



Ready-to-fit ATEX-compliant sensors – after all, you carry enough responsibility already!



WT24Ex



WL24Ex



WSWE24Ex



WLL24Ex

Hazard Zone 1 – device category 2G

Occasional occurrence of an explosive gas atmosphere

Meeting the Standard's strict safety requirements means that current, performance and temperature development are strictly limited

Typical applications:

- Production and bottling of engineering gases
- Chemical industry
- Water processing



W27-3Ex



W18-3Ex



WTR2Ex



WL24-2Ex

Hazard Zone 2/22 – device category 3G/3D

Short-term and rare occurrence of explosive gas or non-conducting dust




In addition to limit values for temperature, performance or UV resistance, the Standard also prescribes a mechanical strength which cannot be achieved with standard sensors. The SICK photoelectric switches of category 3D/3G are thus equipped with a metallic housing. This housing meets the Standard's strict requirements and thus offers a ready-to-fit solution.

Typical applications:



- Mills
- Timber processing
- Pharmaceutical industry



W 24 Exi: Safe and reliable switching in Ex-areas (gas)


	Photoelectric proximity switches, BGS
	Photoelectric reflex switches
	Through-beam photoelectric switches



	Photoelectric switches with fibre-optic cable
	Photoelectric switches with fibre-optic cable

The device variants used depend on the specific application:

- the WT 24 Exi photoelectric proximity switch with an adjustable scanning distance of 100 to 2,000 mm and background suppression,
- the WL 24 Exi photoelectric reflex switch which reliably detects objects located up to 8 metres away,
- the WS/WE 24 Exi through-beam photoelectric switch with a scanning range of 30 metres, and
- the WLL 24 Exi fibre-optic cable version which, depending on the type of optical head, can be used in both through-beam and proximity mode whereby the maximum distance to the object is 100 mm and 25 mm respectively.

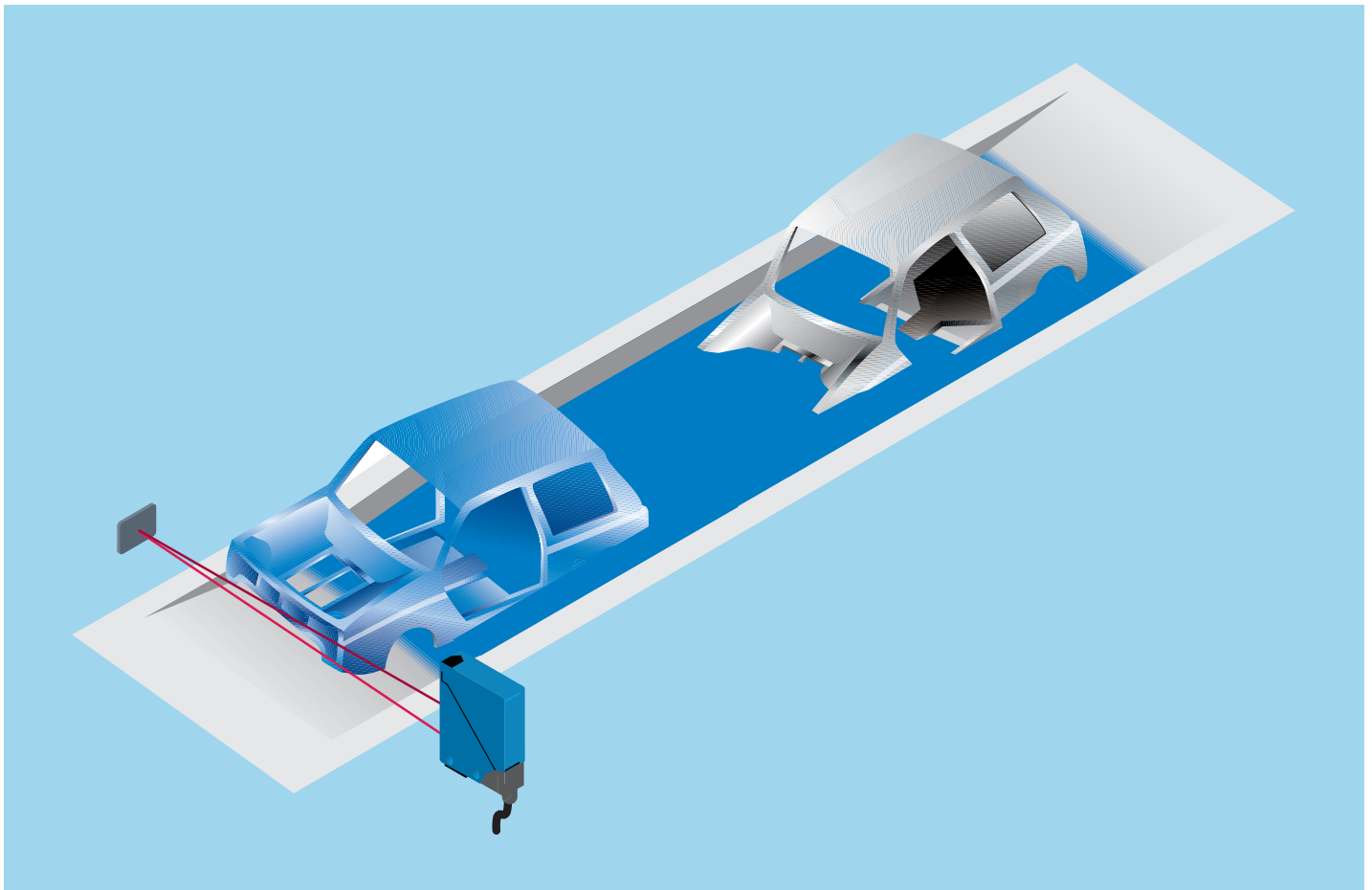
The W 24 X Series has been developed for applications in explosive areas, in order to provide intrinsic safety according to EN 50014 and EN 50020, and approved by the “Physikalisch-Technische Bundesanstalt (PTB)” in Braunschweig, Germany. The switching outputs of the devices are designed according to EN 60947-5-6 (NAMUR). Therefore, the W 24 X Series labelled  2G EEx ia IIC T4 complies with the requirements of Category 2G according to the new Directive 94/9/EC (ATEX). The W 24 X Series devices may be used in the explosive areas “Zone 1 (gas)” and “Zone 2 (gas)”.


The sturdy zinc die-cast housings with enclosure rating IP 67 (IP 65 with WLL 24 Exi), the cable glands and plugs that can be rotated towards the bottom and rear of the sensor, and very good insensitivity to ambient light make all of these devices ideally suited for use in industrial environments.

► Ex-Zone 1:
Automatic palletisation/
depalletisation of gas
cylinders.



▼ Ex-Zone 1:
Body panel detection with photoelectric
reflex switches during fully automatic
pretreatment of body shells.

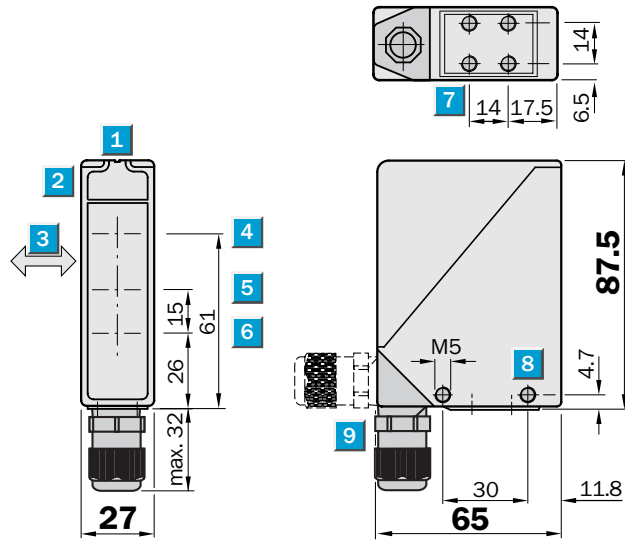



Scanning distance
100 ... 2000 mm
Photoelectric proximity switches

- **Marking:** Ex II 2G EEx ia IIC T4 according to Directive 94/9/EC (ATEX)
- **According to category** 2G
- **Switching output:** EN 60947-5-6 (NAMUR)
- **Background suppression** can be set very precisely
- **Infrared light**

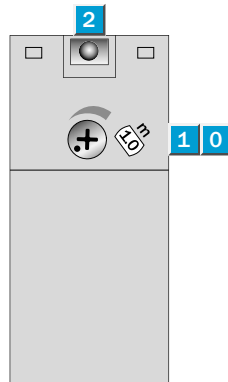


Dimensional drawing



Adjustments possible

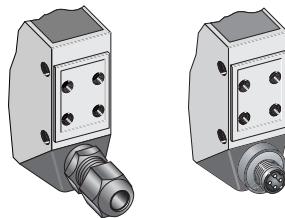
- WT 24-2X 260
- WT 24-2X 460



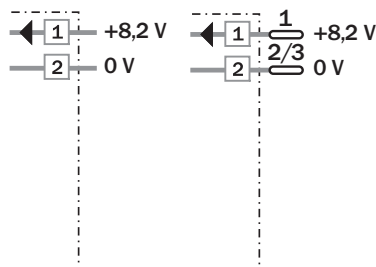
- 1** Alignment sight
- 2** LED signal strength indicator
- 3** Standard direction of the material being scanned
- 4** Middle of optic axis, sender
- 5** Middle of optic axis, receiver at close range
- 6** Middle of optic axis, receiver at long range
- 7** M5 threaded mounting hole, 6 mm deep
- 8** M5 threaded mounting hole
- 9** M16 screw fixing or M12 plug, rotatable by 90°
- 10** Scanning distance adjuster

