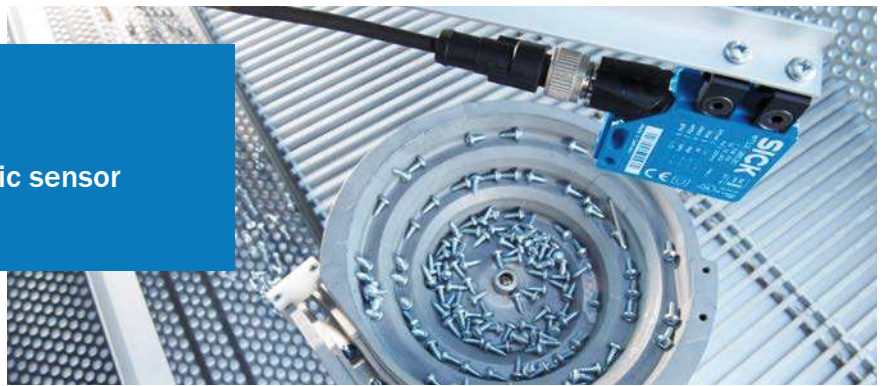


High-performance photoelectric sensor family with laser optics



★ PTFE	★ IP 69K	★ ≥ 2 kHz	★ Laser
SIRIC®			
Light	m/s		



Additional information

Detailed technical dataG-511
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Product description

The W12L-2 series of photoelectric sensors features laser technology that is optimally designed for individual applications. These sensors provide reliable ob-

ject detection, fast response times and are enclosed in a rugged metal housing, which is ideal for use in all types of industrial applications.

At a glance

- Best-in-class retro-reflective laser performance in a metal housing
- Teflon® coating available
- Precise autocollimation optics
- Adjustable focus on retro-reflective sensors
- High switching frequency of 2.5 kHz
- Connection via cable or rotatable connector
- Mounting options with through holes, blind holes, oblong holes and dovetail
- Laser protection class 1 or 2

Your benefits

- Reliable object detection of small objects due to superior ASIC (application-specific integrated circuit) technology combined with innovative laser technology
- Red light laser technology provides quick and easy alignment of sensor
- Rugged metal housing (available with Teflon® coating) withstands harsh environments
- Laser protection class 1 or 2 for eye safety
- Resistance to optical interference reduces false readings and downtime
- Rotatable connector provides easy installation

→ www.mysick.com/en/W12-2_Laser

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

	WT12L-2	WL12L-2	WS/WE12L-2
Sensor principle	Photoelectric proximity sensor	Photoelectric retro-reflective sensor	Through-beam photoelectric sensor
Detection principle	Background suppression	Autocollimation	–
Dimensions (W x H x D)	15 mm x 49 mm x 41.5 mm		
Housing design (light emission)	Rectangular		
Sensing range max.	20 mm ... 50 mm ¹⁾ 30 mm ... 200 mm ²⁾ (depending on type)	0 m ... 18 m ³⁾ (depending on type)	0 m ... 80 m (depending on type)
Focus	45 mm ... 100 mm (depending on type)	–	
Type of light	Visible red light		
Light source	Laser ⁴⁾		Laser ⁴⁾ /Laser ⁴⁾ ⁵⁾ (depending on type)
Wave length	650 nm		
Laser class	1/2 (depending on type)		
Adjustment	Potentiometer		

¹⁾ Object with 6 % reflectance (referred to standard white, DIN 5033)

²⁾ Objects to be sensed with 18 % reflectivity (based on DIN 5033 white standard)

³⁾ PL80A.

⁴⁾ Average service life 50,000 h at T_A = +25 °C.

⁵⁾ Parallel light beam.

