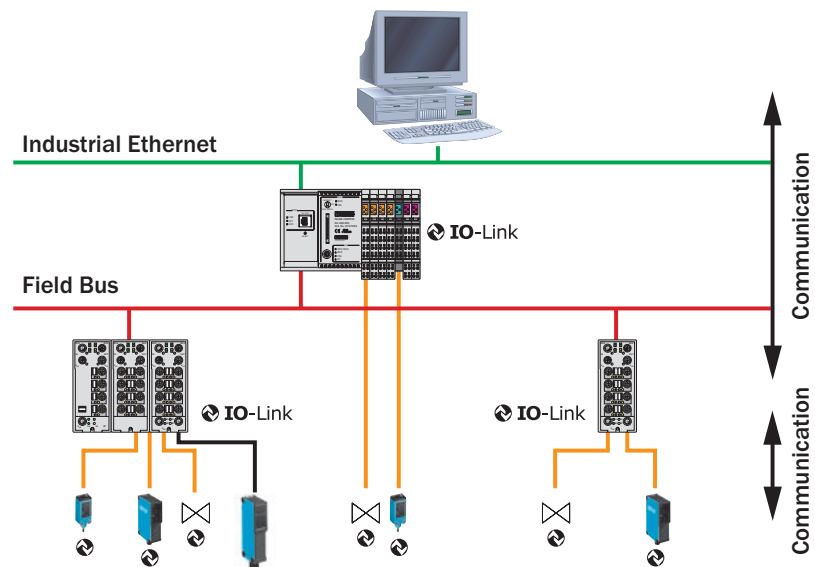


IO-Link: breakthrough in communication

In recent years, modern machines and production systems in factory and process automation have become increasingly more powerful. This was achieved by many innovations at all levels of automation technology including controller, field bus and sensor/actuator levels. Demands for easy commissioning, high availability and the ability to both parameterise and diagnose led to “intelligent” sensors and actuators. Yet for instance, a standard sensor with 3-wire connection (voltage supply and binary switching signal) is unable to transmit the scanning distance or the degree of contamination to the controller. A possible solution to this lies in additional wiring or mostly proprietary interfaces which predominantly require special software and interface cables. Moreover, today’s standard IOs are unidirectional, i.e. the controller cannot communicate any parameters to the sensor.

Overcoming the “last hurdle”

Different manufacturers in the automation market have joined forces and developed the “IO-Link” communication standard to overcome this “last hurdle” and be able to communicate continuously and bidirectionally with a standard sensor or actuator for the first time. It is now possible to adjust or reduce the maximum range (background suppression) using the controller or MMI (Man-Machine Interface). Manual adjustment of the potentiometer or Teach-in directly at the sensor is not required, leading to substantial time and cost savings during commissioning, sensor exchange and even conversions. Furthermore, IO-Link also provides communication schemes for complex sensors such as colour sensors or light grids.

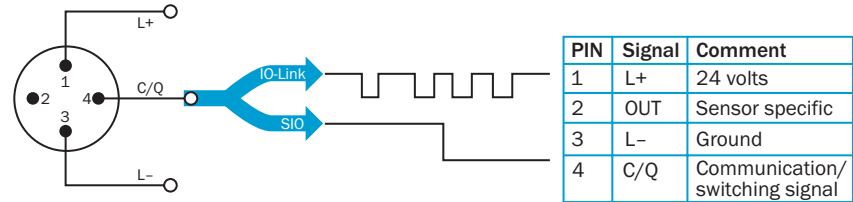


Compatible with today’s cabling

During the development of IO-Link, in order to safeguard investments, particular emphasis was placed from the outset on achieving greatest possible compatibility with existing technology. Consequently, IO-Link sensors and actuators can be connected to existing IO modules. Vice versa, a sensor not yet “fluent in IO-Link” can be connected to an IO-Link module. The wiring between sensor

Compatible with today's cabling

or actuator and IO module is maintained as a point-to-point connection. The connection is made via standard unshielded sensor cables already used today.



Communication as an “add-on” to the standard

Today's binary connection of sensors and actuators is designed to transmit as process data a single bit (i.e. the switching data). Beyond the real-time enabled switching output, IO-Link for instance facilitates serial parametrisation, diagnostic and process communication. For example, communication can occur during system start-up (communication mode COM1 with 4.8 kBaud) or continuously (communication mode COM2 with 38.4 kBaud). In both cases, the sensors can be switched to the known binary mode (SIO) at any time.

IO-Link – sensor communication of the future

An essential property of the IO-Link system is its full backward compatibility with existing binary switching standard sensors. This means 100% safeguarding of investments and enables stepwise migration to the IO-Link system. Intelligent sensors and actuators, as IO-Link slaves, increase the system performance through additional information such as diagnostics, error detection and analysis or messages regarding temperatures, contamination etc. A reduction in machine downtimes is the consequence of differential, standardised diagnostics, error location and comfortable system monitoring down to the lowest sensor level.

In the shape of uniform interfaces, the IO-Link system already reduces engineering expenditure and commissioning time. Through integrated parameterisation, the sensor data can now be held in a superordinate data pool, which reduces setup times, simplifies the exchange of sensors and makes monitoring for validation possible at all.

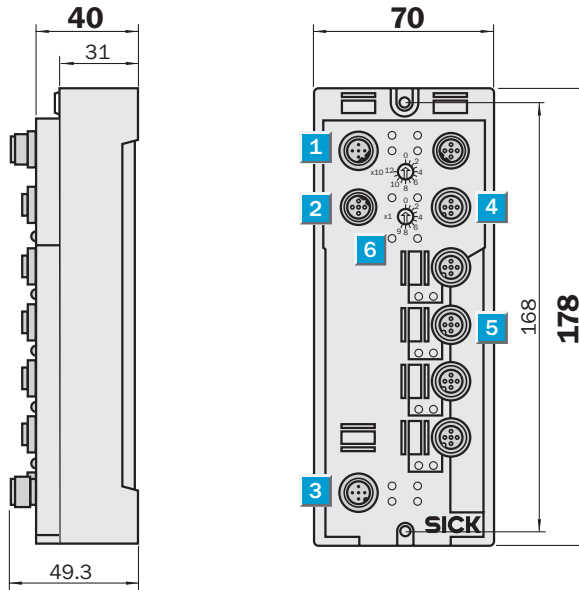
Installation costs are substantially reduced by combining binary and analogue sensor signals and the standard wiring. IO-Link is not a bus system and, consequently, requires neither special bus topologies nor addressing of the devices or sensors.

IO-Link is currently being prepared for standardisation. In future, IO-Link masters will be available as coupling modules, PLC/IPC expansion cards, mini controllers etc., and sensors and actuators will be available as IO-Link devices. Standard unshielded sensor cables, based on IEC 60947-5-2, are used as connecting cables.

IO-Link field module

- For field applications IP 67
- 4 ports for the connection of binary or IO-Link sensors/actuators
- Connection of 3- or 4-wire sensors

Dimensional drawing



- 1** Bus IN
- 2** Bus OUT
- 3** Power supply IN
- 4** Power supply OUT
- 5** Port 1 ... 4
- 6** Bus address rotary switch

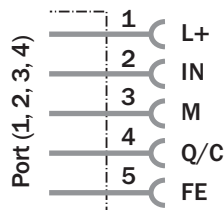


Connection type

IOLSHPB-P3104

Socket 1 - 4

Input 1 - 4



Technical specifications		IOLSHPB-	P3104											
Interface	PROFIBUS													
Connection type, interface	Connector M12 ¹⁾													
Data transmission rate	9.64 kBaud to 12 MBaud, Autobaud													
Address space occupation	1 to 127, adjustable													
Supply voltage V_s, module	DC 18 ... 30 V													
Power consumption	Module max. 100 mA Port 15 mA + sensor/actuator current													
Number of IO-Link ports	4													
Communication mode	COM1/COM2													
Connection type, IO-Link ports	Connector M12, 3/4-wire													
Switching input	PNP													
Sensor-/actor supply	Via module													
Supply voltage V_s, IO-Link ports	DC 18 ... 30 V													
Current loading	200 mA													
Reverse polarity protection	✓													
Wire-break protection	✓ ²⁾													
Short-circuit protection	✓ ²⁾													
Enclosure rating	IP 65, IP 67													
VDE protection class	⊠													
Ambient temperature operation	-25 °C ... +60 °C													
Ambient temperature storage	-25 °C ... +85 °C													
Weight	285 g													
Housing material	PBT													