Connection types

- WT 24-2X 260
- WT 24-2X 460



- M16, terminals
- 4-pin, M12



See chapter Accessories

- Cables and connectors
- Mounting systems
- Power supply units

Technical data		WT 24-2	X 260	X 460								
Scanning distance	100 ... 2000 mm, adjustable											
Light source ¹⁾, light type	LED, infrared light											
Light spot diameter	Approx. 50 mm at 2000 mm											
Supply voltage V_S ²⁾	8.2 V DC (R _i approx. 1 kΩ)											
	(5 V ... 15.5 V) ³⁾											
Residual ripple ⁴⁾	0.4 V _{PP}											
EC-type examination certificate	PTB 03 ATEX 2105											
Explosion protection	Type of protection "Intrinsic safety"											
Input voltage U _i , max.	15.5 V											
Input current I _i , max.	53 mA											
Input power P _i , max.	100 mW											
Internal capacity C _i , max.	80 nF											
Internal inductivity L _i , max.	Negligible small (≈ 0 μH)											
Ambient temperature T _A	Operation: -20 °C < T _A < +60 °C											
Output/current consumption	Control current dependent on switching state (to EN 60947-5-6 (NAMUR))											
Object is detected	≥ 2.2 mA											
Object is not detected	≤ 1 mA											
Switching mode	Light-switching											
Response time ⁵⁾	≤ 10 ms											
Max. switching frequency ⁶⁾	50/s											
Connection types	Plug											
	Terminal connection											
VDE protection class ⁷⁾	□											
Circuit protection ⁸⁾	A, C											
Enclosure rating	IP 67											
Ambient temperature T_A	Storage: -25 °C ... +70 °C											
Weight	Approx. 330 g											
Housing material	Zinc die-cast housing											

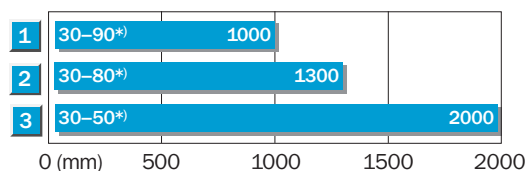
1) Average service life 100,000 h at T_A = +25 °C
 2) Supply with switching amplifier EN 2 Ex

3) Limit values
 4) May not exceed or fall short of V_S tolerances

5) Signal transit time with resistive load
 6) With light/dark ratio 1:1
 7) Reference voltage 50 V DC

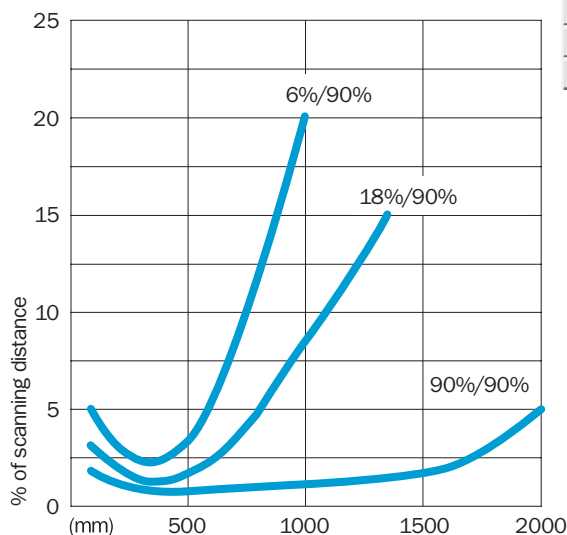
8) A = V_S connections reverse-polarity protected
 C = Interference pulse suppression

Scanning distance




*) Lower bound of detection area depending on the adjusted scanning distance

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



Order information

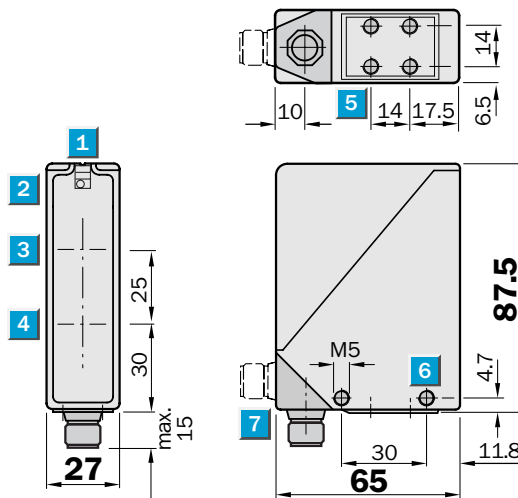
Type	Order no.
WT 24-2X 260	1 025 684
WT 24-2X 460	1 025 683

	Scanning range 15 m
Photoelectric reflex switches	

- Marking: Ex II 2G EEx ia IIC T4 according to Directive 94/9/EC (ATEX)
- According to category 2G
- Switching output: EN 60947-5-6 (NAMUR)
- Red light
- Device plug can be rotated through 90°

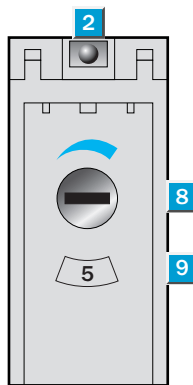


Dimensional drawing



Adjustments possible

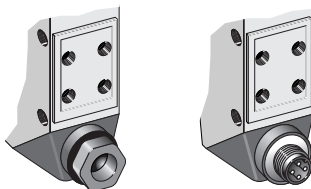
- WL 24-X 2301
- WL 24-X 4301



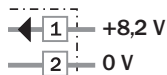
- 1 Alignment sight
- 2 LED signal strength indicator
- 3 Centre of receiver's optical axis
- 4 Centre of transmitter's optical axis
- 5 M5 threaded mounting hole – 8 mm deep
- 6 M5 threaded mounting hole
- 7 PG screw connection or plug M12, rotatable
- 8 Sensitivity adjustment
- 9 Sensitivity indicator

Connection types

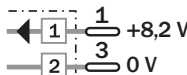
- WL 24-X 2301
- WL 24-X 4301



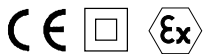
PG 9, terminals



4-pin, M12



See chapter Accessories
Cables and connectors
Mounting systems
Reflectors
Power supply units



Technical data		WL 24-	X 2301	X 4301									
Scanning range, max. typ/on reflector	15 m/PL 80 A												
Sensitivity	Adjustable												
Light source ¹⁾, light type	LED, red light												
Light spot diameter	Approx. 145 mm at 8 m												
Supply voltage V_S ²⁾	8.2 V DC (R _i approx. 1 kΩ) (5 V ... 13.5 V) ³⁾												
Residual ripple ⁴⁾	0.4 V _{PP}												
EC-type examination certificate	PTB 03 ATEX 2104												
Explosion protection	Type of protection "Intrinsic safety"												
Input voltage U _i , max.	15.5 V												
Input current I _i , max.	53 mA												
Input power P _i , max.	100 mW												
Internal capacity C _i , max.	80 nF												
Internal inductivity L _i , max.	80 μH												
Ambient temperature T _A	Operation: -20 °C < T _A < +50 °C												
Output/current consumption	Control current dependent on switching state (to EN 60947-5-6 (NAMUR))												
Light beam not interrupted	≥ 2.2 mA												
Light beam interrupted	≤ 1 mA												
Switching mode	Light-switching												
Response time ⁵⁾	≤ 10 ms												
Max. switching frequency ⁶⁾	50/s												
Connection types	Plug												
Terminal connection													
VDE protection class ⁷⁾	□												
Circuit protection ⁸⁾	A, C												
Enclosure rating	IP 67												
Ambient temperature T_A	Storage: -25 °C ... +70 °C												
Weight	Approx. 330 g												
Housing material	Zinc die-cast housing												

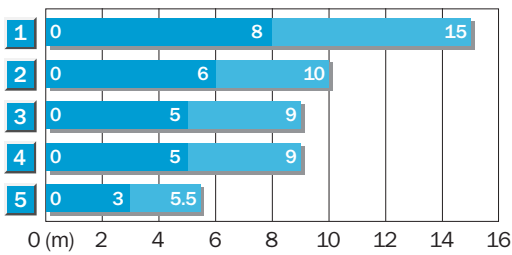
1) Average service life 100,000 h at T_A = +25 °C
 2) Supply with switching amplifier EN 2 Ex

3) Limit values
 4) May not exceed or fall short of V_S tolerances

5) Signal transit time with resistive load
 6) With light/dark ratio 1:1
 7) Reference voltage 50 V DC

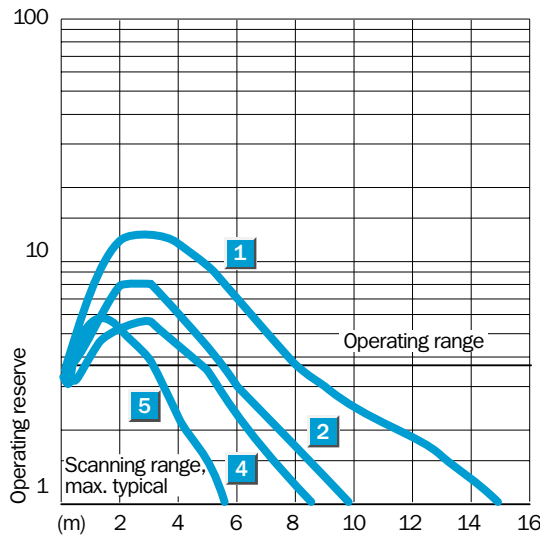
8) A = V_S connections reverse-polarity protected
 C = Interference pulse suppression

Scanning range and operating reserve



■ Operating range ■ Scanning range, max. typical

Reflector type	Operating range
1 PL 80 A	0 ... 8 m
2 PL 50 A	0 ... 6 m
3 PL 40 A	0 ... 5 m
4 PL 30 A	0 ... 5 m
5 PL 20 A	0 ... 3 m



Order information

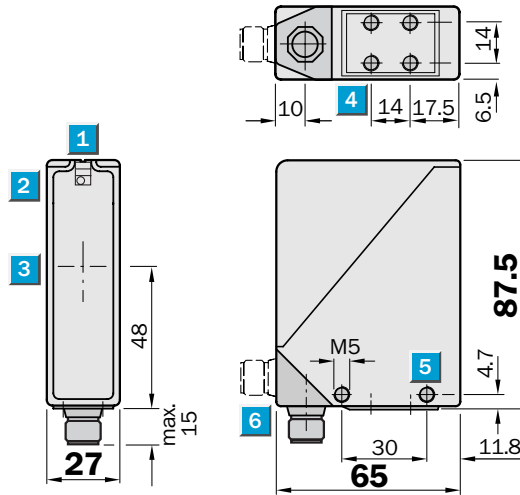
Type	Order no.
WL 24-X 2301	1 011 972
WL 24-X 4301	1 011 971

Scanning range
40 m

Through-beam photoelectric switches

- Marking: Ex II 2G EEx ia IIC T4 according to Directive 94/9/EC (ATEX)
- According to category 2G
- Switching output: EN 60947-5-6 (NAMUR)
- Red light
- Device plug can be rotated through 90°

