Data sheet

WL9LGC-3P2452A70

W9

PHOTOELECTRIC SENSORS

SICK
Sensor Intelligence.

Illustration may differ

Ordering information

Type	part no.
WL9LGC-3P2452A70	1080954

Other models and accessories → www.sick.com/W9

Detailed technical data

Features

Functional principle	Photoelectric retro-reflective sensor
Functional principle detail	Without reflector minimum distance (autocollimation/coaxial optics)
Dimensions (W x H x D)	12.2 mm x 52.2 mm x 23.6 mm
Housing design (light emission)	Rectangular
Mounting hole	M3
Sensing range max.	0 m ... 3.5 m [1] [2]
Sensing range	0 m ... 2.2 m [1] [2]
Type of light	Visible red light
Light source	Laser [3]
Light spot size (distance)	Ø 0.4 mm (60 mm)
Wave length	650 nm
Laser class	1 (IEC 60825-1 / CDRH 21 CFR 1040.10 & 1040.11)
Adjustment	IO-Link, Single teach-in button

[1] Reflective tape REF-AC1000.
[2] To ensure reliable operation, we recommend using REF-AC1000 reflective tape or reflective-tap reflectors such as P41F, PLV14-A, PLH25-M12, or PLH25-D12. Reflectors with large-scale triple structures must only be used if deemed suitable for the application.
[3] Average service life: 50,000 h at T_U = +25 °C.

Pin 2 configuration	External input, Teach-in input, Sender off input, Detection output, logic output, Device contamination alarm output
AutoAdapt	✓
Special applications	Detecting small objects, Detecting transparent objects

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Mechanics/electronics

Supply voltage U_B	10 V DC ... 30 V DC [1]
Ripple	< 5 V_{pp} [2]
Current consumption	30 mA [3]
Switching output	PNP [4] [5]
Output function	Complementary
Switching mode	Light/dark switching [4]
Output current $I_{max.}$	≤ 100 mA
Response time	≤ 0.5 ms [6]
Response time Q/ on Pin 2	300 µs ... 450 µs [6] [7]
Switching frequency	1,000 Hz [8]
Switching frequency Q / to pin 2	≤ 1,000 Hz [9]
Connection type	Male connector M12, 4-pin
Circuit protection	A [10] B [11] C [12]
Protection class	III
Weight	13 g
Polarisation filter	✓
Housing material	Plastic, VISTAL®
Optics material	Plastic, PMMA
Enclosure rating	IP66

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

[2] May not fall below or exceed U_V tolerances.

[3] Without load.

[4] Q = light switching.

[5] Pin 4: This switching output must not be connected to another output.

[6] Signal transit time with resistive load.

[7] Valid for Q \ on Pin2, if configured with software.

[8] With light/dark ratio 1:1.

[9] With light / dark ratio 1:1, valid for Q \ on Pin2, if configured with software.

[10] A = V_S connections reverse-polarity protected.

[11] B = inputs and output reverse-polarity protected.

[12] C = interference suppression.

[13] As of T_a = 50 °C, a max. supply voltage $V_{max.}$ = 24 V and a max. load current $I_{max.}$ = 50 mA is permitted.

[14] Operation below Tu −10 °C is possible if the sensor is already switched on at Tu > −10 °C, then cools down, and the supply voltage is subsequently not switched off. Switching on below Tu −10 °C is not permissible.

	IP67 IP69K
Ambient operating temperature	–10 °C ... +50 °C
Ambient operating temperature extended	–30 °C ... +55 °C [13) 14)]
Ambient temperature, storage	–30 °C ... +70 °C
UL File No.	NRKH.E181493
Repeatability Q/ on Pin 2:	150 µs [7)]

[1)] Limit values when operated in short-circuit protected network: max. 8 A.
[2)] May not fall below or exceed U_V tolerances.
[3)] Without load.
[4)] Q = light switching.
[5)] Pin 4: This switching output must not be connected to another output.
[6)] Signal transit time with resistive load.
[7)] Valid for Q \ on Pin2, if configured with software.
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[14)] Operation below Tu –10 °C is possible if the sensor is already switched on at Tu > –10 °C, then cools down, and the supply voltage is subsequently not switched off. Switching on below Tu –10 °C is not permissible.

Safety-related parameters

$MTTF_D$	562 years (EN ISO 13849-1) [1)]
DC_{avg}	0 %
T_M (mission time)	10 years

[1)] Mode of calculation: Parts-Count-calculation.

Communication interface

Communication interface	IO-Link V1.1
Communication Interface detail	COM2 (38,4 kBaud)
Cycle time	2.3 ms
Process data length	16 Bit
Process data structure	Bit 0 = switching signal Q_{L1} Bit 1 = switching signal Q_{L2} Bit 2 ... 15 = measuring value
VendorID	26
DeviceID HEX	0x800118
DeviceID DEC	8388888

Smart Task

Smart Task name	Time measurement + debouncing
Logic function	Direct WINDOW
Timer function	Deactivated

[1)] SIO Direct: sensor operation in standard I/O mode without IO-Link communication and without using internal sensor logic or time parameters (set to "direct"/"deactivated").
[2)] SIO Logic: Sensor operation in standard I/O mode without IO-Link communication. Sensor-internal logic or timing parameters plus Automation Functions used.
[3)] IOL: Sensor operation with full IO-Link communication and usage of logic, timing and Automation Function parameters.