¹⁾ B-coded

²⁾ Electronically secured

Ordering information

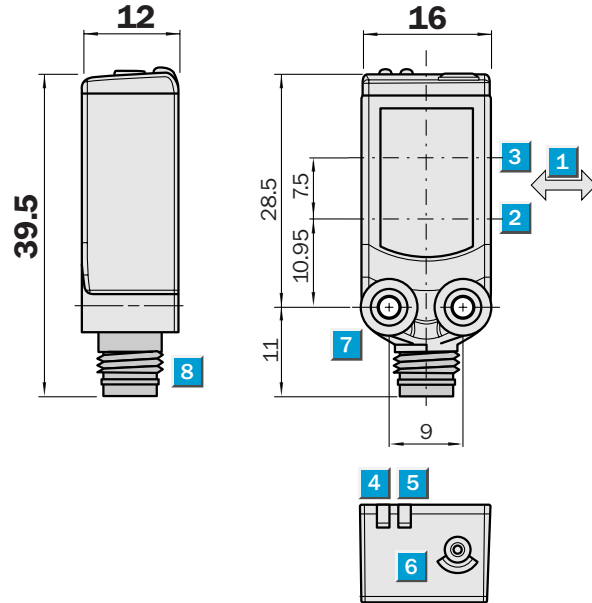
Type	Part Number
IOLSHPB-P3104	6 032 904

Scanning distance
4 ... 150 mm

Photoelectric proximity switch

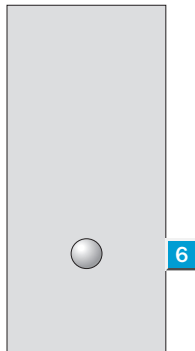
- Object detection almost irrespective of colour and background consistency
- Reliable operation if devices are installed opposite each other
- Commissioning through simple Teach-in function or IO-Link
- Parameters and diagnostics via IO-Link

Dimensional drawing



Adjustments possible

WTB4C-3P3464

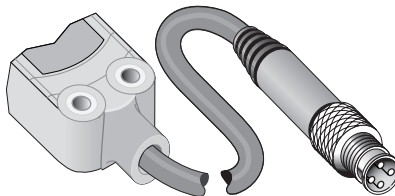


- 1 Standard direction of the material being scanned
- 2 Optical axis, sender
- 3 Optical axis, receiver
- 4 LED indicator yellow, status of received light beam
- 5 LED indicator green, power on
- 6 Teach button
- 7 Mounting hole M3
- 8 Connector

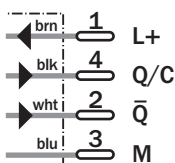


Connection type

WTB4C-3P3464



M12, 4-pin



Accessories
Connector, M12, 4-pin
Mounting systems

Technical specifications		WTB4C-3	P3464											
Scanning distance typ. max.	4 ... 150 mm													
Operating distance	15 ... 150 mm													
Adjustment of operating distance	Teach-in: single-teach button Teach-in: via IO-Link													
Communication mode	COM2													
Light source, light type	Pin Point LED, red light, 660 nm ¹⁾													
Light spot diameter	7 mm at 50 mm distance													
Supply voltage V_s	DC 18 ... 30 V ²⁾													
Ripple	≤ 5 V _{SS} ³⁾													
Power consumption	≤ 30 mA ⁴⁾													
Switching outputs	PNP, Q/C PNP, not Q													
Switching mode	Light-switching ⁵⁾													
Output current I _a max	< 100 mA													
Response time	< 0.65 ms ⁶⁾													
Switching frequency	1,000 Hz ⁷⁾													
Connection type	Cable with plug, M12, 4-pin, PVC, 100 mm ⁸⁾													
VDE protection class	⊕													
Circuit protection	V _s connections reverse-polarity protected / All outputs short-circuit protected / Interference suppression													
Enclosure rating	IP 66, IP 67													
Ambient temperature operation	-40 °C ... +60 °C													
Ambient temperature storage	-40 °C ... +75 °C													
Weight	Ca. 20 g													
Housing material	Bayblend, PMMA													

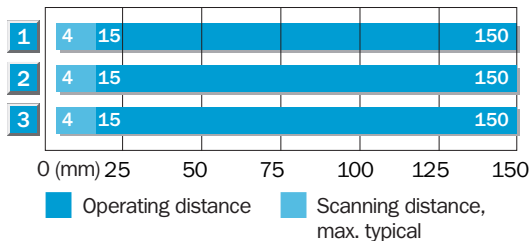
¹⁾ Average service life 100,000 h at T_a = +25 °C
²⁾ Limit values

³⁾ May not exceed or fall short of V_s tolerances
⁴⁾ Without load

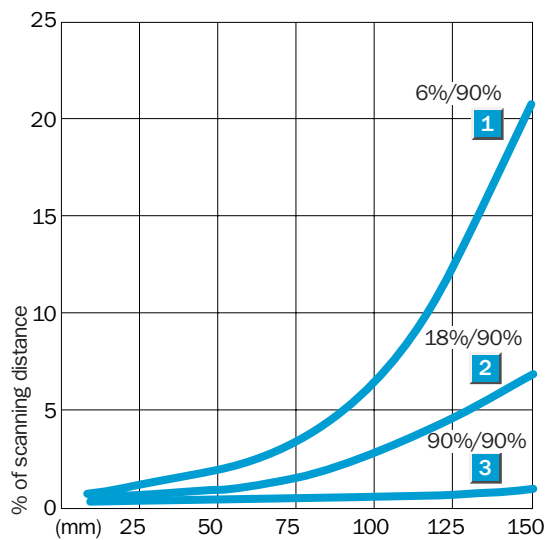
⁵⁾ Parametrisable via IO-Link
⁶⁾ Signal transit time with resistive load in switching mode. Different values possible

in COM2 mode.
⁷⁾ With light/dark ratio 1:1 in switching mode. Different values possible in COM2 mode.
⁸⁾ Do not bend below 0 °C

Scanning distance



- 1 Scanning range on black, 6 % remission
- 2 Scanning range on grey, 18 % remission
- 3 Scanning range on white, 90 % remission



Ordering information

Type	Part Number
WTB4C-3P3464	1 040 119

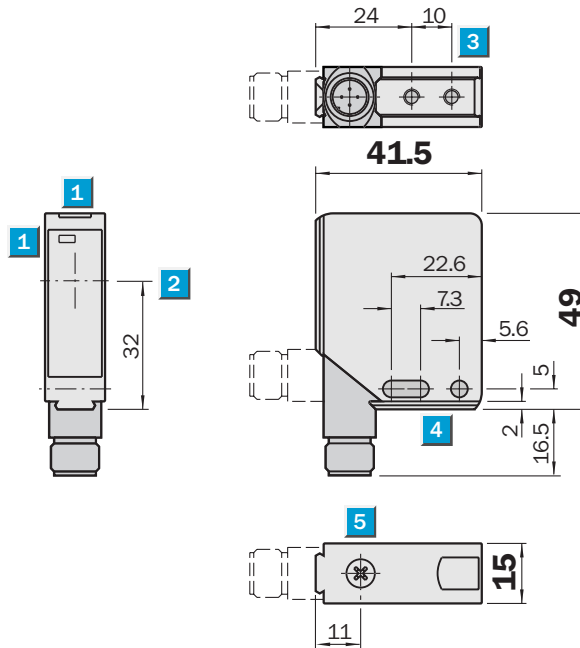
Scanning range
0 ... 3 m

Photoelectric reflex switch

- Reliable detection of transparent objects
- Innovative microprocessor technology allows continuous adaption of the switching threshold on contamination
- Operating range can be preselected via rotary switch, external cable or IO-Link
- Parameters and diagnostics via IO-Link

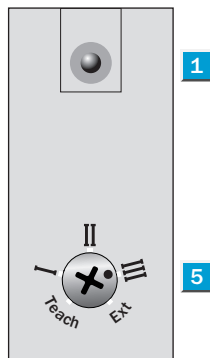


Dimensional drawing



Adjustments possible

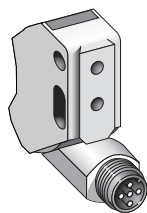
WL12GC-P2434



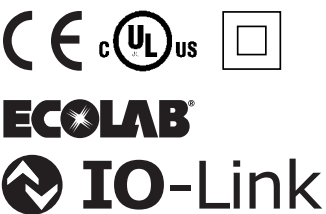
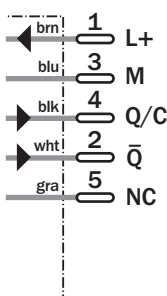
- 1 LED signal strength indicator
- 2 Centre of optical axis
- 3 M4 threaded mounting hole - 4 mm deep
- 4 Mounting holes \varnothing 4.2 mm
- 5 Function selector