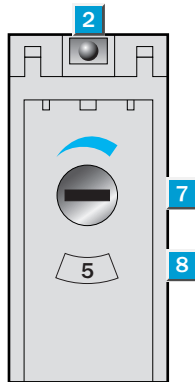
Dimensional drawing



Adjustments possible

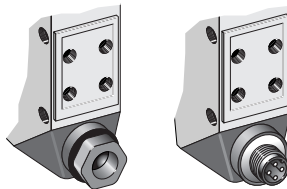
WS/WE 24-X 2301
WS/WE 24-X 4301

- 1 Alignment sight
- 2 LED signal strength indicator on WE
Power indicator on WS
- 3 Middle of optical axis
- 4 M5 threaded mounting hole – 8 mm deep
- 5 M5 threaded mounting hole
- 6 PG screw connection or plug M12, rotatable
- 7 Sensitivity adjustment
- 8 Sensitivity indicator



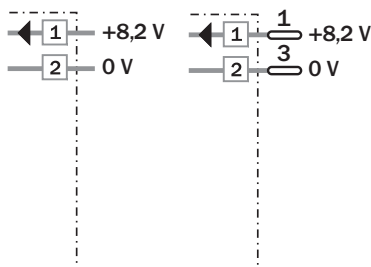
Connection types

WS/WE 24-X 2301 WS/WE 24-X 4301



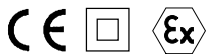
PG 9, terminals

4-pin, M12



See chapter Accessories

- Cables and connectors
- Mounting systems
- Power supply units



Technical data		WS/WE 24-	X 2301	X 4301								
Scanning range, max. typical	0 ... 40 m											
Sensitivity	Adjustable											
Light source ¹⁾ , light type	LED, red light											
Light spot diameter	Approx. 450 mm at 25 m											
Supply voltage V_S ²⁾	8.2 V DC (R_i approx. 1 k Ω) (5 V ... 13.5 V) ³⁾											
Residual ripple ⁴⁾	0.4 V _{PP}											
EC-type examination certificate	PTB 03 ATEX 2103											
Explosion protection	Type of protection "Intrinsic safety"											
Input voltage U_i , max.	15.5 V											
Input current I_i , max.	53 mA											
Input power P_i , max.	100 mW											
Internal capacity C_i , max.	WS: 15 nF/WE: 80 nF											
Internal inductivity L_i , max.	150 μ H											
Ambient temperature T_A	Operation: -20 °C < T_A < +50 °C											
Output/current consumption	Control current dependent on switching state (to EN 60947-5-6 (NAMUR))											
Sender permanent	≥ 2.2 mA											
Light beam not interrupted	≥ 2.2 mA											
Light beam interrupted	≤ 1 mA											
Switching mode	Light-switching											
Response time ⁵⁾	≤ 10 ms											
Max. switching frequency ⁶⁾	50/s											
Connection types	Plug											
	Terminal connection											
VDE protection class ⁷⁾	<input type="checkbox"/>											
Circuit protection ⁸⁾	A, C											
Enclosure rating	IP 67											
Ambient temperature T_A	Storage: -25 °C ... +70 °C											
Weight	Approx. 330 g											
Housing material	Zinc die-cast housing											

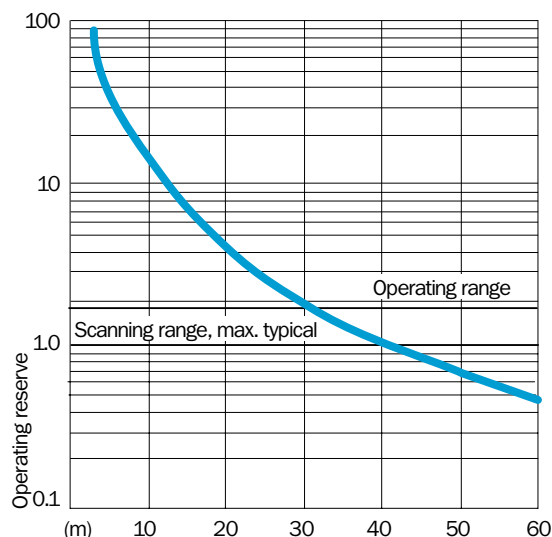
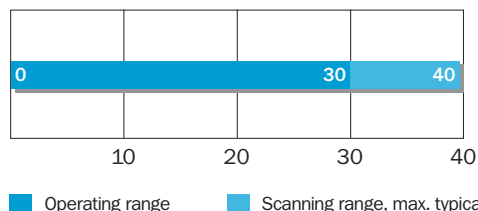
1) Average service life 100,000 h at $T_A = +25$ °C
 2) Supply with switching amplifier EN 2 Ex

3) Limit values
 4) May not exceed or fall short of V_S tolerances

5) Signal transit time with resistive load
 6) With light/dark ratio 1:1
 7) Reference voltage 50 V DC

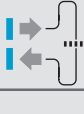

8) A = V_S connections reverse-polarity protected
 C = Interference pulse suppression

Scanning range and operating reserve



Order information

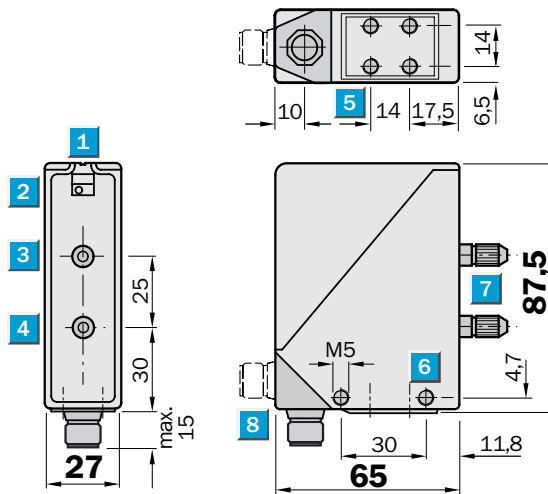
Type	Order no.
WS/WE 24-X 2301	1 011 516
WS/WE 24-X 4301	1 011 517

	Scanning range ... 100 mm (max. 1000 mm)
Through-beam system	
	Scanning distance ... 25 mm
Proximity system	

- Marking: Ex II 2G EEx ia IIC T4 according to Directive 94/9/EC (ATEX)
- Switching output: EN 60947-5-6 (NAMUR)
- Red light
- Fibre-optic cable, exchangeable



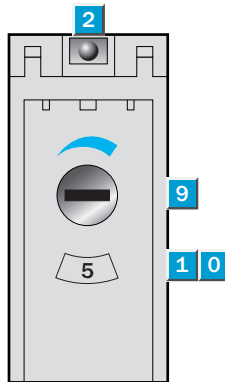
Dimensional drawing



Adjustments possible

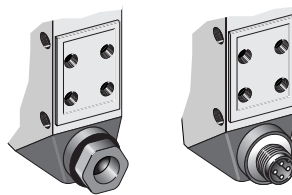
- WLL 24-X 2301
- WLL 24-X 4301

- 1 Alignment sight
- 2 LED signal strength indicator
- 3 Centre of receiver's optical axis
- 4 Centre of transmitter's optical axis
- 5 M5 threaded mounting hole – 8 mm deep
- 6 M5 threaded mounting hole
- 7 Connector for fibre-optic cable
- 8 PG screw connection or plug M12, rotatable
- 9 Sensitivity adjustment
- 10 Sensitivity indicator

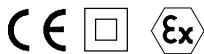
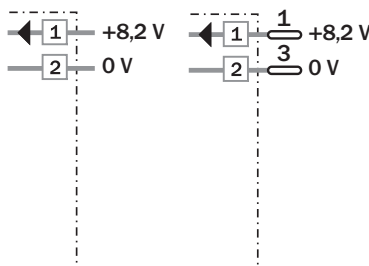


Connection types

- WLL 24-X 2301
- WLL 24-X 4301



- PG 9, terminals
- 4-pin, M12



See chapter Accessories
Cables and connectors
Mounting systems
Fibre-optic cables
Power supply units

Technical data		WLL 24-	X 2301	X 4301								
Scanning range , through-beam system	100 mm with LL3-TB02											
	1000 mm with tip adapter LL3-TA01											
Scanning distance , proximity system	25 mm with LL3-DB01											
Fibre-optic cable	See chapter Accessories "Fibre-optic cables"											
Sensitivity	Adjustable											
Light source ¹⁾ , light type	LED, red light											
Supply voltage V_S ²⁾	8.2 V DC (R_i approx. 1 k Ω) (5 V ... 13.5 V) ³⁾											
Residual ripple ⁴⁾	0.4 V _{PP}											
EC-type examination certificate	PTB 03 ATEX 2104											
Explosion protection	Type of protection "Intrinsic safety"											
Input voltage U_i , max.	15.5 V											
Input current I_i , max.	53 mA											
Input power P_i , max.	100 mW											
Internal capacity C_i , max.	80 nF											
Internal inductivity L_i , max.	80 μ H											
Ambient temperature T_A	Operation: $-20\text{ }^\circ\text{C} < T_A < +50\text{ }^\circ\text{C}$											
Output/current consumption	Control current dependent on switching state (to EN 60947-5-6 (NAMUR))											
Light beam not interrupted	≥ 2.2 mA											
Light beam interrupted	≤ 1 mA											
Switching mode	Light-switching											
Response time ⁵⁾	≤ 10 ms											
Max. switching frequency ⁶⁾	50/s											
Connection types	Plug											
	Terminal connection											
VDE protection class ⁷⁾	<input type="checkbox"/>											
Circuit protection ⁸⁾	A, C											
Enclosure rating	IP 65											
Ambient temperature T_A	Storage: $-25\text{ }^\circ\text{C} \dots +70\text{ }^\circ\text{C}$											
Weight	Approx. 330 g											
Housing material	Zinc die-cast housing											

¹⁾ Average service life 100,000 h at $T_A = +25\text{ }^\circ\text{C}$

²⁾ Supply with switching amplifier
EN 2 Ex

³⁾ Limit values

⁴⁾ May not exceed or fall short of
 V_S tolerances

⁵⁾ Signal transit time with resistive load

⁶⁾ With light/dark ratio 1:1




⁷⁾ Reference voltage 50 V DC

⁸⁾ A = V_S connections reverse-polarity
protected

C = Interference pulse suppression

Order information	
Type	Order no.
WLL 24-X 2301	1 011 562
WLL 24-X 4301	1 012 711

Ready-to-fit and Standard-compliant - Cat. 3D/3G Photoelectric Switches for Explosive Areas

	Photoelectric proximity switches BGS
	Photoelectric reflex switches
	Through-beam photoelectric switches



The Category 3D/3G photoelectric switches from SICK are equipped with a metal housing. This housing meets the demanding requirements of the Standard and therefore offers a ready-to-fit solution in respect of the standard.

