

W 12 L-2: Laser photoelectric switches – long-sighted, certainly, and no need for extra safety precautions

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



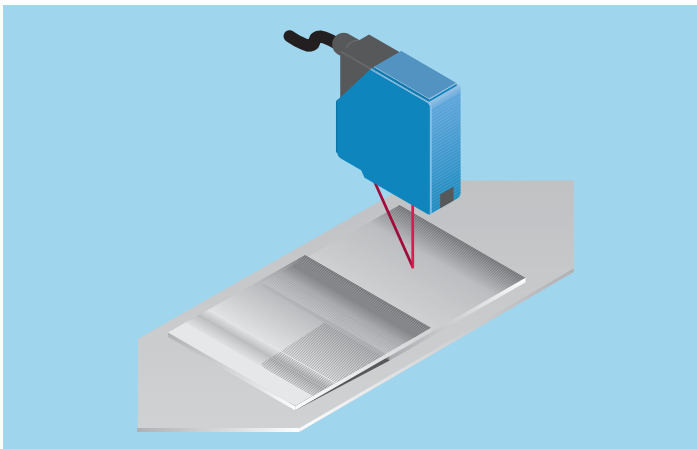
All the devices in this series are particularly "long-sighted": the WS/WE 12 L-2 through-beam photoelectric switch covers distances up to 80 m, while the WL 12 L-2 reflex photoelectric switch can reach up to 18 m. Their integrated polarisation filter makes it possible to reliably detect shiny surfaces. The WT 12 L-2 photoelectric proximity switch also covers a relatively long range: it is the right choice for scanning fixed distances of 20...50 mm, or offers precise background suppression that can be adjusted between 30 and 200 mm.

The W 12 L-2 series offers a complete range of photoelectric switches using innovative laser technology, contained in a rugged metal housing. Pulsed lasers are used to transmit light. Because they have in protection class 2, the machine operator does not need to take any extra safety or protective measures when using the sensors.

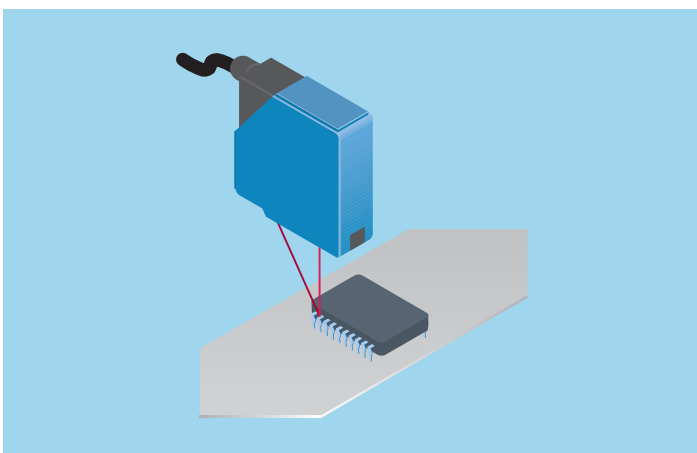
In addition to the scanning range, the small dimensions of the light spot generated on the object is a further advantage of laser technology. This makes it possible to detect even minute items of just 0.5 mm at maximum switching frequencies of 2,500/s.

W 12 L-2 laser photoelectric switches – the best solution for millimetre precision, or even smaller!