Connection type

WL12GC-P2434



M12, 5-pin



Accessories
Connector, M12, 5-pin
Mounting systems
Reflectors

Technical specifications		WL12GC-	P2434										
Scanning range typ. max.	0 ... 3 m												
Scanning range, recommended	0 ... 2.7 m												
Relating to	Reflector PL80A												
Sensitivity adjustment	Switch Teach-in: via IO-Link												
Communication mode	COM2												
Light source, light type	LED, red light ¹⁾												
Light spot diameter	Ca. 8 x 13 mm at 200 mm distance												
Polarisation filter	✓												
Supply voltage V _s	DC 18 ... 30 V ²⁾												
Ripple	≤ 5 V _{SS} ³⁾												
Power consumption	≤ 65 mA ⁴⁾												
Switching outputs	PNP, Q/C PNP, not Q												
Switching mode	Light-switching												
Output current I _a max	100 mA												
Response time	< 0.75 ms ⁵⁾												
Switching frequency	650 Hz ⁶⁾												
Connection type	Connector, M12, 5-pin												
VDE protection class	□ ⁷⁾												
Circuit protection	V _s connections reverse-polarity protected / All outputs short-circuit protected / Interference suppression												
Enclosure rating	IP 67, IP 69K												
Ambient temperature operation	-25 °C ... +60 °C												
Ambient temperature storage	-40 °C ... +75 °C												
Weight	120 g												
Housing material	Zinc die-cast, PMMA ⁸⁾												

1) Average service life 100,000 h at T_a = +25 °C
 2) Limit values
 3) May not exceed or fall short of

V_s tolerances
 4) Without load
 5) Signal transit time with resistive load in switching mode. Different values possible

in COM2 mode.
 6) With light/dark ratio 1:1 in switching mode. Different values possible in COM2 mode.
 7) Reference voltage 50 V DC

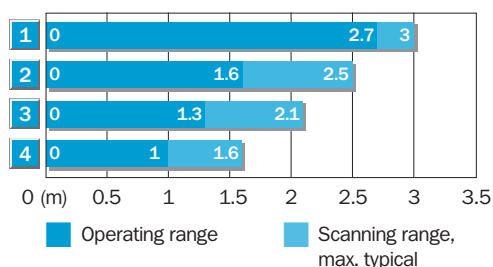
8) Teflon-coated housing available on request

Operating range setting **Set via rotary switch on device or via ET cable (+V_s to ET)**

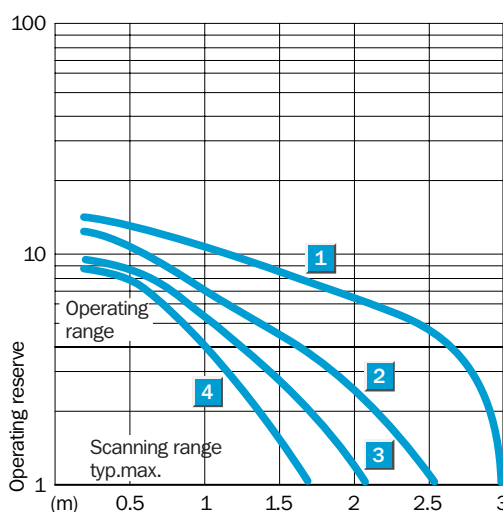
Mode I : 50 ms *	Mode II : 150 ms *	Mode III : 250 ms *
Switches at signal attenuation > 10%	Switches at signal attenuation > 18%	Switches at signal attenuation > 40%
Clean PET bottles	Clear-glass bottles	Coloured glass or non-transparent objects

* Pulse duration via ET (control cable), duration set via rotary switch approx. 2 s

Scanning range and operating reserve



Reflector type	Operating range
1 PL 80 A	0 ... 2.7 m
2 PL 40 A	0 ... 1.6 m
3 PL 30 A	0 ... 1.3 m
4 PL 20 A	0 ... 1.0 m



Ordering information	
Type	Part Number
WL12GC-P2434	1 029 868

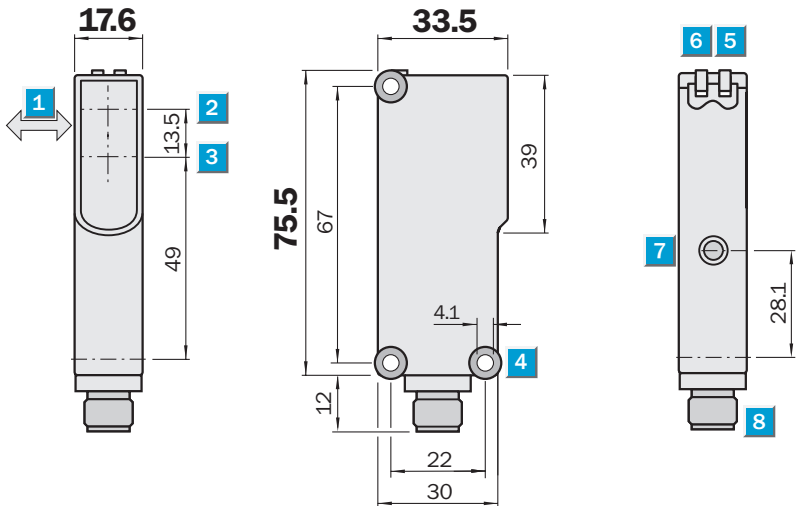
Scanning distance
10 ... 600 mm

Photoelectric proximity switch

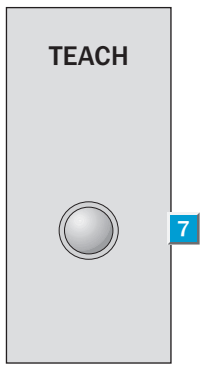
- Precise background suppression; suitable for high demanding applications
- Insensitive to ambient light sources (HF lamps)
- Reliable operation if devices are installed opposite each other
- Commissioning through simple Teach-in function or IO-Link
- Parameters and diagnostics via IO-Link



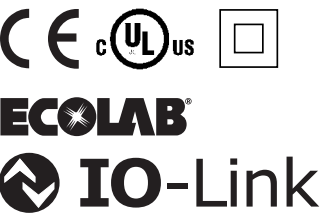
Dimensional drawing



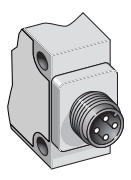
Adjustments possible
WTB18C-3P2434



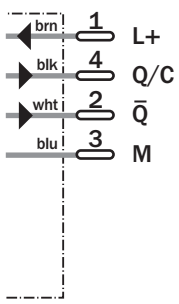
- 1 Standard direction of the material being scanned
- 2 Optical axis, sender
- 3 Optical axis, receiver
- 4 Mounting hole \varnothing 4.1 mm
- 5 LED indicator, yellow; status of received light beam
- 6 LED indicator, green; power on
- 7 Scanning distance adjustment, Single-Teach-in button
- 8 Plug M12, 4-pin



Connection type
WTB18C-3P2434



M12, 4-pin



Accessories
Connector, M12, 4-pin
Mounting systems

Technical specifications		WTB18C-3	P2434									
Scanning distance typ. max.	10 ... 600 mm ¹⁾											
Operating distance	50 ... 600 mm ¹⁾											
Adjustment of operating distance	Teach-in: single-teach button Teach-in: via IO-Link											
Communication mode	COM2											
Light source, light type	LED, red light, 650 nm ²⁾											
Light spot diameter	15 mm at 300 mm distance											
Supply voltage V _s	DC 18 ... 30 V ³⁾											
Ripple	< 5 V _{ss} ⁴⁾											
Power consumption	< 40 mA ⁵⁾											
Switching outputs	PNP, Q/C PNP, not Q											
Output current I _a max	< 100 mA											
Response time	< 0.85 ms ⁶⁾											
Switching frequency	700 Hz ⁷⁾											
Connection type	Connector, M12, 4-pin											
VDE protection class	□ ⁸⁾											
Circuit protection	V _s connections reverse-polarity protected / All outputs short-circuit protected / Interference suppression											
Enclosure rating	IP 66, IP 67											
Ambient temperature operation	-40 °C ... +60 °C											
Ambient temperature storage	-40 °C ... +75 °C											
Weight	Approx. 40 g											
Housing material	ABS, PC											

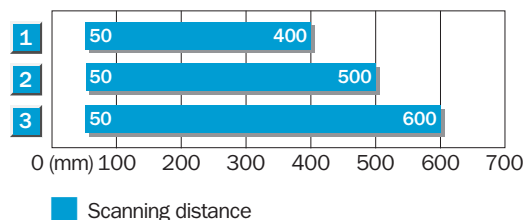
¹⁾ Object with 90 % remission (based on standard white to DIN 5033)
²⁾ Average service life 100,000 h at T_a = +25 °C