Product range:

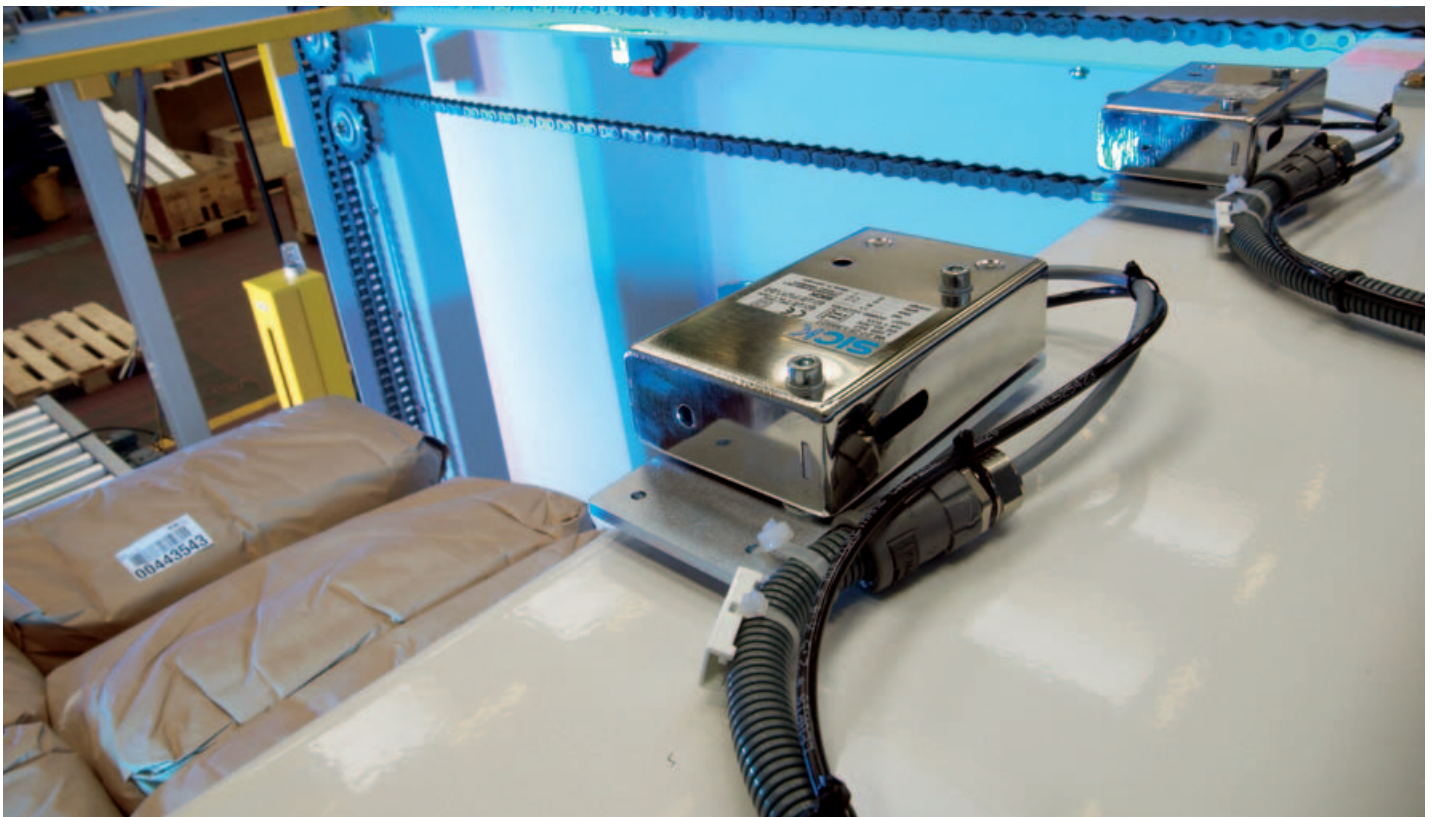
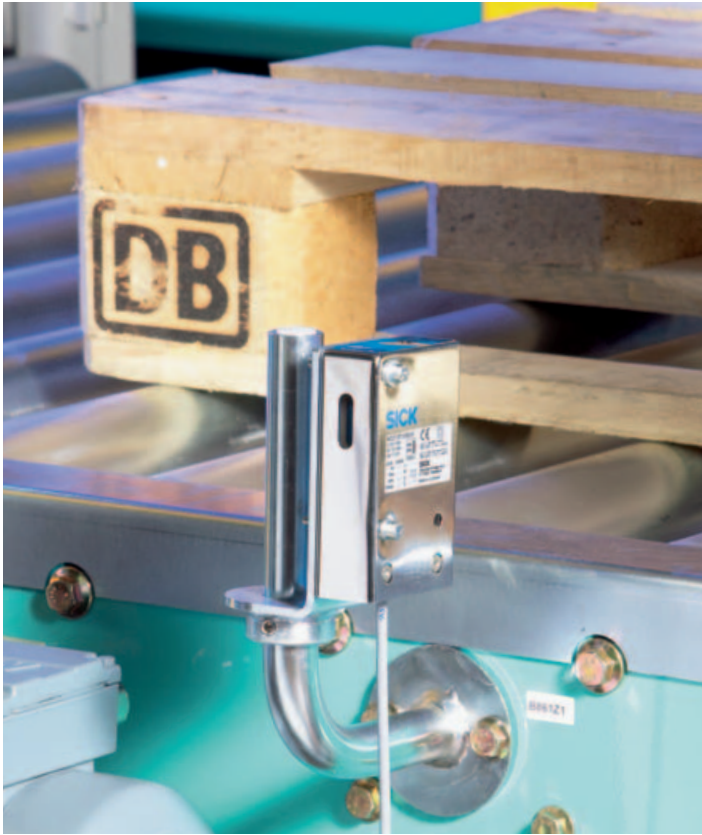
- **W18-3Ex:** Compact dimensions, accurate background suppression, insensitive to optical interference, sensor range up to 1,000 mm and up to 7m as a photoelectric reflex switch,
- **W27-3Ex:** Complete range of photoelectric switches: scanning distance up to 1,500 mm, range up to 14 m on a reflector and 35 m as a through-beam photoelectric switch,
- **WTR2Ex:** Economical solution for scanning distances up to 900 mm,
- **WL24-2Ex:** The powerful photoelectric switch with a range of up to 22 m.

E“Ex” series modules are designed for explosive areas in ignition protection Type “n” according to EN 50021. Hence, they conform to Categories 3G and 3D, based on the new 94/9/EC (ATEX) Directive, and can be used in the areas “Zone 2 (gas)” and “Zone 22 (non-conductive dust)”.

In addition to limit values for temperature, performance or UV resistance, the Standard stipulates a mechanical strength which cannot be achieved with standard sensors.

► Filling of building material.

▼ WTB27-3Ex photoelectric proximity switch detects the presence of pallets.



▲ Smart solution: WTB27-3Ex photoelectric proximity switch and protection housing.

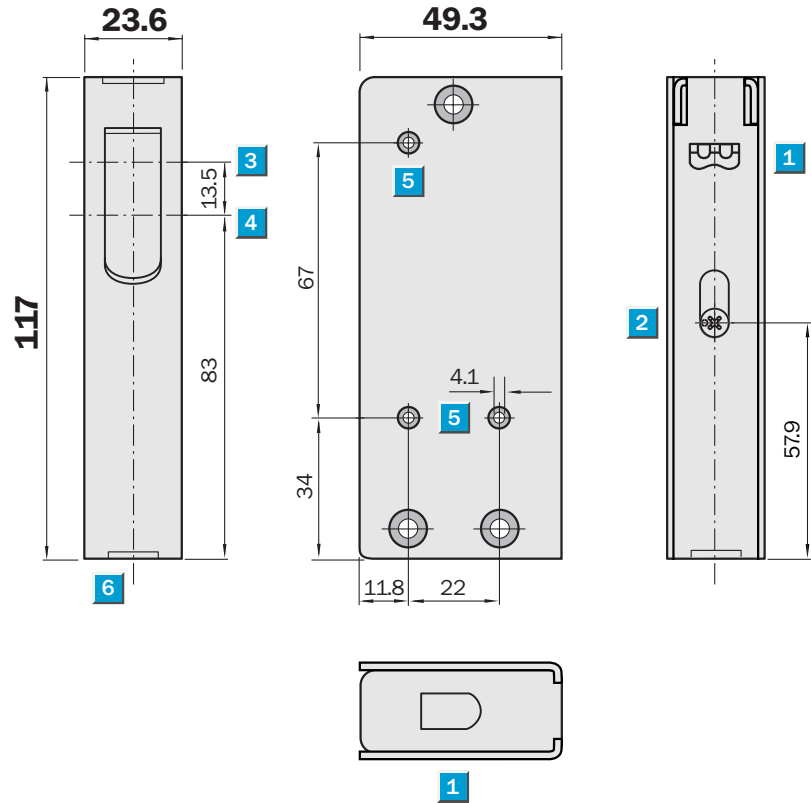
Photoelectric proximity switch, WT18-3Ex, BGS

Scanning distance
50 ... 1,000 mm

Photoelectric proximity switch

- Ready-to-fit, Standard-compliant design: sensor + protective housing
- Complies with Categories 3D and 3G according to 94/9/EC (ATEX) Directive
- Accurate background suppression
- Insensitive to optical interference

Dimensional drawing



Adjustments possible

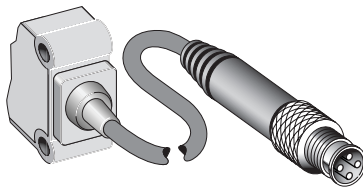
WT18X-3P920



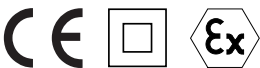
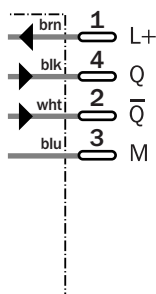
- 1 Status indicator LEDs
- 2 Scanning distance adjustment
- 3 Middle of optical axis, sender
- 4 Middle of optical axis, receiver
- 5 Mounting holes Ø 4.1 mm
- 6 Connector

