

High-performance detection of transparent objects in metal housing



PTFE ★ IP 69K ★ IO-Link ★

★ SIRIC®

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CE □ C-UL US LISTED

SIRIC® optical ASIC invented by SICK

PinPoint by SICK

ECOLAB IO-Link

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Product description

The W12G photoelectric sensors provide reliable detection of transparent objects. Everything from PET bottles to thin, transparent films is detected. The W12G features a rugged metal housing with

high electromagnetic compatibility, high immunity to chemical and thermal conditions, and excellent resistance to high pressure cleaning.

At a glance

- Rugged die-cast zinc housing with optional Teflon® coating
- Reliable detection of transparent objects
- Precise autocollimation optics
- Robust sensors for industrial use
- Precise PinPoint LED
- Dovetail mounting – mounting holes and oblong holes
- Highly visible status LEDs
- Flexible sensor settings, monitoring, advanced diagnostics, and visualization thanks to IO-Link

Your benefits

- Reliable detection of transparent objects – from PET bottles to transparent film – due to superior ASIC (application-specific integrated circuit) technology
- High immunity to ambient conditions reduces false readings
- Red PinPoint LED provides quick and easy alignment of sensor
- Precise switching characteristics, fast response times and high performance ensure superior reliability and productivity in nearly every application type
- Withstands mechanical, thermal, chemical and electromagnetic factors, providing increased industrial reliability
- Flexible mounting and installation due to rotatable connector and versatile mounting options
- IO-Link provides easy data access from the PLC
- Quick and easy configuration

→ www.mysick.com/en/W12G

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



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Detailed technical data

Features

Sensor principle	Photoelectric retro-reflective sensor
Detection principle	Autocollimation
Dimensions (W x H x D)	15.6 mm x 48.5 mm x 42 mm
Housing design (light emission)	Rectangular
Sensing range max. ¹⁾	0 m ... 4 m
Type of light	Visible red light/Infrared light (depending on type)
Light source	LED ²⁾ /PinPoint LED ²⁾ (depending on type)
Angle of dispersion	Approx. 1.5 °
Wave length	
Visible red light	640 nm/660 nm (depending on type)
Infrared light	850 nm
Adjustment	Potentiometer, 11 turns/Single teach-in button ³⁾ ⁴⁾ (depending on type)
Continuous threshold adaption	-/✓ (depending on type)
Special feature	Detection of transparent objects

¹⁾ PL80A.

²⁾ Average service life of 100,000 h at T_A = +25 °C.

³⁾ Mode I, 10 % attenuation.

⁴⁾ Mode II, 18 % attenuation.

Mechanics/electronics

Supply voltage ¹⁾	10 V DC ... 30 V DC
Ripple ²⁾	≤ 5 V _{pp}
Power consumption	≤ 40 mA ³⁾
Output type	PNP/NPN/PNP, NPN (depending on type)
Output function	Complementary
Switching mode	Light switching/Dark-switching/Light/dark-switching (depending on type)
Switching mode selector	Selectable via L/D control wire
Signal voltage PNP HIGH/LOW	> U _v - 3 V/ca. 0 V/approx. V _s - 2.5 V/0 V (depending on type)
Signal voltage NPN HIGH/LOW	Approx. U _v / _{<} 3 V/approx. V _s / _{<} 2.5 V (depending on type)
Output current I_{max.}	100 mA
Response time	≤ 330 μs ⁴⁾
Switching frequency ⁵⁾	1,500 Hz
Connection type	Male connector, M12
Circuit protection	
With automatic threshold adaption (AutoAdapt)	A ⁶⁾ , B ⁹⁾ , C ⁷⁾ , D ⁸⁾
Without automatic threshold adaption (AutoAdapt)	A ⁶⁾ , C ⁷⁾ , D ⁸⁾
Protection class	II
Weight	120 g
Polarisation filter	✓
IO-Link	✓
Housing material	Zinc diecast
Optics material	PMMA, PMMA, PTFE-coated (depending on type)
Enclosure rating	IP 66, IP 67, IP 69K
Operating mode	Mode I, 10 % attenuation, Mode II, 18 % attenuation
Plausibility output, stable detection	Approx. 0 V/approx. V _s (depending on type)

Plausibility output, unstable detection	$V_S - 2.5 \text{ V}$ /approx. 1.5 V (depending on type)
Ambient operating temperature	-40 °C ... +60 °C (depending on type)
Ambient storage temperature	-40 °C ... +75 °C

¹⁾ Limit values, operation in short-circuit protected network max. 8 A.

²⁾ May not exceed or fall short of V_S 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.

⁹⁾ B = inputs and output reverse-polarity protected.