³⁾ Limit values, reverse-polarity protected operation in short-circuit protected network max. 8 A
⁴⁾ May not exceed or fall short of

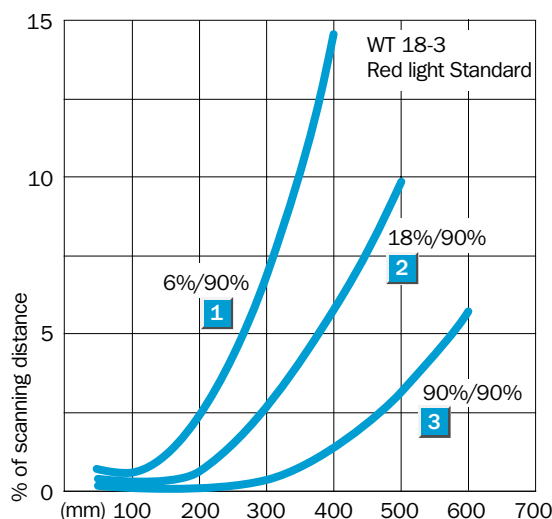
V_s tolerances
⁵⁾ Without load
⁶⁾ Signal transit time with resistive load in switching mode. Different values possible

in COM2 mode.
⁷⁾ With light/dark ratio 1:1 in switching mode. Different values possible in COM2 mode.
⁸⁾ Reference voltage 50 V DC

Scanning distance



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



Ordering information

Type	Part Number
WTB18C-3P2434	1 040 121

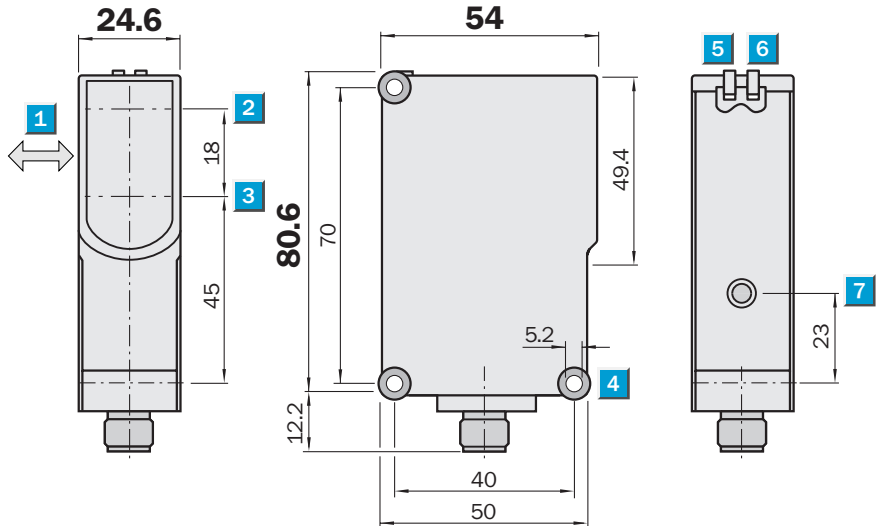
Scanning distance
30 ... 1,100 mm

Photoelectric proximity switch

- Precise background suppression without scanning distance drift
- Reliable in industrial environments; secure against the effect of unwanted optical reflections, other sensors mounted adjacently
- Start-up with easy teach function or IO-Link
- Diagnosis and parametrisation via IO-Link

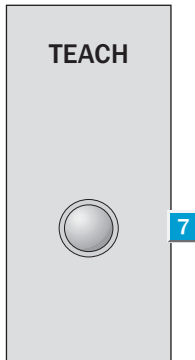


Dimensional drawing



Adjustments possible

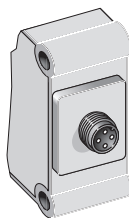
WTB27C-3P2444



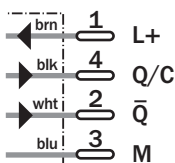
- 1 Standard direction of the material being scanned
- 2 Optical axis sender
- 3 Optical axis receiver
- 4 Mounting hole \varnothing 5.2 mm
- 5 LED indicator green; power on
- 6 LED indicator yellow; status of received light beam
- 7 Scanning distance adjustment: single-teach button

Connection type

WTB27C-3P2444



M12, 4-pin



ECOLAB[®]
IO-Link

Accessories

Connector, M12, 4-pin

Mounting systems

Weather protection

Technical specifications		WTB27C-3	P2444										
Scanning distance typ. max.	30 ... 1,100 mm ¹⁾												
Operating distance	100 ... 1,100 mm ¹⁾												
Adjustment of operating distance	Teach-in: single-teach button Teach-in: via IO-Link												
Communication mode	COM2												
Light source, light type	LED, red light, 660 nm ²⁾												
Light spot diameter	Approx. 15 mm at 500 mm distance												
Supply voltage V_s	DC 18 ... 30 V ³⁾												
Ripple	≤ 5 V _{SS} ⁴⁾												
Power consumption	≤ 45 mA ⁵⁾												
Switching outputs	PNP, Q/C PNP, not Q												
Signal voltage PNP HIGH / LOW	> V _s - 2.5 V / approx. 0 V												
Output current I _a max	100 mA												
Response time	≤ 1.9 ms ⁶⁾												
Switching frequency	350 Hz ⁷⁾												
Connection type	Connector, M12, 4-pin												
VDE protection class	□ ⁸⁾												
Circuit protection	V _s connections reverse-polarity protected / All outputs short-circuit protected / Interference suppression												
Enclosure rating	IP 66, IP 67												
Ambient temperature operation	-40 °C ... +60 °C												
Ambient temperature storage	-40 °C ... +75 °C												
Weight	Approx. 100 g												
Housing material	ABS, PMMA												

¹⁾ Object with 90 % remission (based on standard white to DIN 5033)

²⁾ Average service life 100,000 h at T_a = +25 °C

³⁾ Limit values, reverse-polarity protected operation in short-circuit protected network max. 8 A

⁴⁾ May not exceed or fall short of

V_s tolerances

⁵⁾ Without load

⁶⁾ Signal transit time with resistive load in switching mode. Different values possible

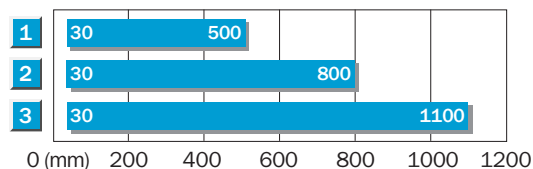
in COM2 mode.

⁷⁾ With light/dark ratio 1:1 in switching mode.

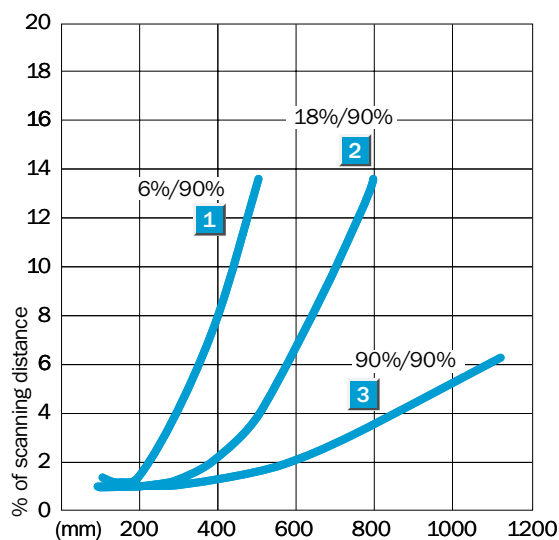
Different values possible in COM2 mode.