Mechanics/electronics

	WT12L-2	WL12L-2	WS/WE12L-2
Supply voltage ¹⁾	10 V DC ... 30 V DC		
Ripple ²⁾	≤ 5 V _{pp}		
Power consumption ³⁾	≤ 55 mA		–
Power consumption, sender	–		≤ 45 mA ³⁾
Power consumption, receiver	–		≤ 15 mA ³⁾
Output type	PNP, NPN		PNP/NPN (depending on type)
Switching mode	Light switching, Dark-switching		–
Switching mode selector	Selectable via L/D control wire, 0 V or not connected, light-switching, U _v , dark-switching		Selectable via L/D control wire
Signal voltage PNP HIGH/LOW	U _v – < 2 V, U _v /0 V, ≤ 1.5 V	U _v – < 2.9 V, U _v V/0 V ≤ 1.5 V	
Signal voltage NPN HIGH/LOW	U _v – < 2 V, U _v /0 V, ≤ 1.5 V	U _v – < 2.9 V, U _v V/0 V ≤ 1.5 V	
Output current I_{max.}	100 mA		
Response time	≤ 200 μs ⁴⁾	≤ 500 μs ⁴⁾ /≤ 200 μs ⁴⁾ (depending on type)	
	1.000 Hz ⁵⁾	–	
	2.500 Hz ⁵⁾	≤ 200 μs	
Connection type	Male connector, M12	Male connector, M12 Cable, 2 m (depending on type)	Male connector, M12
Circuit protection	A ⁶⁾ , C ⁷⁾ , D ⁸⁾		
Protection class	II		
Weight	130 g		260 g

	WT12L-2	WL12L-2	WS/WE12L-2
Polarisation filter	-	✓	-
Enclosure rating	IP 67/IP 69K		
Ambient operating temperature	-10 °C ... +50 °C		
Ambient storage temperature	-25 °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.

Ordering information

Other models available at www.mysick.com/en/W12-2_Laser

WT12L-2, fixed sensing range, 6% remission

- **Adjustment:** potentiometer
- **Switching mode:** light-switching, dark-switching

Laser class	Sensing range max. ¹⁾	Switching frequency	Focus	Light spot size (distance)	Output type	Connection	Connection diagram	Model name	Part no.
2	20 mm ... 50 mm	2,500 Hz	45 mm	Ø 0.1 mm (45 mm)	PNP, NPN	Connector M12, 5-pin	Cd-145	WT12L-2B510	1017959

¹⁾ Object with 6% reflectance (referred to standard white, DIN 5033)

WT12L-2

- **Adjustment:** potentiometer
- **Switching mode:** light-switching, dark-switching
- **Connection diagram:** cd-145

Laser class	Sensing range max. ¹⁾	Switching frequency	Focus	Light spot size (distance)	Output type	Connection	Housing material	Model name	Part no.
1	30 mm ... 200 mm	2,500 Hz	100 mm	Ø 0.2 mm (100 mm)	PNP, NPN	Connector M12, 5-pin	Metal	WT12L-2B551	1047958
2	30 mm ... 200 mm	2,500 Hz	45 mm	Ø 0.1 mm (45 mm)	PNP, NPN	Connector M12, 5-pin	Metal	WT12L-2B530	1018250
			80 mm	Ø 0.2 mm (80 mm)	PNP, NPN	Connector M12, 5-pin	Metal	WT12L-2B540	1018251
			100 mm	Ø 0.2 mm (100 mm)	PNP, NPN	Connector M12, 5-pin	Metal	WT12L-2B550	1017904
						Connector M12, 5-pin	PTFE	WT12L-2B550T01	1018582

¹⁾ Objects to be sensed with 18% reflectivity (based on DIN 5033 white standard)

WL12L-2

- **Adjustment:** potentiometer
- **Switching mode:** light-switching, dark-switching

Laser class	Sensing range max. ¹⁾	Switching frequency	Light spot size (distance)	Output type	Connection	Connection diagram	Model name	Part no.
1	0 m ... 18 m	1,500 Hz	Ø 0.8 mm (300 mm)	PNP, NPN	Connector M12, 5-pin	Cd-145	WL12L-2B531	1047959
2	0 m ... 18 m	2,500 Hz	Ø 0.8 mm (300 mm)	PNP, NPN	Connector M12, 5-pin	Cd-145	WL12L-2B520	1018253
				PNP, NPN	Cable, 4-wire 2 m	Cd-089	WL12L-2P130	1022041
				PNP, NPN	Connector M12, 5-pin	Cd-145	WL12L-2B530	1018252

¹⁾ PL80A.