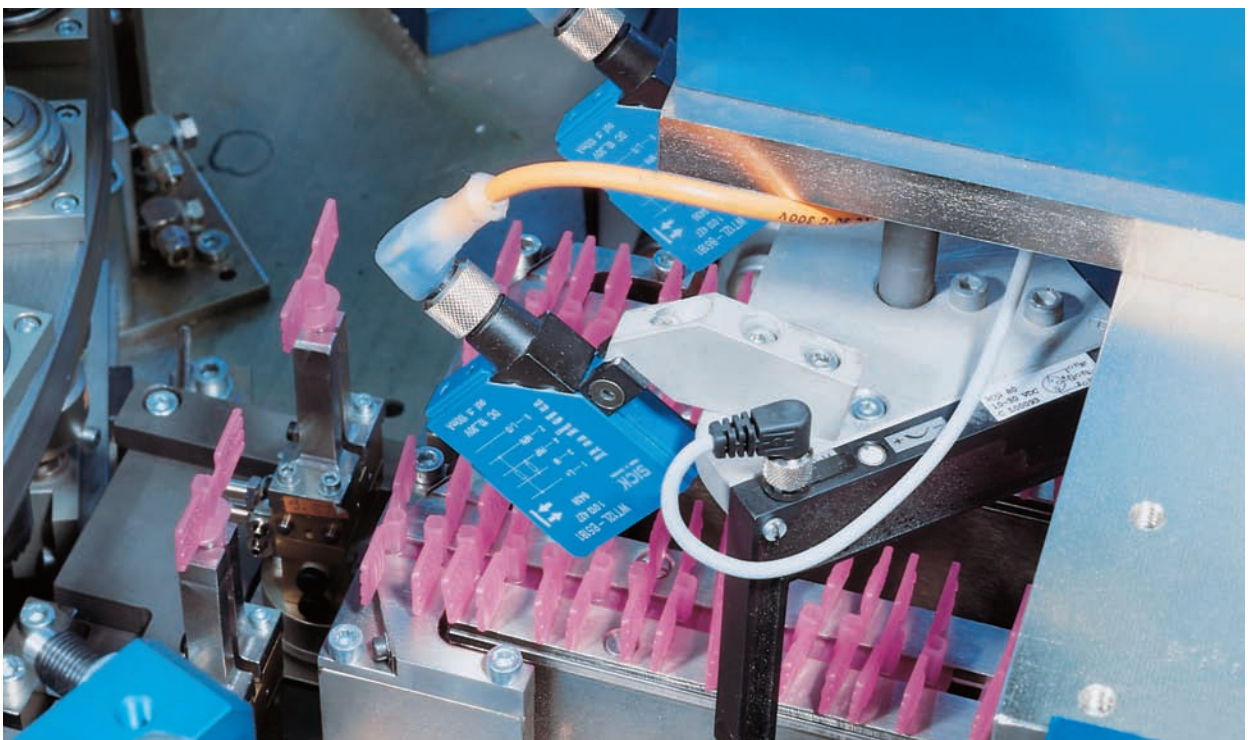
► The laser photoelectric proximity switch detects minimal differences in height, such as overlapping metal sheets, during continuous metal production processes.




► The W 12 L-2 with laser technology detects the smallest electronic components with precision even at high switching frequencies.



▼ Moulded sheet-metal parts used for the production of automobiles are detected with millimetre accuracy by WL 12 L-2 laser photoelectric switches so they can then be picked up and mounted with precision by a robot.



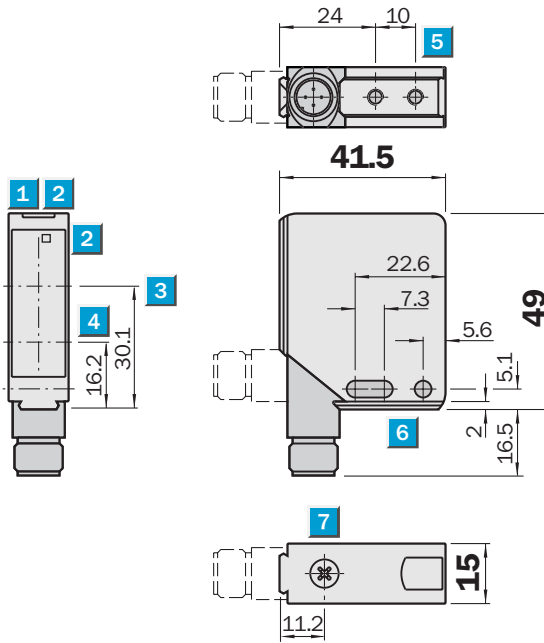
▲ Thanks to their small light spot, laser sensors such as the WT 12 L-2 photoelectric proximity switch can also reliably detect the smallest objects such as packaging units in the pharmaceutical industry.