Ordering information

Other models available at www.mysick.com/en/W12G

WL12G, metal

- Housing material: metal

Type of light	Sensing range max. ¹⁾	Light spot size (distance)	Continuous threshold adaption	Output type	Switching mode	Adjustment	Connection	Connection diagram	Model name	Part no.
Visible red light	0 m ... 4 m	Ø 25 mm (1.5 m)	-	PNP	Light switching Dark-switching	Potentiometer, 11 turns	Connector M12, 4-pin	Cd-087	WL12G-302431	1041457
				PNP, NPN	Light switching Dark-switching	Potentiometer, 11 turns	Connector M12, 5-pin	Cd-144	WL12G-3B2531	1041456
			✓	PNP	Light switching Dark-switching	Single teach-in button ^{2) 3)}	Connector M12, 5-pin	Cd-146	WL12G-3P2572	1053535
				NPN	Light switching Dark-switching	Single teach-in button ^{2) 3)}	Connector M12, 5-pin	Cd-146	WL12G-3N2572	1053530
Infrared light	0 m ... 4 m	Ø 100 mm (3 m)	✓	PNP	Light switching Dark-switching	Single teach-in button ^{2) 3)}	Connector M12, 5-pin	Cd-233	WL12G-3P2582	1053536

¹⁾ PL80A.

²⁾ Mode I, 10 % attenuation.

³⁾ Mode II, 18 % attenuation.

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WL12G, PTFE

- **Housing material:** PTFE
- **Type of light:** visible red light

Sensing range max. ¹⁾	Light spot size (distance)	Continuous threshold adaption	Output type	Switching mode	Adjustment ^{2) 3)}	Connection	Connection diagram	Model name	Part no.
0 m ... 4 m	Ø 25 mm (1.5 m)	✓	PNP	Light/dark-switching	Single teach-in button	Connector M12, 5-pin	Cd-146	WL12G-3P2572T01	1053546

¹⁾ PL80A.

²⁾ Mode I, 10 % attenuation.

³⁾ Mode II, 18 % attenuation.

WL12G, metal alarm output

- **Housing material:** metal
- **Type of light:** visible red light

Sensing range max. ¹⁾	Light spot size (distance)	Continuous threshold adaption	Output type	Switching mode	Adjustment	Connection	Connection diagram	Model name	Part no.
0 m ... 4 m	Ø 25 mm (1.5 m)	✓	PNP	Light/dark-switching	Single teach-in button ^{2) 3)}	Connector M12, 5-pin	Cd-147	WL12G-3V2572	1053537
			NPN	Light/dark-switching	Single teach-in button ^{2) 3)}	Connector M12, 5-pin	Cd-147	WL12G-3W2572	1053538

¹⁾ PL80A.

²⁾ Mode I, 10 % attenuation.

³⁾ Mode II, 18 % attenuation.



WL12G, metal IO-Link

- **Housing material:** metal
- **Type of light:** visible red light
- **Output type:** PNP
- **Switching mode:** light/dark-switching
- **Adjustment:** single teach-in button (Mode I, 10 % attenuation.) (Mode II, 18 % attenuation.)
- **Continuous threshold adaption:** ✓

Sensing range max. ¹⁾	Light spot size (distance)	IO-Link	Advanced functions	Connection	Connection diagram	Model name	Part no.
0 m ... 4 m	Ø 25 mm (1.5 m)	Standard functions	-	Connector M12, 4-pin	Cd-098	WL12GC-3P2472	1054087
			Timer, False Tripping Suppression (Debouncing)			WL12GC-3P2472A70	1067778
		Standard functions, advanced functions	High-Speed Counter, False Tripping Suppression (Debouncing)			WL12GC-3P2472A71	1067779
			Time Stamp, False Tripping Suppression (Debouncing)			WL12GC-3P2472A91	1061063

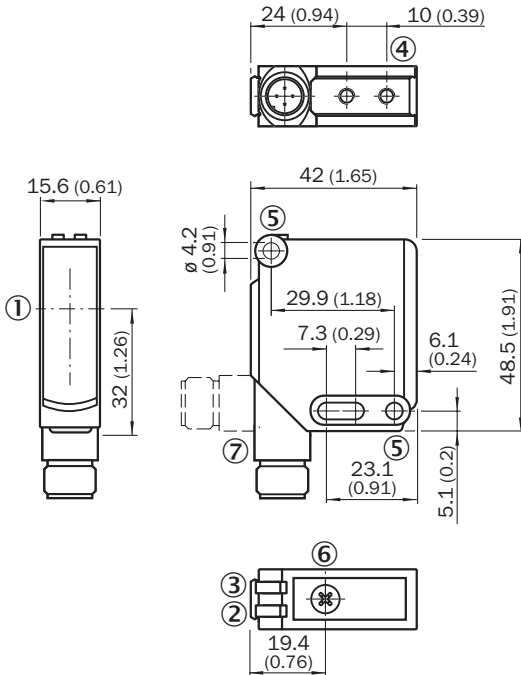
¹⁾ PL80A.

