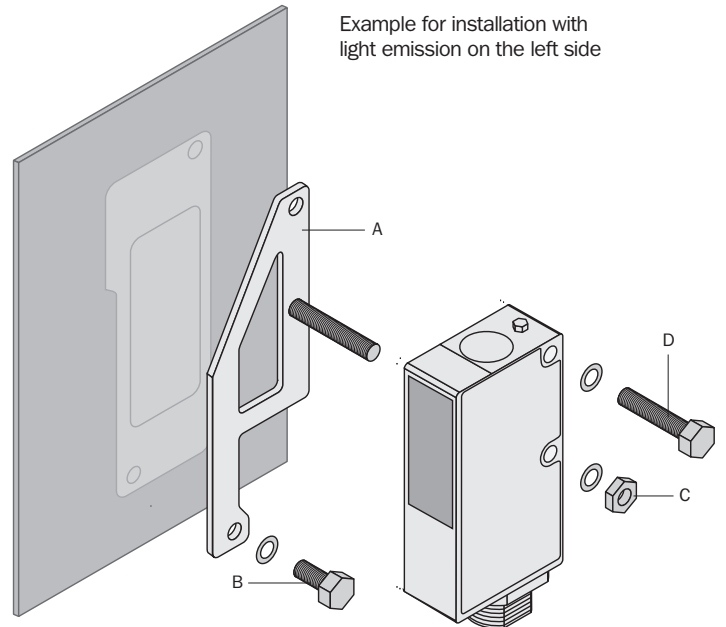
Type	Order no.
BEF-AP-W9	2 022 734



Adapter plate for light emission on the left side



Adapter plate for light emission on right side



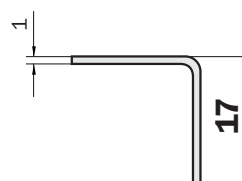
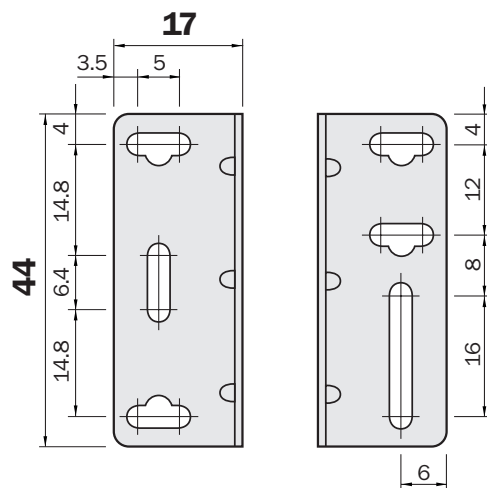
1. Gradual elimination of the old W 9.
2. Chose relevant adapter plate.
3. Align adapter angle "A" to existing hole pattern and attach angle attachment with screw "B".
4. Attach W 9-2 onto pre-mounted adapter angle.
5. Complete mounting of the W 9-2 with the screw "D" and the counter-nut "C".

If a device is to be replaced, we recommend using a W 9-2 with 120 mm cable with a sprayed M 12 plug.

Attachment material is supplied with the adapter set angle.