Scanning distance
30 ... 200 mm
Photoelectric proximity switches

- Laser class 2
- 90° rotatable M12 plug
- Adjustable and fixed background suppression



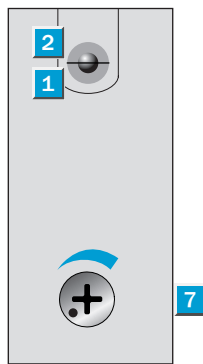
Dimensional drawing



Adjustments possible

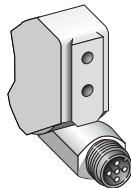
- WT 12L-2B 510*
- WT 12L-2B 530
- WT 12L-2B 540
- WT 12L-2B 550

- 1 LED operating indicator, green
- 2 LED reception indicator, yellow
- 3 Optical axis, receiver
- 4 Optical axis, sender
- 5 M4 threaded mounting hole – 4 mm deep
- 6 Mounting hole \varnothing 4.2 mm
- 7 Scanning distance control
* (not for fixed scanning distances)

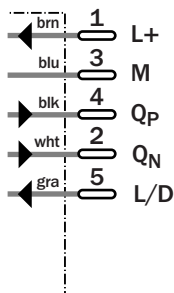


Connection type

- WT 12L-2B 510
- WT 12L-2B 530
- WT 12L-2B 540
- WT 12L-2B 550



5-pin, M12



CE  CDRH



ECOLAB[®]

See chapter Accessories

Mounting systems

Technical data		WT 12L-2	B510	B530	B540	B550							
Scanning distance, adjustable	30...200 mm, 18 % remission												
	Focus 45 mm												
	Focus 80 mm												
	Focus 100 mm												
Scanning range, fixed, 6 % remission	20... 50 mm, focus 45 mm												
Light source¹⁾	Laser 650 nm, pulsed												
Light spot diameter focal point	0.1 mm												
	0.2 mm												
Supply voltage V_S	10...30 V DC ²⁾												
Ripple ³⁾	$\leq 5 V_{SS}$												
Current consumption ⁴⁾	≤ 55 mA												
Switching output Q_N and Q_P	PNP, NPN												
Signal voltage HIGH	$V_S - < 2$ V, V_S												
Signal voltage LOW ⁵⁾	0 V, ≤ 1.5 V												
Output current I_A max.	100 mA												
Operating mode	Light- or dark-switching ⁶⁾												
Control input L/D	0 V or open, light-switching												
Control input L/D	V_S , dark-switching												
Response time max. ⁷⁾	Typ. 200 μ s												
Max. switching frequency ⁸⁾	2500/s												
Laser class	2 (IEC 825-1; EN 60825-1:97)												
VDE protection class⁹⁾	<input type="checkbox"/>												
Enclosure rating	IP 67, IP 69K												
Circuit protection¹⁰⁾	A, B, C												
Ambient temperature T_A	Operation - 10 °C...+ 50 °C												
	Storage - 25 °C...+ 75 °C												
Connection type	M12 plug, 5-pin												
Weight	Approx. 130 g with plug												

