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Switching  
Sensors

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# //PHOTOELECTRIC SENSORS/ LIGHT SCANNERS, CUBIC HOUSING

THE ONLY THING STANDARD HERE IS THE HOUSING SHAPE

The products in this area are characterized by their cubic design. With their various mounting options, they cover a wide range of installation situations. Here, you will find reliable sensors with different operating principles for a variety of detection tasks in a wide range of environmental conditions.

SELECTION TABLE – cubic series

Series	Dimensions in mm (BxHxT)	Housing material		Operating principle	Typ. operating range limit	Light source			Max. switching frequency	Response time	Special object features		
		Plastic	Metal			Infrared light	Red light	Laser			Shiny surface (metallic, foil coated object)	Transparent medium (glass, PET, foil)	Small part
 <b>2</b>	8x23x12	●		Throughbeam sensor	0...2 m	●			385 Hz	1.3 ms			●
				Retro-reflective sensor	0.05...3.1 m	●			700 Hz	0.72 ms			●
				Diff. refl. scanner with backgr. suppr.	15/30/50 mm	●			700 Hz	0.72 ms	●		●
 <b>3B</b>	11x32x17	●		Throughbeam sensor	0...10 m	●			1000 Hz	0.5 ms			
				Retro-reflective sensor	0...6 m	●	●		1000 Hz	0.5 ms	●	●	●
				Energetic light scanner	0...750 mm	●			1000 Hz	0.5 ms			
				Diff. refl. scanner with backgr. suppr.	5...400 mm	●			1000 Hz	0.5 ms	●		●
 <b>5</b>	14x33x20	●		Throughbeam sensor	0...15 m	●			500 Hz	1 ms			
				Retro-reflective sensor	0.02...6 m	●			500 Hz	1 ms			
				Energetic light scanner	0...1 m	●			500 Hz	1 ms			
				Light scanner with fading	0...0.28 m	●			500 Hz	1 ms			
 <b>53</b>	14x54x20	●		Throughbeam sensor	0...10 m	●			1000 Hz	0.25 ms			
				Retro-reflective sensor	0...5 m	●	●		2000 Hz	0.25 ms		●	●
				Diff. refl. scanner with backgr. suppr.	5...400 mm	●			2000 Hz	0.5 ms	●		
 <b>55</b>	14x36x25	●		Throughbeam sensor	0...10 m	●			1000 Hz	0.5 ms			
				Retro-reflective sensor	0.02...6 m	●	●		2000 Hz	0.25 ms		●	●
				Diff. refl. scanner with backgr. suppr.	5...400 mm	●			2000 Hz	0.25 ms	●		●
 <b>25B</b>	15x39x29	●		Throughbeam sensor	0...24 m	●			500 Hz	1 ms			
				Retro-reflective sensor	0.05...15 m	●	●		2000 Hz	0.25 ms	●	●	●
				Energetic light scanner	5...800 mm	●			500 Hz	1 ms			
				Diff. refl. scanner with backgr. suppr.	0...1000 mm	●	●		1000 Hz	0.5 ms	●		●
 <b>28</b>	15x47x32	●		Throughbeam sensor	0...15 m	●			500 Hz	1 ms			
				Retro-reflective sensor	0.02...6 m	●			500 Hz	1 ms			
				Energetic light scanner	0...0.85 m	●			500 Hz	1 ms			
				Light scanner with fading	0...0.25 m	●			500 Hz	1 ms			
 <b>18</b>	15x50x33	●		Retro-reflective sensor	0...7.2 m	●			500 Hz	0.33 ms		●	●
 <b>8</b>	15x48x38	●		Throughbeam sensor	0...100 m	●	●		2800 Hz	0.18 ms			●
				Retro-reflective sensor	0...21 m	●	●		2800 Hz	0.18 ms		●	●
				Light scanners	5...800 mm	●			1500 Hz	0.33 ms			
				Diff. refl. scanner with backgr. suppr.	7...400 mm	●	●		2000 Hz	0.25 ms	●		●
 <b>95</b>	17x66x35	●		Throughbeam sensor	0...20 m	●	●		1000 Hz	0.5 ms			
				Retro-reflective sensor	0...9 m	●			1000 Hz	0.5 ms		●	●
				Energetic light scanner	10...900 mm	●	●		1000 Hz	0.5 ms			
				Diff. refl. scanner with backgr. suppr.	5...500 mm	●	●		1000 Hz	0.5 ms	●		
 <b>46B</b>	18x75x43	●		Throughbeam sensor	0...60 m	●			500 Hz	1 ms			
				Retro-reflective sensor	0.05...18 m	●			500 Hz	1 ms	●		
				Energetic light scanner	30...1100 mm	●			500 Hz	1 ms			
				Diff. refl. scanner with backgr. suppr.	0...2500 mm	●	●		1000 Hz	0.5 ms	●		●
 <b>96</b>	30x90x70	●	●	Throughbeam sensor	0...150 m	●	●		500 Hz	1 ms			
				Retro-reflective sensor	0...28 m	●	●		1000 Hz	0.5 ms		●	
				Energetic light scanner	20...1200 mm	●	●		1000 Hz	0.5 ms			
				Diff. refl. scanner with backgr. suppr.	10...6500/30000 mm	●	●	●	300 Hz	1.67 ms	●		

Switching Sensors

Measuring Sensors

Products for Safety at Work

Identification

Data Transmission / Control Components

Industrial Image Processing

Accessories

## /// 2 Series



With the various miniature sensors of the 2 series – from scanner to photoelectric sensor – you are fully prepared for a range of different applications. The miniature sensors show their strengths above all in situations with limited installation space, e. g. in the areas of handling technology and robotics.



## Throughbeam Sensors

With their very small light spot, these classic throughbeam photoelectric sensors are predestined for the reliable detection of small parts. Their miniature format also allows them to be mounted in constrained spaces.

### LSR 2

With the LSR2 throughbeam photoelectric sensor, large ranges or high performance reserves are possible depending on the application. They feature a PinPoint LED for producing a small, homogeneous and highly visible light spot.

#### Benefits:

- Large ranges
- High performance reserves possible
- PinPoint LED for producing a small, homogeneous and highly visible light spot
- Ideally suited for the detection of small parts

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50112127	▶ LSSR 2	0 ... 1.6 m 0 ... 2 m		LED, red			DC	Cable, 2,000 mm
50112133	◀ LSR 2/42D	0 ... 1.6 m 0 ... 2 m	385 Hz		Transistor, PNP, dark switching	Transistor, NPN, dark switching	DC	Cable, 2,000 mm
50112130	◀ LSR 2/42	0 ... 1.6 m 0 ... 2 m	385 Hz		Transistor, PNP, light switching	Transistor, NPN, light switching	DC	Cable, 2,000 mm
50112129	▶ LSSR 2,150-S12	0 ... 1.6 m 0 ... 2 m		LED, red			DC	Cable with M12 connector, 150 mm, M12, plastic
50112135	◀ LSR 2/42D,150-S12	0 ... 1.6 m 0 ... 2 m	385 Hz		Transistor, PNP, dark switching	Transistor, NPN, dark switching	DC	Cable with M12 connector, 150 mm, M12, plastic
50112132	◀ LSR 2/42,150-S12	0 ... 1.6 m 0 ... 2 m	385 Hz		Transistor, PNP, light switching	Transistor, NPN, light switching	DC	Cable with M12 connector, 150 mm, M12, plastic
50116172	▶ LSSR 2.8,150-S8.3	0 ... 1.6 m 0 ... 2 m		LED, red			DC	Cable with M12 connector, 150 mm, M8, plastic
50116173	◀ LSR 2/4,150-S8.3	0 ... 1.6 m 0 ... 2 m	385 Hz		Transistor, PNP, light switching		DC	Cable with M12 connector, 150 mm, M8, plastic
50112128	▶ LSSR 2,150-S8	0 ... 1.6 m 0 ... 2 m		LED, red			DC	Cable with M12 connector, 150 mm, M8, plastic
50112134	◀ LSR 2/42D,150-S8	0 ... 1.6 m 0 ... 2 m	385 Hz		Transistor, PNP, dark switching	Transistor, NPN, dark switching	DC	Cable with M12 connector, 150 mm, M8, plastic
50112131	◀ LSR 2/42,150-S8	0 ... 1.6 m 0 ... 2 m	385 Hz		Transistor, PNP, light switching	Transistor, NPN, light switching	DC	Cable with M12 connector, 150 mm, M8, plastic

▶ transmitter / ◀ receiver

## Retro-Reflective Sensors

Through the use of polarized light, these photoelectric sensors can even reliably detect objects with glossy surfaces.

### PRK 2

With the PRK 2 retro-reflective photoelectric sensor, large operating ranges or high performance reserves are possible depending on the application. They feature glass optics and polarized light for reliable switching behavior with glossy surfaces.

#### Benefits:

- Large ranges
- High performance reserves possible
- PinPoint LED for producing a small, homogeneous and highly visible light spot
- Ideally suited for the detection of small parts
- Glass optics and polarized light for reliable switching behavior with glossy surfaces

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50112139	PRK 2/42D	0.07 ... 3.5 m 0.07 ... 4 m	700 Hz	LED, red	Transistor, PNP, dark switching	Transistor, NPN, dark switching	DC	Cable, 2,000 mm
50112141	PRK 2/42D,150-S12	0.07 ... 3.5 m 0.07 ... 4 m	700 Hz	LED, red	Transistor, PNP, dark switching	Transistor, NPN, dark switching	DC	Cable with M12 connector, 150 mm, M12, plastic
50112140	PRK 2/42D,150-S8	0.07 ... 3.5 m 0.07 ... 4 m	700 Hz	LED, red	Transistor, PNP, dark switching	Transistor, NPN, dark switching	DC	Cable with M12 connector, 150 mm, M8, plastic
50112136	PRK 2/42	0.07 ... 3.5 m 0.07 ... 4 m	700 Hz	LED, red	Transistor, PNP, light switching	Transistor, NPN, light switching	DC	Cable, 2,000 mm
50112138	PRK 2/42,150-S12	0.07 ... 3.5 m 0.07 ... 4 m	700 Hz	LED, red	Transistor, PNP, light switching	Transistor, NPN, light switching	DC	Cable with M12 connector, 150 mm, M12, plastic
50112137	PRK 2/42,150-S8	0.07 ... 3.5 m 0.07 ... 4 m	700 Hz	LED, red	Transistor, PNP, light switching	Transistor, NPN, light switching	DC	Cable with M12 connector, 150 mm, M8, plastic

Detailed information on operating ranges in combination with reflectors can be found in the respective data sheet (online)

## Light Scanners with Background Suppression

These scanners score big thanks, in particular, to their small light spot and good background suppression. They thereby detect even the smallest components without being influenced by objects in the background.

### HRTR 2

The HRTR 2 miniature diffuse reflection light scanner convinces with a very small, homogeneous and laser-like light spot. The background suppression, which is permanently set to various ranges, allows even dark objects to be reliably detected against a light background.

#### Benefits:

- Miniature diffuse reflection light scanners with visible red light
- Homogeneous light beam with very small laser-like light spot
- Very good background suppression

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50120855	HRTR 2/2-50F,150-S8.3	0.004 ... 0.046 m 0.001 ... 0.06 m	700 Hz	LED, red	Transistor, NPN, light switching		DC	Cable with M12 connector, 150 mm, M8, plastic
50112126	HRTR 2/42D-50F,150-S12	0.004 ... 0.046 m 0.001 ... 0.06 m	700 Hz	LED, red	Transistor, PNP, dark switching	Transistor, NPN, dark switching	DC	Cable with M12 connector, 150 mm, M12, plastic
50112125	HRTR 2/42D-50F,150-S8	0.004 ... 0.046 m 0.001 ... 0.06 m	700 Hz	LED, red	Transistor, PNP, dark switching	Transistor, NPN, dark switching	DC	Cable with M12 connector, 150 mm, M8, plastic
50112124	HRTR 2/42D-50F	0.004 ... 0.046 m 0.001 ... 0.06 m	700 Hz	LED, red	Transistor, PNP, dark switching	Transistor, NPN, dark switching	DC	Cable, 2,000 mm
50112123	HRTR 2/42-50F,150-S12	0.004 ... 0.046 m 0.001 ... 0.06 m	700 Hz	LED, red	Transistor, PNP, light switching	Transistor, NPN, light switching	DC	Cable with M12 connector, 150 mm, M12, plastic
50112122	HRTR 2/42-50F,150-S8	0.004 ... 0.046 m 0.001 ... 0.06 m	700 Hz	LED, red	Transistor, PNP, light switching	Transistor, NPN, light switching	DC	Cable with M12 connector, 150 mm, M8, plastic
50112121	HRTR 2/42-50F	0.004 ... 0.046 m 0.001 ... 0.06 m	700 Hz	LED, red	Transistor, PNP, light switching	Transistor, NPN, light switching	DC	Cable, 2,000 mm
50112120	HRTR 2/42D-30F,150-S12	0.005 ... 0.028 m 0.001 ... 0.035 m	700 Hz	LED, red	Transistor, PNP, dark switching	Transistor, NPN, dark switching	DC	Cable with M12 connector, 150 mm, M12, plastic
50112119	HRTR 2/42D-30F,150-S8	0.005 ... 0.028 m 0.001 ... 0.035 m	700 Hz	LED, red	Transistor, PNP, dark switching	Transistor, NPN, dark switching	DC	Cable with M12 connector, 150 mm, M8, plastic
50112118	HRTR 2/42D-30F	0.005 ... 0.028 m 0.001 ... 0.035 m	700 Hz	LED, red	Transistor, PNP, dark switching	Transistor, NPN, dark switching	DC	Cable, 2,000 mm
50112117	HRTR 2/42-30F,150-S12	0.005 ... 0.028 m 0.001 ... 0.035 m	700 Hz	LED, red	Transistor, PNP, light switching	Transistor, NPN, light switching	DC	Cable with M12 connector, 150 mm, M12, plastic
50112116	HRTR 2/42-30F,150-S8	0.005 ... 0.028 m 0.001 ... 0.035 m	700 Hz	LED, red	Transistor, PNP, light switching	Transistor, NPN, light switching	DC	Cable with M12 connector, 150 mm, M8, plastic
50112115	HRTR 2/42-30F	0.005 ... 0.028 m 0.001 ... 0.035 m	700 Hz	LED, red	Transistor, PNP, light switching	Transistor, NPN, light switching	DC	Cable, 2,000 mm
50112114	HRTR 2/42D-15F,150-S12	0.004 ... 0.014 m 0.001 ... 0.018 m	700 Hz	LED, red	Transistor, PNP, dark switching	Transistor, NPN, dark switching	DC	Cable with M12 connector, 150 mm, M12, plastic
50112113	HRTR 2/42D-15F,150-S8	0.004 ... 0.014 m 0.001 ... 0.018 m	700 Hz	LED, red	Transistor, PNP, dark switching	Transistor, NPN, dark switching	DC	Cable with M12 connector, 150 mm, M8, plastic
50112112	HRTR 2/42D-15F	0.004 ... 0.014 m 0.001 ... 0.018 m	700 Hz	LED, red	Transistor, PNP, dark switching	Transistor, NPN, dark switching	DC	Cable, 2,000 mm
50112111	HRTR 2/42-15F,150-S12	0.004 ... 0.014 m 0.001 ... 0.018 m	700 Hz	LED, red	Transistor, PNP, light switching	Transistor, NPN, light switching	DC	Cable with M12 connector, 150 mm, M12, plastic
50112110	HRTR 2/42-15F,150-S8	0.004 ... 0.014 m 0.001 ... 0.018 m	700 Hz	LED, red	Transistor, PNP, light switching	Transistor, NPN, light switching	DC	Cable with M12 connector, 150 mm, M8, plastic
50112109	HRTR 2/42-15F	0.004 ... 0.014 m 0.001 ... 0.018 m	700 Hz	LED, red	Transistor, PNP, light switching	Transistor, NPN, light switching	DC	Cable, 2,000 mm

Measured against a white object with 90 % diffuse reflection

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## /// 3 Series



The versatile range of models in the 3 series enables use in a variety of applications, such as in packaging technology, handling technology and production electronics. In their performance class, these sensors offer the greatest range of features of all competitors and impress with large ranges and improved performance reserves. Refined technologies for spurious and extraneous light suppression and for fast alignment and commissioning round out the advantages.



## Throughbeam Sensors

Reliable, standard photoelectric sensors with large performance reserves and simple commissioning.

## LSR 3B

The LSR 3B throughbeam photoelectric sensor offers reliable object detection independent of the environmental conditions. The transmitter is optionally available with activation input of the receiver with warning output for increased availability.

## Benefits:

- High performance reserve
- Transmitter with small, homogeneous light spot by means of pin-point LED
- Transmitter optionally with activation input
- Warning output (optional for the receiver) for increased availability

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50108509	▶ LSSR 3B.8-S8	0.05 ... 8.5 m 0.05 ... 10 m		LED, red			DC	Connector, M8, metal
50108514	◀ LSR 3B/66-S8	0.05 ... 8.5 m 0.05 ... 10 m	1,000 Hz		Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	DC	Connector, M8, metal
50108517	◀ ILSER 3B/4-S8	0.05 ... 8.5 m 0.05 ... 10 m	1,000 Hz		Transistor, PNP, light switching	Transistor, PNP, U <sub>b</sub> switching	DC	Connector, M8, metal
50108508	▶ LSSR 3B-S8	0.05 ... 8.5 m 0.05 ... 10 m		LED, red			DC	Connector, M8, metal
50108514	◀ LSR 3B/66-S8	0.05 ... 8.5 m 0.05 ... 10 m	1,000 Hz		Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	DC	Connector, M8, metal
50108515	◀ LSR 3B/66.1-S8	0.05 ... 8.5 m 0.05 ... 10 m	1,000 Hz		Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	DC	Connector, M8, metal
50108511	▶ LSSR 3B.8,5000	0.05 ... 8.5 m 0.05 ... 10 m		LED, red			DC	Cable, 5,000 mm
50108519	◀ LSR 3B/66,5000	0.05 ... 8.5 m 0.05 ... 10 m	1,000 Hz		Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	DC	Cable, 5,000 mm
50111732	◀ LSR 3B/44.1,5000	0.05 ... 8.5 m 0.05 ... 10 m	1,000 Hz		Transistor, PNP, light switching (PNP)/ dark switching (NPN)	Transistor, PNP, dark switching (PNP)/ light switching (NPN)	DC	Cable, 5,000 mm
50108510	▶ LSSR 3B.8	0.05 ... 8.5 m 0.05 ... 10 m		LED, red			DC	Cable, 2,000 mm
50108519	◀ LSR 3B/66,5000	0.05 ... 8.5 m 0.05 ... 10 m	1,000 Hz		Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	DC	Cable, 5,000 mm
50108516	◀ LSR 3B/66	0.05 ... 8.5 m 0.05 ... 10 m	1,000 Hz		Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	DC	Cable, 2,000 mm
50111440	▶ LSSR 3B,200-S12	0.05 ... 8.5 m 0.05 ... 10 m		LED, red			DC	Cable with M12 connector, 200 mm, M12, plastic
50111442	◀ LSR 3B/66,200-S12	0.05 ... 8.5 m 0.05 ... 10 m	1,000 Hz		Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	DC	Cable with M12 connector, 200 mm, M12, plastic
50111441	▶ LSSR 3B.8,200-S12	0.05 ... 8.5 m 0.05 ... 10 m		LED, red			DC	Cable with M12 connector, 200 mm, M12, plastic
50111442	◀ LSR 3B/66,200-S12	0.05 ... 8.5 m 0.05 ... 10 m	1,000 Hz		Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	DC	Cable with M12 connector, 200 mm, M12, plastic
50108512	▶ LSSR 3B.8,200-S8	0.05 ... 8.5 m 0.05 ... 10 m		LED, red			DC	Cable with M12 connector, 200 mm, M8, plastic
50108518	◀ ILSER 3B/4,200-S8	0.05 ... 8.5 m 0.05 ... 10 m	1,000 Hz		Transistor, PNP, light switching	Transistor, PNP, U <sub>b</sub> switching	DC	Cable with M12 connector, 200 mm, M8, plastic

▶ transmitter / ◀ receiver

## Retro-Reflective Sensors

In this area you will find a wide range of sensors that function according to the reflection principle including special sensors for the detection of transparent media, sensors for extremely small components or for combination with a polished, metallic surface as reflector.

### PRK 3B

Reliable sensor with a high performance reserve primarily for small, misaligned reflectors and environments with heavy soiling.

#### Benefits:

- Reliable object detection with small, mis-adjusted reflectors
- Reliable object detection with large range
- Reliable object detection with heavy soiling

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50106865	PRK 3B/6D.7-S8	0.02 ... 5 m 0.02 ... 6 m	1,000 Hz	LED, red	Transistor, push-pull, dark switching		DC	Connector, M8, plastic
50109581	PRK 3B/6-S8.3	0.02 ... 5 m 0.02 ... 6 m	1,000 Hz	LED, red	Transistor, push-pull, light switching		DC	Connector, M8, metal
50104698	PRK 3B/6.7-S8	0.02 ... 5 m 0.02 ... 6 m	1,000 Hz	LED, red	Transistor, push-pull, light switching		DC	Connector, M8, plastic
50104697	PRK 3B/6.7	0.02 ... 5 m 0.02 ... 6 m	1,000 Hz	LED, red	Transistor, push-pull, light switching		DC	Cable, 2,000 mm
50104694	PRK 3B/66-S8	0.02 ... 5 m 0.02 ... 6 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Connector, M8, metal
50106078	PRK 3B/66.1-S8	0.02 ... 5 m 0.02 ... 6 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Connector, M8, metal
50104693	PRK 3B/66	0.02 ... 5 m 0.02 ... 6 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Cable, 2,000 mm
50118016	PRK 3B/66.1	0.02 ... 5 m 0.02 ... 6 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Cable, 2,000 mm
50104696	PRK 3B/66,200-S12	0.02 ... 5 m 0.02 ... 6 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Cable with M12 connector, 200 mm, M12, plastic
50104695	PRK 3B/66,200-S8	0.02 ... 5 m 0.02 ... 6 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Cable with M12 connector, 200 mm, M8, plastic

Detailed information on operating ranges in combination with reflectors can be found in the respective data sheet (online)

### PRK 3B.22

The specialist for positioning tasks with a high performance reserve and simple adjustment by means of lockable teach button or teach input.

#### Benefits:

- Positioning with high accuracy
- Short range with foil reflectors
- Autocollimation principle for use at zero distance

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Voltage type	Connection
50106418	PRK 3B/6D.22-S8	0 ... 4 m 0 ... 5 m	1,000 Hz	LED, red	Transistor, push-pull, light/dark reversible	DC	Connector, M8, metal
50104700	PRK 3B/6.22-S8	0 ... 4 m 0 ... 5 m	1,000 Hz	LED, red	Transistor, push-pull, light/dark reversible	DC	Connector, M8, metal
50109385	PRK 3B/6.2-S8.3	0 ... 4 m 0 ... 5 m	1,000 Hz	LED, red	Transistor, push-pull, light/dark reversible	DC	Connector, M8, metal
50104699	PRK 3B/6.22	0 ... 4 m 0 ... 5 m	1,000 Hz	LED, red	Transistor, push-pull, light/dark reversible	DC	Cable, 2,000 mm
50105762	PRK 3B/6.22,200-S12	0 ... 4 m 0 ... 5 m	1,000 Hz	LED, red	Transistor, push-pull, light/dark reversible	DC	Cable with M12 connector, 200 mm, M12, plastic
50104701	PRK 3B/6.22,200-S8	0 ... 4 m 0 ... 5 m	1,000 Hz	LED, red	Transistor, push-pull, light/dark reversible	DC	Cable with M12 connector, 200 mm, M8, plastic
50114099	PRK 3B/6.2,200-S8.3	0 ... 4 m 0 ... 5 m	1,000 Hz	LED, red	Transistor, push-pull, light/dark reversible	DC	Cable with M12 connector, 200 mm, M8, plastic
50110775	PRK 3B/4D.22,200-S8	0 ... 4 m 0 ... 5 m	1,000 Hz	LED, red	Transistor, PNP, light/dark reversible	DC	Cable with M12 connector, 200 mm, M8, plastic

Detailed information on operating ranges in combination with reflectors can be found in the respective data sheet (online)

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**PRKL 3B.22**

The world's first laser autocollimator in this size, specially designed for the detection of parts as small as 0.1 mm.