Mounting bracket

Type	Order no.
BEF-WN-W9-2	2 022 855

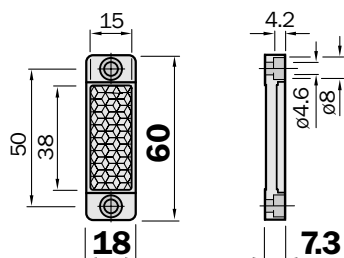


Dimension illustrations and ordering information

Plastic model for temperatures up to 65 °C

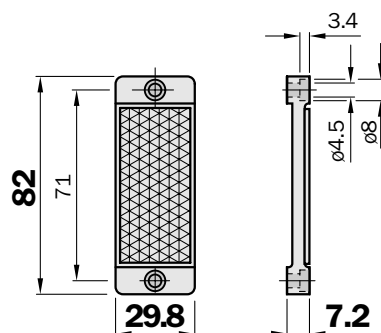
Reflector 20 x 40 mm

Type	Order no.
PL 20 A	1 012 719



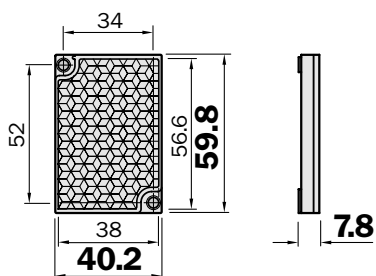
Reflector 30 x 50 mm

Type	Order no.
PL 30 A	1 002 314



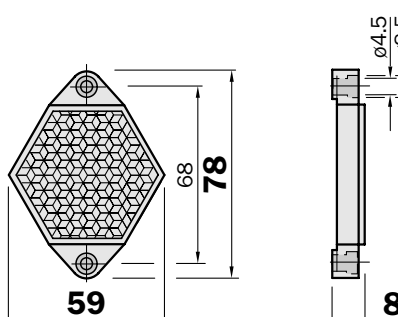
Reflector 40 x 60 mm

Type	Order no.
PL 40 A	1 012 720



Reflector hexagonal, SW 48 mm

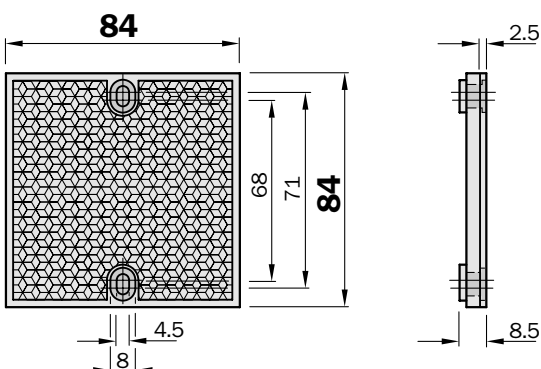
Type	Order no.
PL 50 A	1 000 132



Also available as heatable model:
Continuous heating: PL 50HK,
Order no. 1 001 545
Regulated heating: PL 50HS,
Order no. 1 009 871

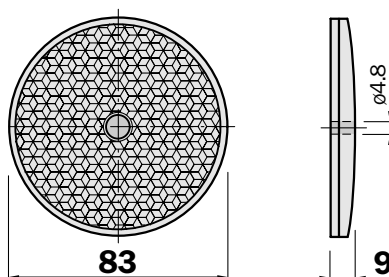
Reflector 80 x 80 mm

Type	Order no.
PL 80 A	1 003 865



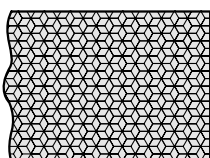
Reflector ø 83 mm, center hole mounting

Type	Order no.
C 110	5 304 549



Reflective tape

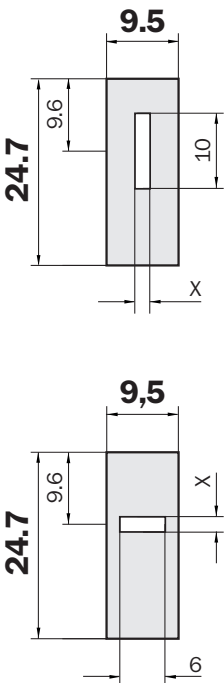
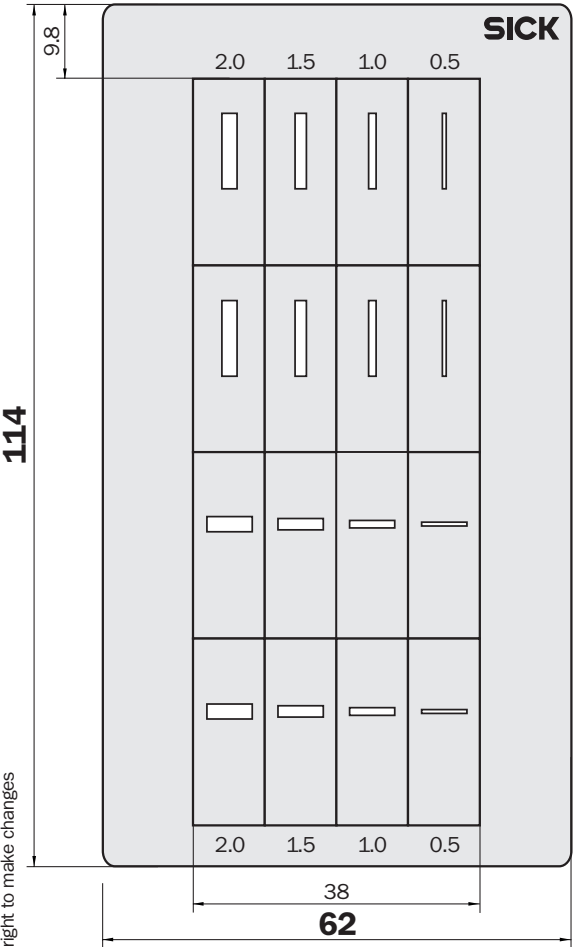
Type	Order no.	
REF-DG-K	4 019 634	fabricated
REF-DG	5 304 334	sheet 749 x 914 mm



Dimension illustrations and ordering information

Slotted mask card

Slotted mask card for WS/WE 9-2	
Slot width X: 0.5 mm/1.0 mm/1.5 mm/2.0 mm	
Type	Order no.
BL-9-2	4 033 253



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