⁸⁾ Reference voltage 50 V DC

Scanning distance



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



Ordering information

Type	Part Number
WTB27C-3P2444	1 040 120

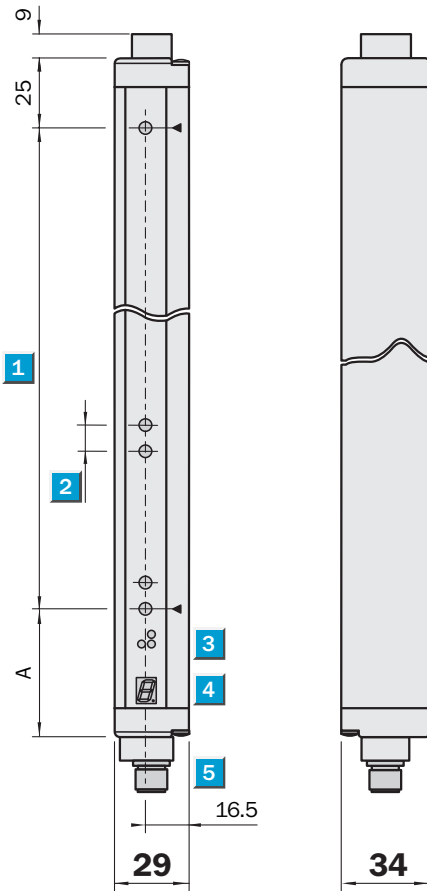
Scanning range
0 ... 5/0 ... 8.5 m

Modular light grid

- High modularity: beam spacing, detection height and scanning range
- Short response time
- Teach-in for optimal sensitivity adjustment
- IO-Link: remote maintenance, diagnostics and parameters



Dimensional drawing



Distance: MLG edge - first beam

Dimensions (mm)	A
Beam spacing 10 mm	49
Beam spacing 20 mm	59
Beam spacing 25 mm	64
Beam spacing 30 mm	69
Beam spacing 50 mm	89

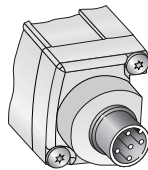
- 1** Detection height (see optical performance)
- 2** Beam spacing (10, 20, 30, 50 mm)
- 3** Status indicator: LEDs green, yellow, red
- 4** Indicator panel, 7-segment display
- 5** M12 plug, 8-pin/M12 plug, 5-pin

IO-Link



Connection type

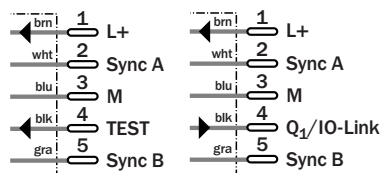
MLGx-xxxxD5x1



5-pin, M12

Sender

Receiver



Accessories

Connectors

Mounting systems

T-Junction

Technical data		MLG	x-xxxx										
			D5x1										
Beam spacing ¹⁾	10 mm/20 mm/25 mm/30 mm/50 mm												
Maximum number of beams	240 beams												
Scanning range	0 ... 5 m (max. 7 m)/0 ... 8.5 m (max. 12 m)												
Synchronization ²⁾	By cable sync A/sync B												
Communication mode	COM2												
Light source, light type	LED, infrared												
Supply voltage V _S ³⁾	15 ... 30 V DC												
Current consumption sender	< 140 mA + 2 mA/beam												
Current consumption receiver ⁴⁾	< 100 mA + 3 mA/beam												
Connection	M12 plug, 5-pin												
Teach-in	See IO-Link function table below												
Output current I _A max.	100 mA per output												
Output load	Capacitive load: 100 nF/output Inductive load: 1H/output												
Switching mode	Light/dark-switching, switchable												
Operating principle	Switching												
Response time ⁵⁾	Max. 150 µs per beam + 1 ms												
Test input »TE«	Sender OFF: Test input to V _S												
Immunity to ambient light	50,000 lx (continuous light)												
VDE protection class	III												
Circuit protection ⁶⁾	A, B, C												
Enclosure rating ⁷⁾	IP 65												
Ambient temperature T _A	Operation -25 ... +55 °C Storage -40 ... +70 °C												
Mechanical resistance	Vibration: 5 g/10-55 Hz - IEC 68-2-6 Shock: 10 g/10 ms - IEC 68-2-29												
Weight	Approx. 1480 g ⁸⁾												
Material	Housing Aluminium anodized Front lens PMMA												

1) Further beam spacing possible
2) Sender (MLGS) and receiver (MLGE)
3) Limit values

4) Without load at V_S = 24 V
5) With resistive load. Deviating value possible in COM2 mode.

6) A= V_S connection, reverse-polarity protected
B= Outputs Q and Q short-circuit protected
C= Interference pulse suppression

7) For outdoor use only with additional protection
8) For 1200 mm detection height, increment 160 g per 150 mm detection height

	Optical performance					Ordering information	
	Detection height			Minimum Detectable Object (MDO)		Type	Order no.
	Minimum	Increment	Maximum	Beam spacing	MDO ⁹⁾	MLGx-xxxxD5x1	On demand
MLG1:	140 mm	150 mm	2390 mm	10 mm	15 ¹⁰⁾ /20 ¹¹⁾ mm		
MLG2:	140 mm	150 mm	3140 mm	20 mm	25 ¹⁰⁾ /30 ¹¹⁾ mm		
MLG3:	120 mm	150 mm	3120 mm	30 mm	35 ¹⁰⁾ /40 ¹¹⁾ mm		
MLG5:	100 mm	150 mm	3100 mm	50 mm	55 ¹⁰⁾ /60 ¹¹⁾ mm		

9) MDO for non-moving objects measured in a direction parallel to the MLG
10) Scanning range: 5 m
11) Scanning range: 8.5 m

IO-Link function table			
	Process data	Diagnostic	Parameter
Type "switching"	OUT 1 x Q (NBB ≥ 1) NBB = Number Beams Blocked	<ul style="list-style-type: none"> ■ Test ■ Contamination ■ Synchronization error ■ Hardware error ■ Reception signal malfunction during teach 	<ul style="list-style-type: none"> ■ Auto-teach (ON - OFF) ■ Teach ■ Beam suppression ■ Multiple scan (ON - OFF) ■ Q Logic (Q - Q̄)

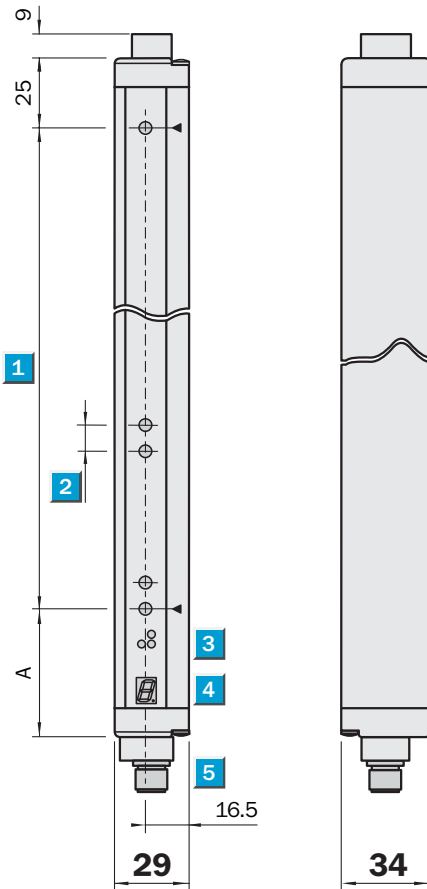
Scanning range
0 ... 5/0 ... 8.5 m

Modular light grid

- High modularity: beam spacing, detection height and scanning range
- Short response time
- Teach-in for optimal sensitivity adjustment
- IO-Link: remote maintenance, diagnostics and parameters



Dimensional drawing



Distance: MLG edge – first beam

Dimensions (mm)	A
Beam spacing 10 mm	49
Beam spacing 20 mm	59
Beam spacing 25 mm	64
Beam spacing 30 mm	69
Beam spacing 50 mm	89

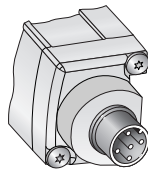
- 1** Detection height (see optical performance)
- 2** Beam spacing (10, 20, 30, 50 mm)
- 3** Status indicator: LEDs green, yellow, red
- 4** Indicator panel, 7-segment display
- 5** M12 plug, 8-pin/M12 plug, 5-pin

IO-Link



Connection type

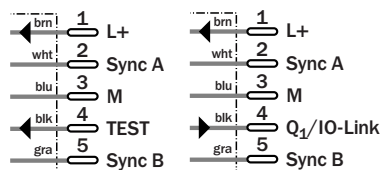
MLGx-xxxxH5x1



5-pin, M12

Sender

Receiver



Accessories

Connectors

Mounting systems

T-Junction

Technical data		MLG	x-xxxx										
			H5x1										
Beam spacing ¹⁾	10 mm/20 mm/25 mm/30 mm/50 mm												
Maximum number of beams	240 beams												
Scanning range	0 ... 5 m (max. 7 m)/0 ... 8.5 m (max. 12 m)												
Synchronization ²⁾	By cable sync A/sync B												
Communication mode	COM2												
Light source, light type	LED, infrared												
Supply voltage V _S ³⁾	15 ... 30 V DC												
Current consumption sender	< 140 mA + 2 mA/beam												
Current consumption receiver ⁴⁾	< 100 mA + 3 mA/beam												
Connection	M12 plug, 5-pin												
Teach-in	See IO-Link function table below												
Output current I _A max.	100 mA per output												
Output load	Capacitive load: 100 nF/output Inductive load: 1H/output												
Switching mode	Light/dark-switching, switchable												
Operating principle	Measuring												
Response time ⁵⁾	Max. 150 µs per beam + 1 ms												
Test input »TE«	Sender OFF: Test input to V _S												
Immunity to ambient light	50,000 lx (continuous light)												
VDE protection class	III												
Circuit protection ⁶⁾	A, B, C												
Enclosure rating ⁷⁾	IP 65												
Ambient temperature T _A	Operation -25 ... +55 °C Storage -40 ... +70 °C												
Mechanical resistance	Vibration: 5 g/10-55 Hz - IEC 68-2-6 Shock: 10 g/10 ms - IEC 68-2-29												
Weight	Approx. 1480 g ⁸⁾												
Material	Housing Aluminium anodized Front lens PMMA												

1) Further beam spacing possible
2) Sender (MLGS) and receiver (MLGE)
3) Limit values

4) Without load at V_S = 24 V
5) With resistive load. Deviating value possible in COM2 mode.