**Benefits:**

- Reliable detection of objects with a diameter  $\geq 0.1$  mm
- Object detection through slits, holes and gaps with extremely small dimensions
- Especially designed for the detection of fast events and small parts

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Voltage type	Connection
50104706	PRKL 3B/6.22-S8	0 ... 2 m 0 ... 3 m	2,000 Hz	Laser, red	Transistor, push-pull, light/dark reversible	DC	Connector, M8, metal
50106475	PRKL 3B/6D.22-S8	0 ... 2 m 0 ... 3 m	2,000 Hz	Laser, red	Transistor, push-pull, light/dark reversible	DC	Connector, M8, metal
50109484	PRKL 3B/6.2-S8.3	0 ... 2 m 0 ... 3 m	2,000 Hz	Laser, red	Transistor, push-pull, light/dark reversible	DC	Connector, M8, metal
50104705	PRKL 3B/6.22	0 ... 2 m 0 ... 3 m	2,000 Hz	Laser, red	Transistor, push-pull, light/dark reversible	DC	Cable, 2,000 mm
50105764	PRKL 3B/6.22,200-S12	0 ... 2 m 0 ... 3 m	2,000 Hz	Laser, red	Transistor, push-pull, light/dark reversible	DC	Cable with M12 connector, 200 mm, M12, plastic
50114872	PRKL 3B/6.2,200-S8.3	0 ... 2 m 0 ... 3 m	2,000 Hz	Laser, red	Transistor, push-pull, light/dark reversible	DC	Cable with M12 connector, 200 mm, M8, plastic
50104707	PRKL 3B/6.22,200-S8	0 ... 2 m 0 ... 3 m	2,000 Hz	Laser, red	Transistor, push-pull, light/dark reversible	DC	Cable with M12 connector, 200 mm, M8, plastic

Detailed information on operating ranges in combination with reflectors can be found in the respective data sheet (online)

**PRK 3B.42 / RKR 3B.42**

Especially designed for the detection of transparent media such as glass, PET (PRK devices) and foils thinner than 20  $\mu\text{m}$  (RKR devices). The lockable teach button and the teach input enable simple adjustment.

**Benefits:**

- Particularly suited for highly transparent PET and glass bottles as well as foils
- Easy adjustment via lockable teach button or teach input

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Voltage type	Connection
50108026	PRK 3B/6D.46	0 ... 4 m 0 ... 5 m	1,000 Hz	LED, red	Transistor, push-pull, light/dark reversible	DC	Cable, 2,000 mm
50112473	PRK 3B/6.42-S8	0 ... 3 m 0 ... 3.6 m	1,000 Hz	LED, red	Transistor, push-pull, light/dark reversible	DC	Connector, M8, metal
50112474	PRK 3B/6D.42-S8	0 ... 3 m 0 ... 3.6 m	1,000 Hz	LED, red	Transistor, push-pull, light/dark reversible	DC	Connector, M8, metal
50113326	PRK 3B/6.42,200-S12	0 ... 3 m 0 ... 3.6 m	1,000 Hz	LED, red	Transistor, push-pull, light/dark reversible	DC	Cable with M12 connector, 200 mm, M12, plastic
50113324	PRK 3B/6D.42,200-S12	0 ... 3 m 0 ... 3.6 m	1,000 Hz	LED, red	Transistor, push-pull, light/dark reversible	DC	Cable with M12 connector, 200 mm, M12, plastic
50113325	PRK 3B/6.42,200-S8	0 ... 3 m 0 ... 3.6 m	1,000 Hz	LED, red	Transistor, push-pull, light/dark reversible	DC	Cable with M12 connector, 200 mm, M8, plastic
50114873	PRK 3B/6.42,5000	0 ... 3 m 0 ... 3.6 m	1,000 Hz	LED, red	Transistor, push-pull, light/dark reversible	DC	Cable, 5,000 mm
50113327	PRK 3B/6.42	0 ... 3 m 0 ... 3.6 m	1,000 Hz	LED, red	Transistor, push-pull, light/dark reversible	DC	Cable, 2,000 mm
50104703	RKR 3B/6.42-S8	0 ... 1.5 m 0 ... 1.8 m	1,000 Hz	LED, red	Transistor, push-pull, light/dark reversible	DC	Connector, M8, metal
50105763	RKR 3B/6.42,200-S12	0 ... 1.5 m 0 ... 1.8 m	1,000 Hz	LED, red	Transistor, push-pull, light/dark reversible	DC	Cable with M12 connector, 200 mm, M12, plastic
50104704	RKR 3B/6.42,200-S8	0 ... 1.5 m 0 ... 1.8 m	1,000 Hz	LED, red	Transistor, push-pull, light/dark reversible	DC	Cable with M12 connector, 200 mm, M8, plastic
50104702	RKR 3B/6.42	0 ... 1.5 m 0 ... 1.8 m	1,000 Hz	LED, red	Transistor, push-pull, light/dark reversible	DC	Cable, 2,000 mm
50107914	RKR 3B/6D.42	0 ... 1.5 m 0 ... 1.8 m	1,000 Hz	LED, red	Transistor, push-pull, light/dark reversible	DC	Cable, 2,000 mm

Detailed information on operating ranges in combination with reflectors can be found in the respective data sheet (online)

**PRKL 3B.42**

The laser retro-reflective photoelectric sensor for detecting and counting glass bottles – especially in the case of small gaps between the objects.

**Benefits:**

- For highly transparent full and empty bottles as well as foils
- Detection or counting of highly transparent objects
- Especially in the case of small gaps between the objects

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Voltage type	Connection
50115117	PRKL 3B/6.42-S8	0 ... 0.4 m 0 ... 0.5 m	2,000 Hz	Laser, red	Transistor, push-pull, light/dark reversible	DC	Connector, M8, metal
50120275	PRKL 3B/6.4-S8.3	0 ... 0.4 m 0 ... 0.5 m	2,000 Hz	Laser, red	Transistor, push-pull, light/dark reversible	DC	Connector, M8, metal
50115116	PRKL 3B/6.42	0 ... 0.4 m 0 ... 0.5 m	2,000 Hz	Laser, red	Transistor, push-pull, light/dark reversible	DC	Cable, 2,000 mm
50115119	PRKL 3B/6.42,200-S12	0 ... 0.4 m 0 ... 0.5 m	2,000 Hz	Laser, red	Transistor, push-pull, light/dark reversible	DC	Cable with M12 connector, 200 mm, M12, plastic
50115118	PRKL 3B/6.42,200-S8	0 ... 0.4 m 0 ... 0.5 m	2,000 Hz	Laser, red	Transistor, push-pull, light/dark reversible	DC	Cable with M12 connector, 200 mm, M8, plastic

Detailed information on operating ranges in combination with reflectors can be found in the respective data sheet (online)

**RKR 3B.x1**

For applications in which no reflector can be mounted, this photoelectric sensor is especially well suited for switching on a metallic background as an alternative to a reflector.

**Benefits:**

- Sensor with unpolarized red light for switching on a polished metal plate as reflector
- Extra large light spot for high angle tolerance

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50122232	RKR 3B/66.11-S8	0.02 ... 6.5 m 0.02 ... 7 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Connector, M8, metal
50109023	RKR 3B/66.11	0.02 ... 6.5 m 0.02 ... 7 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Cable, 2,000 mm
50113267	RKR 3B/22D.01,200-S8	0.02 ... 4 m 0.02 ... 5 m	1,500 Hz	LED, red	Transistor, NPN, dark switching (PNP)/light switching (NPN)	Transistor, NPN, light switching (PNP)/dark switching (NPN)	DC	Cable with M12 connector, 200 mm, M8, plastic

**Energetic Light Scanners**

An economical scanner for standard applications in which there are no special requirements on background suppression.

**RTFR 3B**

This model is suited for scanning distances of up to 400 mm. Fading suppresses objects in the background.

**Benefits:**

- Fading – object suppression in background
- Potentiometer for scanning range adjustment
- High switching frequency for detection of fast events

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50108499	RTFR 3B/6D-S8.3	0 ... 0.42 m 0 ... 0.45 m	1,000 Hz	LED, red	Transistor, push-pull, dark switching		DC	Connector, M8, metal
50108500	RTFR 3B/6D.7-S8	0 ... 0.42 m 0 ... 0.45 m	1,000 Hz	LED, red	Transistor, push-pull, dark switching		DC	Connector, M8, plastic
50108498	RTFR 3B/6-S8.3	0 ... 0.42 m 0 ... 0.45 m	1,000 Hz	LED, red	Transistor, push-pull, light switching		DC	Connector, M8, metal
50108495	RTFR 3B/66-S8	0 ... 0.42 m 0 ... 0.45 m	1,000 Hz	LED, red	Transistor, push-pull, light switching	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Connector, M8, metal
50108497	RTFR 3B/6.7-S8	0 ... 0.42 m 0 ... 0.45 m	1,000 Hz	LED, red	Transistor, push-pull, light switching		DC	Connector, M8, plastic
50108501	RTFR 3B/6.7	0 ... 0.42 m 0 ... 0.45 m	1,000 Hz	LED, red	Transistor, push-pull, light switching		DC	Cable, 2,000 mm
50108496	RTFR 3B/66	0 ... 0.42 m 0 ... 0.45 m	1,000 Hz	LED, red	Transistor, push-pull, light switching	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Cable, 2,000 mm

Detailed information on the typical scanning area can be found in the respective data sheet (online)

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**RTR 3B**

If larger ranges are needed for standard applications, this energetic diffuse reflection light scanner with scanning range adjustment is the best choice.

**Benefits:**

- Large ranges up to 750 mm
- Potentiometer for scanning range adjustment
- High switching frequency for detection of fast events

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50108505	RTR 3B/66-S8	0 ... 0.7 m 0 ... 0.75 m	1,000 Hz	LED, red	Transistor, push-pull, light switching	Transistor, push-pull, dark switching	DC	Connector, M8, metal
50109061	RTR 3B/6.7-S8	0 ... 0.7 m 0 ... 0.75 m	1,000 Hz	LED, red	Transistor, push-pull, light switching		DC	Connector, M8, plastic
50108506	RTR 3B/66	0 ... 0.7 m 0 ... 0.75 m	1,000 Hz	LED, red	Transistor, push-pull, light switching	Transistor, push-pull, dark switching	DC	Cable, 2,000 mm
50109250	RTR 3B/6.7	0 ... 0.7 m 0 ... 0.75 m	1,000 Hz	LED, red	Transistor, push-pull, light switching		DC	Cable, 2,000 mm
50109065	RTR 3B/2.7-S8	0 ... 0.7 m 0 ... 0.75 m	1,000 Hz	LED, red	Transistor, NPN, light switching		DC	Connector, M8, plastic
50109251	RTR 3B/2.7	0 ... 0.7 m 0 ... 0.75 m	1,000 Hz	LED, red	Transistor, NPN, light switching		DC	Cable, 2,000 mm

Detailed information on the typical scanning area can be found in the respective data sheet (online)

**Light Scanners with Background Suppression**

These sensors are suited for the reliable detection of objects against a background. Available in a variety of special designs, the 3B series offers robust and efficient solutions, even for tricky applications such as the detection of objects with colored structure, objects with openings or highly polished surfaces.

**HRT(R) 3B**

Scanner with red light or infrared light with very good b/w detection thresholds and reliable switching nearly independent of the background.

**Benefits:**

- Exact scanning range adjustment through 8-turn potentiometer
- Also available with infrared light (HRT 3B)

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50107922	HRTR 3B/6D.7	0.005 ... 0.4 m 0.005 ... 0.4 m	1,000 Hz	LED, red	Transistor, push-pull, dark switching (PNP)/light switching (NPN)		DC	Cable, 2,000 mm
50108408	HRTR 3B/6-S8.3	0.005 ... 0.4 m 0.005 ... 0.4 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)		DC	Connector, M8, metal
50107229	HRTR 3B/66-S8	0.005 ... 0.4 m 0.005 ... 0.4 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Connector, M8, metal
50107241	HRTR 3B/6.7-S8	0.005 ... 0.4 m 0.005 ... 0.4 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)		DC	Connector, M8, plastic
50107228	HRTR 3B/66	0.005 ... 0.4 m 0.005 ... 0.4 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Cable, 2,000 mm
50107240	HRTR 3B/6.7	0.005 ... 0.4 m 0.005 ... 0.4 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)		DC	Cable, 2,000 mm
50107298	HRTR 3B/66,200-S12	0.005 ... 0.4 m 0.005 ... 0.4 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Cable with M12 connector, 200 mm, M12, plastic
50107230	HRTR 3B/66,200-S8	0.005 ... 0.4 m 0.005 ... 0.4 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Cable with M12 connector, 200 mm, M8, plastic
50107239	HRTR 3B/22-S8	0.005 ... 0.4 m 0.005 ... 0.4 m	1,000 Hz	LED, red	Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Connector, M8, metal
50107918	HRTR 3B/2.7	0.005 ... 0.4 m 0.005 ... 0.4 m	1,000 Hz	LED, red	Transistor, NPN, light switching		DC	Cable, 2,000 mm
50107238	HRTR 3B/22	0.005 ... 0.4 m 0.005 ... 0.4 m	1,000 Hz	LED, red	Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Cable, 2,000 mm
50107233	HRTR 3B/44-S8	0.005 ... 0.4 m 0.005 ... 0.4 m	1,000 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M8, metal
50109753	HRTR 3B/44,5000	0.005 ... 0.4 m 0.005 ... 0.4 m	1,000 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Cable, 5,000 mm
50107235	HRTR 3B/44	0.005 ... 0.4 m 0.005 ... 0.4 m	1,000 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Cable, 2,000 mm
50107236	HRTR 3B/44,200-S12	0.005 ... 0.4 m 0.005 ... 0.4 m	1,000 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Cable with M12 connector, 200 mm, M12, plastic
50112465	HRTR 3B/44-95,200-S8	0.005 ... 0.4 m 0.005 ... 0.4 m	1,000 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Cable with M12 connector, 200 mm, M8, plastic
50107232	HRTR 3B/4,200-S8.3	0.005 ... 0.4 m 0.005 ... 0.4 m	1,000 Hz	LED, red	Transistor, PNP, light switching		DC	Cable with M12 connector, 200 mm, M8, plastic
50110659	HRT 3B/44	0.005 ... 0.6 m 0.005 ... 0.6 m	1,000 Hz	LED, infrared	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Cable, 2,000 mm

Typ. operating range with a black/white error < 10%

**HRTL 3B**

Compact laser scanner for the reliable detection of small parts and highly precise positioning in fast processes. Models are available in laser classes 1 and 2.

**Benefits:**

- Especially designed for the detection of fast events and small parts
- For applications with high demands on positioning and reproducibility
- Standard design in laser class 1
- Extended scanning area with very good b/w behavior in laser class 2

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50114582	HRTL 3B/66.C2-S8	0.015 ... 0.5 m 0.015 ... 0.5 m	2,000 Hz	Laser, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Connector, M8, metal
50114763	HRTL 3B/66.C2	0.015 ... 0.5 m 0.015 ... 0.5 m	2,000 Hz	Laser, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Cable, 2,000 mm
50114765	HRTL 3B/66.C2,200-S12	0.015 ... 0.5 m 0.015 ... 0.5 m	2,000 Hz	Laser, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Cable with M12 connector, 200 mm, M12, plastic
50114764	HRTL 3B/66.C2,200-S8	0.015 ... 0.5 m 0.015 ... 0.5 m	2,000 Hz	Laser, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Cable with M12 connector, 200 mm, M8, plastic
50114581	HRTL 3B/66-S8	0.015 ... 0.4 m 0.015 ... 0.4 m	2,000 Hz	Laser, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Connector, M8, metal
50114760	HRTL 3B/66	0.015 ... 0.4 m 0.015 ... 0.4 m	2,000 Hz	Laser, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Cable, 2,000 mm
50114762	HRTL 3B/66,200-S12	0.015 ... 0.4 m 0.015 ... 0.4 m	2,000 Hz	Laser, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Cable with M12 connector, 200 mm, M12, plastic
50114761	HRTL 3B/66,200-S8	0.015 ... 0.4 m 0.015 ... 0.4 m	2,000 Hz	Laser, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Cable with M12 connector, 200 mm, M8, plastic

Typ. operating range with a black/white error < 10%

**HRTR 3B-(X)L**

With its very large light spot, this sensor type is suitable for the detection of objects with openings, holes and grooves.

**Benefits:**

- Especially designed for the detection of objects with openings, holes and grooves
- Also for detecting transparent foils and bottles

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50111444	HRTR 3B/6D-XL-S8.3	0.005 ... 0.05 m 0.005 ... 0.1 m	1,000 Hz	LED, red	Transistor, push-pull, dark switching (PNP)/light switching (NPN)		DC	Connector, M8, metal
50107247	HRTR 3B/66-XL-S8	0.005 ... 0.05 m 0.005 ... 0.1 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Connector, M8, metal
50109485	HRTR 3B/6-XL-S8.3	0.005 ... 0.05 m 0.005 ... 0.1 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)		DC	Connector, M8, metal
50107246	HRTR 3B/66-XL	0.005 ... 0.05 m 0.005 ... 0.1 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Cable, 2,000 mm
50107249	HRTR 3B/66-XL,200-S12	0.005 ... 0.05 m 0.005 ... 0.1 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Cable with M12 connector, 200 mm, M12, plastic
50107248	HRTR 3B/66-XL,200-S8	0.005 ... 0.05 m 0.005 ... 0.1 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Cable with M12 connector, 200 mm, M8, plastic
50111443	HRTR 3B/44-L-S8	0.005 ... 0.05 m 0.005 ... 0.1 m	150 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M8, metal
50107299	HRTR 3B/4-XL-S8	0.005 ... 0.05 m 0.005 ... 0.1 m	1,000 Hz	LED, red	Transistor, PNP, light switching		DC	Connector, M8, metal
50107250	HRTR 3B/44-XL-S8	0.005 ... 0.05 m 0.005 ... 0.1 m	1,000 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M8, metal
50124155	HRTR 3B/44-L,200-S12	0.005 ... 0.05 m 0.005 ... 0.1 m	150 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Cable with M12 connector, 200 mm, M12, plastic
50107251	HRTR 3B/44-XL,200-S12	0.005 ... 0.05 m 0.005 ... 0.1 m	1,000 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Cable with M12 connector, 200 mm, M12, plastic
50113317	HRTR 3B/44-L,200-S8	0.005 ... 0.05 m 0.005 ... 0.1 m	150 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Cable with M12 connector, 200 mm, M8, plastic

Typ. operating range with a black/white error < 10%

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**HRTR 3B-S**

Sensor for demanding detection tasks with small, homogeneous light spot, very good background suppression and excellent b/w detection thresholds for reliable switching on glossy objects and objects with colored structure.

**Benefits:**

- Small, homogeneous light spot by means of pin-point LED
- Exact scanning range adjustment through 8-turn potentiometer

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50107243	HRTR 3B/66-S-S8	0.005 ... 0.2 m 0.005 ... 0.2 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Connector, M8, metal
50108407	HRTR 3B/6-S-S8.3	0.005 ... 0.2 m 0.005 ... 0.2 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)		DC	Connector, M8, metal
50110809	HRTR 3B/66-S,5000	0.005 ... 0.2 m 0.005 ... 0.2 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Cable, 5,000 mm
50107242	HRTR 3B/66-S	0.005 ... 0.2 m 0.005 ... 0.2 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Cable, 2,000 mm
50107245	HRTR 3B/66-S,200-S12	0.005 ... 0.2 m 0.005 ... 0.2 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Cable with M12 connector, 200 mm, M12, plastic
50109051	HRTR 3B/6-S,200-S8.3	0.005 ... 0.2 m 0.005 ... 0.2 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)		DC	Cable with M12 connector, 200 mm, M8, plastic
50107244	HRTR 3B/66-S,200-S8	0.005 ... 0.2 m 0.005 ... 0.2 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Cable with M12 connector, 200 mm, M8, plastic

Typ. operating range with a black/white error < 10 %

**HRTR 3B-V**

Special scanner with V-optics for the reliable detection of planar, reflecting, highly polished or transparent objects.

**Benefits:**

- For the reliable detection of flat, reflective or highly glossy surfaces
- Also suited for transparent objects

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50114769	HRTR 3B/66-V-S8	0.015 ... 0.2 m 0.015 ... 0.2 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Connector, M8, metal
50114766	HRTR 3B/66-V	0.015 ... 0.2 m 0.015 ... 0.2 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Cable, 2,000 mm
50114768	HRTR 3B/66-V,200-S12	0.015 ... 0.2 m 0.015 ... 0.2 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Cable with M12 connector, 200 mm, M12, plastic
50114767	HRTR 3B/66-V,200-S8	0.015 ... 0.2 m 0.015 ... 0.2 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Cable with M12 connector, 200 mm, M8, plastic
50115641	HRTR 3B/2.7-V	0.015 ... 0.2 m 0.015 ... 0.2 m	1,000 Hz	LED, red	Transistor, NPN, light switching		DC	Cable, 2,000 mm
50122262	HRTR 3B/66-VXL-S8	0.01 ... 0.09 m 0.01 ... 0.09 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Connector, M8, metal

Typ. operating range with a black/white error < 10 %

## /// 5 Series



The 5 series photoelectric sensors, with their compact cubic design, are always the right choice when powerful and robust standard detection is needed, e. g., in conveyor or packaging technology. The integrated M3 metal threaded sleeves and the cable outlet, which is available either pointing downward or to the rear, open many options, particularly in situations with limited installation space. From a technological perspective as well, the 5 series – with a large range, large brightVision® light spot and active A<sup>2</sup>LS extraneous light suppression – offers everything one expects in a modern photoelectric sensor.



## Throughbeam Sensors

Compact, cubic throughbeam photoelectric sensor for constrained spaces with proven technical features.

## L5

The one-way principle makes possible the reliable detection of even flat objects with a high performance reserve and reduces the risk of a system standstill. Deactivation inputs enable testing of the sensor. In addition, optimized beam geometry and the highly visible brightVision® light spot simplify alignment.

## Benefits:

- High performance reserve
- Simple alignment by means of optimized beam geometry
- Simple detection of flat objects
- Transmitter deactivation for testing and networking

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50117695	▶ LS5/9D-M8	0 ... 10 m 0 ... 15 m		LED, red			DC	Connector, M8, plastic
50117689	◀ LE5/2N-M8	0 ... 10 m 0 ... 15 m	500 Hz		Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Connector, M8, plastic
50117692	◀ LE5/4P-M8	0 ... 10 m 0 ... 15 m	500 Hz		Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M8, plastic
50117694	▶ LS5/9D	0 ... 10 m 0 ... 15 m		LED, red			DC	Cable, 2,000 mm
50117688	◀ LE5/2N	0 ... 10 m 0 ... 15 m	500 Hz		Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Cable, 2,000 mm
50117691	◀ LE5/4P	0 ... 10 m 0 ... 15 m	500 Hz		Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Cable, 2,000 mm
50117693	▶ LS5/9D-200-M12	0 ... 10 m 0 ... 15 m		LED, red			DC	Cable with M12 connector, 200 mm, M12, plastic
50117683	◀ LE5/2N-200-M12	0 ... 10 m 0 ... 15 m	500 Hz		Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Cable with M12 connector, 200 mm, M12, plastic
50117690	◀ LE5/4P-200-M12	0 ... 10 m 0 ... 15 m	500 Hz		Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Cable with M12 connector, 200 mm, M12, plastic

▶ transmitter / ◀ receiver

## Retro-Reflective Sensors

Compact retro-reflective photoelectric sensors for constrained spaces, on transport systems for example.

## PRK5

A polarization filter ensures the reliable suppression of direct reflections and, together with the high performance reserve of the sensor, enables reliable detection. In addition, optimized beam geometry and the highly visible brightVision® light spot simplify alignment.

## Benefits:

- Homogeneous light spot for safe switching behavior and easy alignment
- Safe suppression of direct reflection due to polarization filter

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50117703	PRK5/2N-M8	0.02 ... 4.5 m 0.02 ... 6 m	500 Hz	LED, red	Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Connector, M8, plastic
50117707	PRK5/2N	0.02 ... 4.5 m 0.02 ... 6 m	500 Hz	LED, red	Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Cable, 2,000 mm
50117702	PRK5/2N-200-M12	0.02 ... 4.5 m 0.02 ... 6 m	500 Hz	LED, red	Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Cable with M12 connector, 200 mm, M12, plastic
50117706	PRK5/4P-M8	0.02 ... 4.5 m 0.02 ... 6 m	500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M8, plastic

Detailed information on operating ranges in combination with reflectors can be found in the respective data sheet (online)

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50117705	PRK5/4P	0.02 ... 4.5 m 0.02 ... 6 m	500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Cable, 2,000 mm
50123266	PRK5/4P-800-M12	0.02 ... 4.5 m 0.02 ... 6 m	500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Cable with M12 connector, 800 mm, M12, plastic
50123267	PRK5/4P-350-M12	0.02 ... 4.5 m 0.02 ... 6 m	500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Cable with M12 connector, 350 mm, M12, plastic
50122066	PRK5/4X-200-M8.1	0.02 ... 4.5 m 0.02 ... 6 m	500 Hz	LED, red	Transistor, PNP, light switching		DC	Cable with M12 connector, 200 mm, snap-in, M8, plastic
50117704	PRK5/4P-200-M12	0.02 ... 4.5 m 0.02 ... 6 m	500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Cable with M12 connector, 200 mm, M12, plastic
50122106	PRK5/4-200-M8.3	0.02 ... 4.5 m 0.02 ... 6 m	500 Hz	LED, red	Transistor, PNP, light switching		DC	Cable with M12 connector, 200 mm, M8, plastic
50122446	PRK5/4P-200-M8	0.02 ... 4.5 m 0.02 ... 6 m	500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Cable with M12 connector, 200 mm, M8, plastic

Detailed information on operating ranges in combination with reflectors can be found in the respective data sheet (online)

## Energetic Light Scanners

Compact cubic light scanner for standard detection tasks. This sensor performs detection directly on an object and requires no reflector.