	Switch-on delay Off delay ON and OFF delay Impulse (one shot)
Inverter	Yes
Time measurement accuracy	SIO Direct: --- [1] SIO Logic: - 0,7 ... + 0,7 ms ± 0,5 % of time measurement value [2] IOL: - 0.9 ... + 0.9 ms ± 0.5% of the time measurement [3]
Time measurement accuracy (e.g. accuracy for time measurement value = 1 s)	SIO Direct: --- [1] SIO Logic: - 5,7 ... + 5,7 ms [2] IOL: - 5,9 ... + 5,9 ms [3]
Resolution time measuring value	1 ms
Min. Time between two process events (switches)	SIO Direct: --- SIO Logic: 450 µs IOL: 500 µs
Debounce time max.	SIO Direct: --- SIO Logic: 30.000 ms IOL: 30.000 ms
Switching signal	
Switching signal Q_{L1}	Output type (dependant on the adjusted threshold)
Switching signal Q_{L2}	Output type (dependant on the adjusted threshold)
Measuring value	Time measurement value

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Diagnosis

Device status	Yes
Quality of teach	Yes
Quality of run	Yes, Contamination display

Certificates

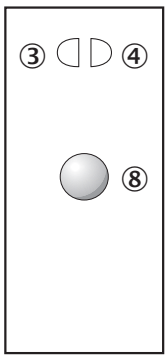
EU declaration of conformity	✓
UK declaration of conformity	✓
ACMA declaration of conformity	✓
Moroccan declaration of conformity	✓
China-RoHS	✓
ECOLAB certificate	✓
cULus certificate	✓
IO-Link	✓
Laser safety (IEC 60825-1) certificate	✓

Classifications

ECLASS 5.0	27270902
ECLASS 5.1.4	27270902
ECLASS 6.0	27270902
ECLASS 6.2	27270902

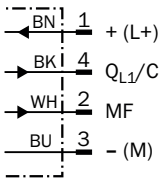
ECLASS 7.0	27270902
ECLASS 8.0	27270902
ECLASS 8.1	27270902
ECLASS 9.0	27270902
ECLASS 10.0	27270902
ECLASS 11.0	27270902
ECLASS 12.0	27270902
ETIM 5.0	EC002717
ETIM 6.0	EC002717
ETIM 7.0	EC002717
ETIM 8.0	EC002717
UNSPSC 16.0901	39121528

Adjustments Single teach-in button

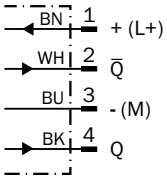


③ LED indicator yellow: Status of received light beam
④ LED indicator green: power on
⑧ Teach-in button

