



WS/WE12L-2P410A03

W12

PHOTOELECTRIC SENSORS

SICK
Sensor Intelligence.



Illustration may differ



Ordering information

Type	part no.
WS/WE12L-2P410A03	1023059

Other models and accessories → www.sick.com/W12

Detailed technical data

Features

Functional principle		Through-beam photoelectric sensor
Sensing range max.		0 m ... 80 m
Emitted beam		
	Light source	Laser ¹⁾
	Type of light	Visible red light
	Light spot size (distance)	Ø 1 mm (2 m)
Key laser figures		
	Normative reference	EN 60825-1:2014, IEC 60825-1:2007
	Laser class	2 ^{2) 3)}
Key LED figures		
	Wave length	650 nm
Adjustment		None
Special features		American version
Special applications		Detecting small objects, Detection of objects moving at high speeds
Part number of individual components		2021726 WE12L-2P430 2026587 WS12L-2D410A03

¹⁾ Average service life: 50,000 h at T_U = +25 °C.
²⁾ Pulse length 4 µs, max. pulse power < 5,0 mW.
³⁾ Do not intentionally look into the laser beam. Never point the laser beam at people's eyes.

Safety-related parameters

MTTF_D	396 years
DC_{avg}	0 %
T_M (mission time)	10 years

Electronics

Supply voltage U_B	10 V DC ... 30 V DC ¹⁾
Ripple	< 5 V _{pp} ²⁾
Current consumption, sender	≤ 45 mA ³⁾
Current consumption, receiver	≤ 15 mA ³⁾
Protection class	III
Digital output	
Type	PNP
Signal voltage PNP HIGH/LOW	U _v - < 2.9 V, U _v V / 0 V ≤ 1.5 V
Signal voltage NPN HIGH/LOW	U _v - < 2.9 V, U _v V / 0 V ≤ 1.5 V
Output current I _{max.}	≤ 100 mA
Response time	≤ 200 μs ⁴⁾
Switching frequency	2,500 Hz ⁵⁾
Circuit protection	A ⁶⁾ C ⁷⁾ D ⁸⁾

¹⁾ Limit values when operated in short-circuit protected network: max. 8 A.

²⁾ May not fall below or exceed U_y tolerances.

³⁾ Without load.

⁴⁾ Signal transit time with resistive load.

⁵⁾ With light/dark ratio 1:1.

⁶⁾ A = V_S connections reverse-polarity protected.

⁷⁾ C = interference suppression.

⁸⁾ D = outputs overcurrent and short-circuit protected.

Mechanics

Housing	Rectangular
Dimensions (W x H x D)	15 mm x 49 mm x 41.5 mm
Connection	Male connector M12, 4-pin
Material	
Housing	Metal
Front screen	Plastic, PMMA
Weight	260 g

Ambient data

Enclosure rating	IP67 IP69K
Ambient operating temperature	-10 °C ... +50 °C
Ambient temperature, storage	-25 °C ... +75 °C

Certificates

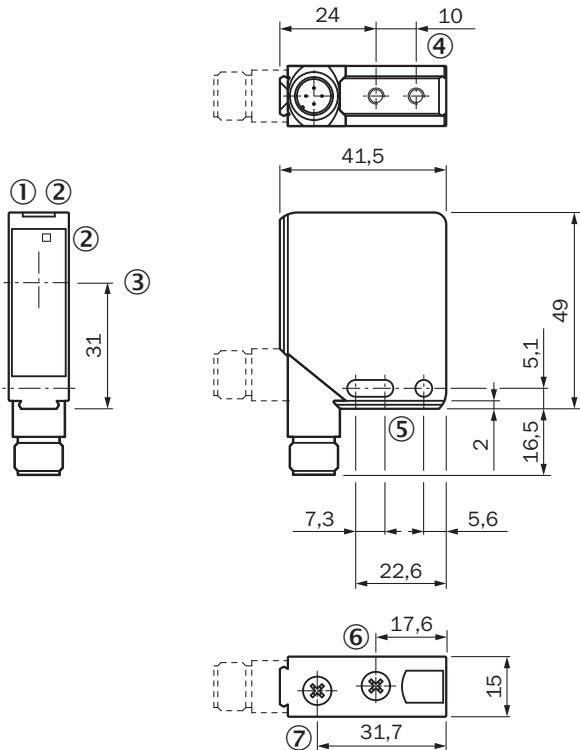
EU declaration of conformity	✓
UK declaration of conformity	✓
ACMA declaration of conformity	✓
Moroccan declaration of conformity	✓

China RoHS	✓
cULus certificate	✓
Laser safety (IEC 60825-1) certificate	✓

Classifications

ECLASS 5.0	27270901
ECLASS 5.1.4	27270901
ECLASS 6.0	27270901
ECLASS 6.2	27270901
ECLASS 7.0	27270901
ECLASS 8.0	27270901
ECLASS 8.1	27270901
ECLASS 9.0	27270901
ECLASS 10.0	27270901
ECLASS 11.0	27270901
ECLASS 12.0	27270901
ETIM 5.0	EC002716
ETIM 6.0	EC002716
ETIM 7.0	EC002716
ETIM 8.0	EC002716
UNSPSC 16.0901	39121528