### ET5 / FT5

These red-light scanners in the compact plastic housing facilitate robust object detection for homogeneous or similar objects. Through the simple sensitivity adjustment with two-level teach (object/background), they are particularly flexible in use. These sensors feature the A<sup>2</sup>LS active ambient light suppression and easy alignment through brightly visible brightVision® light spot.

#### Benefits:

- Energetic reflection light scanner with light/dark switching
- Scanning range adjustment via teach-in
- Simple mounting with integrated M3 metal threaded sleeves
- Compact installation possible due to cable outlet at the rear or bottom
- Full control through green and yellow indicator LEDs and complementary outputs
- Robust plastic housing acc. to IP 67 for industrial application

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50122581	ET5.3/2N-M8	0.001 ... 0.7 m 0 ... 1 m	500 Hz	LED, red	Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Connector, M8, plastic
50122583	ET5.3/2N-200-M12	0.001 ... 0.7 m 0 ... 1 m	500 Hz	LED, red	Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Cable with M12 connector, 200 mm, M12, plastic
50122582	ET5.3/2N	0.001 ... 0.7 m 0 ... 1 m	500 Hz	LED, red	Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Cable, 2,000 mm
50122578	ET5.3/4P-M8	0.001 ... 0.7 m 0 ... 1 m	500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M8, plastic
50122580	ET5.3/4P-200-M12	0.001 ... 0.7 m 0 ... 1 m	500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Cable with M12 connector, 200 mm, M12, plastic
50122579	ET5.3/4P	0.001 ... 0.7 m 0 ... 1 m	500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Cable, 2,000 mm
50122575	FT5.3/2N-M8	0.001 ... 0.215 m 0 ... 0.28 m	500 Hz	LED, red	Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Connector, M8, plastic
50122577	FT5.3/2N-200-M12	0.001 ... 0.215 m 0 ... 0.28 m	500 Hz	LED, red	Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Cable with M12 connector, 200 mm, M12, plastic
50122576	FT5.3/2N	0.001 ... 0.215 m 0 ... 0.28 m	500 Hz	LED, red	Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Cable, 2,000 mm
50122572	FT5.3/4P-M8	0.001 ... 0.215 m 0 ... 0.28 m	500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M8, plastic
50122574	FT5.3/4P-200-M12	0.001 ... 0.215 m 0 ... 0.28 m	500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Cable with M12 connector, 200 mm, M12, plastic
50122573	FT5.3/4P	0.001 ... 0.215 m 0 ... 0.28 m	500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Cable, 2,000 mm

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## /// 8 Series



This extensive series offers a wide variety of operating principles and functions in a sturdy metal housing with very compact dimensions. With degrees of protection of IP 67 and IP 69K, the sensors are well suited for a range of industrial applications with glass pane, e. g., in packaging technology or special-purpose machinery manufacture, particularly in rough conditions. The turning device plug simplifies integration in constrained spaces.



Direct access to the online product selector at [www.leuze.com/en/br8](http://www.leuze.com/en/br8)

## Throughbeam Sensors

Reliable throughbeam photoelectric sensors with visible red light for a wide variety of industrial applications.

## LS 8

Powerful throughbeam photoelectric sensors with visible red light suitable for applications in packaging systems.

## Benefits:

- Push-pull or NPN/PNP outputs immune to interference
- M12 turning connector or cable connection
- With adjustable focal point
- Sensitivity adjustment with potentiometer

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50036358	▶ LSSRL 8.9-S12	0 ... 60 m 0 ... 100 m		Laser, red			DC	Connector, M12, metal
50036359	◀ LSERL 8/24.01-S12	0 ... 60 m 0 ... 100 m	2,800 Hz		Transistor, PNP, light switching	Transistor, NPN, light switching	DC	Connector, M12, metal
50037083	▶ LSSRL 8.9	0 ... 60 m 0 ... 100 m		Laser, red			DC	Cable, 2,000 mm
50037084	◀ LSERL 8/24.01	0 ... 60 m 0 ... 100 m	2,800 Hz		Transistor, PNP, light switching	Transistor, NPN, light switching	DC	Cable, 2,000 mm
50036354	▶ LSSR 8-S12	0 ... 12 m 0 ... 20 m		LED, red			DC	Connector, M12, metal
50036569	◀ LSER 8/66-S12	0 ... 12 m 0 ... 20 m	1,500 Hz		Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	DC	Connector, M12, metal
50036356	◀ LSER 8/44-S12	0 ... 12 m 0 ... 20 m	1,500 Hz		Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, metal
50036355	▶ LSSR 8	0 ... 12 m 0 ... 20 m		LED, red			DC	Cable, 2,000 mm
50036570	◀ LSER 8/66	0 ... 12 m 0 ... 20 m	1,500 Hz		Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	DC	Cable, 2,000 mm
50036357	◀ LSER 8/44	0 ... 12 m 0 ... 20 m	1,500 Hz		Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Cable, 2,000 mm
50038787	▶ LSSR 8/A.8-S12	0 ... 12 m 0 ... 20 m		LED, red	AS-Interface IO			Connector, M12, metal
50038788	◀ ILSER 8/A-S12	0 ... 12 m 0 ... 20 m	2,800 Hz		AS-Interface IO			Connector, M12, metal

▶ transmitter / ◀ receiver

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## Retro-Reflective Sensors

Compact retro-reflective photoelectric sensors with sensitivity adjustment via potentiometer for integration in constrained spaces.

### PRK(L)8

Retro-reflective photoelectric sensors with visible red light or laser and degree of protection IP 67 and IP 69K.

#### Benefits:

- Push-pull or NPN/PNP outputs immune to interference
- M12 turning connector or cable connection
- Sensitivity adjustment with potentiometer or teach-in

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50036364	PRKL 8/24.91-S12	0 ... 19 m 0 ... 21 m	2,800 Hz	Laser, red	Transistor, PNP, light switching	Transistor, NPN, light switching	DC	Connector, M12, metal
50115689	PRKL 8/24.99-S12	0 ... 19 m 0 ... 21 m	2,800 Hz	Laser, red	Transistor, PNP, light switching	Transistor, NPN, light switching	DC	Connector, M12, metal
50036365	PRKL 8/24.91	0 ... 19 m 0 ... 21 m	2,800 Hz	Laser, red	Transistor, PNP, light switching	Transistor, NPN, light switching	DC	Cable, 2,000 mm
50038789	IPRK 8/A-S12	0.1 ... 6.4 m 0.1 ... 8 m	1,500 Hz	LED, red	AS-Interface IO			Connector, M12, metal
50036362	PRK 8/66-S12	0.1 ... 6.4 m 0.1 ... 8 m	1,500 Hz	LED, red	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	DC	Connector, M12, metal
50036363	PRK 8/66	0.1 ... 6.4 m 0.1 ... 8 m	1,500 Hz	LED, red	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	DC	Cable, 2,000 mm
50036360	PRK 8/44-S12	0.1 ... 6.4 m 0.1 ... 8 m	1,500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, metal
50036361	PRK 8/44	0.1 ... 6.4 m 0.1 ... 8 m	1,500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Cable, 2,000 mm
50037133	PRK 8/66.11-S12	0 ... 5 m 0 ... 7 m	1,500 Hz	LED, infrared	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	DC	Connector, M12, metal

Detailed information on operating ranges in combination with reflectors can be found in the respective data sheet (online)

### PRK 8.4x

Retro-reflective photoelectric sensor specially designed for single-lane bottle transport and transparent media.

#### Benefits:

- Autocollimation principle for transparent media
- Tracking function in the event of contamination
- Sensitivity adjustment with potentiometer or teach-in
- Push-pull switching outputs immune to interference
- M12 turning connector or cable connection

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50037135	PRK 8/66.42-S12	0 ... 2 m 0 ... 2.4 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	DC	Connector, M12, metal
50037134	PRK 8/66.41-S12	0 ... 2 m 0 ... 2.4 m	1,500 Hz	LED, red	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	DC	Connector, M12, metal

Detailed information on operating ranges in combination with reflectors can be found in the respective data sheet (online)

## Light Scanners

Powerful reflection light scanner with visible red light.

### (I)RTR 8 / VRTR 8

These light scanners feature a visible red light and are perfectly suited for rough environmental conditions. In addition, models with foreground suppression (VRTR 8) are available.

#### Benefits:

- Push-pull, PNP outputs or AS-Interface IO
- Scanning range adjustment with potentiometer
- M12 turning connector or cable connection
- Visible red light

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50038790	IRTR 8/A-800-S12	0.01 ... 0.6 m 0.01 ... 0.8 m	1,500 Hz	LED, red	AS-Interface IO			Connector, M12, metal
50036368	RTR 8/66-800-S12	0.01 ... 0.6 m 0.01 ... 0.8 m	1,500 Hz	LED, red	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	DC	Connector, M12, metal

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50036369	RTR 8/66-800	0.01 ... 0.6 m 0.01 ... 0.8 m	1,500 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Cable, 2,000 mm
50036366	RTR 8/44-800-S12	0.01 ... 0.6 m 0.01 ... 0.8 m	1,500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, metal
50036367	RTR 8/44-800	0.01 ... 0.6 m 0.01 ... 0.8 m	1,500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Cable, 2,000 mm
50036374	VRTR 8/66-250-S12	0 ... 0.25 m 0 ... 0.25 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Connector, M12, metal
50036375	VRTR 8/66-250	0 ... 0.25 m 0 ... 0.25 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Cable, 2,000 mm
50036372	VRTR 8/44-250-S12	0 ... 0.25 m 0 ... 0.25 m	1,000 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, metal

Detailed information on operating ranges in combination with reflectors can be found in the respective data sheet (online)

## Light Scanners with Background Suppression

Reflection light scanner with background suppression and visible red light or infrared light.

### (I)HRT 8 / HRTL 8 / HRTR 8

Powerful reflection light scanners with multiturn potentiometer, specially designed for detecting glossy objects.

#### Benefits:

- Detection of shining objects
- Adjustable background suppression via multiturn potentiometer
- Push-pull or NPN/PNP outputs immune to interference
- M12 turning connector or cable connection
- High switching frequency

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50102705	HRTL 8/66-350-S12	0.007 ... 0.35 m 0.007 ... 0.4 m	200 Hz	Laser, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Connector, M12, metal
50103709	HRTL 8/66-350,5000	0.007 ... 0.35 m 0.007 ... 0.4 m	2,000 Hz	Laser, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Cable, 5,000 mm
50036370	HRTL 8/24-350-S12	0.007 ... 0.35 m 0.007 ... 0.4 m	2,000 Hz	Laser, red	Transistor, PNP, light switching	Transistor, NPN, light switching	DC	Connector, M12, metal
50036371	HRTL 8/24-350	0.007 ... 0.35 m 0.007 ... 0.4 m	2,000 Hz	Laser, red	Transistor, PNP, light switching	Transistor, NPN, light switching	DC	Cable, 2,000 mm
50102704	HRTL 8/66-150-S12	0.01 ... 0.15 m 0.01 ... 0.2 m	200 Hz	Laser, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Connector, M12, metal
50115688	HRTL 8/66.09-150-S12	0.025 ... 0.15 m 0.025 ... 0.2 m	2,000 Hz	Laser, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Connector, M12, metal
50038482	HRTL 8/24-150-S12	0.01 ... 0.15 m 0.01 ... 0.2 m	2,000 Hz	Laser, red	Transistor, PNP, light switching	Transistor, NPN, light switching	DC	Connector, M12, metal
50038483	HRTL 8/24-150	0.01 ... 0.15 m 0.01 ... 0.2 m	2,000 Hz	Laser, red	Transistor, PNP, light switching	Transistor, NPN, light switching	DC	Cable, 2,000 mm
50036352	HRTR 8/66-350-S12	0.007 ... 0.35 m 0.007 ... 0.4 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Connector, M12, metal
50108224	HRTR 8/66-350,5000	0.007 ... 0.35 m 0.007 ... 0.4 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Cable, 5,000 mm
50036353	HRTR 8/66-350	0.007 ... 0.35 m 0.007 ... 0.4 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Cable, 2,000 mm
50036350	HRTR 8/44-350-S12	0.007 ... 0.35 m 0.007 ... 0.4 m	1,000 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, metal
50036351	HRTR 8/44-350	0.007 ... 0.35 m 0.007 ... 0.4 m	1,000 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Cable, 2,000 mm
50103360	IHRT 8/4-100-S12	0.03 ... 0.1 m 0.03 ... 0.1 m	200 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, U <sub>s</sub> switching	DC	Connector, M12, metal
50039650	HRT 8/66.6-350-S12	0.007 ... 0.35 m 0.007 ... 0.4 m	1,000 Hz	LED, infrared	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Connector, M12, metal
50103361	IHRT 8/4-200-S12	0.04 ... 0.2 m 0.04 ... 0.2 m	200 Hz	LED, infrared	Transistor, PNP, light switching	Transistor, PNP, U <sub>s</sub> switching	DC	Connector, M12, metal

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## /// 18 Series



These retro-reflective photoelectric sensors in coated metal housing with glass optics were designed specially for detecting transparent PET and glass bottles, plastic foils as well as flat glass. The patented tracking process extends the cleaning interval many times over; short response times and minimal jitter ensure reliable control of fast processes. The versatile fastening options with integrated thread facilitate mounting and the models with aligned abeam optics make alignment unnecessary.



## Retro-Reflective Sensors

Polarized and unpolarized retro-reflective photoelectric sensors with autocollimation optics for the detection of foils and transparent media are available. In line with application requirements, three different types of adjustment options (270° potentiometer, teach button, 11-turn potentiometer) are available.

## (P)RK18B / (I)PRK 18

Polarized and unpolarized retro-reflective photoelectric sensors for the reliable detection of highly transparent bottles, foils and glass panes.

## Benefits:

- Reliable detection of containers for single bottles
- Precisely adjustable switching point via 270° potentiometer, teach button, 11-turn potentiometer
- Coated with chemical nickel
- Models with high optical accuracy available thanks to calibrated optical system
- Large temperature compensation
- Tracking for contamination compensation
- Front and side mounting systems with M4 thread

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50117373	RK18B.1/2N-M12	0 ... 6 m 0 ... 7.2 m	500 Hz	LED, red	Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Connector, M12, metal
50117357	PRK18B.1/2N-M12	0 ... 6 m 0 ... 7.2 m	500 Hz	LED, red	Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Connector, M12, metal
50117372	RK18B.1/2N-6000	0 ... 6 m 0 ... 7.2 m	500 Hz	LED, red	Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Cable, 6,000 mm
50117356	PRK18B.1/2N-6000	0 ... 6 m 0 ... 7.2 m	500 Hz	LED, red	Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Cable, 6,000 mm
50117375	RK18B.1/4P-M12	0 ... 6 m 0 ... 7.2 m	500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, metal
50117359	PRK18B.1/4P-M12	0 ... 6 m 0 ... 7.2 m	500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, metal
50117374	RK18B.1/4P-6000	0 ... 6 m 0 ... 7.2 m	500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Cable, 6,000 mm
50117358	PRK18B.1/4P-6000	0 ... 6 m 0 ... 7.2 m	500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Cable, 6,000 mm
50117364	PRK18B.T2/NX-M12	0 ... 4 m 0 ... 4.8 m	1,500 Hz	LED, red	Transistor, NPN, dark switching		DC	Connector, M12, metal
50117366	PRK18B.T3/2N-M12	0 ... 4 m 0 ... 4.8 m	1,500 Hz	LED, red	Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Connector, M12, metal
50117377	RK18B.T2/2N-M12	0 ... 4 m 0 ... 4.8 m	1,500 Hz	LED, red	Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Connector, M12, metal
50117360	PRK18B.T2/2N-6000	0 ... 4 m 0 ... 4.8 m	1,500 Hz	LED, red	Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Cable, 6,000 mm
50117361	PRK18B.T2/PX-M12	0 ... 4 m 0 ... 4.8 m	1,500 Hz	LED, red	Transistor, PNP, dark switching		DC	Connector, M12, metal
50117365	PRK18B.T2/4X-M12	0 ... 4 m 0 ... 4.8 m	1,500 Hz	LED, red	Transistor, PNP, dark switching		DC	Connector, M12, metal
50124944	PRK18B.XT3/4P-M12	0 ... 4 m 0 ... 4.8 m	1,500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, metal
50124945	PRK18B.XT2/4P-M12	0 ... 4 m 0 ... 4.8 m	1,500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, metal
50117363	PRK18B.T2/4P-M12	0 ... 4 m 0 ... 4.8 m	1,500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, metal
50117379	RK18B.T2/4P-M12	0 ... 4 m 0 ... 4.8 m	1,500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, metal
50117367	PRK18B.T3/4P-M12	0 ... 4 m 0 ... 4.8 m	1,500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, metal

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50117362	PRK18B.T2/4P-6000	0 ... 4 m 0 ... 4.8 m	1,500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Cable, 6,000 mm
50117369	PRK18B.FXT3/2N-M12	0 ... 3 m 0 ... 3.6 m	5,000 Hz	LED, red	Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Connector, M12, metal
50121228	PRK18B.TT3/2N-M12	0 ... 3 m 0 ... 3.6 m	1,500 Hz	LED, red	Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Connector, M12, metal
50033552	IPRK 18/4 DL.41	0 ... 3 m 0 ... 4 m	1,000 Hz	LED, red	Transistor, PNP, dark switching	Transistor, PNP, U <sub>s</sub> switching	DC	Connector, M12, stainless steel
50033554	PRK 18/24 DL.42	0 ... 3 m 0 ... 4 m	1,000 Hz	LED, red	Transistor, PNP, dark switching	Transistor, NPN, light switching	DC	Connector, M12, stainless steel
50032798	PRK 18/24 DL.46	0 ... 3 m 0 ... 4 m	1,000 Hz	LED, red	Transistor, PNP, dark switching	Transistor, NPN, light switching	DC	Connector, M12, stainless steel
50124943	PRK18B.XTT3/4P-M12	0 ... 3 m 0 ... 3.6 m	1,500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, metal
50117371	PRK18B.FXT3/4P-M12	0 ... 3 m 0 ... 3.6 m	5,000 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, metal
50121229	PRK18B.TT3/4P-M12	0 ... 3 m 0 ... 3.6 m	1,500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, metal
50115193	PRK 18/44 L.43	0 ... 3 m 0 ... 4 m	1,000 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, stainless steel
50034119	IPRK 18/A.1 L.4	0 ... 2.4 m 0 ... 3 m	500 Hz	LED, red	AS-Interface IO			Connector, M12, stainless steel
50040278	IPRK 18/A L.46	0 ... 2.4 m 0 ... 3 m	1,000 Hz	LED, red	AS-Interface IO			Connector, M12, stainless steel
50030077	IPRK 18/A L.4	0 ... 2.4 m 0 ... 3 m	500 Hz	LED, red	AS-Interface IO			Connector, M12, stainless steel
50106974	IPRK 18/V L.03	0 ... 1 m 0 ... 1.2 m	1,000 Hz	LED, red	Transistor, PNP, light switching		DC	Connector, M12, stainless steel

Switching Sensors

Measuring Sensors

/// 25 Series



This series covers all operating principles – from the throughbeam photoelectric sensor to the scanner with background suppression – and have been optimized for a wide range of different applications, especially in intralogistics and packaging technology. Protection ratings IP 67 and IP 66 as well as the active suppression of extraneous light enable use in a wide range of industrial sectors. A number of different options, such as activation input or warning output, facilitate a high level of process reliability and, thus, system availability.



Products for Safety at Work

Identification

Throughbeam Sensors

The photoelectric sensors of this series offer a high performance reserve and are suited for use in rough, industrial environments.

LSR 25B

The standard LSR 25B throughbeam photoelectric sensor convinces with its large range and its versatile options for increasing process reliability (warning, testing).

Benefits:

- Photoelectric sensor with very high performance reserve
- Suitable for use in rough, industrial environment
- Various options for increasing the process reliability (warning, test activation)

Data Transmission / Control Components

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50108478	▶ LSSR 25B.8-S12	0 ... 20 m 0 ... 24 m		LED, red			DC	Connector, M12, plastic
50108483	◀ LSR 25B/66-S12	0 ... 20 m 0 ... 24 m	500 Hz		Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Connector, M12, plastic
50108487	◀ ILSER 25B/4-S12	0 ... 20 m 0 ... 24 m	500 Hz		Transistor, PNP, light switching (PNP)/dark switching (NPN)	Transistor, PNP, U <sub>s</sub> switching	DC	Connector, M12, plastic

▶ transmitter / ◀ receiver

Industrial Image Processing

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Accessories

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50108477	► LSSR 25B-S12	0 ... 20 m 0 ... 24 m		LED, red			DC	Connector, M12, plastic
50108484	◄ LSER 25B/66.1-S12	0 ... 20 m 0 ... 24 m	500 Hz		Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	DC	Connector, M12, plastic
50108483	◄ LSER 25B/66-S12	0 ... 20 m 0 ... 24 m	500 Hz		Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	DC	Connector, M12, plastic
50108487	◄ ILSER 25B/4-S12	0 ... 20 m 0 ... 24 m	500 Hz		Transistor, PNP, light switching (PNP)/ dark switching (NPN)	Transistor, PNP, U <sub>s</sub> switching	DC	Connector, M12, plastic
50108479	► LSSR 25B.8-S8	0 ... 20 m 0 ... 24 m		LED, red			DC	Connector, M8, plastic
50108485	◄ LSER 25B/66-S8	0 ... 20 m 0 ... 24 m	500 Hz		Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	DC	Connector, M8, plastic
50108480	► LSSR 25B.8	0 ... 20 m 0 ... 24 m		LED, red			DC	Cable, 2,000 mm
50108486	◄ LSER 25B/66	0 ... 20 m 0 ... 24 m	500 Hz		Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	DC	Cable, 2,000 mm
50110872	► LSSR 25B,200-S8.1	0 ... 20 m 0 ... 24 m		LED, red			DC	Cable with connector, 200 mm, snap-in, M8, metal
50110873	◄ LSER 25B/4,200-S8.1	0 ... 20 m 0 ... 24 m	500 Hz		Transistor, PNP, light switching		DC	Cable with connector, 200 mm, snap-in, M8, metal
50110922	► LSSR 25B,200-S12	0 ... 20 m 0 ... 24 m		LED, red			DC	Cable with connector, 200 mm, M12, metal
50110923	◄ LSER 25B/4,200-S12	0 ... 20 m 0 ... 24 m	500 Hz		Transistor, PNP, light switching		DC	Cable with connector, 200 mm, M12, metal

► transmitter / ◄ receiver

## Retro-Reflective Sensors

In addition to normal polarized retro-reflective photoelectric sensors, the 25B series with variants is ideally suited for the reliable detection of stretch-wrapped pallets or for very precise positioning.

### (I)PRK 25B

The standard (I)PRK 25B retro-reflective photoelectric sensor ensures high system availability, even under extreme environmental conditions. Additional functions, such as warning and activation, further increase process reliability.

#### Benefits:

- High system availability under extreme environmental conditions
- Additional functions, e. g. warning, activation, for increasing the process reliability

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50104223	PRK 25B/66-S12	0.08 ... 8 m 0.05 ... 10 m	500 Hz	LED, red	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	DC	Connector, M12, plastic
50104230	PRK 25B/66.1-S12	0.08 ... 8 m 0.05 ... 10 m	500 Hz	LED, red	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	DC	Connector, M12, plastic
50104224	PRK 25B/66-S8	0.08 ... 8 m 0.05 ... 10 m	500 Hz	LED, red	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	DC	Connector, M8, plastic
50104225	PRK 25B/66	0.08 ... 8 m 0.05 ... 10 m	500 Hz	LED, red	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	DC	Cable, 2,000 mm
50104226	PRK 25B/66,200-S12	0.08 ... 8 m 0.05 ... 10 m	500 Hz	LED, red	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	DC	Cable with connector, 200 mm, M12, metal
50105739	PRK 25B/66,100-S8	0.08 ... 8 m 0.05 ... 10 m	500 Hz	LED, red	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	DC	Cable with M12 connector, 100 mm, M8, metal
50104229	IPRK 25B/4,200-S12	0.08 ... 8 m 0.05 ... 10 m	500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, U <sub>s</sub> switching	DC	Cable with M12 connector, 200 mm, M12, plastic
50104228	IPRK 25B/4-S12	0.05 ... 8 m 0.05 ... 10 m	500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, U <sub>s</sub> switching	DC	Connector, M12, plastic
50104227	PRK 25B/4.8-S12	0.05 ... 8 m 0.05 ... 10 m	500 Hz	LED, red	Transistor, PNP, light switching		DC	Connector, M12, plastic
50109432	PRK 25B/44-S12	0.05 ... 8 m 0.05 ... 10 m	500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, plastic
50113771	PRK 25B/4,200-S8.1	0.05 ... 8 m 0.05 ... 10 m	500 Hz	LED, red	Transistor, PNP, light switching		DC	Cable with connector, 200 mm, snap-in, M8, metal

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**(I)PRK 25B.3**

The (I)PRK 25B.3 retro-reflective photoelectric sensor is optimized for use in the areas of material flow, intralogistics and packaging technology. It is particularly well suited for the reliable detection of stretch-wrapped pallets, foil-wrapped objects or laminated surfaces.