WS/WE12L-2

- **Connection:** connector M12, 4-pin

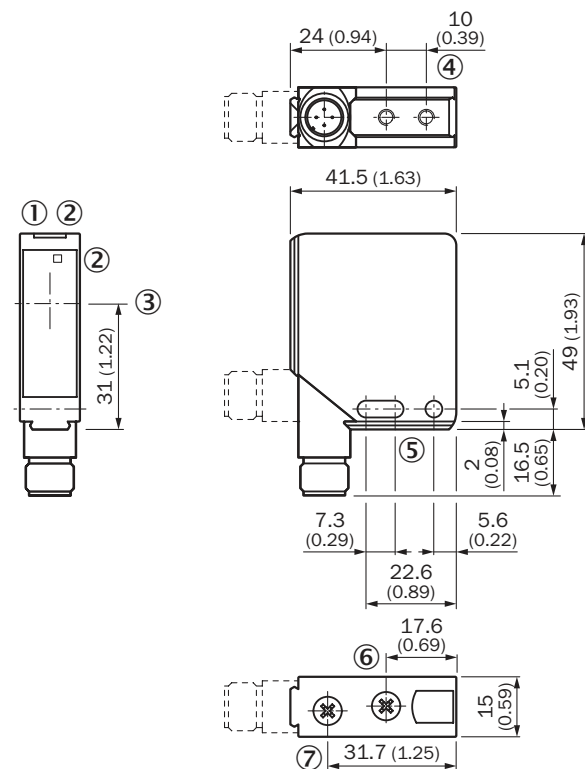
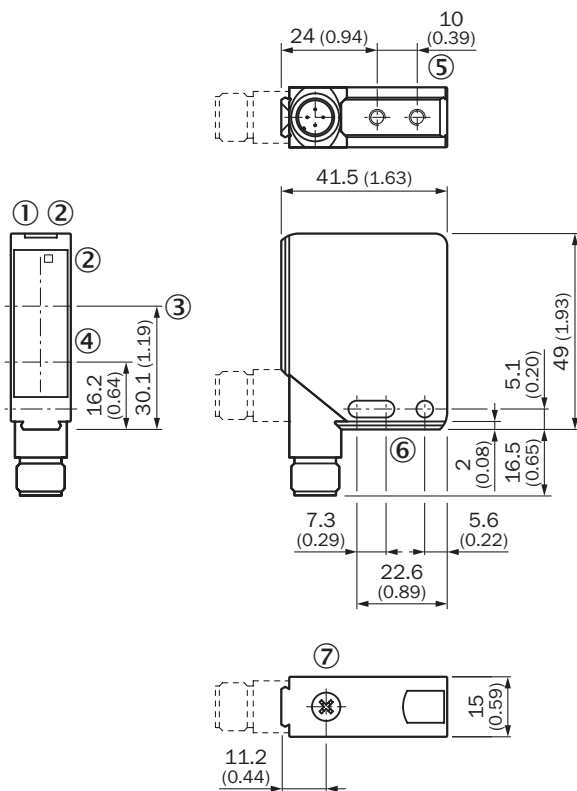
Laser class	Sensing range max.	Switching frequency	Light spot size (distance)	Output type	Adjustment	Connection diagram	Model name	Part no.
1	0 m ... 80 m	1,000 Hz	Ø 150 mm (60 m)	PNP	-	Cd-077	WS/WE12L-2P431	1047960
2	0 m ... 10 m	2,500 Hz	Ø 1 mm (1 m)	PNP	Potentiometer	Cd-077	WS/WE12L-2P410	1018256
				NPN	Potentiometer	Cd-077	WS/WE12L-2N410	1018257
	0 m ... 80 m	2,500 Hz	Ø 150 mm (60 m)	PNP	-	Cd-077	WS/WE12L-2P430	1018254
				NPN	-	Cd-077	WS/WE12L-2N430	1018255

Dimensional drawings

Dimensions in mm (inch)

WT12L-2

WL12L-2, WS/WE12L-2

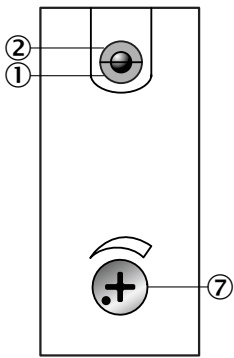


- ① Operating indicator, green
- ② LED reception indicator, yellow
- ③ Optical axis, receiver
- ④ Optical axis, sender
- ⑥ Mounting hole, Ø 4.2 mm
- ⑦ Sensing range adjustment