Connection type

WT18X-3P920



M12, 4-pin



See chapter Accessories

Connector, M12, 4-pin

Mounting systems

WT18X-3		P920									
Scanning distance typ. max.	50 ... 1,000 mm ¹⁾										
Adjustment of operating distance	Potentiometer										
Light source, light type	LED, infrared light ²⁾										
Light spot diameter	30 mm at 600 mm distance										
Supply voltage V_s	DC 10 ... 30 V ³⁾										
Ripple	< 5 V _{ss} ⁴⁾										
Power consumption	< 45 mA ⁵⁾										
Switching outputs	PNP antivalent										
Output current I _a max	< 100 mA										
Response time	< 700 μs ⁶⁾										
Switching frequency	700 Hz ⁷⁾										
Connection type	Cable with plug, M12, 4-pin, 290 mm ⁸⁾										
Ex marking (ATEX)	EX II 3G EEx nA II T4 X EX II 3D IP67 T70 °C ⁹⁾										
VDE protection class	□ ¹⁰⁾										
Circuit protection	V _s connections reverse-polarity protected / All outputs short-circuit protected / Interference suppression										
Enclosure rating	IP 67										
Ambient temperature operation	-20 °C ... +50 °C										
Ambient temperature storage	-40 °C ... +75 °C										
Weight	Approx. 300 g										
Housing material	ABS / stainless steel 1.4301										

¹⁾ Object with 90 % remission (based on standard white to DIN 5033)

²⁾ Average service life 100,000 h at 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

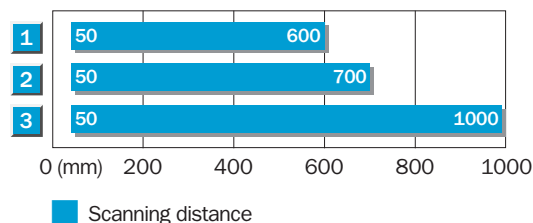
⁷⁾ with light/dark ratio 1:1

⁸⁾ do not bend below 0 °C

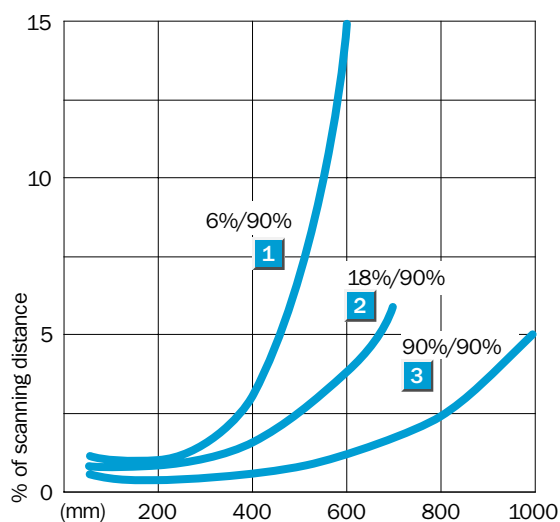
⁹⁾ conformity with directives. Explosion prevention: Directive 94/9/EC

¹⁰⁾ Reference voltage 50 V DC

Scanning range




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



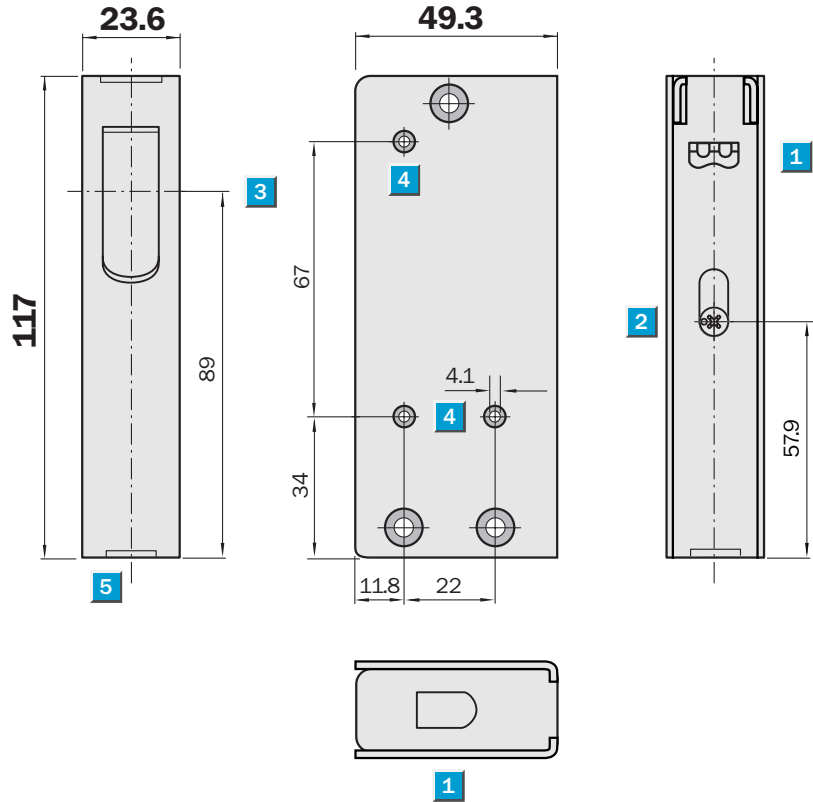
Ordering information

Type	Order no.
WT18X-3P920	1 029 901


Scanning range
 0 ... 7 m
Photoelectric reflex switch

- Ready-to-fit, Standard-compliant design: sensor + protective housing
- Complies with Categories 3D and 3G according to 94/9/EC (ATEX) Directive
- Autocollimation principle
- Insensitive to optical interference

Dimensional drawing



Adjustments possible

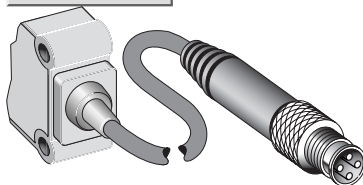
WL18X-3P930



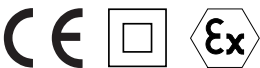
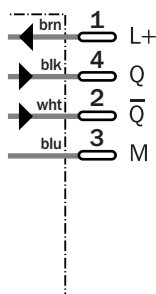
- 1 Status indicator LEDs
- 2 Sensitivity control
- 3 Middle of optical axis
- 4 Mounting holes \varnothing 4.1 mm
- 5 Connector

Connection type

WL18X-3P930



M12, 4-pin



See chapter Accessories

- Connector, M12, 4-pin
- Mounting systems
- Reflectors

WL18X-3

P930

Scanning range typ. max.	0 ... 7 m	
Relating to	Reflector PL80A	
Sensitivity adjustment	Potentiometer	
Light source, light type	LED, visible red light ¹⁾	
Light spot diameter	40 mm at 2 m distance	
Angle of dispersion	1.5 °	
Polarisation filter	✓	
Supply voltage V_s	DC 10 ... 30 V ²⁾	
Ripple	< 5 V _{ss} ³⁾	
Power consumption	< 30 mA ⁴⁾	
Switching outputs	PNP antivalent	
Output current I _a max	< 100 mA	
Response time	500 µs ⁵⁾	
Switching frequency	1,000 Hz ⁶⁾	
Connection type	Cable with plug, M12, 4-pin, 290 mm ⁷⁾	
Ex marking (ATEX)	EX II 3D IP67 T70 °C EX II 3G EEx nA II T4 X ⁸⁾	
VDE protection class	□ ⁹⁾	
Circuit protection	V _s connections reverse-polarity protected / All outputs short-circuit protected / Interference suppression	
Enclosure rating	IP 67	
Ambient temperature operation	-20 °C ... +50 °C	
Ambient temperature storage	-40 °C ... +75 °C	
Weight	Approx. 300 g	
Housing material	ABS / stainless steel 1.4301	
Included with delivery	Securing clip for connector	

¹⁾ Average service life 100,000 h at T_a = +25 °C

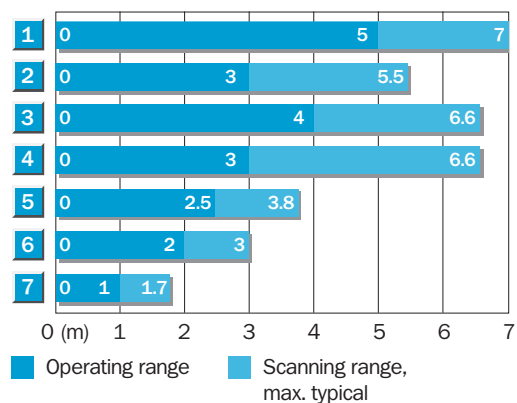
²⁾ Limit values, reverse-polarity protected operation in short-circuit protected

network max. 8 A
³⁾ may not exceed or fall short of V_s tolerances

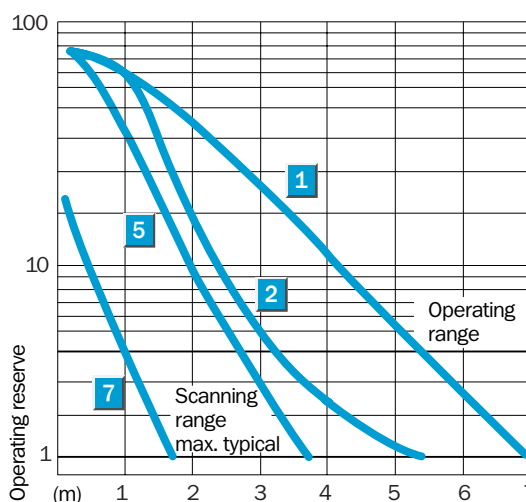
⁴⁾ without load
⁵⁾ Signal transit time with resistive load
⁶⁾ with light/dark ratio 1:1
⁷⁾ do not bend below 0 °C

⁸⁾ Conformity with directives. Explosion prevention: Directive 94/9/EC
⁹⁾ Reference voltage 50 V DC

Scanning range and operating reserve



Reflector type	Operating range
1 PL 80 A	0 ... 5.0 m
2 C 110	0 ... 3.0 m
3 PL 50 A	0 ... 4.0 m
4 PL 40 A	0 ... 3.0 m
5 PL 30 A	0 ... 2.5 m
6 PL 20 A	0 ... 2.0 m
7 Reflective tape Diamond Grade	0 ... 1.0 m