**Benefits:**

- Optimized for use in the areas of material flow/intralogistics and packaging technology
- Reliable function even with stretch-wrapped pallets

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50104243	PRK 25B/66.31-S12	0.05 ... 6 m 0.05 ... 8 m	500 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Connector, M12, plastic
50104236	PRK 25B/66.3-S12	0.05 ... 6 m 0.05 ... 8 m	500 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Connector, M12, plastic
50104237	PRK 25B/66.3-S8	0.05 ... 6 m 0.05 ... 8 m	500 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Connector, M8, plastic
50104244	PRK 25B/66.31-S8	0.05 ... 6 m 0.05 ... 8 m	500 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Connector, M8, plastic
50104238	PRK 25B/66.3	0.05 ... 6 m 0.05 ... 8 m	500 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Cable, 2,000 mm
50104245	PRK 25B/66.31	0.05 ... 6 m 0.05 ... 8 m	500 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Cable, 2,000 mm
50106203	PRK 25B/66.30,200-S12	0.05 ... 6 m 0.05 ... 8 m	500 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Cable with connector, 200 mm, M12, metal
50104240	PRK 25B/66.3,200-S12	0.05 ... 6 m 0.05 ... 8 m	500 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Cable with connector, 200 mm, M12, metal
50104239	PRK 25B/66.3,200-S8	0.05 ... 6 m 0.05 ... 8 m	500 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Cable with M12 connector, 200 mm, M8, metal
50118424	PRK 25B/4D.3,2000-S12	0.05 ... 6 m 0.05 ... 8 m	500 Hz	LED, red	Transistor, PNP, dark switching		DC	Cable with M12 connector, 2,000 mm, M12, metal
50108549	PRK 25B/4D.3,200-S12	0.05 ... 6 m 0.05 ... 8 m	500 Hz	LED, red	Transistor, PNP, dark switching		DC	Cable with connector, 200 mm, M12, metal
50104242	PRK 25B/4D.3-S12	0.05 ... 6 m 0.05 ... 8 m	500 Hz	LED, red	Transistor, PNP, dark switching, AS-Interface, connection via coupling module		DC	Connector, M12, plastic
50104241	PRK 25B/4D.3-S8	0.05 ... 6 m 0.05 ... 8 m	500 Hz	LED, red	Transistor, PNP, dark switching, AS-Interface, connection via coupling module		DC	Connector, M8, plastic
50117202	PRK 25B/44.3-S12	0.05 ... 6 m 0.05 ... 8 m	500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, plastic
50104247	PRK 25B/4.38-S12	0.05 ... 6 m 0.05 ... 8 m	500 Hz	LED, red	Transistor, PNP, light switching		DC	Connector, M12, plastic
50104246	IPRK 25B/4.3-S12	0.05 ... 6 m 0.05 ... 8 m	500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, U <sub>B</sub> switching	DC	Connector, M12, plastic
50120578	PRK 25B/44.3,200-S12	0.05 ... 6 m 0.05 ... 8 m	500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, 200 mm, M12, metal
50108111	IPRK 25B/4.3,200-S12	0.05 ... 6 m 0.05 ... 8 m	500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, U <sub>B</sub> switching	DC	Cable with connector, 200 mm, M12, metal
50110924	PRK 25B/4.3,200-S12	0.05 ... 6 m 0.05 ... 8 m	500 Hz	LED, red	Transistor, PNP, light switching, AS-Interface, connection via coupling module		DC	Cable with connector, 200 mm, M12, metal
50110874	PRK 25B/4.3,200-S8.1	0.05 ... 6 m 0.05 ... 8 m	500 Hz	LED, red	Transistor, PNP, light switching, AS-Interface, connection via coupling module		DC	Cable with M12 connector, 200 mm, M8, metal

**PRKL 25B**

The PRKL 25B laser retro-reflective photoelectric sensor offers reliable detection of small parts and objects, even at large ranges. Its optimum light beam propagation predestines it for positioning and counting applications.

**Benefits:**

- Reliable detection of small parts/objects
- Optimum light beam propagation for positioning and counting applications

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50104233	PRKL 25B/6.81-S12	0.3 ... 12 m 0.05 ... 15 m	2,000 Hz	Laser, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)		DC	Connector, M12, plastic
50104231	PRKL 25B/66.1-S12	0.3 ... 12 m 0.05 ... 15 m	2,000 Hz	Laser, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Connector, M12, plastic
50104234	PRKL 25B/66.1-S8	0.3 ... 12 m 0.05 ... 15 m	2,000 Hz	Laser, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Connector, M8, plastic

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50104235	PRKL 25B/66.1	0.3 ... 12 m 0.05 ... 15 m	2,000 Hz	Laser, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Cable, 2,000 mm
50104232	PRKL 25B/4D.1-S12	0.3 ... 12 m 0.05 ... 15 m	2,000 Hz	Laser, red	Transistor, PNP, dark switching, AS-Interface, connection via coupling module		DC	Connector, M12, plastic
50110921	PRKL 25B/4.1,200-S12	0.3 ... 12 m 0.05 ... 15 m	2,000 Hz	Laser, red	Transistor, PNP, light switching, AS-Interface, connection via coupling module		DC	Cable with connector, 200 mm, M12, metal

Detailed information on operating ranges in combination with reflectors can be found in the respective data sheet (online)

## Energetic Light Scanners

An economical scanner for standard applications in which there are no special requirements on background suppression.

### RTFR 25B

With its fading function, the RTFR 25B diffuse reflection light scanner is able to suppress objects in the background. The scanning range is set electrically by means of a potentiometer.

#### Benefits:

- Fading – object suppression in background
- Short response behavior for detecting fast events
- Electrical scanning range adjustment via potentiometer

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50108476	RTR 25B/66-S12	0.01 ... 0.6 m 0.01 ... 0.65 m	500 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Connector, M12, plastic
50108472	RTFR 25B/66-S12	0 ... 0.6 m 0 ... 0.65 m	500 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Connector, M12, plastic
50108474	RTFR 25B/66-S8	0 ... 0.6 m 0 ... 0.65 m	500 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Connector, M8, plastic
50108475	RTFR 25B/66	0 ... 0.6 m 0 ... 0.65 m	500 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Cable, 2,000 mm

## Light Scanners with Background Suppression

These sensors are suited for the reliable detection of objects against a background. Available in a variety of special designs, the 25B series offers robust and efficient solutions, even for tricky applications such as the detection of extremely dark objects or objects with colored structure or objects with openings. An additional indicator LED signals the switching state, even in covered installation situations.

### HRT 25B

The HRT 25B infrared light scanner with background suppression reliably detects even very dark surfaces. It combines large ranges with an above-average performance reserve.

#### Benefits:

- Universal application
- Reliable with materials/surfaces having low reflectance
- Mechanical adjustment of scanning range
- Background suppression
- Additional status LEDs on the front side of the sensor

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50114874	HRT 25B/66-S12	0 ... 1 m 0 ... 1 m	250 Hz	LED, infrared	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Connector, M12, plastic
50115134	HRT 25B/66-S8	0 ... 1 m 0 ... 1 m	250 Hz	LED, infrared	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Connector, M8, plastic
50115127	HRT 25B/6-S8	0 ... 1 m 0 ... 1 m	250 Hz	LED, infrared	Transistor, push-pull, light switching (PNP)/dark switching (NPN)		DC	Connector, M8, plastic
50115131	HRT 25B/66	0 ... 1 m 0 ... 1 m	250 Hz	LED, infrared	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Cable, 2,000 mm
50115133	HRT 25B/66,200-S12	0 ... 1 m 0 ... 1 m	250 Hz	LED, infrared	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Cable with connector, 200 mm, M12, metal
50115123	HRT 25B/6.8,200-S12	0 ... 1 m 0 ... 1 m	250 Hz	LED, infrared	Transistor, push-pull, light switching (PNP)/dark switching (NPN)		DC	Cable with connector, 200 mm, M12, metal
50115132	HRT 25B/66,200-S8	0 ... 1 m 0 ... 1 m	250 Hz	LED, infrared	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Cable with M12 connector, 200 mm, M8, metal
50122100	HRT 25B/2	0 ... 1 m 0 ... 1 m	250 Hz	LED, infrared	Transistor, PNP, light switching		DC	Cable, 2,000 mm
50115122	HRT 25B/4D-S12	0 ... 1 m 0 ... 1 m	250 Hz	LED, infrared	Transistor, PNP, dark switching		DC	Connector, M12, plastic

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Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50120272	HRT 25B/4D,200-S12	0 ... 1 m 0 ... 1 m	250 Hz	LED, infrared	Transistor, PNP, dark switching		DC	Cable with connector, 200 mm, M12, metal
50115130	HRT 25B/44-S12	0 ... 1 m 0 ... 1 m	250 Hz	LED, infrared	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, plastic
50115129	HRT 25B/44-S8	0 ... 1 m 0 ... 1 m	250 Hz	LED, infrared	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M8, plastic
50123982	HRT 25B/44,200-S12	0 ... 1 m 0 ... 1 m	250 Hz	LED, infrared	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Cable with M12 connector, 200 mm, M12, plastic

## HRTR 25B

The HRTR 25B universal red-light scanner with background suppression combines reliable detection and good background suppression with great ease of use.

### Benefits:

- Brightly visible brightVision® light spot
- Mechanical adjustment of scanning range
- Background suppression
- Additional status LEDs on the front side of the sensor

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50114491	HRTR 25B/66-S12	0 ... 1 m 0 ... 1 m	250 Hz	LED, red	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	DC	Connector, M12, plastic
50115144	HRTR 25B/6-S12	0 ... 1 m 0 ... 1 m	250 Hz	LED, red	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)		DC	Connector, M12, plastic
50115153	HRTR 25B/66-S8	0 ... 1 m 0 ... 1 m	250 Hz	LED, red	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	DC	Connector, M8, plastic
50115140	HRTR 25B/6	0 ... 1 m 0 ... 1 m	250 Hz	LED, red	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)		DC	Cable, 2,000 mm
50115150	HRTR 25B/66	0 ... 1 m 0 ... 1 m	250 Hz	LED, red	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	DC	Cable, 2,000 mm
50115152	HRTR 25B/66,200-S12	0 ... 1 m 0 ... 1 m	250 Hz	LED, red	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	DC	Cable with connector, 200 mm, M12, metal
50121903	HRTR 25B/6,200-S12	0 ... 1 m 0 ... 1 m	250 Hz	LED, red	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)		DC	Cable with M12 connector, 200 mm, M12, plastic
50115151	HRTR 25B/66,200-S8	0 ... 1 m 0 ... 1 m	250 Hz	LED, red	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	DC	Cable with M12 connector, 200 mm, M8, metal
50115137	HRTR 25B/4D,200-S12	0 ... 1 m 0 ... 1 m	250 Hz	LED, red	Transistor, PNP, dark switching		DC	Cable with connector, 200 mm, M12, metal
50115136	HRTR 25B/4D,200-S8	0 ... 1 m 0 ... 1 m	250 Hz	LED, red	Transistor, PNP, dark switching		DC	Cable with M12 connector, 200 mm, M8, metal
50115147	HRTR 25B/44-S12	0 ... 1 m 0 ... 1 m	250 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, plastic
50115146	HRTR 25B/44-S8	0 ... 1 m 0 ... 1 m	250 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M8, plastic
50116721	HRTR 25B/66,5000	0 ... 1 m 0 ... 1 m	250 Hz	LED, infrared, red	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	DC	Cable, 5,000 mm

## HRTR 25B-XL

With its large light spot, the HRTR 25B-XL diffuse reflection light scanner with background suppression is well suited for the reliable detection of meshed containers, such as lattice boxes.

### Benefits:

- Optimized light spot for reliable detection of meshed containers
- Reliable positioning on glossy, metallic surfaces with openings (e. g. slide bolts)
- Brightly visible brightVision® light spot
- Additional status LEDs on the front side of the sensor

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50114876	HRTR 25B/66-XL-S12	0 ... 0.6 m 0 ... 0.6 m	250 Hz	LED, red	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	DC	Connector, M12, plastic
50116532	HRTR 25B/66-XL	0 ... 0.6 m 0 ... 0.6 m	250 Hz	LED, red	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	DC	Cable, 2,000 mm
50115158	HRTR 25B/66-XL,200-S12	0 ... 0.6 m 0 ... 0.6 m	250 Hz	LED, red	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	DC	Cable with connector, 200 mm, M12, metal
50115157	HRTR 25B/66-XL,200-S8	0 ... 0.6 m 0 ... 0.6 m	250 Hz	LED, red	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	DC	Cable with M12 connector, 200 mm, M8, metal
50115139	HRTR 25B/4D-XL-S12	0 ... 0.6 m 0 ... 0.6 m	250 Hz	LED, red	Transistor, PNP, dark switching		DC	Connector, M12, plastic
50116808	HRTR 25B/4D-XL,200-S12	0 ... 0.6 m 0 ... 0.6 m	250 Hz	LED, red	Transistor, PNP, dark switching		DC	Cable with connector, 200 mm, M12, metal

**HRTR 25B-S**

With its focused light spot, the HRTR 25B-S diffuse reflection light scanner with background suppression is ideally suited for the reliable detection of objects with glossy surfaces and with surfaces that have colored structure. This makes it the sensor of choice for complex applications, such as in packaging technology.

**Benefits:**

- Focused light spot for the reliable detection of objects with glossy and inconsistently structured surfaces
- High switching frequency and short response time for detection of fast events
- Additional status LEDs on the front side of the sensor

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50114875	HRTR 25B/66-S-S12	0 ... 1 m 0 ... 1 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Connector, M12, plastic
50115145	HRTR 25B/6-S-S12	0 ... 1 m 0 ... 1 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)		DC	Connector, M12, plastic
50115142	HRTR 25B/6.8-S-S12	0 ... 1 m 0 ... 1 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)		DC	Connector, M12, plastic
50115156	HRTR 25B/66-S-S8	0 ... 1 m 0 ... 1 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Connector, M8, plastic
50115155	HRTR 25B/66-S,200-S12	0 ... 1 m 0 ... 1 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Cable with connector, 200 mm, M12, metal
50115149	HRTR 25B/44-S-S12	0 ... 1 m 0 ... 1 m	1,000 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, plastic

**/// 28 Series**

The 28 series sensors are reliable, powerful photoelectric sensors that are predestined for many standard detection tasks in materials handling, packaging technology and machines for special applications. They offer large ranges and numerous technical highlights, such as the highly visible brightVision® light spot for simple alignment or the front- and plug-side M18 mounting option, at an absolutely convincing, economical price. Moreover, the fiber-reinforced, cubic plastic housing with rating and the IP 67 A<sup>2</sup>LS active suppression of extraneous light facilitate especially robust detection, even in rough industrial environments.

**Throughbeam Sensors**

Solid, cubic throughbeam photoelectric sensor for standard detection tasks with transmitter and receiver.

**L28**

The one-way principle makes possible the reliable detection of even flat objects with a high performance reserve and reduces the risk of a system standstill. Deactivation inputs enable testing of the sensor. In addition, optimized beam geometry and the highly visible brightVision® light spot simplify alignment.

**Benefits:**

- High performance reserve
- Simple alignment by means of optimized beam geometry
- Simple detection of flat objects
- Transmitter deactivation for testing and networking

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50117928	▶ LS28/9D-M12	0 ... 10 m 0 ... 15 m		LED, red			DC	Connector, M12, plastic
50117932	◀ LE28/2N-M12		500 Hz		Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Connector, M12, plastic
50117930	◀ LE28/4P-M12		500 Hz		Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, plastic
50117929	▶ LS28/9D	0 ... 10 m 0 ... 15 m		LED, red			DC	Cable, 2,000 mm
50117933	◀ LE28/2N		500 Hz		Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Cable, 2,000 mm
50117931	◀ LE28/4P		500 Hz		Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Cable, 2,000 mm

▶ transmitter / ◀ receiver

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## Retro-Reflective Sensors

Solid, cubic, polarized retro-reflective photoelectric sensor for installation situations in which a retro-reflector can be used.

### PRK28

A polarization filter ensures the reliable suppression of direct reflections and, together with the high performance reserve of the sensor, enables reliable detection. In addition, optimized beam geometry and the highly visible brightVision® light spot simplify alignment.

#### Benefits:

- Homogeneous light spot for safe switching behavior and easy alignment
- Safe suppression of direct reflection due to polarization filter

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50117926	PRK28/2N-M12	0.02 ... 4.5 m 0.02 ... 6 m	500 Hz	LED, red	Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Connector, M12, plastic
50117927	PRK28/2N	0.02 ... 4.5 m 0.02 ... 6 m	500 Hz	LED, red	Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Cable, 2,000 mm
50122589	PRK28/2N-200-M12	0.02 ... 4.5 m 0.02 ... 6 m	500 Hz	LED, red	Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Cable with M12 connector, 200 mm, M12, plastic
50117924	PRK28/4P-M12	0.02 ... 4.5 m 0.02 ... 6 m	500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, plastic
50117925	PRK28/4P	0.02 ... 4.5 m 0.02 ... 6 m	500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Cable, 2,000 mm
50122584	PRK28/4P-200-M12	0.02 ... 4.5 m 0.02 ... 6 m	500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Cable with M12 connector, 200 mm, M12, plastic

## Energetic Light Scanners

Sturdy cubic light scanner for standard detection tasks. This sensor performs detection directly on an object and requires no reflector.

### ET28 / FT28

These red-light scanners in the solid plastic housing facilitate robust object detection for homogeneous or similar objects. Through the simple sensitivity adjustment with two-level teach (object/background), they are particularly flexible in use. These sensors feature the A<sup>2</sup>LS active ambient light suppression and quick and easy alignment through brightly visible brightVision® light spot.

#### Benefits:

- Energetic reflection light scanner with light/dark switching
- Scanning range adjustment via teach-in
- Universal option for M18 hole mounting at the front and connector side
- Simple through-hole mounting with housing-side anti-rotation protection for mounting nuts
- Full control through green and yellow indicator LEDs and complementary outputs
- Robust plastic housing acc. to IP 67 for industrial application

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50122599	ET28.3/2N-M12	0.001 ... 0.65 m 0.001 ... 0.85 m	500 Hz	LED, red	Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Connector, M12, plastic
50122601	ET28.3/2N	0.001 ... 0.65 m 0.001 ... 0.85 m	500 Hz	LED, red	Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Cable, 2,000 mm
50122600	ET28.3/2N-200-M12	0.001 ... 0.65 m 0.001 ... 0.85 m	500 Hz	LED, red	Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Cable with M12 connector, 200 mm, M12, plastic
50122596	ET28.3/4P-M12	0.001 ... 0.65 m 0.001 ... 0.85 m	500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, plastic
50122598	ET28.3/4P	0.001 ... 0.65 m 0.001 ... 0.85 m	500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Cable, 2,000 mm
50122597	ET28.3/4P-200-M12	0.001 ... 0.65 m 0.001 ... 0.85 m	500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Cable with M12 connector, 200 mm, M12, plastic
50122593	FT28.3/2N-M12	0.001 ... 0.21 m 0 ... 0.25 m	500 Hz	LED, red	Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Connector, M12, plastic
50122595	FT28.3/2N	0.001 ... 0.21 m 0 ... 0.25 m	500 Hz	LED, red	Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Cable, 2,000 mm
50122594	FT28.3/2N-200-M12	0.001 ... 0.21 m 0 ... 0.25 m	500 Hz	LED, red	Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Cable with M12 connector, 200 mm, M12, plastic
50122590	FT28.3/4P-M12	0.001 ... 0.21 m 0 ... 0.25 m	500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, plastic
50122592	FT28.3/4P	0.001 ... 0.21 m 0 ... 0.25 m	500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Cable, 2,000 mm
50122591	FT28.3/4P-200-M12	0.001 ... 0.21 m 0 ... 0.25 m	500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Cable with M12 connector, 200 mm, M12, plastic

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## /// 46 Series



With high performance reserves and large ranges, these sensors with plastic housing are ideal for use in conveyor and storage systems, in the wood-processing industry and in special-purpose machinery manufacture. The extended series of sensors, with large lenses, protection ratings IP 67 and IP 69K, and the patented autocontrol performance reserve warning, opens many application fields.



Direct access to the online product selector at [www.leuze.com/en/br46](http://www.leuze.com/en/br46)

## Throughbeam Sensors

Reliable, red-light photoelectric sensors with large range, optimized ray geometry for simple alignment, robust switching behavior and maximum functional reliability.

## LSR 46B

The LSR 46B throughbeam photoelectric sensor features a high performance reserve and a switching state display that is visible over the entire range.

## Benefits:

- Switching state display clearly visible up to the max. range
- Robust behavior thanks to optimized beam geometry
- Simple alignment and check through SAT 5 alignment aid

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50108527	► LSSR 46B.8-S12	0 ... 50 m 0 ... 60 m		LED, red			DC	Connector, M12, plastic
50108532	◄ LSER 46B/66-S12	0 ... 50 m 0 ... 60 m	500 Hz		Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	DC	Connector, M12, plastic
50108536	◄ ILSER 46B/4-S12	0 ... 50 m 0 ... 60 m	500 Hz		Transistor, PNP, light switching	Transistor, PNP, U <sub>s</sub> switching	DC	Connector, M12, plastic
50108526	► LSSR 46B-S12	0 ... 50 m 0 ... 60 m		LED, red			DC	Connector, M12, plastic
50108533	◄ LSER 46B/66.1-S12	0 ... 50 m 0 ... 60 m	500 Hz		Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	DC	Connector, M12, plastic
50108532	◄ LSER 46B/66-S12	0 ... 50 m 0 ... 60 m	500 Hz		Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	DC	Connector, M12, plastic
50108536	◄ ILSER 46B/4-S12	0 ... 50 m 0 ... 60 m	500 Hz		Transistor, PNP, light switching	Transistor, PNP, U <sub>s</sub> switching	DC	Connector, M12, plastic
50108529	► LSSR 46B	0 ... 50 m 0 ... 60 m		LED, red			DC	Cable, 2,000 mm
50108535	◄ LSER 46B/66	0 ... 50 m 0 ... 60 m	500 Hz		Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	DC	Cable, 2,000 mm
50108528	► LSSR 46B,200-S12	0 ... 50 m 0 ... 60 m		LED, red			DC	Cable with connector, 200 mm, M12, metal
50108534	◄ LSER 46B/66,200-S12	0 ... 50 m 0 ... 60 m	500 Hz		Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	DC	Cable with connector, 200 mm, M12, metal
50119367	◄ LSER 46B/4D,200-S12	0 ... 50 m 0 ... 60 m	100 Hz		Transistor, PNP, dark switching		DC	Cable with connector, 200 mm, M12, metal
50110929	► LSSR 46B-S-S12	0 ... 40 m 0 ... 44 m		LED, red			DC	Connector, M12, plastic
50110930	◄ LSER 46B/66-S-S12	0 ... 40 m 0 ... 44 m	100 Hz		Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	DC	Connector, M12, plastic

► transmitter / ◄ receiver

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## Retro-Reflective Sensors

Reliable retro-reflective photoelectric sensors with extremely large performance reserves for high system availability.

### PRK 46B

This retro-reflective photoelectric sensor for large operating ranges offers high performance reserves for reliable object detection even with small, soiled or misaligned reflectors.

#### Benefits:

- Maximum performance reserve within the operating range
- Reliable object detection with heavily soiled or mis-adjusted reflectors

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50119714	PRK 46B/7D,5000	0.05 ... 15 m 0.5 ... 18 m	20Hz	LED, red	Relay, make-contact, dark switching		DC	Cable, 5,000 mm
50103080	PRK 46B/7D-S12	0.05 ... 15 m 0.05 ... 18 m	20Hz	LED, red	Relay, make-contact, dark switching		DC	Connector, M12, plastic
50113009	PRK 46B/66D-S12	0.05 ... 15 m 0.05 ... 18 m	500 Hz	LED, red	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	DC	Connector, M12, plastic
50103082	PRK 46B/66.01-S12	0.05 ... 15 m 0.05 ... 18 m	500 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Connector, M12, plastic
50103070	PRK 46B/66-S12	0.05 ... 15 m 0.05 ... 18 m	500 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Connector, M12, plastic
50107068	PRK 46B/66	0.05 ... 15 m 0.05 ... 18 m	500 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Cable, 2,000 mm
50103071	PRK 46B/66, 200-S12	0.05 ... 15 m 0.05 ... 18 m	500 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Cable with connector, 200 mm, M12, metal
50105986	PRK 46B/44-S12	0.05 ... 15 m 0.05 ... 18 m	500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, plastic
50103074	IPRK 46B/4-S12	0.05 ... 15 m 0.05 ... 18 m	500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, U <sub>s</sub> switching	DC	Connector, M12, plastic
50119366	PRK 46B/4D,200-S12	0.1 ... 8 m 0.1 ... 10 m	500 Hz	LED, red	Transistor, PNP, dark switching		DC	Cable with M12 connector, 200 mm, M12, plastic

### (I)PRK 46B.2

Special type of the retro-reflective photoelectric sensor of this series optimized for use on roller conveyors with large functional reliability even with stretch-wrapped pallets.