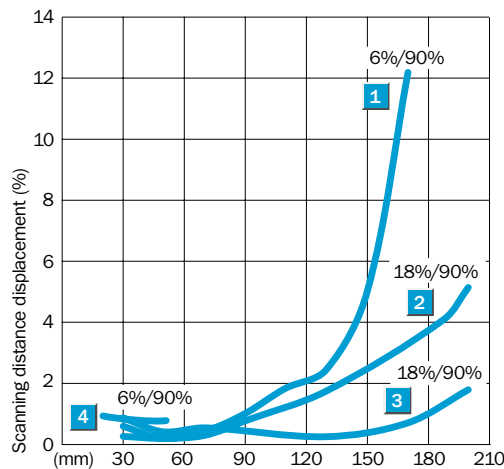
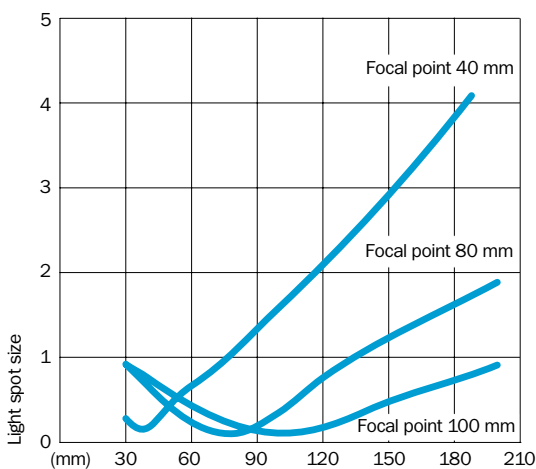
¹⁾ Average service life 50,000 h at $T_A = + 25$ °C
²⁾ Limit values

³⁾ May not exceed or fall short of V_S tolerances
⁴⁾ Without load
⁵⁾ At $T_A = + 25$ °C and 100 mA output current

⁶⁾ Reversible via control input L/D
⁷⁾ Signal transit time with resistive load
⁸⁾ At light/dark ratio 1:1
⁹⁾ Reference voltage 50 V DC

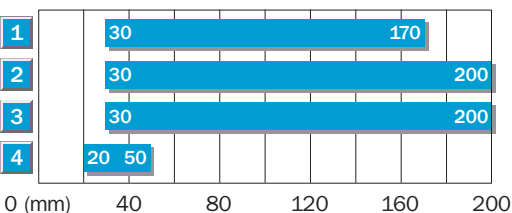
¹⁰⁾ A = V_S connections reverse-polarity protected
 B = Outputs protected against short-circuiting
 C = Interference pulse suppression

Scanning distance and light spot size



Order information

Type	Order no.
WT 12L-2B 510	1 017 959
WT 12L-2B 530	1 018 250
WT 12L-2B 540	1 018 251
WT 12L-2B 550	1 017 904



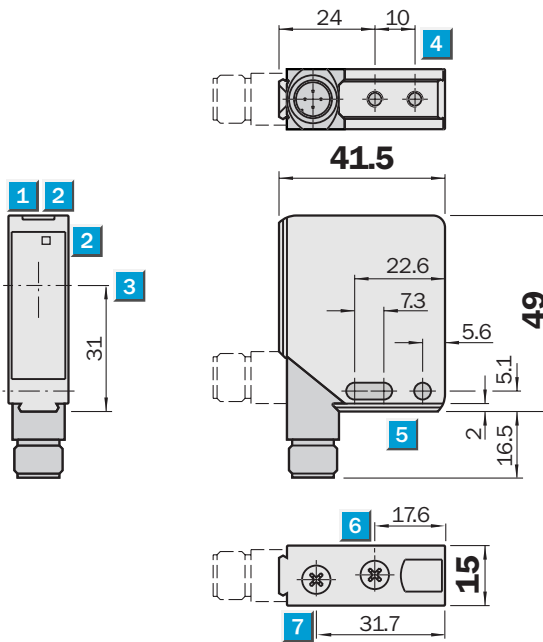
- 1 Scanning distance on black, 6 % remission
- 2 Scanning distance on grey, 18 % remission
- 3 Scanning distance on white, 90 % remission
- 4 Scanning distance on black, 6 % remission, fixed