²⁾ Mode I, 10 % attenuation.

³⁾ Mode II, 18 % attenuation.

Dimensional drawings

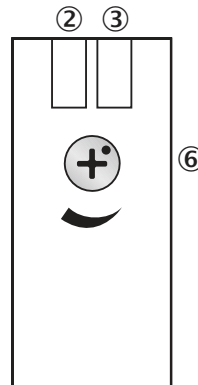
Dimensions in mm (inch)



- ① Optical axis
- ② LED indicator yellow: Light received
- ③ Green LED indicator: supply voltage active
- ④ M4 threaded mounting hole, 4 mm deep
- ⑤ Mounting hole, \varnothing 4.2 mm
- ⑥ Sensitivity adjustment: poti
- ⑦ Connection

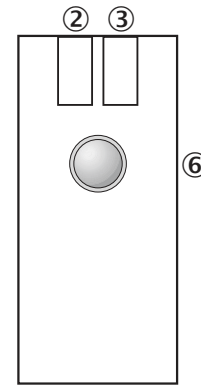
Adjustments

Potentiometer



- ② LED indicator yellow: Light received
- ③ Green LED indicator: supply voltage active
- ⑥ Sensitivity adjustment: poti

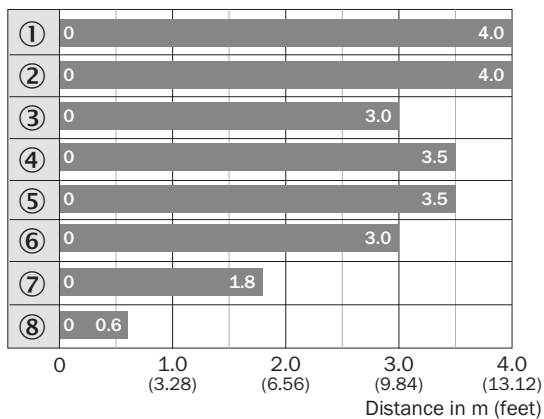
Singel teach-in button



- ② LED indicator yellow: Light received
- ③ LED indicator, green: power on, teach-in mode I, LED indicator, blue: teach-in mode II
- ⑥ Single teach-in button, Function 1: teach-in sensitivity on reflector, Function 2: change operation/teach-in mode



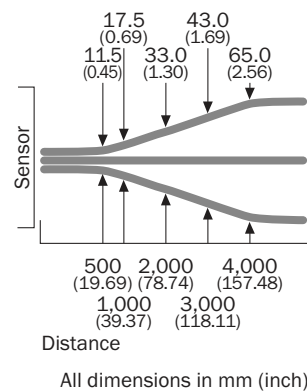
Bar diagrams



■ Sensing range max.

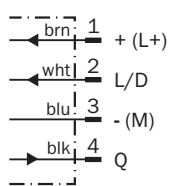
- ① PL80A
- ② C110A
- ③ P250F
- ④ PL50A
- ⑤ PL40A
- ⑥ PL30A
- ⑦ PL20A
- ⑧ REF-IRF-56

Light spot diameter

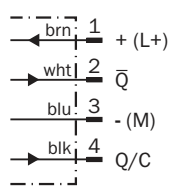


Connection diagram

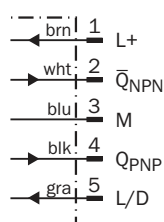
Cd-087



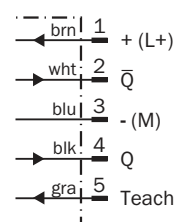
Cd-098



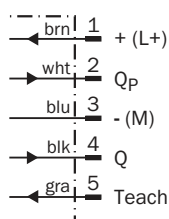
Cd-144



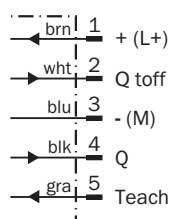
Cd-146



Cd-147




Cd-233



Recommended accessories

Mounting brackets/plates





Mounting brackets

Figure	Material	Description	Model name	Part no.
	Stainless steel	Mounting bracket, large	BEF-WG-W12	2013942
		Mounting bracket, small	BEF-WK-W12	2012938





Plug connectors and cables

Connecting cable (female connector-open)