#### Benefits:

- Optimized for use on roller conveyors
- Reliable function even with stretch-wrapped pallets

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50105156	PRK 46B/6.2-S12	0.1 ... 8 m 0.1 ... 10 m	500 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)		DC	Connector, M12, plastic
50103072	PRK 46B/66.2-S12	0.1 ... 8 m 0.1 ... 10 m	500 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Connector, M12, plastic
50103073	PRK 46B/66.2, 200-S12	0.1 ... 8 m 0.1 ... 10 m	500 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Cable with connector, 200 mm, M12, metal
50105987	PRK 46B/4D.2-S12	0.1 ... 8 m 0.1 ... 10 m	500 Hz	LED, red	Transistor, PNP, dark switching		DC	Connector, M12, plastic
50111655	IPRK 46B/4D.2-S12	0.1 ... 8 m 0.1 ... 10 m	500 Hz	LED, red	Transistor, PNP, dark switching	Transistor, PNP, U <sub>s</sub> switching	DC	Connector, M12, plastic
50103076	IPRK 46B/4.2-S12	0.1 ... 8 m 0.1 ... 10 m	500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, U <sub>s</sub> switching	DC	Connector, M12, plastic
50105106	PRK 46B/44.2-S12	0.1 ... 8 m 0.1 ... 10 m	500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, plastic
50103084	PRK 46B/4.82-S12	0.1 ... 8 m 0.1 ... 10 m	500 Hz	LED, red	Transistor, PNP, light switching		DC	Connector, M12, plastic

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## Light Scanners with Background Suppression

Large range of reflection light scanners that utilizes background suppression to deliver reliable results even with changing backgrounds. In addition to laser photoelectric sensors, solutions with IO-Link for format changeover are also available.

### (I)HRT 46B

Optimized, infrared light scanner for the reliable detection of dark and glossy objects at large ranges and very small black/white error.

#### Benefits:

- Very high performance reserve
- Very small black/white error
- Optimized for glossy, dark objects and large ranges

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50106562	HRT 46B/7-S12	0 ... 2.5 m 0 ... 2.5 m	20 Hz	LED, infrared	Relay, make-contact, light switching		DC	Connector, M12, plastic
50106547	HRT 46B/66-S12	0 ... 2.5 m 0 ... 2.5 m	200 Hz	LED, infrared	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Connector, M12, plastic
50112805	HRT 46B/66	0 ... 2.5 m 0 ... 2.5 m	200 Hz	LED, infrared	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Cable, 2,000 mm
50106548	HRT 46B/66,200-S12	0 ... 2.5 m 0 ... 2.5 m	200 Hz	LED, infrared	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Cable with connector, 200 mm, M12, metal
50106552	IHRT 46B/4D-S12	0 ... 2.5 m 0 ... 2.5 m	200 Hz	LED, infrared	Transistor, PNP, dark switching	Transistor, PNP, U <sub>b</sub> switching	DC	Connector, M12, plastic
50106550	HRT 46B/4D-S12	0 ... 2.5 m 0 ... 2.5 m	200 Hz	LED, infrared	Transistor, PNP, dark switching		DC	Connector, M12, plastic
50109551	HRT 46B/4D,200-S12	0 ... 2.5 m 0 ... 2.5 m	200 Hz	LED, infrared	Transistor, PNP, dark switching		DC	Cable with connector, 200 mm, M12, metal
50106554	IHRT 46B/4D,200-S12	0 ... 2.5 m 0 ... 2.5 m	200 Hz	LED, infrared	Transistor, PNP, dark switching	Transistor, PNP, U <sub>b</sub> switching	DC	Cable with connector, 200 mm, M12, metal
50106549	HRT 46B/4-S12	0 ... 2.5 m 0 ... 2.5 m	200 Hz	LED, infrared	Transistor, PNP, light switching		DC	Connector, M12, plastic
50106551	IHRT 46B/4-S12	0 ... 2.5 m 0 ... 2.5 m	200 Hz	LED, infrared	Transistor, PNP, light switching	Transistor, PNP, U <sub>b</sub> switching	DC	Connector, M12, plastic
50106546	HRT 46B/44-S12	0 ... 2.5 m 0 ... 2.5 m	200 Hz	LED, infrared	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, plastic
50114869	HRT 46B/44	0 ... 2.5 m 0 ... 2.5 m	200 Hz	LED, infrared	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Cable, 2,000 mm
50106553	IHRT 46B/4,200-S12	0 ... 2.5 m 0 ... 2.5 m	200 Hz	LED, infrared	Transistor, PNP, light switching	Transistor, PNP, U <sub>b</sub> switching	DC	Cable with connector, 200 mm, M12, metal

Typ. operating range with a black/white error < 10%

### HRTR 46B

Universal, red-light scanner, either with mechanical adjustment or teach-in function or teach input. The scanner is equipped with an extra bright light spot for very simple alignment.

#### Benefits:

- Models with mechanical adjustment and teach-in
- Remote teach via teach line
- High performance reserve
- Very visible, bright light spot
- Protection against manipulation by means of a lockable button

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50114032	HRTR 46B/6.22-S12	0.02 ... 1.8 m 0.02 ... 1.8 m	200 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)		DC	Connector, M12, plastic
50106555	HRTR 46B/66-S12	0.02 ... 1.8 m 0.02 ... 1.8 m	200 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Connector, M12, plastic
50114034	HRTR 46B/6.22,200-S12	0.02 ... 1.8 m 0.02 ... 1.8 m	200 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)		DC	Cable with connector, 200 mm, M12, metal
50106556	HRTR 46B/66,200-S12	0.02 ... 1.8 m 0.02 ... 1.8 m	200 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Cable with connector, 200 mm, M12, metal
50106558	HRTR 46B/4D-S12	0.02 ... 1.8 m 0.02 ... 1.8 m	200 Hz	LED, red	Transistor, PNP, dark switching		DC	Connector, M12, plastic
50113432	HRTR 46B/4D, 200-S12	0.02 ... 1.8 m 0.02 ... 1.8 m	200 Hz	LED, red	Transistor, PNP, dark switching		DC	Cable with connector, 200 mm, M12, metal
50106557	HRTR 46B/4-S12	0.02 ... 1.8 m 0.02 ... 1.8 m	200 Hz	LED, red	Transistor, PNP, light switching		DC	Connector, M12, plastic

Typ. operating range with a black/white error < 10%

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## HRTR 46B-Teach (2 switching points)

This scanner features two individually adjustable switching points and can be configured via the teach button or the integrated IO-Link interface. The optimum solution for simple, 2-point controls or format changeovers.

### Benefits:

- Output of 2 individually adjustable switching points
- Intelligent configuration and diagnostics via IO-Link interface
- Quick format conversions by adjusting the scanning range in millimeters via the interface
- Optimum price/performance ratio for 2-point controls

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50118554	HRTR 46B/L6.23-S12	0.02 ... 1.8 m 0.02 ... 1.8 m	100 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN), IO-Link	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	DC	Connector, M12, plastic
50114037	HRTR 46B/L4.23-S12	0.02 ... 1.8 m 0.02 ... 1.8 m	100 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN), IO-Link	Transistor, PNP, light switching	DC	Connector, M12, plastic

Typ. operating range with a black/white error < 10%

## HRTL 46B

Laser scanner for very precise positioning and reliable detection of small parts, available in either laser class 1 or 2.

### Benefits:

- Models in laser class 1 and 2 available
- Precise positioning and detection of small parts

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50110806	HRTL 46B/6.8-S12	0.05 ... 1.2 m 0.05 ... 1.2 m	1,000 Hz	Laser, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)		DC	Connector, M12, plastic
50106560	HRTL 46B/66-S12	0.05 ... 1.2 m 0.05 ... 1.2 m	1,000 Hz	Laser, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Connector, M12, plastic
50106561	HRTL 46B/66,200-S12	0.05 ... 1.2 m 0.05 ... 1.2 m	1,000 Hz	Laser, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Cable with connector, 200 mm, M12, metal
50113308	HRTL 46B/66.1-S12	0.05 ... 0.8 m 0.05 ... 0.8 m	1,000 Hz	Laser, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Connector, M12, plastic

Typ. operating range with a black/white error < 10%

## HRT 46B, narrow beam

Scanner with particularly narrow infrared LED beam, e. g., for the detection of objects from below between the rollers of a roller conveyor.

### Benefits:

- Detection through a gap  $\geq 6$  mm
- Reliable detection of wood, metal and plastic pallets
- Simple alignment
- Large optics ensure low sensitivity to soiling

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50111640	HRT 46B/66.1-S12	0 ... 2.5 m 0 ... 2.5 m	200 Hz	LED, infrared	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Connector, M12, plastic

Typ. operating range with a black/white error < 10%

## HRTR 46B-S

Special solution for the reliable detection of even objects with colored structure against a background. Typical applications are found in the wood and packaging industries.

### Benefits:

- Small light spot and very good background suppression
- Reliable detection of objects with colored structure located in front of a background
- Optimized for applications in the wood and packaging industries
- Typical actuation distances: 100–300 mm

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50106559	HRTR 46B/66-S-S12	0.01 ... 0.7 m 0.01 ... 0.7 m	200 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Connector, M12, plastic

Typ. operating range with a black/white error < 10%

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## Reference Scanner

The reference scanner employs a detection process patented by Leuze. With this process, the scanner is taught against a fixed background – the reference. Like a retro-reflective photoelectric sensor, the scanner returns a switching signal if the reference is no longer detected. The sensor is the optimum solution for demanding detection tasks for which no reflector can be mounted.

### HRTR 46B-Teach

Reliable detection of glossy, dark or partially transparent objects from above over a conveying belt or other fixed background (e. g., machine base). Commissioning via teach-in. The sensor can be optimally adjusted to the application via the IO-Link interface.

#### Benefits:

- Very reliable detection of glossy, dark or partially transparent objects on a conveying belt or in front of a fixed background
- Quick commissioning through teach-in on a conveying belt or background
- Intelligent configuration and diagnostics via IO-Link interface

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Voltage type	Connection
50114036	HRTR 46B/L.221-S12	0.2 ... 0.5 m 0.2 ... 0.5 m	100 Hz	LED, red	Transistor, push-pull, light switching (PNP)/ dark switching (NPN), IO-Link	DC	Connector, M12, plastic

Distance on fixed background (reference)

## /// 53 Series



These sensors were specially designed for sensitive hygiene applications, e. g., in the pharmaceutical, cosmetic and food industries. Their housing is consistently designed for preventing bacterial carry-overs with its scratch resistant and non-diffusive plastic screen. The unique fastening concept, which consists of a mounting trunnion with 12 mm diameter and G6 fit, ensures a gas-tight connection between sensor and machine.



## Throughbeam Sensors

These stainless steel throughbeam photoelectric sensors in HYGIENE design are specially suited for use in challenging environments.

### LSR 53

These photoelectric sensors have a large operating range and feature a visible red light spot for easy alignment.

#### Benefits:

- 316L stainless steel housing in HYGIENE-Design
- Enclosed optics design prevents bacterial carry-overs
- ECOLAB and CleanProof+ tested
- A<sup>2</sup>LS – Active Ambient Light Suppression
- High switching frequency for detection of fast events

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50108736	▶ LSSR 53.8-S8	0 ... 8.5 m 0 ... 10 m		LED, red			DC	Connector, M8, stainless steel
50108742	◀ LSR 53/66-S8	0 ... 8.5 m 0 ... 10 m	1,000 Hz		Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	DC	Connector, M8, stainless steel

▶ transmitter / ◀ receiver

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## Retro-Reflective Sensors

Polarized and unpolarized retro-reflective photoelectric sensors for transport systems, for exact positioning as well as models for detection of PET and glass bottles and plastic foils are available. In addition, there is a laser device specially designed for the detection of small parts.

### PRK(L)53.22

Polarized retro-reflective photoelectric sensors with visible red light in stainless steel housing in the HYGIENE design.

#### Benefits:

- 316L stainless steel housing in HYGIENE-Design
- Enclosed optics design prevents bacterial carry-overs
- ECOLAB and CleanProof+ tested
- High switching frequency for detection of fast events
- Easy adjustment via lockable teach button or teach input

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Voltage type	Connection
50107605	PRKL 53/6.22-S8	0 ... 2 m 0 ... 3 m	2,000 Hz	Laser, red	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	DC	Connector, M8, stainless steel
50107603	PRK 53/6.22-S8	0 ... 4 m 0 ... 5 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	DC	Connector, M8, stainless steel
50121898	PRK 53/6.22,5000	0 ... 4 m 0 ... 5 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	DC	Cable, 5,000 mm

### PRK 53.42 / RKR 53.42

Stainless steel sensors with autocollimation optics and red light with ranges of up to 3m for transparent objects, both in a polarized design for glass panes (PRK devices) and a non-polarized design for foils (RKR devices).

#### Benefits:

- 316L stainless steel housing in HYGIENE-Design
- Enclosed optics design prevents bacterial carry-overs
- ECOLAB and CleanProof+ tested
- High switching frequency for detection of fast events
- Easy adjustment via lockable teach button or teach input

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Voltage type	Connection
50112476	PRK 53/6D.42-S8	0 ... 3 m 0 ... 3.5 m	1,000 Hz	LED, red	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	DC	Connector, M8, stainless steel
50112475	PRK 53/6.42-S8	0 ... 3 m 0 ... 3.5 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	DC	Connector, M8, stainless steel
50107607	RKR 53/6.42-S8	0 ... 1.5 m 0 ... 1.8 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	DC	Connector, M8, stainless steel

## Light Scanners with Background Suppression

These light scanners with precise adjustment via multiturn potentiometer are designed for particularly reliable switching. With models that work on nearly any background, optimized versions for highly glossy objects and objects with colored structures as well for the detection of gaps and openings are available.

### HRTL 53 / HRTR 53

Depending on the design, these scanners offer a large scanning range or small light spots for the reliable detection of glossy, structured objects. A model with elongated light spot specially produced for transparent objects or objects with openings is also available for delivery.

#### Benefits:

- 316L stainless steel housing in HYGIENE-Design
- Enclosed optics design prevents bacterial carry-overs
- ECOLAB and CleanProof+ tested
- Exact adjustment of the scanning range via 8-gear spindle
- Collimated light beam propagation with small beam diameter permits identical switching behavior within the specified scanning range

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50115203	HRTL 53/66-S8	0.015 ... 0.4 m 0.015 ... 0.4 m	2,000 Hz	Laser, red	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	DC	Connector, M8, stainless steel
50115202	HRTL 53/66,5000	0.015 ... 0.4 m 0.015 ... 0.4 m	2,000 Hz	Laser, red	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	DC	Cable, 5,000 mm
50107499	HRTR 53/66-S8	0.005 ... 0.4 m 0.005 ... 0.4 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	DC	Connector, M8, stainless steel
50121900	HRTR 53/66,5000	0.005 ... 0.4 m 0.005 ... 0.4 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	DC	Cable, 5,000 mm

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50107503	HRTR 53/66-S-S8	0.005 ... 0.2 m 0.005 ... 0.2 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Connector, M8, stainless steel
50121899	HRTR 53/66-S,5000	0.005 ... 0.2 m 0.005 ... 0.2 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Cable, 5,000 mm
50107507	HRTR 53/66-XL-S8	0.005 ... 0.1 m 0.005 ... 0.1 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Connector, M8, stainless steel
50120622	HRTR 53/66-V-S8	0.015 ... 0.1 m 0.015 ... 0.1 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Connector, M8, stainless steel
50122261	HRTR 53/66-VXL-S8	0.01 ... 0.09 m 0.01 ... 0.09 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Connector, M8, stainless steel

### /// 55 series



This stainless steel sensor series show their strength particularly in the wet areas of your production line. With the innovative WASH-DOWN design, it is possible to thoroughly clean the entire system with all common cleaning agents and processes. The non-diffusive and chemically-stable materials prevent bacterial carry-overs and ensure the functional capability of the systems for years to come. The fact that their fastening systems are compatible to those of the standard series makes integration easier.



## Throughbeam Sensors

Stainless steel throughbeam photoelectric sensors in the WASH-DOWN design with standard hole pattern for use in wet areas.

### LSR 55

Models with three different connections specially designed for detection of fast events are available for delivery. The enclosed optics design reliably prevents bacterial carry-overs.

#### Benefits:

- 316L stainless steel housing in WASH-DOWN-Design
- Enclosed optics design prevents bacterial carry-overs
- ECOLAB and CleanProof+ tested
- Scratch resistant and non-diffusive plastic front cover
- High switching frequency for detection of fast events

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50108715	► LSSR 55.8-S8	0 ... 8.5 m 0 ... 10 m		LED, red			DC	Connector, M8, stainless steel
50108721	◄ LSER 55/66-S8	0 ... 8.5 m 0 ... 10 m	1,000 Hz		Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Connector, M8, stainless steel
50111969	► LSSR 55.8,5000	0 ... 8.5 m 0 ... 10 m		LED, red			DC	Cable, 5,000 mm
50111970	◄ LSER 55/66,5000	0 ... 8.5 m 0 ... 10 m	1,000 Hz		Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Cable, 5,000 mm
50108717	► LSSR 55.8,200-S12	0 ... 8.5 m 0 ... 10 m		LED, red			DC	Cable with connector, 200 mm, M12, stainless steel
50108723	◄ LSER 55/66,200-S12	0 ... 8.5 m 0 ... 10 m	1,000 Hz		Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Cable with connector, 200 mm, M12, stainless steel

► transmitter / ◄ receiver

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## Retro-Reflective Sensors

Polarized and unpolarized retro-reflective photoelectric sensors for transport systems, for object positioning as well as autocollimation models for bottle and foil detection are available for delivery. In addition, there are laser devices with higher switching frequency specially designed for the detection of small parts.

### PRK(L) 55

Polarized retro-reflective photoelectric sensors available with red light in V4A/316L and as laser models. The autocollimation function ensures precise detection of even highly-glossy objects.

#### Benefits:

- Enclosed optics design prevents bacterial carry-overs
- ECOLAB and CleanProof+ tested
- Scratch resistant and non-diffusive plastic front cover
- A<sup>2</sup>LS – Active Ambient Light Suppression
- High switching frequency for detection of fast events
- Easy adjustment via lockable teach button or teach input

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50105797	PRKL 55/6.22,200-S12	0 ... 4 m 0 ... 3.5 m	2,000 Hz	Laser, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)		DC	Cable with connector, 200 mm, M12, stainless steel
50105796	PRKL 55/6.22-S8	0 ... 4 m 0 ... 5 m	2,000 Hz	Laser, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)		DC	Connector, M8, stainless steel
50114072	PRKL 55/6.22,5000	0 ... 4 m 0 ... 5 m	2,000 Hz	Laser, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)		DC	Cable, 5,000 mm
50105804	PRK 55/66-S8	0.2 ... 5 m 0 ... 6 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Connector, M8, stainless steel
50111966	PRK 55/66,5000	0.2 ... 5 m 0 ... 6 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Cable, 5,000 mm
50105805	PRK 55/66,200-S12	0.2 ... 5 m 0 ... 6 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Cable with connector, 200 mm, M12, stainless steel
50105792	PRK 55/6.22-S8	0 ... 4 m 0 ... 5 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)		DC	Connector, M8, stainless steel
50111967	PRK 55/6.22,5000	0 ... 4 m 0 ... 5 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)		DC	Cable, 5,000 mm
50105793	PRK 55/6.22,200-S12	0 ... 4 m 0 ... 5 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)		DC	Cable with connector, 200 mm, M12, stainless steel

### PRK 55.42 / RKR 55.42

Polarized and unpolarized retro-reflective photoelectric sensors especially for the detection of highly transparent bottles, foils (RKR devices) and glass panes (PRK devices) are available.

#### Benefits:

- Particularly suited for thin, highly transparent foils with thickness < 20 µm
- Enclosed optics design prevents bacterial carry-overs
- ECOLAB and CleanProof+ tested
- Scratch resistant and non-diffusive plastic front cover
- High switching frequency for detection of fast events
- May also be used with glass reflectors (TG)
- Easy adjustment via lockable teach button or teach input

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Voltage type	Connection
50112992	PRK 55/6D.42-S8	0 ... 3 m 0 ... 3.5 m	1,000 Hz	LED, red	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Connector, M8, stainless steel
50112478	PRK 55/6D.42,200-S12	0 ... 3 m 0 ... 3.5 m	1,000 Hz	LED, red	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	DC	Cable with connector, 200 mm, M12, stainless steel
50112991	PRK 55/6.42-S8	0 ... 3 m 0 ... 3.5 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	DC	Connector, M8, stainless steel
50112477	PRK 55/6.42,200-S12	0 ... 3 m 0 ... 3.5 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	DC	Cable with connector, 200 mm, M12, stainless steel
50114071	PRK 55/6.42,5000	0 ... 3 m 0 ... 3.5 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	DC	Cable, 5,000 mm
50105794	RKR 55/6.42-S8	0 ... 1.5 m 0 ... 1.8 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	DC	Connector, M8, stainless steel

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Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Voltage type	Connection
50105795	RKR 55/6.42,200-S12	0 ... 1.5 m 0 ... 1.8 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	DC	Cable with connector, 200 mm, M12, stainless steel
50114073	RKR 55/6.42,5000	0 ... 1.5 m 0 ... 1.8 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	DC	Cable, 5,000 mm

Detailed information on operating ranges in combination with reflectors can be found in the respective data sheet (online)

## Light Scanners with Background Suppression

These light scanners with precise adjustment via multiturn potentiometer are designed for particularly reliable switching and can be used on nearly any background. Other models are optimized for highly-glossy and structured objects as well as the detection of grids and gaps.

### HRTL 55 / HRTR 55

Depending on the design, these scanners offer a large scanning range or small light spots for the reliable detection of even glossy, structured objects. Models with elongated light spot for transparent objects or objects with openings are also available for delivery. A model with V-optics for polished object surfaces is also available.

#### Benefits:

- Enclosed optics design prevents bacterial carry-overs
- ECOLAB and CleanProof+ tested
- Scratch resistant and non-diffusive plastic front cover
- Exact adjustment of the scanning range via 8-gear spindle
- Very good black/white behavior and reliable switching, even on glossy objects and objects with colored structure
- Small, homogeneous light spot for detecting small parts
- A<sup>2</sup>LS – Active Ambient Light Suppression
- High switching frequency for detection of fast events

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50115204	HRTL 55/66,200-S12	0.015 ... 0.4 m 0.015 ... 0.4 m	2,000 Hz	Laser, red	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	DC	Connector, M12, stainless steel
50115206	HRTL 55/66-S8	0.015 ... 0.4 m 0.015 ... 0.4 m	2,000 Hz	Laser, red	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	DC	Connector, M8, stainless steel
50115205	HRTL 55/66,5000	0.015 ... 0.4 m 0.015 ... 0.4 m	2,000 Hz	Laser, red	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	DC	Cable, 5,000 mm
50107496	HRTR 55/66-XL-S8	0.005 ... 0.1 m 0.005 ... 0.1 m	1,000 Hz	Laser, red	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	DC	Connector, M8, stainless steel
50107484	HRTR 55/66-S8	0.005 ... 0.4 m 0.005 ... 0.4 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	DC	Connector, M8, stainless steel
50107492	HRTR 55/66,200-S12	0.005 ... 0.4 m 0.005 ... 0.4 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	DC	Cable with connector, 200 mm, M12, stainless steel
50111968	HRTR 55/66,5000	0.005 ... 0.4 m 0.005 ... 0.4 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	DC	Cable, 5,000 mm
50107493	HRTR 55/66-S-S8	0.005 ... 0.2 m 0.005 ... 0.2 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	DC	Connector, M8, stainless steel
50107495	HRTR 55/66-S,200-S12	0.005 ... 0.2 m 0.005 ... 0.2 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	DC	Cable with connector, 200 mm, M12, stainless steel
50114069	HRTR 55/66-S,5000	0.005 ... 0.2 m 0.005 ... 0.2 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	DC	Cable, 5,000 mm
50120623	HRTR 55/66-V,200-S12	0.015 ... 0.1 m 0.015 ... 0.1 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	DC	Connector, 200 mm, M12, stainless steel
50107498	HRTR 55/66-XL,200-S12	0.005 ... 0.1 m 0.005 ... 0.1 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	DC	Connector, 200 mm, M12, stainless steel
50114070	HRTR 55/66-XL,5000	0.005 ... 0.1 m 0.005 ... 0.1 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	DC	Cable, 5,000 mm
50117199	HRTR 55/22-XL,5000	0.005 ... 0.1 m 0.005 ... 0.1 m	1,000 Hz	LED, red	Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Cable, 5,000 mm
50116828	HRTR 55/44-XL,5000	0.005 ... 0.1 m 0.005 ... 0.1 m	1,000 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Cable, 5,000 mm

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## /// 95 Series



Series 95 is available as throughbeam photoelectric sensors, retro-reflective photoelectric sensors and light scanners in versions used for PET, foil and glass detection. Moreover, the sturdy housing with degree of protection IP 67 / IP 69K and the A<sup>2</sup>LS active ambient light suppression facilitate especially reliable detection, even in rough industrial environments.



## Throughbeam Sensors

Throughbeam photoelectric sensors with glass optics and high performance reserve using visible red light or infrared light.

## LS 95

Sturdy throughbeam photoelectric sensors with high performance reserve using visible red light or infrared light. The series has complementary switching outputs for light/dark switching as a control function.