6) A = V_S connection, reverse-polarity protected
B = Outputs Q and Q short-circuit protected
C = Interference pulse suppression

7) For outdoor use only with additional protection
8) For 1200 mm detection height, increment 160 g per 150 mm detection height

	Optical performance					Ordering information	
	Detection height			Minimum Detectable Object (MDO)		Type	Order no.
	Minimum	Increment	Maximum	Beam spacing	MDO ⁹⁾	MLGx-xxxxH5x1	On demand
MLG1:	140 mm	150 mm	2390 mm	10 mm	15 ¹⁰⁾ /20 ¹¹⁾ mm		
MLG2:	140 mm	150 mm	3140 mm	20 mm	25 ¹⁰⁾ /30 ¹¹⁾ mm		
MLG3:	120 mm	150 mm	3120 mm	30 mm	35 ¹⁰⁾ /40 ¹¹⁾ mm		
MLG5:	100 mm	150 mm	3100 mm	50 mm	55 ¹⁰⁾ /60 ¹¹⁾ mm		

9) MDO for non-moving objects measured in a direction parallel to the MLG
10) Scanning range: 5 m
11) Scanning range: 8.5 m

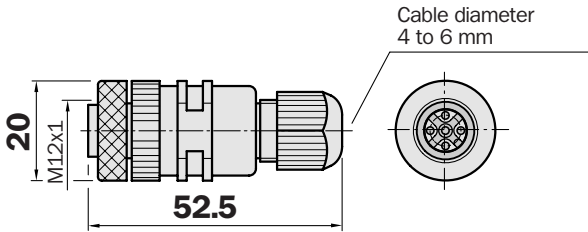
IO-Link function table			
	Process data	Diagnostic	Parameter
Type "measuring"	IN BBH (Block Beam Hold) Stand By Activate Q OUT 6 x Q 10 basic functions Beam status	<ul style="list-style-type: none"> ■ Test ■ Contamination ■ Status byte ■ Equipment identification ■ Synchronization error ■ Reception signal malfunction during teach 	<ul style="list-style-type: none"> ■ Beam suppression ■ Teach ■ Setup of all basic functions ■ Multiple scan (ON - OFF)

Dimensional drawing and Order information

SENSICK screw-in system M12, 4-pin, enclosure rating IP 67

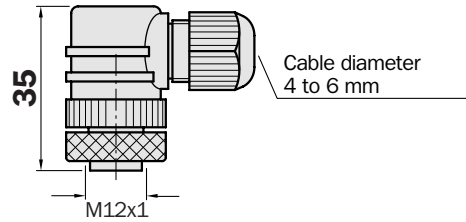
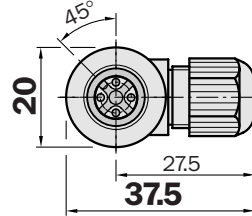
Female connector M12, 4-pin, straight

Type	Order no.	Contacts
DOS-1204-G	6007302	4



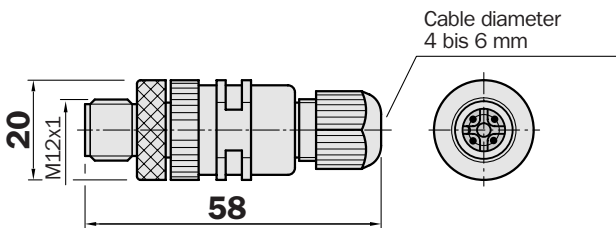
Female connector M12, 4-pin, angled

Type	Order no.	Contacts
DOS-1204-W	6007303	4



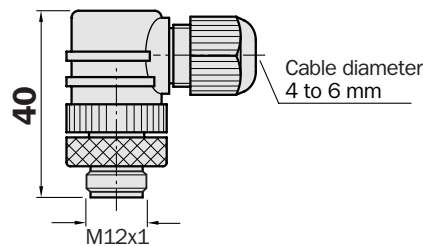
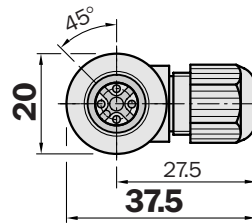
Cable connector M12, 4-pin, straight

Type	Order no.	Contacts
STE-1204-G	6009932	4



Cable connector M12, 4-pin, angled

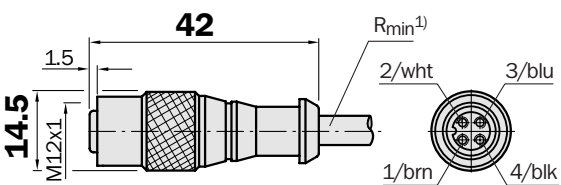
Type	Order no.	Contacts
STE-1204-W	6022084	4



Female connector M12, 4-pin, straight

Cable diameter 5 mm, 4 x 0,25 mm², PVC

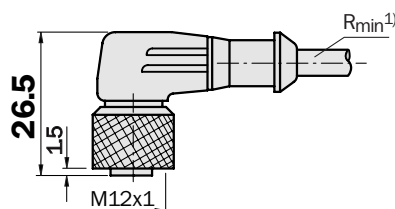
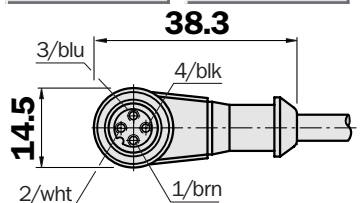
Type	Order no.	Contacts	Cable length
DOL-1204-G02M	6009382	4	2 m
DOL-1204-G05M	6009866	4	5 m
DOL-1204-G10M	6010543	4	10 m
DOL-1204-G15M	6010753	4	15 m



Female connector M12, 4-pin, angled

Cable diameter 5 mm, 4 x 0,25 mm², PVC

Type	Order no.	Contacts	Cable length
DOL-1204-W02M	6009383	4	2 m
DOL-1204-W05M	6009867	4	5 m
DOL-1204-W10M	6010541	4	10 m



1) Minimum bend radius in dynamic use
 $R_{min} = 20 \times \text{cable diameter}$

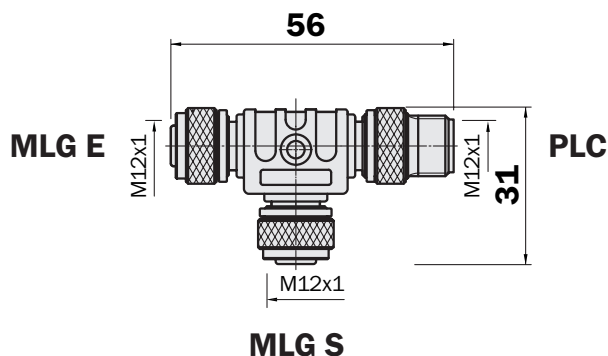
Dimensional drawing and Order information

Cables and connectors MLG

To connect MLGS at MLGE and PLC

T-Junction M12, 5-pin

Type	Order no.
SBO-02G12-SM	6029305



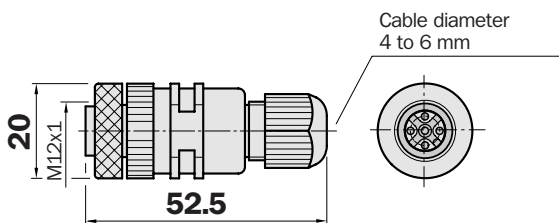
Female connector M12, male connector M12, 5-pin, straight, PUR

Type	Order no.	Description	Cable length
DSL-1205-G02MC	6025931	Female connector, straight	2 m
DSL-1205-G05MC	6029282	Female connector, straight	5 m