- Cable material: PVC
- Connector material: TPU

Figure	Connection type head A	Connection type head B	Connecting cable	Enclosure rating	Model name	Part no.
	Female connector, M12, 4-pin, straight	Cable, open conductor heads	2 m, 4-wire	IP 67	DOL-1204-G02M	6009382
			5 m, 4-wire	IP 67	DOL-1204-G05M	6009866
	Female connector, M12, 4-pin, angled	Cable, open conductor heads	2 m, 4-wire	IP 67	DOL-1204-W02M	6009383
			5 m, 4-wire	IP 67	DOL-1204-W05M	6009867
	Female connector, M12, 5-pin, straight	Cable, open conductor heads	5 m, 5-wire	IP 67	DOL-1205-G05M	6009868
	Female connector, M12, 5-pin, angled	Cable, open conductor heads	2 m, 5-wire	IP 67	DOL-1205-W02M	6008900
			5 m, 5-wire	IP 67	DOL-1205-W05M	6009869

Female connector (ready to assemble)

Figure	Connection type head A	Connection type head B	Connector material	Enclosure rating	Model name	Part no.
	Female connector, M12, 4-pin, straight	Screw-type terminals	PBT	IP 67	DOS-1204-G	6007302
	Female connector, M12, 4-pin, angled	Screw-type terminals	PBT	IP 67	DOS-1204-W	6007303
	Female connector, M12, 5-pin, straight	Screw-type terminals	PBT	IP 67	DOS-1205-G	6009719
	Female connector, M12, 5-pin, angled	Screw-type terminals	PBT	IP 67	DOS-1205-W	6009720



Universal bar clamp systems

Figure	Material	Description	Model name	Part no.
	Zinc plated steel (sheet), Diecast zinc (clamp)	Plate N02 for universal clamp bracket	BEF-KHS-N02	2051608
		Plate N03 for universal clamp bracket	BEF-KHS-N03	2051609
		Plate N04 for universal clamp bracket	BEF-KHS-N04	2051610

G**Device protection (mechanical)****Protective housing/tubes**



Figure	Material	Description	Model name	Part no.
	Zinc plated steel (protective housing), Diecast zinc (clamp)	Protective housing for universal clamp	BEF-SG-W12-3	2045175

Terminal and alignment brackets**Terminal brackets**








Figure	Material	Description	Model name	Part no.
	Steel, zinc coated	Double clamp bracket for dovetail mounting	BEF-DKH-W12	2013947
		Clamping block for dovetail mounting	BEF-KH-W12	2013285

Reflectors

Angular


Figure	Material	Description	Model name	Part no.
	Plastic	Chemically resistant, screw connection, 47 mm x 47 mm	P250 CHEM	5321097
	PMMA/ABS	Rectangular, screw connection, 80 mm x 80 mm	PL80A	1003865

Fine triple reflectors




Figure	Material	Description	Model name	Part no.
	PMMA/ABS	Fine triple, screw connection, suitable for laser sensors, 47 mm x 47 mm	P250F	5308843
		Fine triple, screw connection, suitable for laser sensors, 18 mm x 18 mm	PL10F	5311210
	Plastic	Fine triple, chemically resistant, screw connection, 18 mm x 18 mm	PL10F CHEM	5321636
	PMMA/ABS	Fine triple, screw connection, suitable for laser sensors, 38 mm x 16 mm	PL20F	5308844
	Plastic	Fine triple, chemically resistant, screw connection, suitable for laser sensors, 16 mm x 38 mm	PL20F-CHEM	5326089
	PMMA/ABS	Fine triple, screw connection, suitable for laser sensors, 56 mm x 28 mm	PL30F	5326523
		Fine triple, screw connection, suitable for laser sensors, 76 mm x 45 mm	PL81-1F	5325060



Reflective tape

Figure	Description	Model name	Part no.
	Suitable for laser sensors, self-adhesive, cut, see alignment note, 56.3 mm x 56.3 mm	REF-AC1000-56	4063030

Special reflectors

Figure	Material	Description	Model name	Part no.
	Stainless steel V4A (1.4404, 316L)	Stainless steel reflector, hygienic design, chemically resistant, Enclosure rating IP 69K, D12-adaptor shaft, 25 mm x 25 mm	PLH25-D12	2063404
		Stainless steel reflector, hygienic design, chemically resistant, Enclosure rating IP 69K, M12-adaptor thread, 25 mm x 25 mm	PLH25-M12	2063403
		Stainless steel reflector, wash-down design, chemically resistant, Enclosure rating IP 69K, screw connection, 14 mm x 14 mm	PLV14-A	2063405

→ For additional accessories, please see page L-861