## Benefits:

- Activation input and warning output
- Sensitivity adjustment via multiturn potentiometer
- Complementary switching outputs for light/dark switching or as a control function

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50034509	► LSR 95/2.8 SE-L.1	0 ... 12 m 0 ... 18 m		LED, red			DC	Connector, M12, stainless steel
50034510	◄ ILSR 95/44 E-L.1	0 ... 12 m 0 ... 18 m	1,000 Hz		Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, stainless steel
50026835	► LS 95/2.8 SE-L.1	0 ... 12 m 0 ... 20 m		LED, infrared			DC	Connector, M12, stainless steel
50026836	◄ ILS 95/44 E-L.1	0 ... 12 m 0 ... 20 m	1,000 Hz		Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, stainless steel

► transmitter / ◄ receiver

## Retro-Reflective Sensors

These retro-reflective photoelectric sensors with glass optics are available with visible red light or infrared light.

## (I)PRK 95

Reliable retro-reflective photoelectric sensors with performance reserves for high system availability. The sensitivity adjustment is performed via multiturn potentiometer.

## Benefits:

- With autocollimation principle
- Sensitivity adjustment via multiturn potentiometer
- Activation input and warning output
- Version with focus at 100 mm

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50034511	PRK 95/44 L	0 ... 6 m 0 ... 6 m	1,000 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, stainless steel
50034512	IPRK 95/44 L.5	0.15 ... 6 m 0.15 ... 9 m	1,000 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, stainless steel
50102613	IPRK 95/44 L.21	0 ... 4.2 m 0 ... 6 m	1,000 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, stainless steel
50022680	IPRK 95/44 L.2	0 ... 4.2 m 0 ... 6 m	1,000 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, stainless steel
50030257	IPRK 95/4.8 L.2	0 ... 4.2 m 0 ... 6 m	1,000 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, U <sub>s</sub> switching	DC	Connector, M12, stainless steel
50027993	PRK 95/4 L.2	0 ... 3.4 m 0 ... 5 m	200 Hz	LED, red	Transistor, PNP, light switching		DC	Connector, M12, stainless steel
50022681	IPRK 95/44 L.3	0 ... 0.3 m 0 ... 0.3 m	1,000 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, stainless steel

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**PRK 95.4**

Retro-reflective photoelectric sensors for reliable detection of transparent media (e. g. clear glass, PET, foil)

**Benefits:**

- User controlled sensitivity adjustment for transparent objects
- Autocollimation principle for transparent media
- Activation input and warning output

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50027095	PRK 95/A L.4	0 ... 1.8 m 0 ... 3 m		LED, red	AS-Interface IO			Connector, M12, stainless steel
50025609	PRK 95/44 L.4	0 ... 1.8 m 0 ... 3 m	1,000 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, stainless steel

**Energetic light scanners**

Light scanners are transmitter and receiver in one and react to the light reflected by the object to be detected, and therefore do not need a separate reflector. The switching distance possible is therefore dependent on the reflection properties of the object.

**IRK(R) 95 / RKR 95**

Light scanner using red light or infrared light with operating range adjustable via potentiometer. The exact adjustment is performed via multiturn potentiometer.

**Benefits:**

- Very good black/white behavior
- Exact adjustment via multiturn potentiometer
- Warning output
- PNP outputs for light/dark switching

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50034513	RKR 95/44-600 L	0.02 ... 0.6 m 0.02 ... 0.9 m	1,000 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, stainless steel
50025612	IRKR 95/44-250 L	0.01 ... 0.25 m 0.01 ... 0.4 m	1,000 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, stainless steel
50025611	IRK 95/44-250 L	0.01 ... 0.25 m 0.01 ... 0.4 m	1,000 Hz	LED, infrared	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, stainless steel

**Light Scanners with Background Suppression**

These sturdy light scanners with adjustable background suppression are available with visible red light or infrared light. They are suited for many applications.

**FRK(R) 95**

These scanners feature a very good black/white behavior and are particularly well-suited for glossy surfaces.

**Benefits:**

- Scanner with adjustable background suppression using visible red light or infrared light
- Very good black/white behavior
- Optimized for glossy/inclined surfaces
- Models with focused light beam
- NPN/PNP outputs for light/dark switching

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50034514	FRKR 95/44-350 L	0.005 ... 0.35 m 0.005 ... 0.5 m	1,000 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, stainless steel
50025610	FRKR 95/44-150 L	0.012 ... 0.15 m 0.012 ... 0.19 m	1,000 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, stainless steel
50034515	FRK 95/44-350 L	0.005 ... 0.35 m 0.005 ... 0.5 m	1,000 Hz	LED, infrared	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, stainless steel
50022794	FRK 95/22-150 L	0.012 ... 0.15 m 0.012 ... 0.23 m	1,000 Hz	LED, infrared	Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Connector, M12, stainless steel
50019925	FRK 95/44-150 L	0.012 ... 0.15 m 0.012 ... 0.23 m	1,000 Hz	LED, infrared	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, stainless steel

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## /// 96 Series



Regardless of operating principle, regardless of whether metal or plastic housing, regardless of whether DC or AC supply – the sensors of this series are all-rounders. With their large optical surface, IP 67 or IP 69K safety class and optional optics heating, they will win you over with their reliable detection with high performance reserves, large operating ranges and a multitude of options under rough environmental conditions.



## Throughbeam Sensors

Throughbeam photoelectric sensors with particularly high performance reserve using visible red light or infrared light and numerous options.

## LS 96

Sturdy throughbeam photoelectric sensors with high performance reserve using visible red light or infrared light for standard applications. Models with optics heatings are also available for delivery.

## Benefits:

- Complementary outputs for standard applications and a wide range of input and output variants for optimal adaptation to the application
- Versatile options with warning output, activation input and switching delay
- Models with optics heating for use at low temperatures

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50103290	► LSS 96M-1090-43	0 ... 120 m 0 ... 150 m		LED, infrared			DC	Connector, M12, metal
50103291	◄ LSE 96M/P-3012-41	0 ... 120 m 0 ... 150 m	500 Hz		Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, metal
50106871	► LSS 96M-1093-24	0 ... 120 m 0 ... 150 m		LED, infrared			DC	Terminal
50033328	◄ LSE 96M/P-3012-21	0 ... 120 m 0 ... 150 m	500 Hz		Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Terminal
50025228	► LSS 96M-1070-43			LED, infrared			DC	Connector, M12, metal
50034128	◄ LSE 96M/P-3010-41	0 ... 120 m 0 ... 150 m	500 Hz		Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, metal
50025205	◄ LSE 96M/P-1040-42	0 ... 50 m 0 ... 65 m	500 Hz		Transistor, PNP, light switching	Transistor, PNP, light switching	DC	Connector, M12, metal
50025223	► LSS 96M-1090-24			LED, infrared			DC	Terminal
50033328	◄ LSE 96M/P-3012-21	0 ... 120 m 0 ... 150 m	500 Hz		Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Terminal
50025201	◄ LSE 96M/P-1130-22	0 ... 50 m 0 ... 65 m	500 Hz		Transistor, PNP, light switching	Transistor, PNP, light switching	DC	Terminal
50025225	► LSS 96M-1070-23			LED, infrared			DC	Terminal
50082296	◄ LSE 96M/P-3010-21	0 ... 120 m 0 ... 150 m	500 Hz		Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Terminal
50031295	◄ LSE 96M/N-1010-27	0 ... 50 m 0 ... 65 m	500 Hz		Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Terminal
50080081	► LSS 96M-1350-26			LED, infrared			AC/DC	Terminal
50031651	◄ LSE 96M/R-3310-25	0 ... 120 m 0 ... 150 m	20 Hz		Relay, break-contact/ make-contact, light switching	Relay, dark switching	AC/DC	Terminal
50080080	◄ LSE 96M/R-1310-25	0 ... 50 m 0 ... 65 m	20 Hz		Relay, break-contact/ make-contact, light switching		AC/DC	Terminal
50025254	► LSS 96K-1070-43	0 ... 50 m 0 ... 65 m		LED, infrared			DC	Connector, M12, plastic
50025258	◄ LSE 96K/P-1010-41	0 ... 50 m 0 ... 65 m	500 Hz		Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, plastic
50080483	◄ LSE 96K/P-1030-41	0 ... 50 m 0 ... 65 m	500 Hz		Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, plastic
50103004	◄ LSE 96K/P-1015-45	0 ... 50 m 0 ... 65 m	500 Hz		Transistor, PNP, light switching		DC	Connector, M12, plastic

► transmitter / ◄ receiver

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Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50025253	► LSS 96K-1350-26	0 ... 50 m 0 ... 65 m		LED, infrared			AC/DC	Terminal
50025256	◄ LSE 96K/R-1320-25	0 ... 50 m 0 ... 65 m	20 Hz		Relay, break-contact/ make-contact, light switching		AC/DC	Terminal
50025257	◄ LSE 96K/R-1310-25	0 ... 50 m 0 ... 65 m	20 Hz		Relay, break-contact/ make-contact, light switching		AC/DC	Terminal
50025255	► LSS 96K-1070-23	0 ... 50 m 0 ... 65 m		LED, infrared			DC	Terminal
50025259	◄ LSE 96K/P-1030-21	0 ... 50 m 0 ... 65 m	500 Hz		Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Terminal
50108812	► LSS 96K-1079-43	0 ... 30 m 0 ... 35 m		LED, infrared			DC	Connector, M12, plastic
50108813	◄ LSE 96K/P-1039.1-41	0 ... 30 m 0 ... 35 m	500 Hz		Transistor, PNP, light/dark reversible		DC	Connector, M12, plastic
50032129	► LSS 96M-1206-43	0 ... 30 m 0 ... 39 m		LED, red			DC	Connector, M12, metal
50025197	◄ LSE 96M/P-1170-42	0 ... 30 m 0 ... 39 m	500 Hz		Transistor, PNP, light switching	Transistor, PNP, light switching	DC	Connector, M12, metal
50032128	◄ LSE 96M/P-1816-41	0 ... 30 m 0 ... 39 m	500 Hz		Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, metal
50031574	► LSS 96M-120W-43	0 ... 30 m 0 ... 39 m		LED, red			DC	Connector, M12, metal
50031575	◄ LSE 96M/P-181W-41	0 ... 30 m 0 ... 39 m	500 Hz		Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, metal
50025217	► LSS 96M-1200-23	0 ... 30 m 0 ... 39 m		LED, red			DC	Terminal
50025195	◄ LSE 96M/P-1170-22	0 ... 30 m 0 ... 39 m	500 Hz		Transistor, PNP, light switching	Transistor, PNP, light switching	DC	Terminal
50080657	► LSS 96K-1213-24	0 ... 30 m 0 ... 39 m		LED, red			DC	Terminal
50030269	◄ LSE 96K/P-1140-21	0 ... 30 m 0 ... 39 m	500 Hz		Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Terminal
50032004	► LSS 96M-175W-26	0 ... 30 m 0 ... 39 m		LED, red			AC/DC	Terminal
50032003	◄ LSE 96M/R-176W-25	0 ... 30 m 0 ... 39 m	20 Hz		Relay, break-contact/ make-contact, light switching		AC/DC	Terminal
50082040	► LSS 96M-180W-44	0 ... 30 m 0 ... 39 m		LED, red	AS-Interface IO			Connector, M12, metal
50082039	◄ LSE 96M/A-182W-44	0 ... 30 m 0 ... 39 m	500 Hz		AS-Interface IO			Connector, M12, metal

► transmitter / ◄ receiver

## Retro-Reflective Sensors

Polarized and unpolarized retro-reflective photoelectric sensors with particularly high performance reserve using visible red light or infrared light and other options.

### (P)RK 96

Polarized and unpolarized retro-reflective photoelectric sensors with large operating range using visible red light. Extensive input/output models for optimal adaptation to the application. The product range also contains sensors for detection of transparent objects (e. g. clear glass, PET, foil)

#### Benefits:

- Complementary outputs for standard applications and a wide range of input and output variants for optimal adaptation to the application
- Connection via M12 connector or terminal compartment
- Multiple options with warning output, activation input, switching delays and optics heating for use at low temperatures

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50041042	PRK 96K/P-3368-41	0.3 ... 26 m 0.1 ... 28 m	1,000 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, plastic
50107216	PRK 96K/R-3428.1-25	0.3 ... 20 m 0.1 ... 24 m	20 Hz	LED, red	Relay, break-contact/ make-contact, light/dark reversible		AC/DC	Terminal
50035351	PRK 96K/R-3428-25	0.3 ... 20 m 0.1 ... 24 m	20 Hz	LED, red	Relay, break-contact/ make-contact, light switching		AC/DC	Terminal
50082067	PRK 96M/A-3410-44	0.3 ... 15 m 0.1 ... 18 m	1,000 Hz	LED, red	AS-Interface IO			Connector, M12, metal
50082066	PRK 96M/R-3420-25	0.3 ... 15 m 0.1 ... 18 m	20 Hz	LED, red	Relay, break-contact/ make-contact, light switching		AC/DC	Terminal
50061111	PRK 96M/R-3430-25	0.3 ... 15 m 0.1 ... 18 m	20 Hz	LED, red	Relay, break-contact/ make-contact, light switching		AC/DC	Terminal
50102379	PRK 96M/N-3366-27	0.3 ... 15 m 0.1 ... 18 m	1,000 Hz	LED, red	Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Terminal

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Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50061452	PRK 96M/P-3380-41	0.3 ... 15 m 0.1 ... 18 m	1,000 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, metal
50082065	PRK 96M/P-3360-21	0.3 ... 15 m 0.1 ... 18 m	1,000 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Terminal
50105587	PRK 96K/R-1420.1-25	0.3 ... 8 m 0.1 ... 10 m	20 Hz	LED, red	Relay, break-contact/ make-contact, light/dark reversible		AC/DC	Terminal
50025167	PRK 96K/R-1420-25	0.3 ... 8 m 0.1 ... 10 m	20 Hz	LED, red	Relay, break-contact/ make-contact, light switching		AC/DC	Terminal
50025168	PRK 96K/R-1430-25	0.3 ... 8 m 0.1 ... 10 m	20 Hz	LED, red	Relay, break-contact/ make-contact, light switching		AC/DC	Terminal
50104279	PRK 96M/P-1361.1-47	0.3 ... 8 m 0.1 ... 10 m	1,000 Hz	LED, red	Transistor, PNP, light/dark reversible		DC	Connector, M12, metal
50103216	PRK 96K/P-1360.1-41	0.3 ... 8 m 0.1 ... 10 m	1,000 Hz	LED, red	Transistor, PNP, light/dark reversible		DC	Connector, M12, plastic
50031549	PRK 96M/P-1400-42	0.3 ... 8 m 0.1 ... 10 m	1,000 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, metal
50025186	PRK 96M/P-1370-42	0.3 ... 8 m 0.1 ... 10 m	1,000 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, light switching	DC	Connector, M12, metal
50082092	PRK 96M/P-1361-47	0.3 ... 8 m 0.1 ... 10 m	1,000 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, metal
50080477	PRK 96M/P-1362-47	0.3 ... 8 m 0.1 ... 10 m	1,000 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, metal
50025166	PRK 96K/P-1380-41	0.3 ... 8 m 0.1 ... 10 m	1,000 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, plastic
50025165	PRK 96K/P-1360-41	0.3 ... 8 m 0.1 ... 10 m	1,000 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, plastic
50109208	PRK 96M/P-1375-22	0.3 ... 8 m 0.1 ... 10 m	1,000 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Terminal
50025182	PRK 96M/P-1370-22	0.3 ... 8 m 0.1 ... 10 m	1,000 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, light switching	DC	Terminal
50025163	PRK 96K/P-1360-21	0.3 ... 8 m 0.1 ... 10 m	1,000 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Terminal
50025178	PRK 96M/P-1400-22	0.3 ... 8 m 0.1 ... 10 m	1,000 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Terminal
50080476	PRK 96K/P-1361-29	0.3 ... 8 m 0.1 ... 10 m	1,000 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Terminal
50081325	PRK 96K/N-1380-46	0 ... 8 m 0.1 ... 10 m	500 Hz	LED, red	Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Connector, M12, metal
50105622	PRK 96M/P-1832-41	0 ... 7 m 0 ... 8.5 m	1,000 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, metal
50082060	PRK 96M/P-2838-28	0 ... 7 m 0 ... 8.5 m	1,000 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Terminal
50080484	RK 96K/R-1560-25	0.3 ... 15 m 0.1 ... 18 m	20 Hz	LED, infrared	Relay, break-contact/ make-contact, light switching		AC/DC	Terminal
50030648	RK 96M/P-1440-21	0.3 ... 15 m 0.1 ... 18 m	1,000 Hz	LED, infrared	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Terminal

Switching Sensors

Measuring Sensors

Products for Safety at Work

Identification

### PRK 96-183x / PRK 96-185x

Polarized retro-reflective photoelectric sensors with large operating range and red light especially for the detection of highly transparent foils.

#### Benefits:

- Autocollimation principle allows use at zero distance and provides a constant performance reserve across the entire operating range
- Visible red light
- Complementary outputs, sensitivity adjustment and delay before start-up for optimal adaptation to the application
- Connection via comfortable terminal compartment up to 1.5 mm<sup>2</sup> or metal M12 connector

Data Transmission / Control Components

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50029881	PRK 96M/R-1858-25	0 ... 7 m 0 ... 8.5 m	20 Hz	LED, red	Relay, break-contact/ make-contact, light switching		AC/DC	Terminal
50080760	PRK 96M/P-1838-41	0 ... 7 m 0 ... 8.5 m	1,000 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, metal
50029880	PRK 96M/P-1838-21	0 ... 7 m 0 ... 8.5 m	1,000 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Terminal
50080470	PRK 96M/R-1850-25	0 ... 1.5 m 0 ... 1.85 m	20 Hz	LED, red	Relay, break-contact/ make-contact, light switching		AC/DC	Terminal
50080469	PRK 96M/P-1830-41	0 ... 1.5 m 0 ... 1.85 m	1,000 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, metal
50028975	PRK 96M/P-1830-21	0 ... 1.5 m 0 ... 1.85 m	1,000 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Terminal

Industrial Image Processing

Accessories

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## Energetic Light Scanners

Energetic light scanners with good black/white behavior and large scanning range.

### RT 96

Reliable light scanners with potentiometer for sensitivity adjustment for the minimal short range.

#### Benefits:

- Sensitivity adjustment via potentiometer
- Complementary switching outputs and delay before start-up for optimal adaptation to the application
- Minimal short range
- Connection via M12 connector or terminal compartment

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50041598	RT 96M/R-1574-800-25	0.02 ... 0.8 m 0.02 ... 1.2 m	20 Hz	LED, infrared	Relay, break-contact/ make-contact, light switching	Relay, dark switching	AC/DC	Terminal
50041595	RT 96K/N-1444-800-46	0.02 ... 0.8 m 0.02 ... 1.2 m	1,000 Hz	LED, infrared	Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Connector, M12, plastic
50041597	RT 96M/P-1474-800-42	0.02 ... 0.8 m 0.02 ... 1.2 m	1,000 Hz	LED, infrared	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, metal
50081178	RT 96K/P-1444-800-41	0.02 ... 0.8 m 0.02 ... 1.2 m	1,000 Hz	LED, infrared	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, plastic
50081177	RT 96K/P-1444-800-21	0.02 ... 0.8 m 0.02 ... 1.2 m	1,000 Hz	LED, infrared	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Terminal

## Light Scanners with Background Suppression

Powerful light scanners with background suppression for particularly large operating range.

### HRT 96

Light scanners with adjustable background suppression using visible red light and infrared light with versatile options such as switching delays, activation input and optics heating.

#### Benefits:

- Complementary outputs, scanning range adjustment and delay before start-up for optimal adaptation to the application
- Connection via M12 connector or terminal compartment
- Multiple options with switching delays, activation input and optics heating for use at low temperatures
- Up to three programmable switching points for short range/  
distant range

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50080048	HRT 96M/A-1670-800-44	0.1 ... 0.8 m 0.1 ... 1.2 m	300 Hz	LED, red	AS-Interface IO			Connector, M12, metal
50025126	HRT 96M/P-1640-800-41	0.1 ... 0.8 m 0.1 ... 1.2 m	300 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, metal
50080047	HRT 96M/P-1630-800-41	0.1 ... 0.8 m 0.1 ... 1.2 m	300 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, metal
50032127	HRT 96M/P-1636-800-41	0.1 ... 0.8 m 0.1 ... 1.2 m	300 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, metal
50038471	HRT 96K/P-1631-800-47	0.1 ... 0.8 m 0.1 ... 1.2 m	300 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, metal
50081464	HRT 96K/P-1640-800-41	0.1 ... 0.8 m 0.1 ... 1.2 m	300 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, plastic
50080242	HRT 96K/P-1630-800-41	0.1 ... 0.8 m 0.1 ... 1.2 m	300 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, plastic
50080327	HRT 96K/P-1630-800-21	0.1 ... 0.8 m 0.1 ... 1.2 m	300 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Terminal
50025124	HRT 96M/P-1640-800-21	0.1 ... 0.8 m 0.1 ... 1.2 m	300 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Terminal
50060858	HRT 96M/P-3604-2000-42	0.1 ... 2 m 0.1 ... 2.5 m	300 Hz	LED, infrared	Transistor, PNP, light switching	Transistor, PNP, light switching	DC	Connector, M12, metal
50060857	HRT 96M/P-1600-2000-42	0.1 ... 2 m 0.1 ... 2.5 m	300 Hz	LED, infrared	Transistor, PNP, light switching	Transistor, PNP, light switching	DC	Connector, M12, metal
50113909	HRT 96M/P-1620-1800-41	0.1 ... 1.8 m 0.1 ... 2 m	100 Hz	LED, infrared	Transistor, PNP, light switching	Transistor, PNP, light switching (PNP)/ dark switching (NPN)	DC	Connector, M12, metal
50105667	HRT 96K/P-1600-1800-41	0.1 ... 1.8 m 0.1 ... 2 m	300 Hz	LED, infrared	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, plastic
50025112	HRT 96M/A-1660-1200-44	0.1 ... 1.2 m 0.1 ... 1.8 m	300 Hz	LED, infrared	AS-Interface IO			Connector, M12, metal
50080075	HRT 96M/R-1690-1200-25	0.1 ... 1.2 m 0.1 ... 1.8 m	20 Hz	LED, infrared	Relay, break-contact/ make-contact, light switching		AC/DC	Terminal
50080076	HRT 96M/R-1680-1200-25	0.1 ... 1.2 m 0.1 ... 1.8 m	20 Hz	LED, infrared	Relay, break-contact/ make-contact, light switching		AC/DC	Terminal

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50025131	HRT 96K/R-1690-1200-25	0.1 ... 1.2 m 0.1 ... 1.8 m	20 Hz	LED, infrared	Relay, break-contact/ make-contact, light switching		AC/DC	Terminal
50025132	HRT 96K/R-1680-1200-25	0.1 ... 1.2 m 0.1 ... 1.8 m	20 Hz	LED, infrared	Relay, break-contact/ make-contact, light switching		AC/DC	Terminal
50040358	HRT 96M/N-1606-1200-27	0.1 ... 1.2 m 0.1 ... 1.8 m	300 Hz	LED, infrared	Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Terminal
50103217	HRT 96K/P-1600.1-1200-41	0.1 ... 1.2 m 0.1 ... 1.8 m	300 Hz	LED, infrared	Transistor, PNP, light/dark reversible		DC	Connector, M12, plastic
50025133	HRT 96K/P-1600-1200-41	0.1 ... 1.2 m 0.1 ... 1.8 m	300 Hz	LED, infrared	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, metal
50025118	HRT 96M/P-1610-1200-41	0.1 ... 1.2 m 0.1 ... 1.8 m	300 Hz	LED, infrared	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, metal
50061102	HRT 96M/P-1620-1200-41	0.1 ... 1.2 m 0.1 ... 1.8 m	300 Hz	LED, infrared	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, metal
50103090	HRT 96K/P-1607-1200-49	0.1 ... 1.2 m 0.1 ... 1.8 m	300 Hz	LED, infrared	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, plastic
50025116	HRT 96M/P-1610-1200-21	0.1 ... 1.2 m 0.1 ... 1.8 m	300 Hz	LED, infrared	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Terminal
50025135	HRT 96K/P-1600-1200-21	0.1 ... 1.2 m 0.1 ... 1.8 m	300 Hz	LED, infrared	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Terminal
50025114	HRT 96M/P-1620-1200-21	0.1 ... 1.2 m 0.1 ... 1.8 m	300 Hz	LED, infrared	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Terminal

## HRT(I)L 96B

Laser light scanners with large detection range for universal application (visible red light or infrared light). The time lock prevents inadvertent changes to switching points.