SENSICK screw-in system M12, 5-pin, enclosure rating IP 67

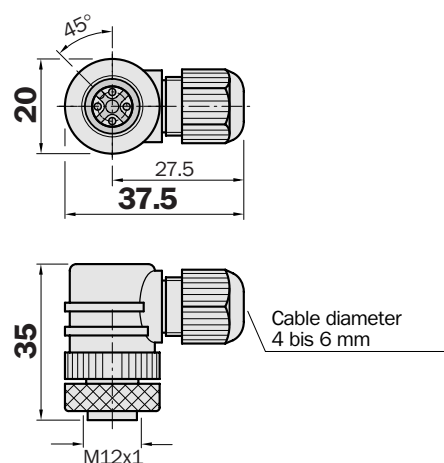
Female connector M12, 5-pin, straight

Type	Order no.	Contacts
DOS-1205-G	6009719	5



Female connector M12, 5-pin, right angle

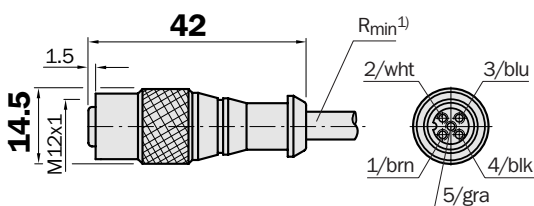
Type	Order no.	Contacts
DOS-1205-W	6009720	5



Female connector M12, 5-pin, straight

Cable diameter 5/6 mm, 4/5 x 0.25 mm², sheath PVC

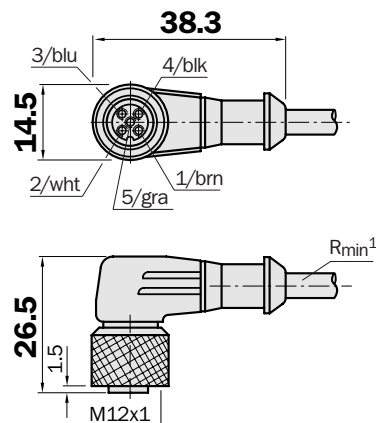
Type	Order no.	Contacts	Cable length
DOL-1205-G02M	6008899	5	2 m
DOL-1205-G05M	6009868	5	5 m
DOL-1205-G10M	6010544	5	10 m
DOL-1205-G15M	6029215	5	15 m



Female connector M12, 5-pin, right angle

Cable diameter 5/6 mm, 4/5 x 0.25 mm², sheath PVC

Type	Order no.	Contacts	Cable length
DOL-1205-W02M	6008900	5	2 m
DOL-1205-W05M	6009868	5	5 m
DOL-1205-W10M	6010544	5	10 m



1) Minimum bend radius in dynamic use
 $R_{min} = 20 \times \text{cable diameter}$

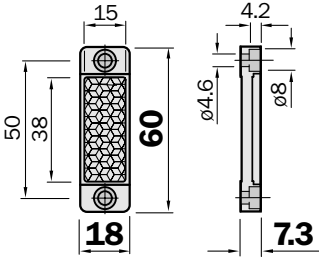
Dimensional drawing and Order information

Reflectors

Plastic design for temperatures up to 65 °C

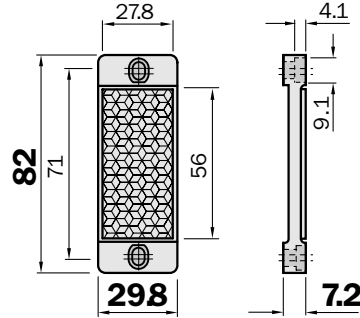
Reflector 20 x 40 mm²

Type	Order no.
PL20A	1012719



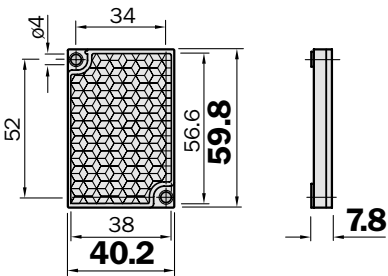
Reflector 30 x 50 mm²

Type	Order no.
PL30A	1002314



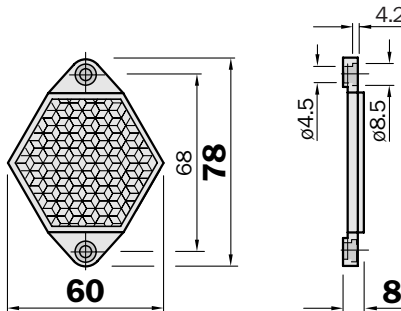
Reflector 40 x 60 mm²

Type	Order no.
PL40A	1012720



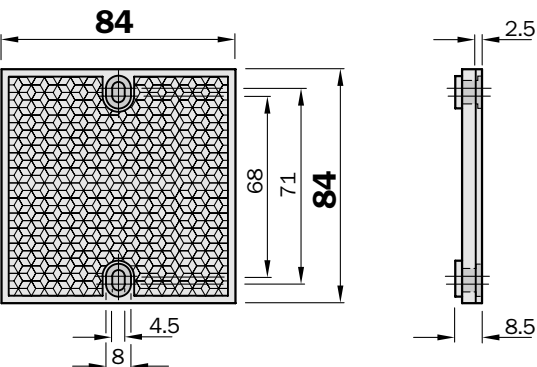
Reflector, 6-sided, width across flats 48 mm

Type	Order no.
PL50A	1000132



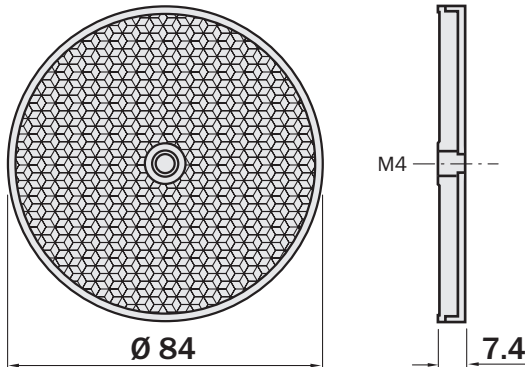
Reflector 80 x 80 mm²

Type	Order no.
PL80A	1003865



Reflector, diameter 83 mm, centre hole mounting

Type	Order no.
C110A	5304549

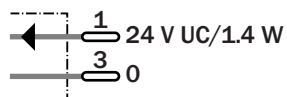
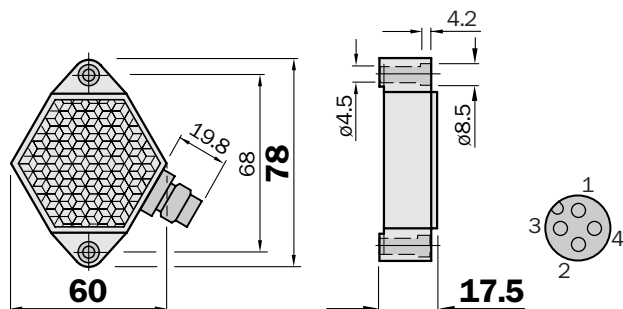


Dimensional drawings and Order information

Reflectors with heating, UC 24 V; 1.4 W

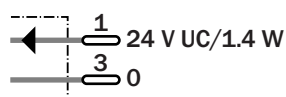
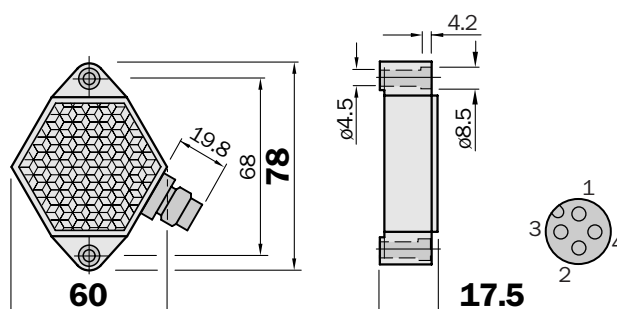
Reflector, 6-sided, width across flats 48 mm, continuous heating