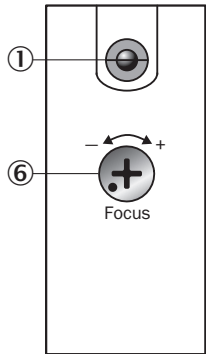
Dimensional drawing WL12L-2, WS/WE12L-2



Dimensions in mm (inch)

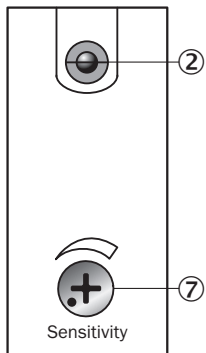
- ① Operating indicator, green
- ② LED reception indicator, yellow
- ③ Center of optical axis
- ④ M4 threaded mounting hole – 4 mm depth
- ⑤ Mounting hole, Ø 4.2 mm
- ⑥ Focal adjustment
- ⑦ sensitivity control

Adjustments WS/WE12L-2



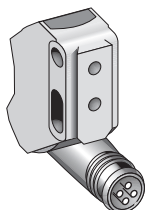
- ① status indicator (WS, top only)
- ⑥ Focal adjustment (WS)

Adjustments



- ② LED signal strength indicator (WE)
- ⑦ Sensitivity adjustment (WE)

Connection type



The diagram illustrates a 4-bit bus system with two components: ① sender and ② receiver. The bus lines are labeled BN, BU, BK, and BL. The receiver's outputs are labeled 1 (+ (L+)), 2 (\bar{Q}), 3 (- (M)), and 4 (Q). The timing shows the receiver's outputs following the sender's data signals.

Figure 1 is a semi-logarithmic plot showing the sensing range of a sensor as a function of distance. The y-axis is logarithmic, ranging from 10 to 10,000. The x-axis is linear, ranging from 0 to 80 meters (0 to 262.47 feet). A thick gray curve represents the sensing range, which starts at 10,000 at 0 meters and decreases rapidly, leveling off at approximately 300 meters. A horizontal line at approximately 300 meters is labeled "Sensing range, max. typical".

0 20 40 60 80






(65.62) (131.23) (196.85) (262.47)

Distance in m (feet)

■ Sensing range/sensing range typ. max.

Recommended accessories

Other models and accessories → www.sick.com/W12

	Brief description	Type	part no.
Mounting systems			
	<ul style="list-style-type: none"> Description: Mounting bracket, large Material: Stainless steel Details: Stainless steel Items supplied: Mounting hardware included Suitable for: W11-2, W12-3, W16 	BEF-WG-W12	2013942
	<ul style="list-style-type: none"> Description: Plate N11N for universal clamp bracket Material: Stainless steel Details: Stainless steel 1.4571 (sheet), Stainless steel 1.4408 (clamp) Items supplied: Universal clamp (5322627), mounting hardware Usable for: DeltaPac, Glare, WTD20E 	BEF-KHS-N11N	2071081
connectors and cables			
	<ul style="list-style-type: none"> Connection type head A: Female connector, M12, 4-pin, straight, A-coded Connection type head B: Flying leads Signal type: Sensor/actuator cable Cable: 5 m, 4-wire, PVC Description: Sensor/actuator cable, unshielded Application: Zones with chemicals, Uncontaminated zones 	YF2A14-050VB3XLEAX	2096235
	<ul style="list-style-type: none"> Connection type head A: Male connector, M12, 4-pin, straight, A-coded Description: Unshielded Connection systems: Screw-type terminals Permitted cross-section: ≤ 0.75 mm² 	STE-1204-G	6009932
	<ul style="list-style-type: none"> Connection type head A: Female connector, M12, 4-pin, straight, A-coded Connection type head B: Flying leads Signal type: Sensor/actuator cable Cable: 5 m, 4-wire, PUR, halogen-free Description: Sensor/actuator cable, unshielded Application: Uncontaminated zones, Zones with oils and lubricants, Robot, Drag chain operation 	YF2A14-050UB3XLEAX	2095608

SICK AT A GLANCE

SICK is one of the leading manufacturers of intelligent sensors and sensor solutions for industrial applications. A unique range of products and services creates the perfect basis for controlling processes securely and efficiently, protecting individuals from accidents and preventing damage to the environment.

We have extensive experience in a wide range of industries and understand their processes and requirements. With intelligent sensors, we can deliver exactly what our customers need. In application centers in Europe, Asia and North America, system solutions are tested and optimized in accordance with customer specifications. All this makes us a reliable supplier and development partner.

Comprehensive services complete our offering: SICK LifeTime Services provide support throughout the machine life cycle and ensure safety and productivity.

For us, that is “Sensor Intelligence.”

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