### Benefits:

- Light propagation time measurement makes use possible under difficult environmental conditions (brightness, light, interfering contours)
- Extremely simple operation, teachable switching points and teach input
- Time lock prevents unintentional changing of the switching points
- Optimized for positioning applications and reliable object detection (e. g. compartment occupation check, shelf positioning, collision protection)
- Diagnostics function
- Sensors in laser class 1 and 2 available

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50115690	HRTL 96B M/66.04S-S12	0.15 ... 25 m 0.1 ... 30 m	100 Hz	Laser, red	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	DC	Connector, M12, metal
50113800	HRTL 96B M/66.02S-S12	0.1 ... 6 m 0.05 ... 6.5 m	100 Hz	Laser, red	Transistor, push-pull, dark switching	Transistor, push-pull, dark switching	DC	Connector, M12, metal
50112803	HRTL 96B M/6.49.02S-S12	0.1 ... 6 m 0.05 ... 6.5 m	100 Hz	Laser, red	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)		DC	Connector, M12, metal
50111208	HRTL 96B M/C66.01S-S12	0.1 ... 6 m 0.05 ... 6.5 m	100 Hz	Laser, red	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	DC	Connector, M12, metal
50110952	HRTL 96B M/V66.01S-S12	0.1 ... 6 m 0.05 ... 6.5 m	100 Hz	Laser, red	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	DC	Connector, M12, metal
50114306	HRTL 96B M/C66.03S-S12	0.1 ... 6 m 0.05 ... 6.5 m	100 Hz	Laser, red	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	DC	Connector, M12, metal
50108889	HRTL 96B M/66.01S-S12	0.1 ... 6 m 0.05 ... 6.5 m	100 Hz	Laser, red	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	DC	Connector, M12, metal
50112862	HRTL 96B M/66.9.03S-S12	0.1 ... 6 m 0.05 ... 6.5 m	100 Hz	Laser, red	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	DC	Connector, M12, metal
50111815	HRTL 96B M/6.4.02S-S12	0.1 ... 6 m 0.05 ... 6.5 m	100 Hz	Laser, red	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)		DC	Connector, M12, metal
50110990	HRTL 96B M/6.9S-S12	0.1 ... 6 m 0.05 ... 6.5 m	100 Hz	Laser, red	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	DC	Connector, M12, metal
50112804	HRTL 96B M/666.01S-S12	0.1 ... 6 m 0.05 ... 6.5 m	100 Hz	Laser, red	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	DC	Connector, M12, metal
50116678	HRTL 96B M/C66.01.C1S-S12	0.1 ... 6 m 0.05 ... 6.5 m	50 Hz	Laser, red	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	DC	Connector, M12, metal
50115016	HRTL 96B M/66.01S-S12	0.1 ... 6 m 0.05 ... 6.5 m	100 Hz	Laser, infrared	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	DC	Connector, M12, metal
50115015	HRTL 96B M/C66.01S-S12	0.1 ... 6 m 0.05 ... 6.5 m	100 Hz	Laser, infrared	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	DC	Connector, M12, metal
50117920	HRTL 96B M/66.03S-S12	0.1 ... 6 m 0.05 ... 6.5 m	100 Hz	Laser, infrared	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	DC	Connector, M12, metal

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# //PHOTOELECTRIC SENSORS/ LIGHT SCANNERS, CYLINDRICAL HOUSING

## TO KEEP YOUR PROCESS RUNNING SMOOTHLY

The common characteristic of sensors from this area is their cylindrical design. This facilitates extremely simple and fast mounting in the system.

SELECTION TABLE – cubic series

Series	Dimensions in mm (B×H×T)	Housing material			Operating principle	Typ. operating range limit	Light source			Max. switching frequency	Response time	Special object features		
		Plastic	Metal	Stainless steel			Infrared light	Red light	Laser			Shiny surface (metallic, foil coated object)	Transparent medium (glass, PET, foil)	Small part
 <b>318</b>	M18x50	●	●		Throughbeam sensor	0...120 m			●	5000 Hz	0.1 ms			●
					Retro-reflective sensor	0.02...15 m		●	●	5000 Hz	0.1 ms		●	
					Energetic light scanner	0...1000 mm		●	●	5000 Hz	0.1 ms		●	
					Diff. refl. scanner with backgr. suppr.	1...140 mm		●		1000 Hz	0.5 ms			
					Light scanner with fading	0...280 mm		●		500 Hz	1 ms			
 <b>328</b>	M18x46			●	Throughbeam sensor	0...15 m		●		500 Hz	1 ms			
					Retro-reflective sensor	0.02...6 m		●		500 Hz	1 ms			
					Energetic light scanner	1...1000 mm		●		500 Hz	1 ms			
					Light scanner with fading	1...280 mm		●		500 Hz	1 ms			
 <b>412</b>	M12x55		●		Throughbeam sensor	0...8 m		●		500 Hz	1 ms			
					Retro-reflective sensor	0.05...1.6 m		●		700 Hz	0.7 ms			
					Energetic light scanner	0...400 mm		●		700 Hz	0.7 ms			
 <b>618</b>	M18x60	●			Throughbeam sensor	0...12 m	●			500 Hz	1 ms			
					Retro-reflective sensor	0...7 m		●		500 Hz	1 ms			
					Energetic light scanner	0...300 mm	●			500 Hz	1 ms			

### /// 318-plastic Series



Our 318B family of photoelectric sensors is proof that affordable and functional do not have to be a contradiction in terms. A robust plastic sleeve, reliable detection behavior and the intelligent omni-mount mounting process for M18 hole mounting make these sensors the first choice for standard detection tasks in many areas of application.



\*1 only 318 series  
\*2 only 318B series

### Throughbeam Sensors

The photoelectric sensors of this series offer a high performance reserve and are suited for use in rough, industrial environments.

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**L318B**

The L318B throughbeam photoelectric sensor offers simple alignment with its optimized beam geometry. It is also suitable for the simple detection of flat objects. Deactivation inputs enable testing of the sensor. The simple fine adjustment with omni-mount, the embedded mounting option and variants with axial and angled optics round out the portfolio.

**Benefits:**

- High performance reserve
- Simple alignment by means of optimized beam geometry
- Simple detection of flat objects

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50116853	▶ LS318B/9D-M12	0 ... 10 m 0 ... 15 m		LED, red			DC	Connector, M12, plastic
50116845	◀ LE318B/2N-M12	0 ... 10 m 0 ... 15 m	500 Hz		Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Connector, M12, plastic
50116847	◀ LE318B/4P-M12	0 ... 10 m 0 ... 15 m	500 Hz		Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, plastic
50116852	▶ LS318B/9D	0 ... 10 m 0 ... 15 m		LED, red			DC	Cable, 2,000 mm
50116844	◀ LE318B/2N	0 ... 10 m 0 ... 15 m	500 Hz		Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Cable, 2,000 mm
50116846	◀ LE318B/4P	0 ... 10 m 0 ... 15 m	500 Hz		Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Cable, 2,000 mm
50116855	▶ LS318B.W/9D-M12	0 ... 5.5 m 0 ... 8 m		LED, red			DC	Connector, M12, plastic
50116849	◀ LE318B.W/2N-M12	0 ... 5.5 m 0 ... 8 m	500 Hz		Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Connector, M12, plastic
50116851	◀ LE318B.W/4P-M12	0 ... 5.5 m 0 ... 8 m	500 Hz		Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, plastic
50116854	▶ LS318B.W/9D	0 ... 5.5 m 0 ... 8 m		LED, red			DC	Cable, 2,000 mm
50116848	◀ LE318B.W/2N	0 ... 5.5 m 0 ... 8 m	500 Hz		Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Cable, 2,000 mm
50116850	◀ LE318B.W/4P	0 ... 5.5 m 0 ... 8 m	500 Hz		Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Cable, 2,000 mm

transmitter / receiver

**Retro-Reflective Sensors**

Through the use of polarized light, these photoelectric sensors can even reliably detect objects with glossy surfaces.

**PRK318B**

Reliable suppression of direct reflections through polarization filter and optimized beam path for fast commissioning. The simple fine adjustment with omni-mount, the embedded mounting option and variants with axial and angled optics round out the portfolio.

**Benefits:**

- High performance reserve
- Safe suppression of direct reflection due to polarization filter

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50116857	PRK318B/2N-M12	0.02 ... 4.5 m 0.02 ... 6 m	500 Hz	LED, red	Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Connector, M12, plastic
50116856	PRK318B/2N	0.02 ... 4.5 m 0.02 ... 6 m	500 Hz	LED, red	Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Cable, 2,000 mm
50116859	PRK318B/4P-M12	0.02 ... 4.5 m 0.02 ... 6 m	500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, plastic
50116858	PRK318B/4P	0.02 ... 4.5 m 0.02 ... 6 m	500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Cable, 2,000 mm
50116861	PRK318B.W/2N-M12	0.02 ... 4 m 0.02 ... 5 m	500 Hz	LED, red	Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Connector, M12, plastic
50116860	PRK318B.W/2N	0.02 ... 4 m 0.02 ... 5 m	500 Hz	LED, red	Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Cable, 2,000 mm
50116863	PRK318B.W/4P-M12	0.02 ... 4 m 0.02 ... 5 m	500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, plastic
50116862	PRK318B.W/4P	0.02 ... 4 m 0.02 ... 5 m	500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Cable, 2,000 mm

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## Energetic Light Scanners

These sensors perform detection directly on an object and require no reflector. Versions are available that have been optimized for various distances.

### ET318B / FT318B

These red-light scanners facilitate robust object detection for homogeneous or similar objects. Through the simple sensitivity adjustment with two-level teach (object/background), they are particularly flexible in use. These sensors feature the A<sup>2</sup>LS active ambient light suppression and easy alignment through brightly visible brightVision® light spot

#### Benefits:

- Energetic reflection light scanner with light/dark switching
- Scanning range adjustment via teach-in
- Axial and 90° light beam gate for flexible integration
- Simple fine adjustment via Omnimount
- Embedded mounting option
- Full control through green and yellow indicator LEDs and complementary outputs
- Robust plastic housing acc. to IP 67 for industrial application

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50122564	ET318B.3/2N-M12	0.001 ... 0.7 m 0 ... 1 m	500 Hz	LED, red	Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Connector, M12, plastic
50122565	ET318B.3/2N	0.001 ... 0.7 m 0 ... 1 m	500 Hz	LED, red	Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Cable, 2,000 mm
50122562	ET318B.3/4P-M12	0.001 ... 0.7 m 0 ... 1 m	500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, plastic
50122563	ET318B.3/4P	0.001 ... 0.7 m 0 ... 1 m	500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Cable, 2,000 mm
50122560	ET318B.W3/2N-M12	0.005 ... 0.35 m 0.001 ... 0.45 m	500 Hz	LED, red	Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Connector, M12, plastic
50122561	ET318B.W3/2N	0.005 ... 0.35 m 0.001 ... 0.45 m	500 Hz	LED, red	Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Cable, 2,000 mm
50122558	ET318B.W3/4P-M12	0.005 ... 0.35 m 0.001 ... 0.45 m	500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, plastic
50122559	ET318B.W3/4P	0.005 ... 0.35 m 0.001 ... 0.45 m	500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Cable, 2,000 mm
50122556	FT318B.3/2N-M12	0.001 ... 0.215 m 0 ... 0.28 m	500 Hz	LED, red	Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Connector, M12, plastic
50122557	FT318B.3/2N	0.001 ... 0.215 m 0 ... 0.28 m	500 Hz	LED, red	Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Cable, 2,000 mm
50122554	FT318B.3/4P-M12	0.001 ... 0.215 m 0 ... 0.28 m	500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, plastic
50122555	FT318B.3/4P	0.001 ... 0.215 m 0 ... 0.28 m	500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Cable, 2,000 mm
50122552	FT318B.W3/2N-M12	0.002 ... 0.1 m 0 ... 0.12 m	500 Hz	LED, red	Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Connector, M12, plastic
50122553	FT318B.W3/2N	0.002 ... 0.1 m 0 ... 0.12 m	500 Hz	LED, red	Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Cable, 2,000 mm
50122550	FT318B.W3/4P-M12	0.002 ... 0.1 m 0 ... 0.12 m	500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, plastic
50122551	FT318B.W3/4P	0.002 ... 0.1 m 0 ... 0.12 m	500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Cable, 2,000 mm

## Light Scanners with Background Suppression

These diffuse reflection light scanners with background suppression and highly visible red light spot are well-suited for detection of fast events thanks to their high switching frequency.

### HRTR 318

Light scanner with very short, robust housing with straight optics and active ambient light suppression.

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#### Benefits:

- Exact background suppression, electronically adjustable
- Nearly colour-independent object detection
- Clearly visible red light spot
- High switching frequency for detection of fast events
- A<sup>2</sup>LS - Active Ambient Light Suppression
- Very short, robust cylindrical stainless steel or plastic housing with straight optics

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50106085	HRTR 318K/66-120-S12	0.001 ... 0.12 m 0.001 ... 0.14 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	DC	Connector, M12, plastic
50106089	HRTR 318K/66-120	0.001 ... 0.12 m 0.001 ... 0.14 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	DC	Cable, 2,000 mm

## /// 318-metal Series



The stainless steel metal housing and the range of models make these sensors from the 318 series interesting for all customers who are looking a sensor program with sturdy mounting and metal nuts for challenging applications.



## Throughbeam Sensors

Throughbeam photoelectric sensors with long operating range in red laser light and straight optics.

## LS(L)318

Throughbeam photoelectric laser sensors in stainless steel housing in cylindrical M18 design.

## Benefits:

- Sensitivity adjustment via potentiometer
- Fixed beam geometry, convergent
- Activation input for testing and interlinking of the sensor
- Complementary switching outputs for light/dark switching or as a control function

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50083172	► LSSL 318M-S12			Laser, red			DC	Connector, M12, plastic
50083176	◄ LSEL 318M/P-S12	0 ... 100 m 0 ... 120 m	5,000 Hz		Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, plastic
50083180	◄ LSEL 318M/P-B5-S12	0 ... 15 m 0 ... 18 m	5,000 Hz		Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, plastic
50083171	► LSSL 318M			Laser, red			DC	Cable, 2,000 mm
50083175	◄ LSEL 318M/P	0 ... 100 m 0 ... 120 m	5,000 Hz		Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Cable, 2,000 mm
50083179	◄ LSEL 318M/P-B5	0 ... 15 m 0 ... 18 m	5,000 Hz		Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Cable, 2,000 mm

► transmitter / ◄ receiver

## Retro-Reflective Sensors

Polarized retro-reflective photoelectric sensors with straight optics and very short construction for application in limited spaces.

## PRKL 318

Polarized and unpolarized laser retro-reflective photoelectric sensors in sturdy stainless steel housing in cylindrical M18 design. LED and laser devices are available.

## Benefits:

- Sturdy cylindrical stainless steel housing M18, degree of protection IP 67 for industrial application
- Sensitivity adjustment via potentiometer
- Fixed beam geometry, convergent
- Complementary switching outputs for light/dark switching or as a control function

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50083184	PRKL 318M/P-S12	0.15 ... 11 m 0.12 ... 15 m	5,000 Hz	Laser, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, plastic
50083183	PRKL 318M/P	0.15 ... 11 m 0.12 ... 15 m	1,000 Hz	Laser, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Cable, 2,000 mm

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## Energetic Light Scanners

Energetic diffuse reflection light scanner with straight optics for application in limited spaces.

### RTL 318

Energetic diffuse reflection light scanner in cylindrical M18 design.

#### Benefits:

- Sensitivity adjustment via potentiometer
- Fixed beam geometry, convergent
- Complementary switching outputs for light/dark switching or as a control function

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50083188	RTL 318M/P-300-S12	0 ... 0.3 m 0 ... 0.35 m	5,000 Hz	Laser, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, plastic

## Light scanners with background suppression

Diffuse reflection scanners with background suppression and straight optics.

### HRTR 318

Light scanners with background suppression and highly visible red light spot in cylindrical M18 design for nearly color-independent object detection.

#### Benefits:

- Exact background suppression, electronically adjustable
- Nearly colour-independent object detection
- Clearly visible red light spot
- A<sup>2</sup>LS – Active Ambient Light Suppression

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50106086	HRTR 318M/66-120-S12	0.001 ... 0.12 m 0.001 ... 0.14 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	DC	Connector, M12, plastic
50106090	HRTR 318M/66-120	0.001 ... 0.12 m 0.001 ... 0.14 m	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	DC	Cable, 2,000 mm

## /// 328 Series



The 328 series photoelectric sensor family unifies the sturdiness of a stable stainless steel metal thread in the plastic housing with high functionality, all at a low price. With their reliable detection behavior, the versatile mounting options thanks to extensive accessories and models with axial and angled optics, these sensors are the perfect choice for standard detection tasks in many challenging areas of application.



## Throughbeam Sensors

The photoelectric sensors of this series offer a high performance reserve and are suited for use in industrial environments with their metal thread in the plastic housing.

### L328

The L328 throughbeam photoelectric sensor in the sturdy plastic housing with metal thread simplifies alignment thanks to optimized beam geometry. It is also suitable for the simple detection of flat objects. The simple fine adjustment and deactivation inputs for testing the sensor round out the portfolio of these sensors.

#### Benefits:

- High performance reserve
- Simple alignment by means of optimized beam geometry
- Simple detection of flat objects

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Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50122702	► LS328/9D-M12	0 ... 10 m 0 ... 15 m		LED, red			DC	Connector, M12, plastic
50122711	◄ LE328/2N-M12		500 Hz		Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Connector, M12, plastic
50122709	◄ LE328/4P-M12		500 Hz		Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, plastic
50122699	► LS328/XX-M12	0 ... 10 m 0 ... 15 m		LED, red			DC	Connector, M12, plastic
50122708	◄ LE328/4X-M12		500 Hz		Transistor, PNP, light switching		DC	Connector, M12, plastic
50122703	► LS328/9D	0 ... 10 m 0 ... 15 m		LED, red			DC	Cable, 2,000 mm
50122712	◄ LE328/2N		500 Hz		Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Cable, 2,000 mm
50122710	◄ LE328/4P		500 Hz		Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Cable, 2,000 mm
50122700	► LS328.W/9D-M12	0 ... 5.5 m 0 ... 8 m		LED, red			DC	Connector, M12, plastic
50122706	◄ LE328.W/2N-M12		500 Hz		Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Connector, M12, plastic
50122704	◄ LE328.W/4P-M12		500 Hz		Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, plastic
50122701	► LS328.W/9D	0 ... 5.5 m 0 ... 8 m		LED, red			DC	Cable, 2,000 mm
50122707	◄ LE328.W/2N		500 Hz		Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Cable, 2,000 mm
50122705	◄ LE328.W/4P		500 Hz		Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Cable, 2,000 mm

► transmitter / ◄ receiver

## Retro-Reflective Photoelectric Sensor

These retro-reflective photoelectric sensors with metal thread can reliably detect objects even with glossy surfaces through the use of polarized light.

### PRK328

Reliable blanking of direct reflections by the polarization filter, an optimized beam path for quick commissioning and simple fine adjustment characterize these sensors in the sturdy plastic housings with metal thread.

#### Benefits:

- High performance reserve
- Safe suppression of direct reflection due to polarization filter

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50122697	PRK328.3/2N-M12	0.02 ... 4.5 m 0.02 ... 6 m	500 Hz	LED, red	Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Connector, M12, plastic
50122698	PRK328.3/2N	0.02 ... 4.5 m 0.02 ... 6 m	500 Hz	LED, red	Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Cable, 2,000 mm
50122695	PRK328.3/4P-M12	0.02 ... 4.5 m 0.02 ... 6 m	500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, plastic
50122696	PRK328.3/4P	0.02 ... 4.5 m 0.02 ... 6 m	500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Cable, 2,000 mm
50122691	PRK328.W3/2N-M12	0.02 ... 4 m 0.02 ... 5 m	500 Hz	LED, red	Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Connector, M12, plastic
50122694	PRK328.W3/2N	0.02 ... 4 m 0.02 ... 5 m	500 Hz	LED, red	Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Cable, 2,000 mm
50122689	PRK328.W3/4P-M12	0.02 ... 4 m 0.02 ... 5 m	500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, plastic
50122690	PRK328.W3/4P	0.02 ... 4 m 0.02 ... 5 m	500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Cable, 2,000 mm

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## Energetic Light Scanners

These sturdy sensors with metal thread in the plastic housing perform detection directly on an object and do not require a reflector. Versions are available for various distances.

### ET328 / FT328

These red light scanners in the sturdy plastic housing with metal thread facilitate robust object detection. The simple adjustment to the object through the teach button with two levels makes installation a piece of cake. These sensors feature the A<sup>2</sup>LS active ambient light suppression and easy alignment through brightly visible brightVision® light spot.

#### Benefits:

- Energetic reflection light scanner with light/dark switching
- Scanning range adjustment via teach-in
- Axial and 90° light beam gate for flexible integration
- Sturdy plastic housing with stainless steel threaded sleeve with cylindrical M18 design
- Full control through green and yellow indicator LEDs and complementary outputs

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Switching output 2	Voltage type	Connection
50122728	ET328.3/2N-M12	0.001 ... 0.7 m 0.001 ... 1 m	500 Hz	LED, red	Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Connector, M12, plastic
50122729	ET328.3/2N	0.001 ... 0.7 m 0.001 ... 1 m	500 Hz	LED, red	Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Cable, 2,000 mm
50122726	ET328.3/4P-M12	0.001 ... 0.7 m 0.001 ... 1 m	500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, plastic
50122727	ET328.3/4P	0.001 ... 0.7 m 0.001 ... 1 m	500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Cable, 2,000 mm
50122724	ET328.W3/2N-M12	0.005 ... 0.35 m 0.001 ... 0.45 m	500 Hz	LED, red	Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Connector, M12, plastic
50122725	ET328.W3/2N	0.005 ... 0.35 m 0.001 ... 0.45 m	500 Hz	LED, red	Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Cable, 2,000 mm
50122721	ET328.W3/4P-M12	0.005 ... 0.35 m 0.001 ... 0.45 m	500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, plastic
50122722	ET328.W3/4P	0.005 ... 0.35 m 0.001 ... 0.45 m	500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Cable, 2,000 mm
50122719	FT328.3/2N-M12	0.001 ... 0.215 m 0.001 ... 0.280 m	500 Hz	LED, red	Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Connector, M12, plastic
50122720	FT328.3/2N	0.001 ... 0.215 m 0.001 ... 0.280 m	500 Hz	LED, red	Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Cable, 2,000 mm
50122717	FT328.3/4P-M12	0.001 ... 0.215 m 0.001 ... 0.280 m	500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, plastic
50122718	FT328.3/4P	0.001 ... 0.215 m 0.001 ... 0.280 m	500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Cable, 2,000 mm
50122715	FT328.W3/2N-M12	0.002 ... 0.1 m 0 ... 0.12 m	500 Hz	LED, red	Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Connector, M12, plastic
50122716	FT328.W3/2N	0.002 ... 0.1 m 0 ... 0.12 m	500 Hz	LED, red	Transistor, NPN, light switching	Transistor, NPN, dark switching	DC	Cable, 2,000 mm
50122713	FT328.W3/4P-M12	0.002 ... 0.1 m 0 ... 0.12 m	500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Connector, M12, plastic
50122714	FT328.W3/4P	0.002 ... 0.1 m 0 ... 0.12 m	500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, dark switching	DC	Cable, 2,000 mm

## /// 412 Series



The extremely compact M12 design of the 412 series opens many interesting applications, e. g., in assembly and handling technology or packaging technology.



Direct access to the online product selector at [www.leuze.com/en/br412](http://www.leuze.com/en/br412)

## Throughbeam Sensors

Short and compact throughbeam photoelectric sensors with visible red light.

## LS 412

Throughbeam photoelectric sensors with visible red light in cylindrical M12 design.

## Benefits:

- Slim and short cylindrical metal housing M12
- Sensitivity adjustment for optimum adaptation to the application
- Light/dark switching via control cable

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Voltage type	Connection
50081431	SET LS 412M/P-S12	0 ... 6 m 0 ... 8 m	500 Hz	LED, red	Transistor, PNP, light/dark reversible	DC	Connector, M12, metal
50081432	LS 412M/P	0 ... 6 m 0 ... 8 m	500 Hz	LED, red	Transistor, PNP, light/dark reversible	DC	Cable, 2,000 mm

Set consists of transmitter and receiver

## Retro-Reflective Sensors

Short and compact retro-reflective photoelectric sensors with visible red light and polarization filter.

## PRK 412

Retro-reflective photoelectric sensor in slim metal housing is well-suited for detection of fast events thanks to the high switching frequency.

## Benefits:

- High switching frequency for detection of fast events
- Slim and short cylindrical metal housing M12
- Light/dark switching via control cable

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Voltage type	Connection
50081407	PRK 412M/P-S12	0.15 ... 1.3 m 0.15 ... 1.6 m	700 Hz	LED, red	Transistor, PNP, light/dark reversible	DC	Connector, M12, metal
50081408	PRK 412M/P	0.15 ... 1.3 m 0.15 ... 1.6 m	700 Hz	LED, red	Transistor, PNP, light/dark reversible	DC	Cable, 2,000 mm

## Energetic Light Scanners

Short and compact energetic light scanner with visible red light.

## RT 412

Energetic retro-reflective photoelectric sensor with visible red light in cylindrical M12 design for detection of fast events.

## Benefits:

- High switching frequency for detection of fast events
- Slim and short cylindrical metal housing M12
- Light/dark switching via control cable

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Voltage type	Connection
50081409	RT 412M/P-200-S12	0 ... 0.2 m 0 ... 0.4 m	700 Hz	LED, red	Transistor, PNP, light/dark reversible	DC	Connector, M12, metal
50081410	RT 412M/P-200	0 ... 0.2 m 0 ... 0.4 m	700 Hz	LED, red	Transistor, PNP, light/dark reversible	DC	Cable, 2,000 mm

**/// 618 Series**

With its full-metal housing, this M18 design makes no compromises in terms of maximum robustness.