Type	Order no.
PL50HK	1011545



Reflector, 6-sided, width across flats 48 mm, regulated heating

Type	Order no.
PL50HS	1009871

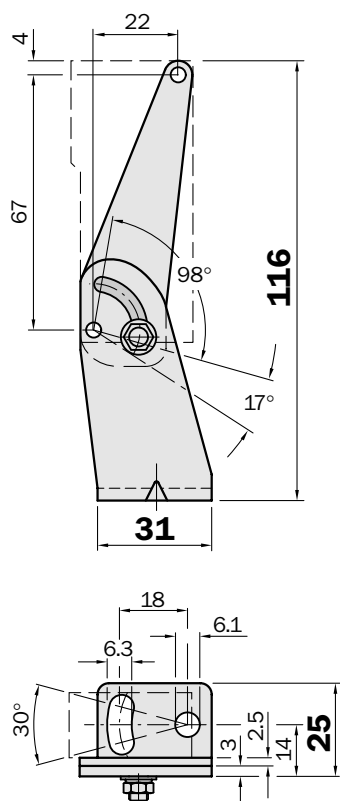


Heating ON: < 15 °C

Mounting systems

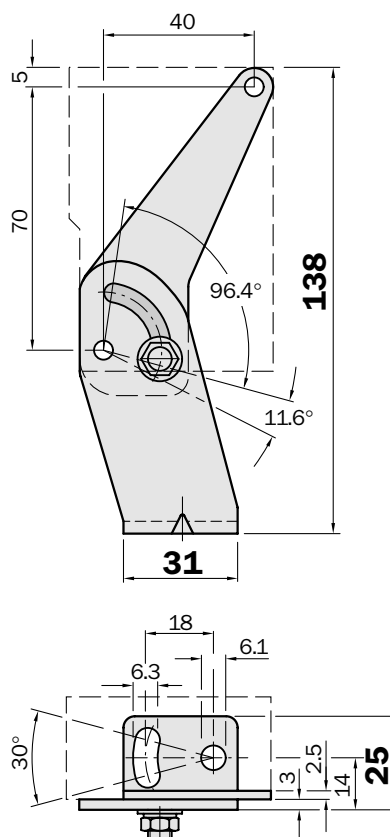
Mounting bracket

Type	Order no.
BEF-WN-W18	2009317



Mounting bracket for W27-3

Type	Order no.
BEF-WN-W27	2009122



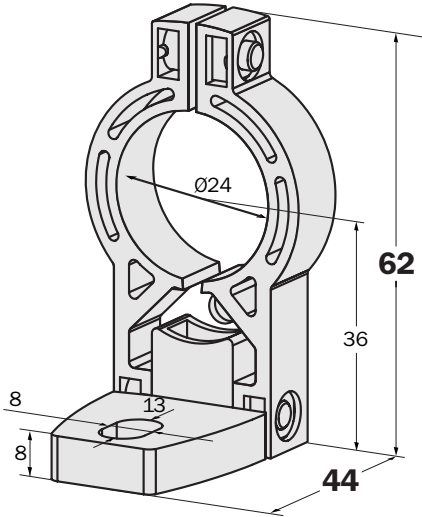
Dimensional drawing and Order information

Mounting systems

Mounting kit 1 - Swivel Mount

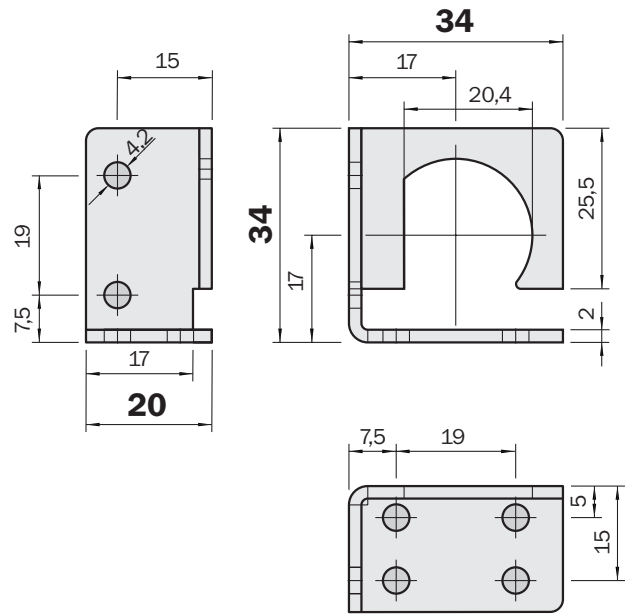
For MLGS and MLGE, recommended for detection heights up to 1600 mm

Type	Order no.	Pieces
	2019649	4



Mounting kit 1 - compact metal angled bracket recommended for all detection heights

Type	Order no.	Pieces
BEF-WK-XLG	2029100	4

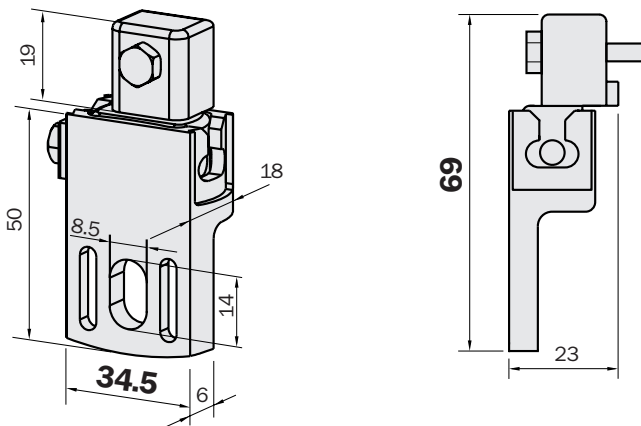


Mounting kit 4 - T-nuts with shifting nuts

Side mounting with shift nuts for all monitoring heights

(for high vibration and shock exposure)

Type	Order no.	Pieces
BEF-NUT-MLG	2023696	4

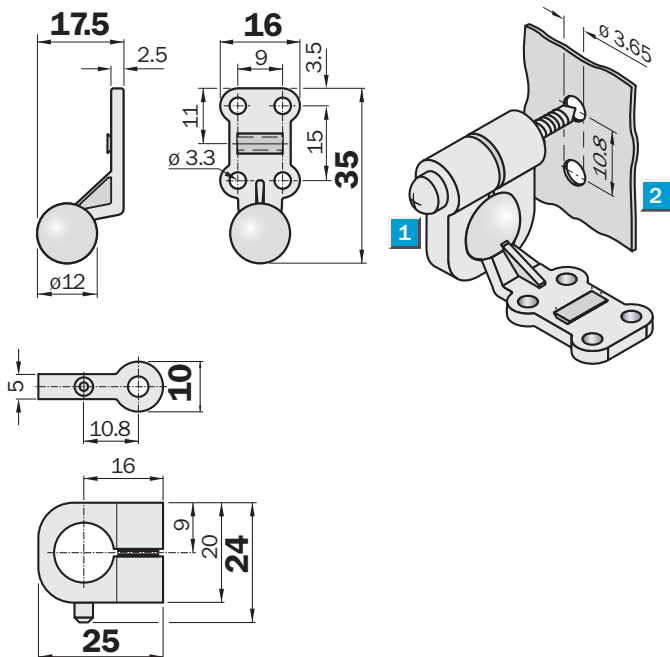


Dimensional drawing and Order information

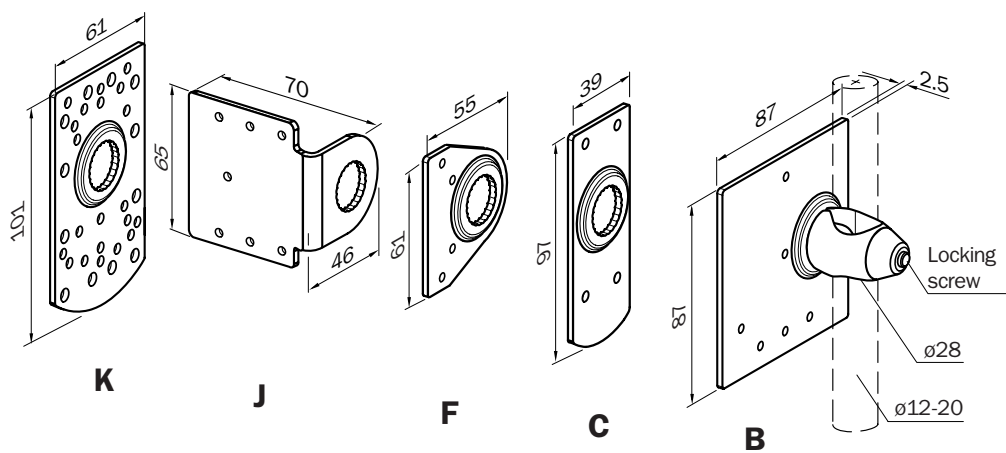
Mounting systems

Articulated mounting for W4-2

Type	Order no.
BEF-GH-MINI01	2023160



Universal-clamps (rod mounting) for sensors and reflectors



Mounting plates	Type	Order no. ¹⁾	For device/reflector type
B	BEF-KHS-B01	2022459	PL30A, PL40A, PL50A, PL80A, C110A
C	BEF-KHS-C01	2022460	W18-3
F	BEF-KHS-F01	2022463	PL20A
J	BEF-KHS-J01	2022719	PL20A, PL40A, PL50A, C110A
K	BEF-KHS-K01	2022718	W18-3, PL20A, PL30A, PL40A, PL50A, PL80A, C110A
	BEF-KHS-KH1	2022726	Clamp without mounting plate

¹⁾ Order no. includes bar support and mounting material