Scanning range
18 m
 Reflexions-Lichtschranke

- Laser class 2
- Adjustable focus and sensitivity
- 90° rotatable M12 plug



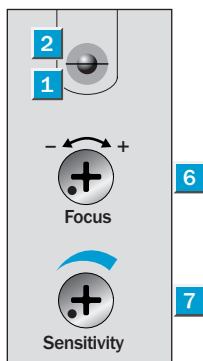
Dimensional drawing



Adjustments possible

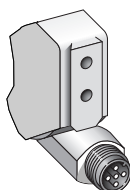
- WL 12L-2B 530
- WL 12L-2B 520

- 1 LED operating indicator, green
- 2 LED reception indicator, yellow
- 3 Centre of optical axis
- 4 M4 threaded mounting hole – 4 mm deep
- 5 Mounting hole \varnothing 4.2 mm
- 6 Focal adjustment
- 7 Sensitivity adjustment

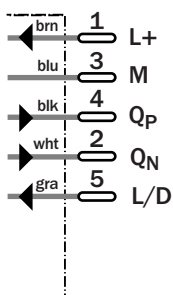


Connection type

- WL 12L-2B 530
- WL 12L-2B 520



5-pin, M12



See chapter Accessories

- Cables and connectors
- Mounting systems
- Reflectors

Technical data		WL 12L-2	B530	B520								
Scanning range,	18 m/PL 80 A											
max. typical/on reflector	15 m/PL 80 A											
Light source¹⁾	Laser 650 nm, pulsed											
Light spot diameter	min. 0.8 mm											
in focal range	300 mm to ∞											
	150 mm to 450 mm											
Supply voltage V_S	10...30 V DC ²⁾											
Ripple ³⁾	≤ 5 V _{SS}											
Current consumption ⁴⁾	≤ 55 mA											
Switching output Q_N and Q_P	PNP, NPN											
Signal voltage HIGH	V _S - < 2.9 V, V _S											
Signal voltage LOW ⁵⁾	0 V, ≤ 1.5 V											
Output current I _A max.	100 mA											
Operating mode	Light- or dark-switching ⁶⁾											
Control input L/D	0 V or open, light-switching											
Control input L/D	V _S , dark-switching											
Response time max. ⁷⁾	Typ. 200 μs											
Max. switching frequency ⁸⁾	2500/s											
Laser class	2 (IEC 825-1; EN 60825-1:97)											
VDE protection class⁹⁾	□											
Enclosure rating	IP 67, IP 69K											
Circuit protection¹⁰⁾	A, B, C											
Ambient temperature T_A	Operation - 10 °C...+ 50 °C											
	Storage - 25 °C...+ 75 °C											
Connection type	M12 plug, 5-pin											
Weight	Approx. 130 g with plug											

1) Average service life 50,000 h at T_A = + 25 °C
2) Limit values

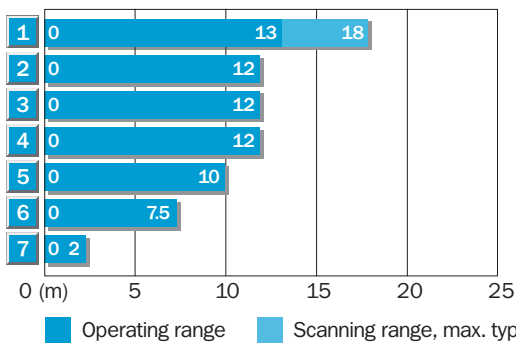
3) May not exceed or fall short of V_S tolerances
4) Without load
5) At T_A = + 25 °C and 100 mA output current

6) Reversible via control input L/D
7) Signal transit time with resistive load
8) At light/dark ratio 1:1
9) Reference voltage 50 V DC

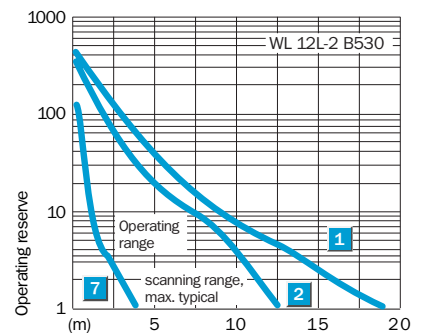
10) A = V_S connections reverse-polarity protected
B = Outputs protected against short-circuiting
C = Interference pulse suppression