- ① Operating indicator, green
- ② LED reception indicator, yellow
- ③ Center of optical axis
- ⑤ Mounting hole, Ø 4.2 mm
- ⑥ Focal adjustment
- ⑦ Sensitivity adjustment

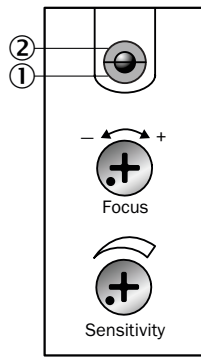
Adjustments

WT12L-2



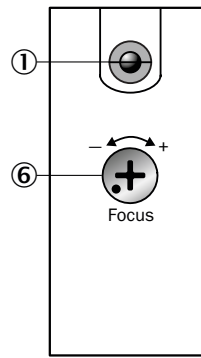
- ① Operating indicator, green
- ② LED reception indicator, yellow
- ⑦ Sensing range adjustment

WL12L-2



- ① Operating indicator, green
- ② LED reception indicator, yellow
- ③ Focal adjustment
- ⑦ Sensitivity adjustment

WS/WE12L-2

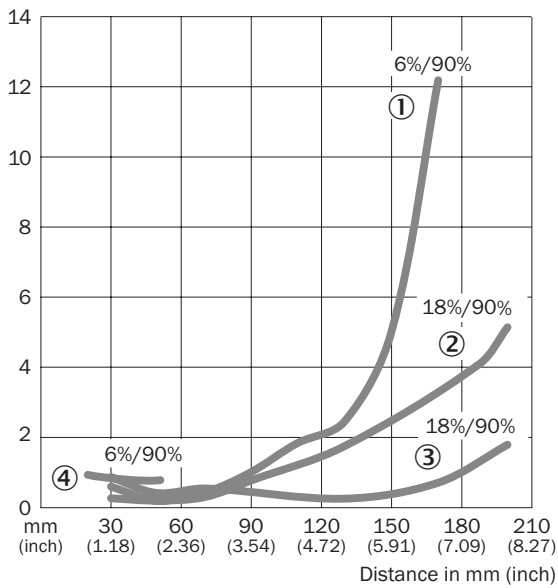


- ① Operating indicator (WS above only)
- ⑥ Focal adjustment (WS)

Characteristic curves

Black-white shift

WT12L-2

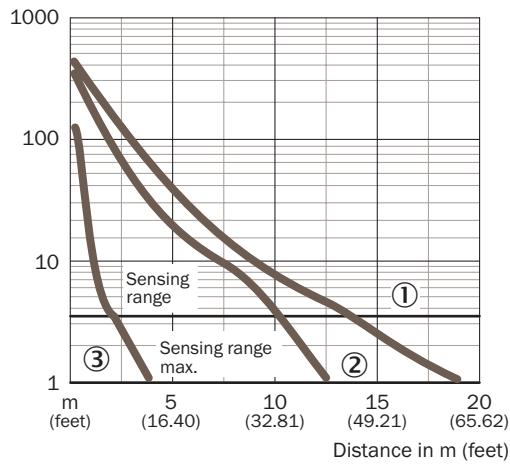


- ① Sensing range on black, 6 % remission
- ② Sensing range on gray, 18 % remission
- ③ Sensing range on white, 90 % remission
- ④ Sensing range on black, 6 % remission, fix

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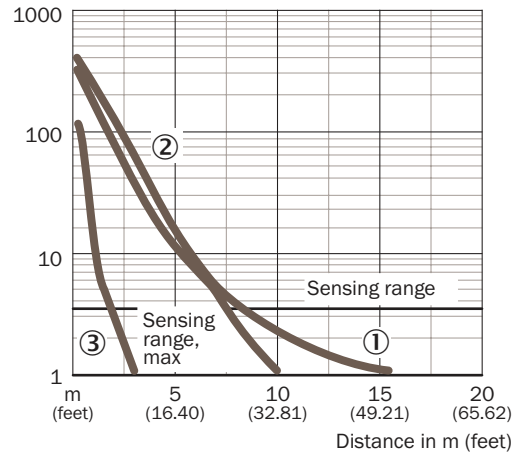
Operating reserve