Ordering information

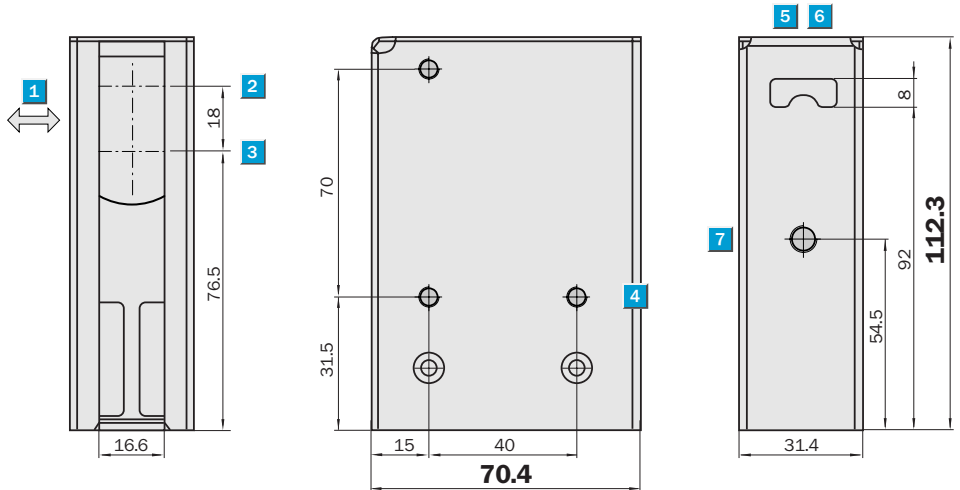
Type	Order no.
WL18X-3P930	1 029 902

Scanning distance
30 ... 1,600 mm

Photoelectric proximity switch

- Category 3D and 3G (ATEX)
- Standard-compliant:
sensor + protective housing
- Infrared light,
very long scanning distance
- Reliable in industrial
environments; secure against the
effects of ambient light, unwanted
optical reflections and other
sensors mounted adjacently

Dimensional drawing



Adjustments possible

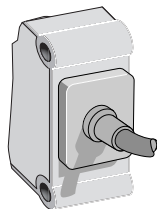
WTB27X-3P1811



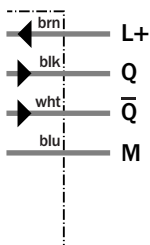
- 1 Standard direction of the material being scanned
- 2 Optical axis sender
- 3 Optical axis receiver
- 4 Mounting hole \varnothing 5.2 mm
- 5 LED indicator green; power on
- 6 LED indicator yellow; status of received light beam
- 7 Adjustment of operating distance: Poti

Connection type

WTB27X-3P1811



4 x 0.25 mm²



See chapter Accessories

Mounting systems

WTB27X-3

P1811

Scanning distance typ. max.	30 ... 1,600 mm ¹⁾
Operating distance	100 ... 1,600 mm ¹⁾
Adjustment of operating distance	Potentiometer
Light source, light type	LED, infrared light, 880 nm ²⁾
Light spot diameter	Approx. 25 mm at 800 mm distance
Supply voltage V_s	DC 10 ... 30 V ³⁾
Ripple	≤ 5 V _{ss} ⁴⁾
Power consumption	≤ 40 mA ⁵⁾
Switching outputs	PNP antivalent
Signal voltage PNP HIGH / LOW	> V _s - 2.5 V / approx. 0 V
Output current I _a max	100 mA
Response time	≤ 1.5 ms ⁶⁾
Switching frequency	350 Hz ⁷⁾
Connection type	Cable, PVC, 10 m ⁸⁾
Ex marking (ATEX)	EX II 3D IP67 T70 °C EX II 3G EEx nA II T4 X ⁹⁾
VDE protection class	□ ¹⁰⁾
Circuit protection	V _s connections reverse-polarity protected / All outputs short-circuit protected / Interference suppression
Enclosure rating	IP 67
Ambient temperature operation	-20 °C ... +50 °C
Ambient temperature storage	-40 °C ... +75 °C
Weight	Approx. 750 g
Housing material	ABS / stainless steel 1.4301, PMMA

¹⁾ Object with 90 % remission (based on standard white to DIN 5033)

²⁾ Average service life 100,000 h at 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

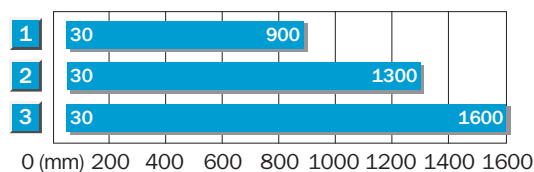
⁷⁾ with light/dark ratio 1:1

⁸⁾ do not bend below 0 °C

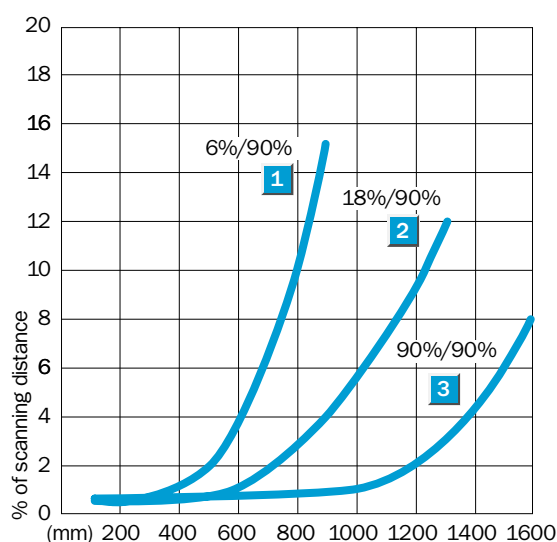
⁹⁾ conformity with directives. Explosion prevention: Directive 94/9/EC

¹⁰⁾ Reference voltage 50 V DC

Scanning distance




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



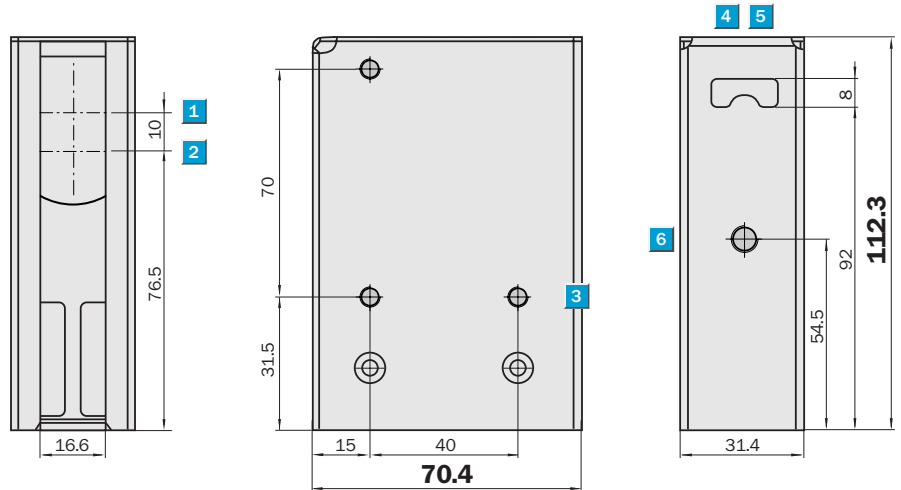
Ordering information

Type	Order no.
WTB27X-3P1811	1 027 988


Scanning range
0.1 ... 15 m
Photoelectric reflex switch

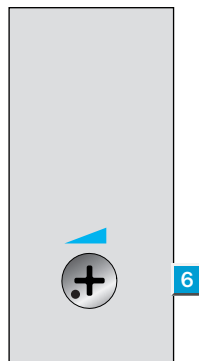
- Category 3D and 3G (ATEX)
- Standard-compliant:
sensor + protective housing
- Red light for easier alignment
- Long range, high operating reserve

Dimensional drawing

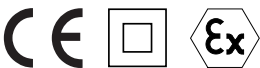


Adjustments possible

WL27X-3P1831

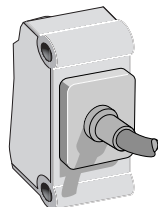


- 1 Optical axis sender
- 2 Optical axis receiver
- 3 Mounting hole \varnothing 5.2 mm
- 4 LED indicator green; power on
- 5 LED indicator yellow; status of received light beam
- 6 Sensitivity adjustment: Poti

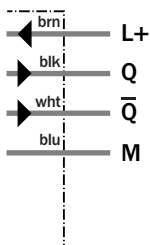


Connection type

WL27X-3P1831



4 x 0.25 mm²



See chapter Accessories

Mounting systems

Reflectors

WL27X-3

P1831

Scanning range typ. max.	0.1 ... 15 m
Scanning range, recommended	0.1 ... 11 m
Relating to	Reflector PL80A
Sensitivity adjustment	Potentiometer
Light source, light type	LED, red light, 660 nm ¹⁾
Light spot diameter	Approx. 220 mm at 10 m distance
Angle of dispersion	Approx. 1.5 °
Polarisation filter	✓
Supply voltage V_s	DC 10 ... 30 V ²⁾
Ripple	≤ 5 V _{SS} ³⁾
Power consumption	≤ 30 mA ⁴⁾
Switching outputs	PNP antivalent
Signal voltage PNP HIGH / LOW	> V _s - 2.5 V / approx. 0 V
Output current I _a max	100 mA
Response time	≤ 500 µs ⁵⁾
Switching frequency	1,000 Hz ⁶⁾
Connection type	Cable, PVC, 10 m ⁷⁾
Ex marking (ATEX)	EX II 3D IP67 T70 °C EX II 3G EEx nA II T4 X ⁸⁾
VDE protection class	□ ⁹⁾
Circuit protection	V _s connections reverse-polarity protected / All outputs short-circuit protected / Interference suppression
Enclosure rating	IP 67
Ambient temperature operation	-20 °C ... +50 °C
Ambient temperature storage	-40 °C ... +75 °C
Weight	Approx. 750 g
Housing material	ABS / stainless steel 1.4301, PMMA