Scanning range and operating reserve

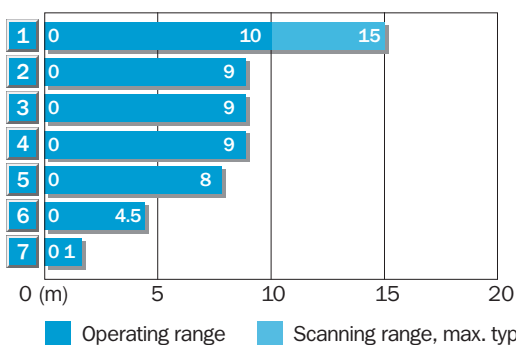
WL 12L-2 B530



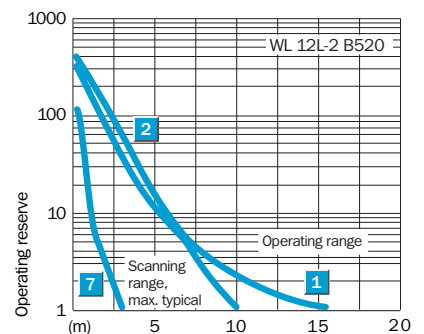
Reflector type	Operating range
1 PL 80 A	0 ... 13.0 m
2 PL 50 A	0 ... 12.0 m
3 PL 40 A	0 ... 12.0 m
4 P 250	0 ... 12.0 m
5 PL 30 A	0 ... 10.0 m
6 PL 20 A	0 ... 7.5 m
7 Reflective tape «Diamond Grade»	0 ... 2.0 m



WL 12L-2 B520



Reflector type	Operating range
1 PL 80 A	0 ... 10.0 m
2 PL 50 A	0 ... 9.0 m
3 PL 40 A	0 ... 9.0 m
4 P 250	0 ... 9.0 m
5 PL 30 A	0 ... 8.0 m
6 PL 20 A	0 ... 4.5 m
7 Reflective tape «Diamond Grade»	0 ... 1.0 m



Order information

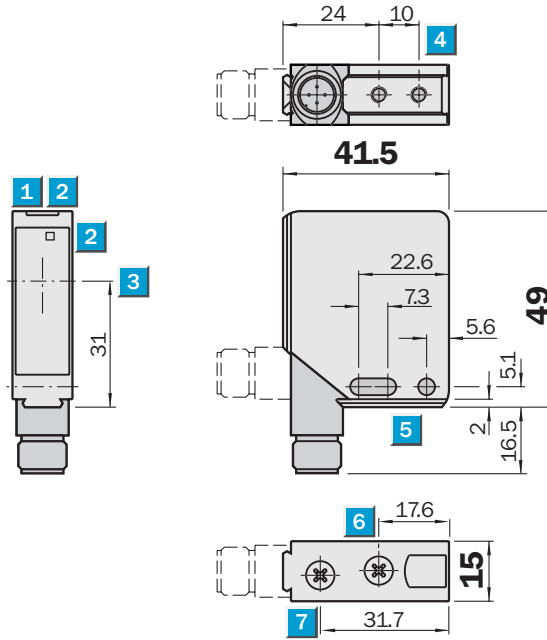
Type	Order no.
WL 12L-2B 530	1 018 252
WL 12L-2B 520	1 018 253

Scanning range
80 m

Through-beam photoelectric switches

- Laser class 2
- Adjustable focus and sensitivity
- 90° rotatable M12 plug

Dimensional drawing

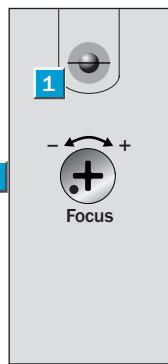


Adjustments possible

WS/WE 12L-2P430	WS/WE 12L-2P410
WS/WE 12L-2N430	WS/WE 12L-2N410

Sender WS

Receiver WE



- 1 LED operating indicator (WS above only)
- 2 LED reception indicator (WE)
- 3 Centre of optical axis
- 4 M4 threaded mounting hole – 4 mm deep
- 5 Mounting drill hole \varnothing 4.2 mm
- 6 Focal adjustment (WS)
- 7 Sensitivity adjustment (WE)