WL12L-2, 18 m



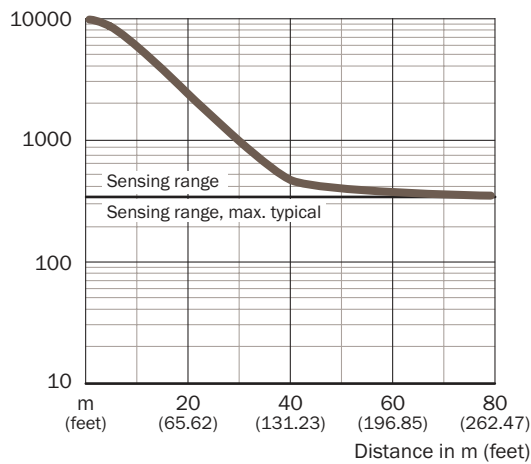
- ① PL80A
- ② PL50A
- ③ Reflective tape Diamond Grade

WL12L-2, 15 m

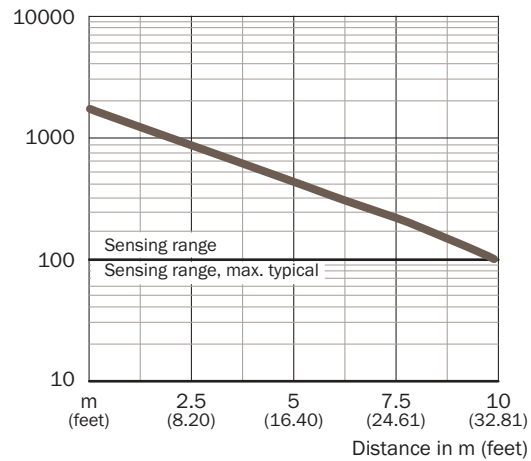


- ① PL80A
- ② PL50A
- ③ Reflective tape Diamond Grade

WS/WE12L-2, 80 m



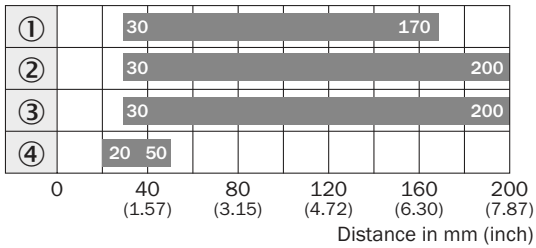
WS/WE12L-2, 10 m



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Bar diagrams

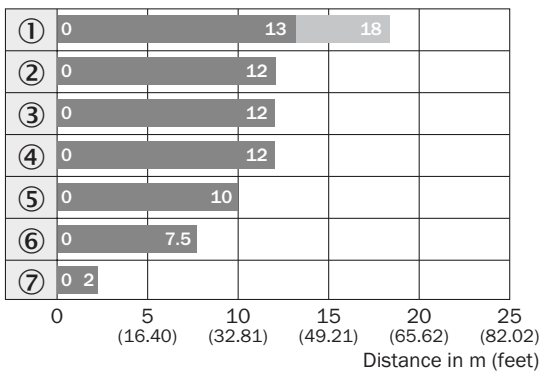
WT12L-2



■ Sensing range

- ① Sensing range on black, 6 % remission
- ② Sensing range on gray, 18 % remission
- ③ Sensing range on white, 90 % remission
- ④ Sensing range on black, 6 % remission, fix

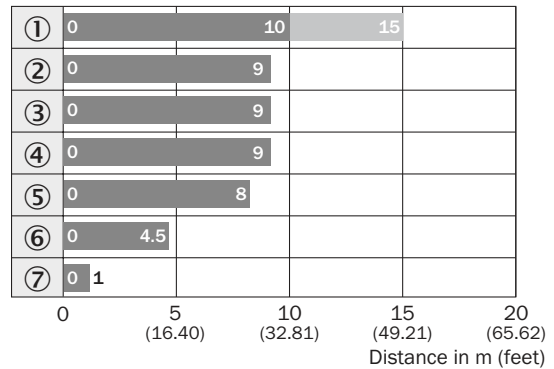
WL12L-2, 18 m



■ Sensing range ■ Sensing range typ. max.