¹⁾ Average service life 100,000 h at T_a = +25 °C

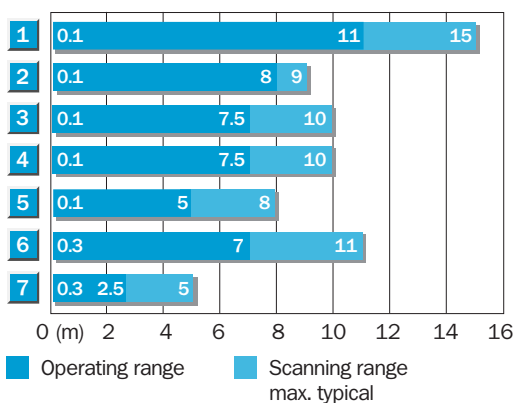
²⁾ Limit values, reverse-polarity protected operation in short-circuit protected

network max. 8 A
³⁾ may not exceed or fall short of V_s tolerances

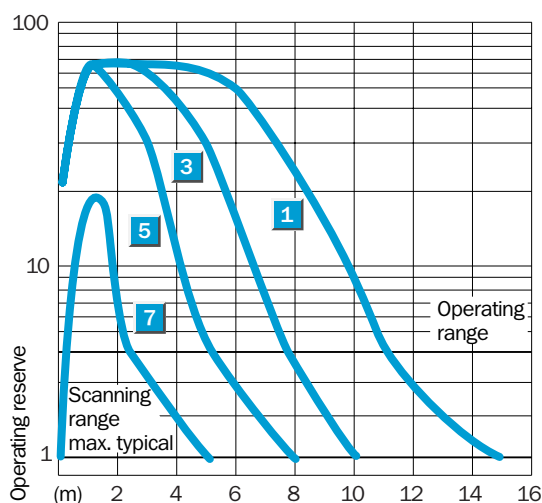
⁴⁾ without load
⁵⁾ Signal transit time with resistive load
⁶⁾ with light/dark ratio 1:1
⁷⁾ do not bend below 0 °C

⁸⁾ conformity with directives. Explosion prevention: Directive 94/9/EC
⁹⁾ Reference voltage 50 V DC

Scanning range and operating reserve



Reflector type	Operating range
1 PL 80 A	0.1 ... 11.0 m
2 PL 50 A	0.1 ... 8.0 m
3 PL 40 A	0.1 ... 7.5 m
4 PL 30 A	0.1 ... 7.5 m
5 PL 20 A	0.1 ... 5.0 m
6 C 110	0.3 ... 7.0 m
7 Reflective tape Diamond Grade	0.3 ... 2.5 m



Ordering information

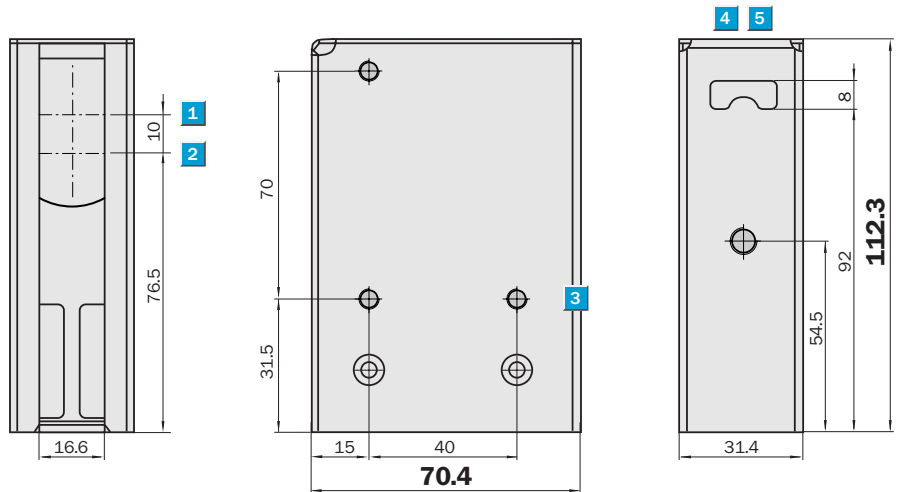
Type	Order no.
WL27X-3P1831	1 027 989

Scanning range
0 ... 35 m

Through-beam photoelectric switch

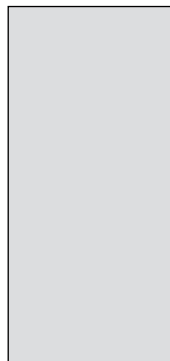
- Category 3D and 3G (ATEX)
- Standard-compliant:
sensor + protective housing
- High intensity red light
for easier alignment
- Long range,
high operating reserve

Dimensional drawing



Adjustments possible

WSE27X-3P1830

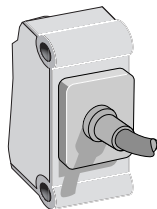


- 1 Optical axis sender
- 2 Optical axis receiver
- 3 Mounting hole \varnothing 5.2 mm
- 4 LED indicator green; power on
- 5 LED indicator yellow; status of received light beam

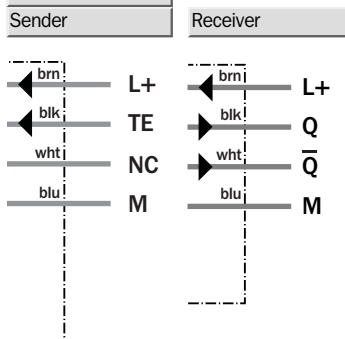


Connection type

WSE27X-3P1830

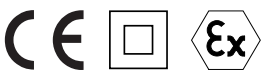


4 x 0.25 mm²



See chapter Accessories

Mounting systems



WSE27X-3

P1830

Scanning range typ. max.	0 ... 35 m
Scanning range, recommended	0 ... 25 m
Light source, light type	LED, red light, 645 nm ¹⁾
Light spot diameter	Approx. 600 mm at 25 m distance
Angle of dispersion	Approx. 1.5 °
Angle of reception	Approx. 3 °
Supply voltage V_s	DC 10 ... 30 V ²⁾
Ripple	≤ 5 V _{SS} ³⁾
Power consumption, sender	≤ 35 mA ⁴⁾
Power consumption, receiver	≤ 20 mA ⁴⁾
Switching outputs	PNP antivalent
Signal voltage PNP HIGH / LOW	> V _s - 2.5 V / approx. 0 V
Output current I _a max	100 mA
Response time	≤ 500 μs ⁵⁾
Switching frequency	1,000 Hz ⁶⁾
Test input sender off	TE to 0 V
Connection type	Cable, PVC, 10 m ⁷⁾
Ex marking (ATEX)	EX II 3D IP67 T70 °C EX II 3G EEx nA II T4 X ⁸⁾
VDE protection class	□ ⁹⁾
Circuit protection	V _s connections reverse-polarity protected / All outputs short-circuit protected / Interference suppression
Enclosure rating	IP 67
Ambient temperature operation	-20 °C ... +50 °C
Ambient temperature storage	-40 °C ... +75 °C
Weight	Approx. 1,500 g
Housing material	ABS / stainless steel 1.4301, PMMA

¹⁾ Average service life 100,000 h
at T_a = +25 °C

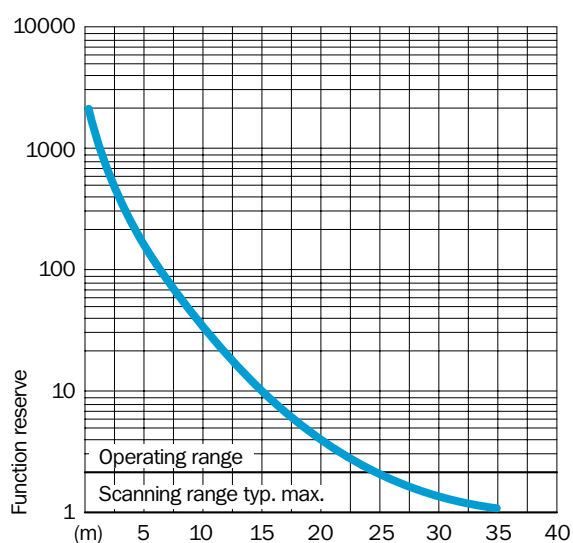
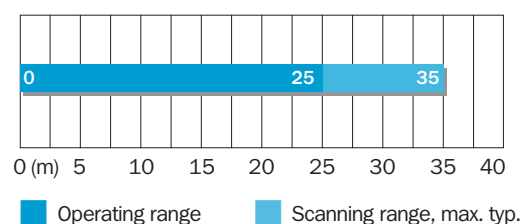
²⁾ Limit values, reverse-polarity protected
operation in short-circuit protected

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⁾ conformity with directives. Explosion
prevention: Directive 94/9/EC
⁹⁾ Reference voltage 50 V DC

Scanning range and function reserve



Ordering information

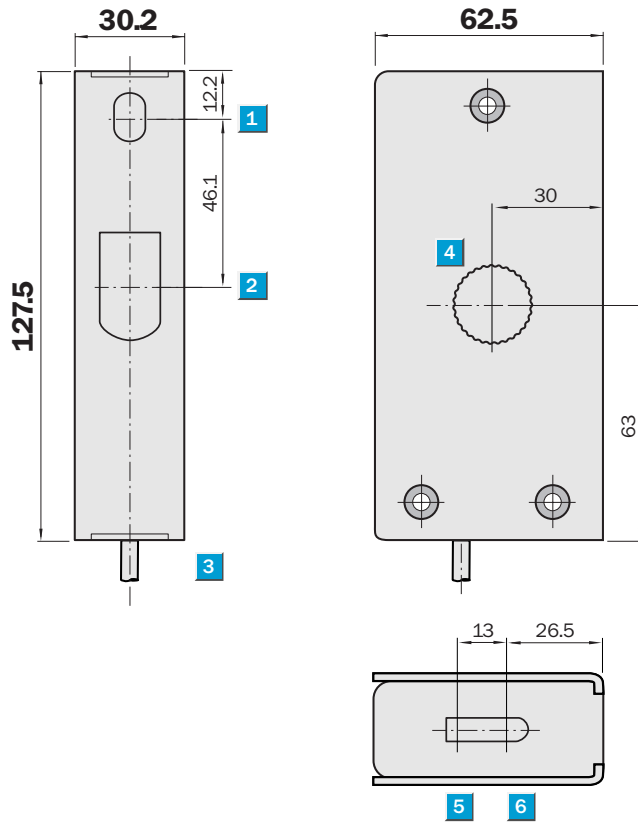
Type	Order no.
WSE27X-3P1830	1 027 991

Scanning distance
300 ... 900 mm

Photoelectric proximity switch

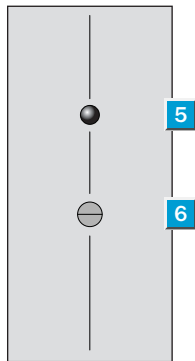
- Ready-to-fit, Standard-compliant design: sensor + protective housing
- Complies with Categories 3D and 3G according to 94/9/EC (ATEX) Directive
- Accurate background suppression
- Fixing hole for clamp holder