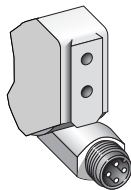
CE CDRH



ECOLAB®

Connection type

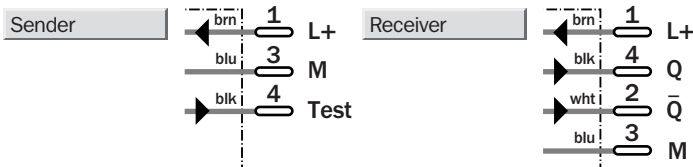
WS/WE 12L-2P430	WS/WE 12L-2P410
WS/WE 12L-2N430	WS/WE 12L-2N410



4-pin, M12

See chapter Accessories

- Cables and connectors
- Mounting systems



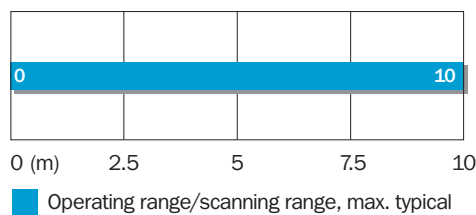
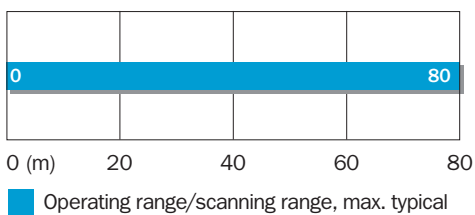
Technical data		WS/WE 12L-2	P430	N430	P410	N410						
Scanning range, max. typical	80 m											
	10 m											
Recommended operating range	80 m											
	10 m											
Focus adjustable	300 mm...∞											
	Fixed parallel light beam											
Light source¹⁾	Laser 650 nm, pulsed											
Light spot diameter	150 mm at 60 m											
	1.0 mm at 1 m											
Supply voltage V_S	10...30 V DC ²⁾											
Ripple³⁾	$\leq 5 V_{SS}$											
Current consumption⁴⁾	WS ≤ 45 mA, WE ≤ 15 mA											
Switching outputs Q and \bar{Q}	PNP											
	NPN											
Signal voltage HIGH	$V_S - < 2.9 V, V_S$											
Signal voltage LOW⁵⁾	Approx. 0 V, $\leq 1.5 V$											
Output current I_A max.	100 mA											
Response time max.⁶⁾	Typ. 200 μ s											
Max. switching frequency⁷⁾	2500/s											
Input "TE" system test	V_S or open: sender active											
	0 V: sender inactive											
VDE protection class⁸⁾	<input type="checkbox"/>											
Laser class	2 (IEC 825-1; EN 60825-1:97)											
Enclosure rating	IP 67, IP 69K											
Circuit protection⁹⁾	A, B, C											
Ambient temperature T_A	Operation $-10^\circ\text{C} \dots +50^\circ\text{C}$											
	Storage $-25^\circ\text{C} \dots +75^\circ\text{C}$											
Connection type	M12 plug, 4-pin											
Weight (WS + WE)	Approx. 260 g											

1) Average service life 50,000 h at $T_A = +25^\circ\text{C}$
 2) Limit values
 3) May not exceed or fall short of V_S tolerances

4) Without load
 5) At $T_A = +25^\circ\text{C}$ and 100 mA output current
 6) Signal transit time with resistive load
 7) At light/dark ratio 1:1

8) Reference voltage 50 V DC
 9) A = V_S connections reverse-polarity protected
 B = Outputs protected against short-circuiting
 C = Interference pulse suppression

Scanning range



Order information

Type	Order no.
WS/WE 12L-2P430	1 018 254
WS/WE 12L-2N430	1 018 255
WS/WE 12L-2P410	1 018 256
WS/WE 12L-2N410	1 018 257