- ① PL80A
- ② PL50A
- ③ PL40A
- ④ P250
- ⑤ PL30A
- ⑥ PL20A
- ⑦ Reflective tape Diamond Grade

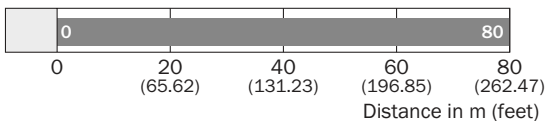
WL12L-2, 15 m



■ Sensing range ■ Sensing range typ. max.

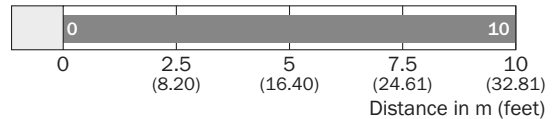
- ① PL80A
- ② PL50A
- ③ PL40A
- ④ P250
- ⑤ PL30A
- ⑥ PL20A
- ⑦ Reflective tape Diamond Grade

WS/WE12L-2, 80 m



■ Sensing range/sensing range typ. max.

WS/WE12L-2, 10 m

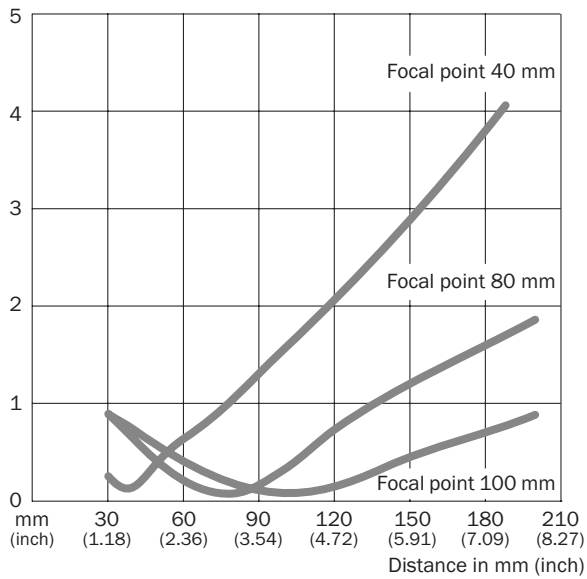


■ Sensing range/sensing range typ. max.



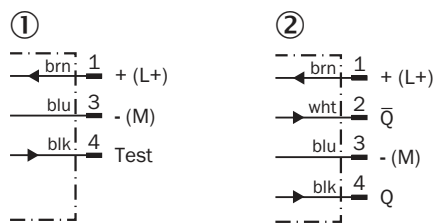
Light spot diameter

WT12L-2



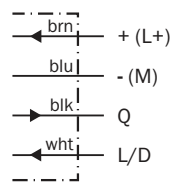
Connection diagram

Cd-077

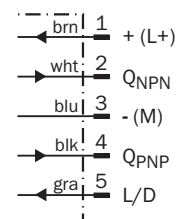


- ① Sender
- ② Receiver

Cd-089




Cd-145



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
			10 m, 4-wire	IP 67	DOL-1204-W10M	6010541
	Female connector, M12, 5-pin, straight	Cable, open conductor heads	2 m, 5-wire	IP 67	DOL-1205-G02M	6008899
			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

Terminal and alignment brackets

Terminal brackets


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

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

Reflectors


Angular

Figure	Material	Description	Model name	Part no.
	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, self-adhesive, suitable for laser sensors, Ø 23 mm	P25F-1	5319385
		Reflector with microprismatic reflex tape REF-AC1000, suitable for laser sensors, see alignment note, 23 mm x 23 mm	P41F	5315128
		Fine triple, screw connection, suitable for laser sensors, 18 mm x 18 mm	PL10F	5311210
		Fine triple, screw connection, suitable for laser sensors, 38 mm x 16 mm	PL20F	5308844
		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

→ For additional accessories, please see page L-861