Dimensional drawing



Adjustments possible

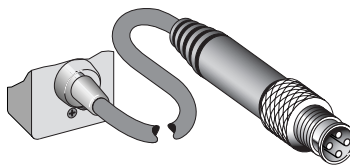
WTR2-P511S21



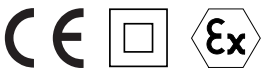
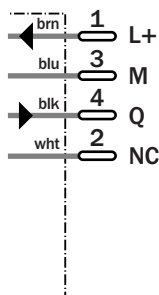
- 1 Middle optical axis, sender
- 2 Middle optical axis, receiver
- 3 Connection
- 4 Fixing hole for clamp holder
- 5 Reception display
- 6 Scanning distance adjustment

Connection type

WTR2-P511S21



M12, 4-pin



See chapter Accessories

Connector, M12, 4-pin

Mounting systems

WTR2-P5

11S21

Scanning distance typ. max.	300 ... 900 mm
Light source, light type	LED, infrared light
Light spot diameter	Approx. 40 mm
Supply voltage V_s	DC 10 ... 30 V ¹⁾
Ripple	< 5 V _{ss} ²⁾
Power consumption	≤ 25 mA ³⁾
Switching outputs	PNP
Switching mode	Light-switching
Output current I_a max	100 mA
Switching frequency	250 Hz
Connection type	Cable with plug, M12, 4-pin, 270 mm ⁴⁾
Ex marking (ATEX)	EX II 3D IP67 T70 °C ⁵⁾
VDE protection class	□
Circuit protection	In-/outputs short-circuit protected / All outputs short-circuit protected / Interference suppression
Enclosure rating	IP 54
Ambient temperature operation	-20 °C ... +50 °C
Ambient temperature storage	-40 °C ... +75 °C
Weight	Approx. 550 g
Housing material	ABS / stainless steel 1.4301
Included with delivery	Securing clip for connector

¹⁾ Limit values

²⁾ may not exceed or fall short of

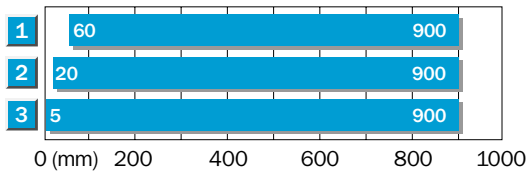
V_s tolerances

³⁾ without load

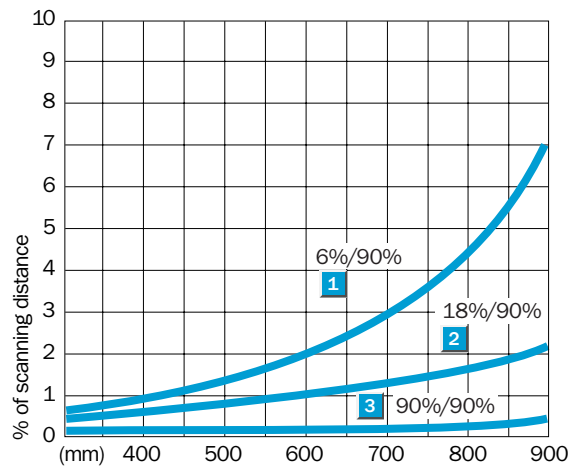
⁴⁾ do not bend below 0 °C

⁵⁾ conformity with directives. Explosion prevention: Directive 94/9/EC

Scanning distance




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



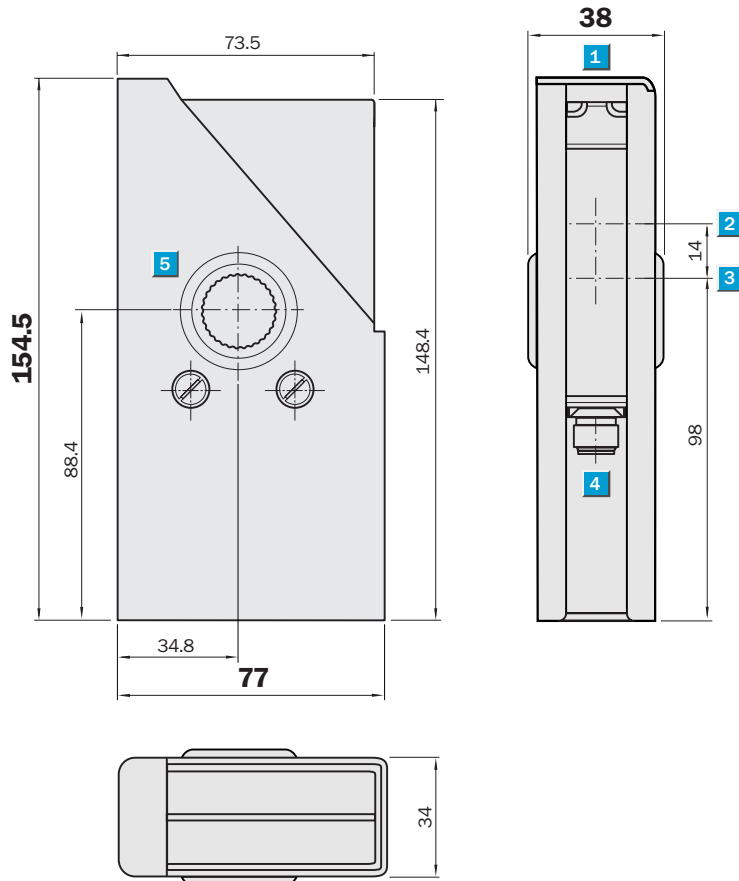
Ordering information

Type	Order no.
WTR2-P511S21	1 029 241


Scanning range
0 ... 22 m
 Photoelectric reflex switch

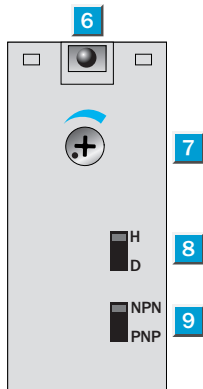
- Ready-to-fit, Standard-compliant design: sensor + protective housing
- Complies with Categories 3D and 3G according to 94/9/EC (ATEX) Directive
- Very large range
- Fixing hole for clamp holder

Dimensional drawing



Adjustments possible

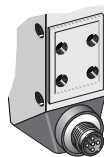
WL24-2V530S06



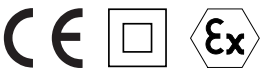
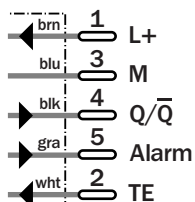
- 1 Reception display
- 2 Middle optical axis, sender
- 3 Middle optical axis, receiver
- 4 Connection
- 5 Fixing hole for clamp holder
- 6 Reception display
- 7 Sensitivity adjuster
- 8 Light/dark switch
- 9 NPN/PNP selector switch

Connection type

WL24-2V530S06



M12, 5-pin



See chapter Accessories

Connector, M12, 5-pin

Mounting systems

Reflectors

WL24-2V530

S06

Scanning range typ. max.	0 ... 22 m
Scanning range, recommended	0 ... 15 m
Relating to	Reflector PL80A
Light source, light type	LED, red light ¹⁾
Light spot diameter	Approx. 250 mm at 15 m distance
Polarisation filter	✓
Supply voltage V_s	DC 10 ... 30 V ²⁾
Ripple	< 5 V _{SS} ³⁾
Power consumption	≤ 50 mA ⁴⁾
Switching outputs	PNP or NPN, Q or Q not
Output current I _{a,max}	100 mA
Response time	≤ 500 μs ⁵⁾
Switching frequency	1,000 Hz ⁶⁾
Test input sender off	TE to 0 V
Connection type	Connector, M12, 5-pin
Ex marking (ATEX)	EX II 3D IP67 T70 °C EX II 3G EEx nA II T4 X ⁷⁾
VDE protection class	□ ⁸⁾
Circuit protection	Vs connections reverse-polarity protected / Output Q and Q not short-circuit protected / Interference suppression
Enclosure rating	IP 67
Ambient temperature operation	-20 °C ... +50 °C
Ambient temperature storage	-40 °C ... +75 °C
Weight	Approx. 800 g
Housing material	Zinc die-cast

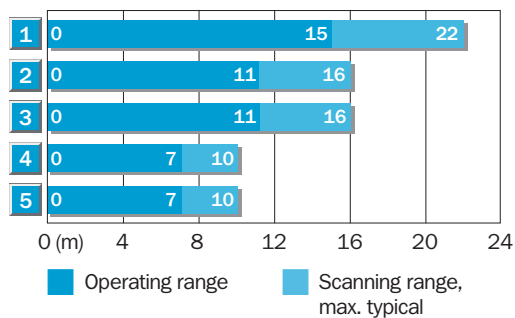
¹⁾ Average service life 100,000 h at T_a = +25 °C
²⁾ Limit values

³⁾ may not exceed or fall short of V_s tolerances
⁴⁾ without load

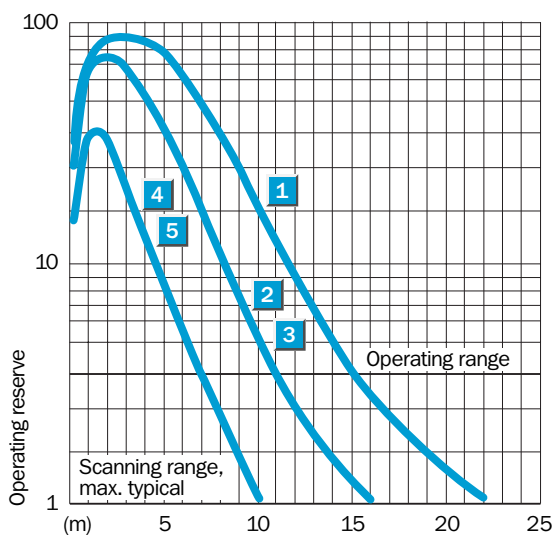
⁵⁾ Signal transit time with resistive load
⁶⁾ with light/dark ratio 1:1
⁷⁾ conformity with directives. Explosion

prevention: Directive 94/9/EC
⁸⁾ Reference voltage 50 V DC

Scanning range and operating reserve



Reflector type	Operating range
1 PL 80 A	0 ... 15.0 m
2 PL 50 A	0 ... 11.0 m
3 PL 40 A	0 ... 11.0 m
4 PL 30 A	0 ... 7.0 m
5 PL 20 A	0 ... 7.0 m



Ordering information

Type	Order no.
WL24-2V530S06	1 027 613