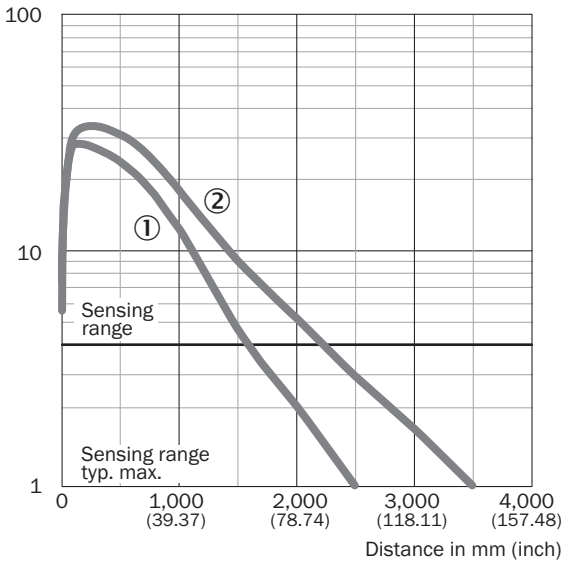
Connection diagram Cd-367



Connection diagram Cd-083

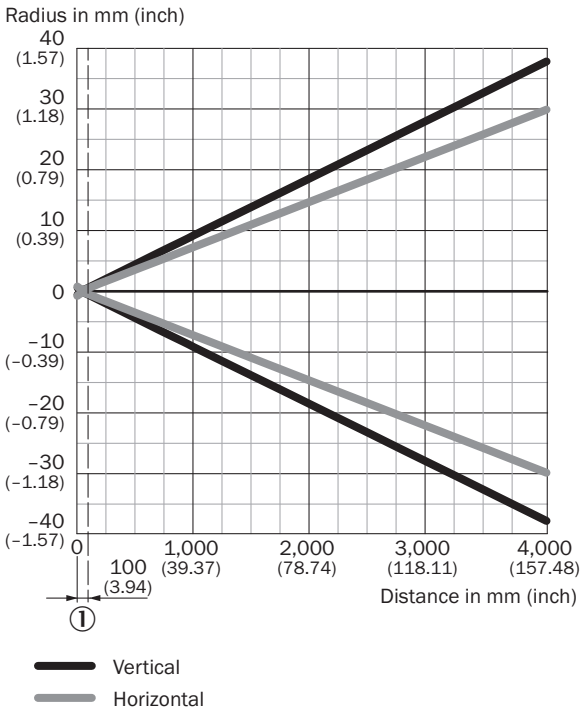


Characteristic curve



① Reflector PLV14-A / PLH25-M12 / PLH25-D12
② Reflector P41F / reflective tape REF-AC1000

Light spot size

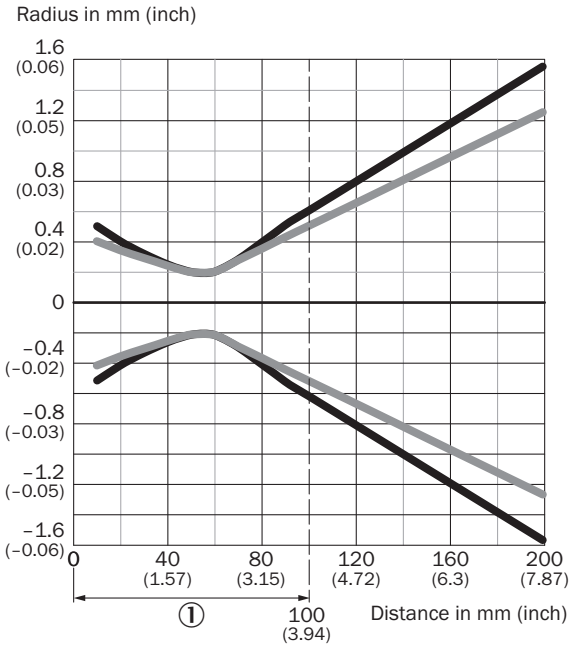


① Minimum distance between sensor and reflector

Dimensions in mm (inch)

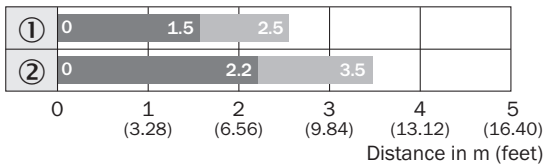
Sensing range	Vertical	Horizontal
60 mm (2.36)	0.4 (0.02)	0.4 (0.02)
200 mm (7.87)	3.2 (0.13)	2.4 (0.09)
2,000 mm (78,74)	40 (1.57)	30 (0.18)
3,500 mm (137.80)	60 (2.36)	50 (1.97)

Light spot size (detailed view)



① Minimum distance between sensor and reflector

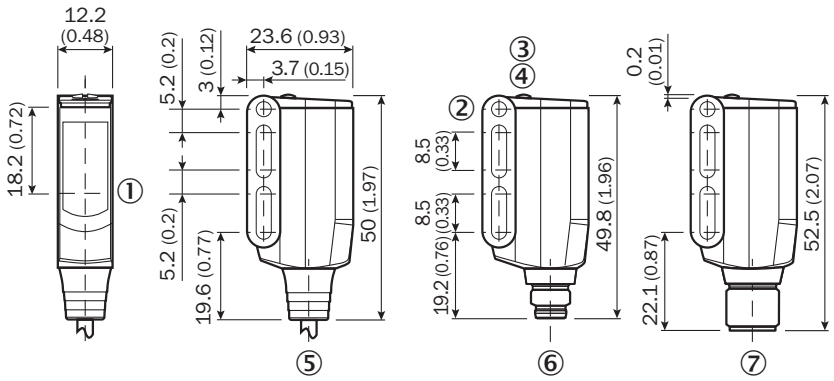
Sensing range diagram



Sensing range Sensing range max.

① Reflector PLV14-A / PLH25-M12 / PLH25-D12
② Reflector P41F / reflective tape REF-AC1000

Dimensional drawing WL9L-3



Dimensions in mm (inch)
① Sender and receiver optical axis center
② Mounting hole M3 (Ø 3.1 mm)
③ LED indicator yellow: Status of received light beam
④ LED indicator green: power on
⑤ Connecting cable or connecting cable with connector
⑥ male connector M8, 4-pin
⑦ male connector M12, 4-pin

Recommended accessories

Other models and accessories ➜ www.sick.com/W9

	Brief description	Type	part no.
reflectors and optics			
	• **Description:** Suitable for laser sensors, self-adhesive, cut, see alignment note • **Dimensions:** 56.3 mm 56.3 mm • **Ambient operating temperature:** –20 °C ... +60 °C	REF-AC1000-56	4063030

	Brief description	Type	part no.
connectors and cables			
	• **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
	• **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

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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