**Throughbeam Sensors**

Sturdy throughbeam photoelectric sensors with infrared light.

**LS 618**

Throughbeam photoelectric sensors with infrared light and light/dark switching via control cable.

**Benefits:**

- Sturdy metal housing in cylindrical M18 design
- Sensitivity adjustment for optimum adaptation to the application
- Dual LED display for easy commissioning
- M12 connector for fast installation

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Voltage type	Connection
50038451	SET LS 618/4-S12	0 ... 10 m 0 ... 12 m	500 Hz	LED, infrared	Transistor, PNP, light/dark reversible	DC	Connector, M12, metal

Set consists of transmitter and receiver

**Retro-Reflective Sensors**

Retro-reflective photoelectric sensors with red light in sturdy metal housing.

**PRK 618**

Retro-reflective photoelectric sensor with light/dark switching via control cable.

**Benefits:**

- Sturdy metal housing in cylindrical M18 design
- Sensitivity adjustment for optimum adaptation to the application
- Dual LED display for easy commissioning
- M12 connector for fast installation

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Voltage type	Connection
50038450	PRK 618/4-S12	0 ... 5 m 0 ... 7 m	500 Hz	LED, red	Transistor, PNP, light/dark reversible	DC	Connector, M12, metal

**Energetic Light Scanners**

Energetic light scanner with infrared light in sturdy metal housing.

**RT 618**

Energetic reflection light scanner with light/dark switching via control cable.

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**Benefits:**

- Sturdy metal housing in cylindrical M18 design
- Sensitivity adjustment for optimum adaptation to the application
- Dual LED display for easy commissioning
- M12 connector for fast installation

Part no.	Part description	Operating range [m] Op. range limit [m]	Switching frequency	Light source	Switching output 1	Voltage type	Connection
50038449	RT 618/4-200-S12	0 ... 0.2 m 0 ... 0.3 m	500 Hz	LED, infrared	Transistor, PNP, light/dark reversible	DC	Connector, M12, metal

# //SENSORS FOR POTENTIALLY EXPLOSIVE AREAS

## DETECT WITHOUT RISK

The use of optoelectronic sensors in potentially explosive areas requires specially protected devices. Our extensive product line offers powerful sensors in all common technologies.

### /// 92 Series



The Series 92 Ex sensors are available as reflection light scanners, retro-reflective photoelectric sensors or throughbeam photoelectric sensors and reliably detect objects at distances of 300 mm up to 12 m. The intrinsically safe sensors transmit switching signals to the VS 403 isolated switching amplifier by way of the NAMUR interface. The temperature class for explosive gas areas is T6; for explosive dust areas it is 80 °C.



#### Benefits:

- Compact construction with robust diecast zinc housing and glass optics for protection against environmental influences
- Switching output acc. to IEC 60947-5-6 (NAMUR)
- EU type examination certificate DMT 03 ATEX E 029 for zone 1/21
- Large range from 0.3 to 12 m

Part no.	Part description	Operating range [m] Op. range limit [m]	Ex device category / Ex-zone	Switching frequency	Light source	Switching output 1	Connection
50080722	▶ LS 92/3 SE-L Ex	0 ... 12 m 0 ... 15.6 m	2/1/21	60 Hz	LED, infrared	NAMUR	Connector, M12, metal
50080721	◀ LS 92/3 E-L Ex	0 ... 12 m 0 ... 15.6 m	2/1/21			NAMUR	Connector, M12, metal
50080723	PRK 92/3 L Ex	0.2 ... 5 m 0.2 ... 5 m	2/1/21	60 Hz	LED, infrared	NAMUR	Connector, M12, metal
50080724	FRK 92/3-300 L Ex	0.03 ... 0.3 m 0.03 ... 0.3 m	2/1/21	60 Hz	LED, infrared	NAMUR	Connector, M12, metal

LS 92: throughbeam photoelectric sensors; PRK 92: retro-reflective photoelectric sensors; FRK 92: light scanners with background suppression  
▶ transmitter / ◀ receiver

### /// 55 Series



The sensors are developed for all category 3G and 3D applications. With their small dimensions, they fit even in constrained spaces. The sensors and the protective housing are made of stainless steel and are also suitable for demanding operating conditions. Currently available are retro-reflective photoelectric sensors and scanners with background suppression. The temperature class for explosive gas areas is T4; for explosive dust areas it is 70 °C.



#### Benefits:

- Diffuse reflection light scanner with visible red light and adjustable background suppression
- Stainless steel device housing and protective housing
- Exact adjustment of the scanning range via 8-gear spindle
- Very good black/white behavior and reliable switching nearly independent of the object or background properties
- Fast alignment through brightVision®
- A<sup>2</sup>LS – Active Ambient Light Suppression

Part no.	Part description	Operating range [m] Op. range limit [m]	Ex device category / Ex-zone	Switching frequency	Light source	Switching output 1	Switching output 2	Connection
50115207	PRK 55/6D.42-S8.3 Ex	0 ... 3 m 0 ... 3.5 m	3/2/22	1,000 Hz	LED, red	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)		Connector, M8, stainless steel
50119364	PRK 55/6.42-S8 Ex	0 ... 3 m 0 ... 3.5 m	3/2/22	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)		Connector, M8, stainless steel
50115269	HRTR 55/66-S8 Ex	0.005 ... 0.4 m 0.005 ... 0.4 m	3/2/22	1,000 Hz	LED, red	Transistor, push-pull, light switching (PNP)/ dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/ light switching (NPN)	Connector, M8, stainless steel

PRK 55: retro-reflective photoelectric sensors; HRTR 55: light scanners with background suppression

## /// 46 Series



Due to their high performance reserve, these devices are used for reliable detection even with heavy soiling in category 3G and 3D applications. The product spectrum encompasses familiar operating principles such as throughbeam photoelectric sensor, retro-reflective photoelectric sensor or scanner with background suppression. The temperature class for explosive gas areas is T4; for explosive dust areas it is 90 °C.

**Benefits:**

- Scanner with adjustable background suppression through multiturn potentiometer
- Reliable detection of light and dark, as well as inclined or sloped surfaces
- Fast connection through Ultra-Lock™ fast locking
- Complementary switching outputs for optimal adaptation to the application
- Warning output for increased availability
- A<sup>2</sup>LS – Active Ambient Light Suppression

Part no.	Part description	Operating range [m] Op. range limit [m]	Ex device category/Ex-zone	Switching frequency	Light source	Switching output 1	Switching output 2	Connection
50111519	▶ LSSR 46B,200-S12 S-Ex n	0 ... 50 m 0 ... 60 m	3/2/22	500 Hz	LED, red			Cable with connector, 200 mm, M12, metal
50111520	◀ LSR 46B/66,200-S12 S-Ex n	0 ... 50 m 0 ... 60 m	3/2/22	500 Hz		Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	Cable with connector, 200 mm, M12, metal
50114409	HRTL 46B/66,200-S12 S-Ex n	0.05 ... 1.2 m 0.05 ... 1.2 m	3/2/22	1,000 Hz	Laser, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	Cable with connector, 200 mm, M12, metal
50108593	PRK 46B/66.01,200-S12 S-Ex n	0.05 ... 15 m 0.05 ... 18 m	3/2/22	500 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	Cable with connector, 200 mm, M12, metal
50108591	PRK 46B/66,200-S12 S-Ex n	0.05 ... 15 m 0.05 ... 18 m	3/2/22	500 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	Cable with connector, 200 mm, M12, metal
50108945	IPRK 46B/4,200-S12 S-Ex n	0.05 ... 15 m 0 ... 18 m	3/2/22	500 Hz	LED, red	Transistor, PNP, light switching	Transistor, PNP, U <sub>e</sub> switching	Cable with connector, 200 mm, M12, metal
50108589	HRTR 46B/66,200-S12 S-Ex n	0 ... 1.8 m 0 ... 1.8 m	3/2/22	200 Hz	LED, red	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	Cable with connector, 200 mm, M12, metal
50108587	HRT 46B/66,200-S12 S-Ex n	0 ... 2.5 m 0 ... 2.5 m	3/2/22	200 Hz	LED, infrared	Transistor, push-pull, light switching (PNP)/dark switching (NPN)	Transistor, push-pull, dark switching (PNP)/light switching (NPN)	Cable with connector, 200 mm, M12, metal
50108943	IHRT 46B/4,200-S12 S-Ex n	0 ... 2.5 m 0 ... 2.5 m	3/2/22	200 Hz	LED, infrared	Transistor, PNP, light switching	Transistor, PNP, U <sub>e</sub> switching	Cable with connector, 200 mm, M12, metal

LS 46B: throughbeam photoelectric sensors; PRK 46B: retro-reflective photoelectric sensors; HRT 46B: light scanners with background suppression  
▶ transmitter / ◀ receiver

## /// 96 Series



These sensors were specially designed for applications that require large ranges in categories 3G and 3D. The product line covers all operating principles. The temperature class for explosive gas areas is T4; for explosive dust areas it is 70 °C.

**Benefits:**

- Scanner with adjustable background suppression using visible red light
- Robust metal housing with shock-resistant optical window, degree of protection IP 67/ IP 69K for industrial application
- Complementary switching outputs
- Scanning range adjustment and delay before start-up
- Connection via comfortable terminal compartment

Part no.	Part description	Operating range [m] Op. range limit [m]	Ex-device category / Ex-zone	Switching frequency	Light source	Switching output 1	Connection
50111015	▶ LSS 96M-1079-23 Ex n	0 ... 120 m 0 ... 150 m	3/2/22		LED, infrared		Terminal
50111016	◀ LSE 96M/P-3019-21 Ex n	0 ... 120 m 0 ... 150 m	3/2/22	500 Hz		Transistor, PNP, light switching	Terminal
50111088	PRK 96M/P-3369-21 Ex n	0.1 ... 15 m 0.1 ... 18 m	3/2/22	1,000 Hz	LED, red	Transistor, PNP, light/dark reversible	Terminal
50109523	PRK 96M/P-2838-28 Ex n	0.1 ... 7 m 0.1 ... 8.5 m	3/2/22	1,000 Hz	LED, infrared	Transistor, PNP, light/dark reversible	Terminal
50111087	HRT 96M/P-1639-800-21 Ex n	0.1 ... 0.8 m 0.1 ... 1.2 m	3/2/22	300 Hz	LED, infrared	Transistor, PNP, light/dark reversible	Terminal
50111089	HRT 96M/P-1649-800-21 Ex n	0.1 ... 0.8 m 0.1 ... 1.2 m	3/2/22	300 Hz	LED, infrared	Transistor, PNP, light/dark reversible	Terminal

LS 96: throughbeam photoelectric sensors; PRK 96: retro-reflective photoelectric sensors; HRT 96: light scanners with background suppression  
▶ transmitter / ◀ receiver

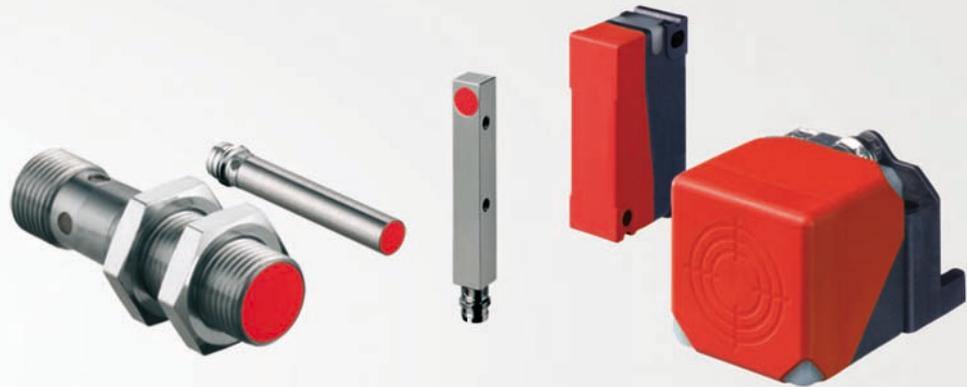
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# / INDUCTIVE SWITCHES

## RELIABLE DETECTION OF METALLIC PARTS

Some detection tasks are not very well suited to optical solutions. Coming into play here are inductive switches which reliably detect metallic parts even under the most adverse conditions. An array of designs, short reaction times and large ranges make our inductive sensors the right solutions for practically all fields of application in industrial automation.

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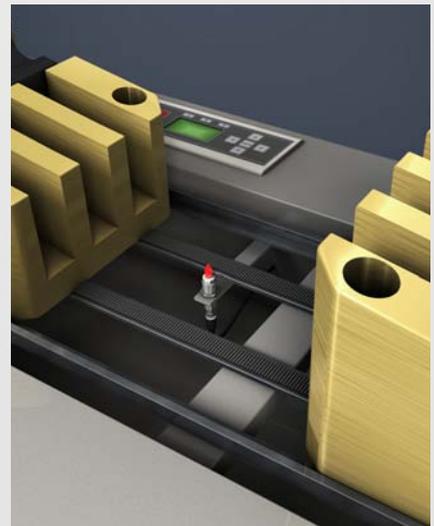
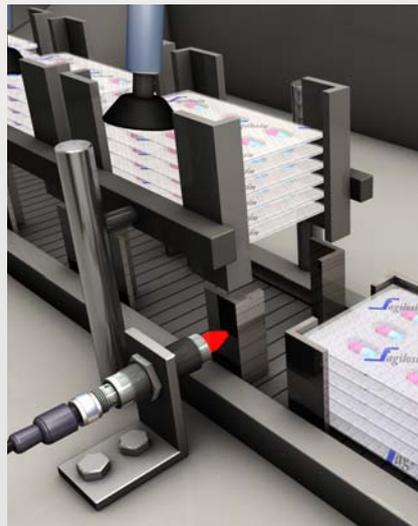


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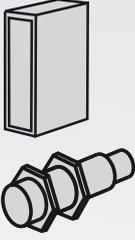
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SELECTION TABLE – cubic series

 Series	Dimensions in mm (HxBxL) / (ØxL)	Typ. scan. range limit S <sub>n</sub>	Installation		Switching output / function				Max. switching frequency	Operating voltage	Connection			Housing material			Degree of protection		
			Embedded	Non-embedded	PNP	NPN	NO - normally open	NC - normally closed			M8 connector	M12 connector	Cable, 2 m, PVC	Chromium-plated brass	Plastic (PA)	Stainless steel	IP 67	IP 69K	
 IS240	40x12x26	4.0 mm	●		●	●	●	●	1400 Hz	10...30 V DC	●		●				●		
		8.0 mm		●	●	●	●	●	1400 Hz	10...30 V DC	●		●		●			●	
 IS244	40x40x67 40x40x120	20.0 mm	●		●	●	●	●	150 Hz	10...30 V DC		●	●		●			●	
		40.0 mm		●	●	●	●	●	150 Hz	10...30 V DC		●	●		●			●	
 IS255	5x5x25	1.5 mm	●		●	●	●	○	3000 Hz	10...30 V DC	○		●	●				●	
 IS288	8x8x50	1.5 mm	●		●	●	●	○	5000 Hz	10...30 V DC	●		●	●				●	
		2.0 mm	●		●	○	●	●	3000 Hz	10...30 V DC	●		●	●				●	
		3.0 mm	●		●	○	●	○	1000 Hz	10...30 V DC	●		●	●				●	
 IS204	Ø 4x25	1.5 mm	●		●	○	●	○	3000 Hz	10...30 V DC	○		●				●	●	
 IS205	M5x38	1.5 mm	●		●	○	●	○	3000 Hz	10...30 V DC	●		●				●	●	
 IS206	Ø 6.5x35	2.0 mm	●		●	○	●	○	5000 Hz	10...30 V DC	●		●				●	●	
		3.0 mm	●		●	○	●	○	1000 Hz	10...30 V DC			●				●	●	
 IS208	M8x45	1.5 mm	●		●	○	●		5000 Hz	10...30 V DC	●	●	●				●	●	
		2.0 mm	●		●	●	●	●	5000 Hz	10...30 V DC	●		●				●	●	
		2.5 mm		●	●	○	●		5000 Hz	10...30 V DC	●	●	●				●	●	
		4.0 mm		●	●	○	●	○	3500 Hz	10...30 V DC	●		●				●	●	
 IS212	M12x50	2.0 mm	●		●	○	●		3000 Hz	10...30 V DC		●	●	●				●	
		4.0 mm	●		●	●	●	●	2000 Hz	10...30 V DC		●	●	●				●	
		4.0 mm		●	●	○	●		2000 Hz	10...30 V DC	●		●	●				●	
		6.0 mm <sup>1)</sup>	●		●	○	●		800 Hz	10...30 V DC	●		●				●	●	●
		6.0 mm	●		●	●	●	○	600 Hz	10...30 V DC	●		●	●				●	●
		8.0 mm		●	●	●	●	○	1500 Hz	10...30 V DC	●		●	●				●	●
		10.0 mm <sup>1)</sup>		●	●	○	●		400 Hz	10...30 V DC	●		●				●	●	●
		10.0 mm		●	●	○	●	○	400 Hz	10...30 V DC	●		●	●				●	●
 IS218	M18x50	5.0 mm	●		●	○	●		2000 Hz	10...30 V DC		●	●	●				●	
		8.0 mm	●		●	●	●	●	1500 Hz	10...30 V DC		●	●	●				●	
		8.0 mm		●	●	○	●		2000 Hz	10...30 V DC	●		●	●				●	
		10.0 mm <sup>1)</sup>	●		●	○	●		200 Hz	10...30 V DC	●						●	●	●
		12.0 mm	●		●	●	●	○	500 Hz	10...30 V DC	●		●	●				●	●
		20.0 mm <sup>1)</sup>		●	●	○	●		200 Hz	10...30 V DC	●		●				●	●	●
		20.0 mm		●	●	○	●	○	200 Hz	10...30 V DC	●		●	●				●	●
 IS230	M30x60	10.0 mm	●		●	○	●		1200 Hz	10...30 V DC		●	●	●				●	
		15.0 mm		●	●	○	●		700 Hz	10...30 V DC	●		●	●				●	
		20.0 mm <sup>1)</sup>	●		●	○	●		100 Hz	10...30 V DC	●						●	●	●
		22.0 mm	●		●	●	●	●	200 Hz	10...30 V DC	●		●	●				●	●
		40.0 mm <sup>1)</sup>		●	●	○	●		100 Hz	10...30 V DC	●		●				●	●	●
		40.0 mm		●	●	●	●	○	90 Hz	10...30 V DC	●		●	●				●	●

1) Food+Beverage version  
○ = on request

# //STANDARD SENSORS, CUBIC HOUSING

## SMALL DESIGNS FOR BIG REQUIREMENTS

These standard cubic sensors can be universally applied for a wide variety of detection tasks. Cubic designs are available in both plastic and metal housings.

### /// IS 288



With a laterally aligned sensor field, space and cost-saving integration is possible. Using our special supports, the sensors can even be mounted in the groove of an ITEM profile.



#### Benefits:

- Laterally aligned sensor field for space and hence cost-saving integration
- Short response times for reliable detection in dynamic processes to increase machine productivity

Part no.	Part description	Operating range Sa Typ. operating range limit Sn	Switching frequency	Type of installation	Switching output 1	Connection	Material
50112890	IS 288MP/4NO-3E0-S8.3	0 ... 2.4 mm 3 mm	1,000 Hz	Embedded	Transistor, PNP, make-contact (NO)	Connector, M8	Metal
50112889	IS 288MP/4NO-3E0	0 ... 2.4 mm 3 mm	1,000 Hz	Embedded	Transistor, PNP, make-contact (NO)	Cable, 2,000 mm	Metal
50113783	IS 288MP/4NC-2E0	0 ... 1.6 mm 2 mm	3,000 Hz	Embedded	Transistor, PNP, break-contact (NC)	Cable, 2,000 mm	Metal
50112888	IS 288MP/4NO-2E0-S8.3	0 ... 1.6 mm 2 mm	3,000 Hz	Embedded	Transistor, PNP, make-contact (NO)	Connector, M8	Metal
50112887	IS 288MP/4NO-2E0	0 ... 1.6 mm 2 mm	3,000 Hz	Embedded	Transistor, PNP, make-contact (NO)	Cable, 2,000 mm	Metal
50113208	IS 288MP/2NO-1E5	0 ... 1.2 mm 1.5 mm	5,000 Hz	Embedded	Transistor, NPN, make-contact (NO)	Cable, 2,000 mm	Metal
50112886	IS 288MP/4NO-1E5-S8.3	0 ... 1.2 mm 1.5 mm	5,000 Hz	Embedded	Transistor, PNP, make-contact (NO)	Connector, M8	Metal
50112885	IS 288MP/4NO-1E5	0 ... 1.2 mm 1.5 mm	5,000 Hz	Embedded	Transistor, PNP, make-contact (NO)	Cable, 2,000 mm	Metal

### /// IS 240



With its cubic design, this sensor is ideal for lateral mounting on conveying belts.



#### Benefits:

- Cubic construction for simple mounting on the side
- Quick and easy installation and commissioning saves mounting times and guarantees the highest availability
- Wider scanning ranges offer high functional reliability
- Very clearly visible status display for reliable detection and commissioning even at long distances

Part no.	Part description	Operating range Sa Typ. operating range limit Sn	Switching frequency	Type of installation	Switching output 1	Switching output 2	Connection	Material
50114204	IS 240PP/22-4E0-S8.4	0 ... 3.2 mm 4 mm	1,400 Hz	Embedded	Transistor, NPN, make-contact (NO)	Transistor, NPN, break-contact (NC)	Connector, M8	Plastic
50114203	IS 240PP/22-4E0	0 ... 3.2 mm 4 mm	1,400 Hz	Embedded	Transistor, NPN, make-contact (NO)	Transistor, NPN, break-contact (NC)	Cable, 2,000 mm	Plastic
50114208	IS 240PP/44-4E0-S8.4	0 ... 3.2 mm 4 mm	1,400 Hz	Embedded	Transistor, PNP, make-contact (NO)	Transistor, PNP, break-contact (NC)	Connector, M8	Plastic

Part no.	Part description	Operating range Sa Typ. operating range limit Sn	Switching frequency	Type of installation	Switching output 1	Switching output 2	Connection	Material
50117797	IS 240PP/4N0-4E0-S8.3	0 ... 3.2 mm 4 mm	1,400 Hz	Embedded	Transistor, PNP, make-contact (NO)		Connector, M8	Plastic
50114207	IS 240PP/44-4E0	0 ... 3.2 mm 4 mm	1,400 Hz	Embedded	Transistor, PNP, make-contact (NO)	Transistor, PNP, break-contact (NC)	Cable, 2,000 mm	Plastic
50114206	IS 240PP/22-8N0-S8.4	0 ... 6.4 mm 8 mm	1,400 Hz	Non-embed- ded	Transistor, NPN, make-contact (NO)	Transistor, NPN, break-contact (NC)	Connector, M8	Plastic
50114205	IS 240PP/22-8N0	0 ... 6.4 mm 8 mm	1,400 Hz	Non-embed- ded	Transistor, NPN, make-contact (NO)	Transistor, NPN, break-contact (NC)	Cable, 2,000 mm	Plastic
50114210	IS 240PP/44-8N0-S8.4	0 ... 6.4 mm 8 mm	1,400 Hz	Non-embed- ded	Transistor, PNP, make-contact (NO)	Transistor, PNP, break-contact (NC)	Connector, M8	Plastic
50114209	IS 240PP/44-8N0	0 ... 6.4 mm 8 mm	1,400 Hz	Non-embed- ded	Transistor, PNP, make-contact (NO)	Transistor, PNP, break-contact (NC)	Cable, 2,000 mm	Plastic

### /// IS 244



With a sensor field that can be aligned in five directions, this compact sensor sees almost everything. Versions with M12 connector or convenient terminal compartment leave nothing to be desired.



#### Benefits:

- Sensor field can be oriented in five directions for flexible mounting and simplified machine construction
- Status displays visible from all sides for reliable detection and commissioning
- Models with comfortable terminal compartment or M12 connector

Part no.	Part description	Operating range Sa Typ. operating range limit Sn	Switching frequency	Type of installation	Switching output 1	Switching output 2	Connection	Material
50114215	ISS 244PP/22-20E-S12	0 ... 16.2 mm 20 mm	150 Hz	Embedded	Transistor, NPN, make-contact (NO)	Transistor, NPN, break-contact (NC)	Connector, M12	Plastic
50114211	IS 244PP/22-20E-TB.4	0 ... 16.2 mm 20 mm	150 Hz	Embedded	Transistor, NPN, make-contact (NO)	Transistor, NPN, break-contact (NC)	Terminal	Plastic
50114217	ISS 244PP/44-20E-S12	0 ... 16.2 mm 20 mm	150 Hz	Embedded	Transistor, PNP, make-contact (NO)	Transistor, PNP, break-contact (NC)	Connector, M12	Plastic
50114213	IS 244PP/44-20E-TB.4	0 ... 16.2 mm 20 mm	150 Hz	Embedded	Transistor, PNP, make-contact (NO)	Transistor, PNP, break-contact (NC)	Terminal	Plastic
50114216	ISS 244PP/22-40N-S12	0 ... 32.4 mm 40 mm	150 Hz	Non-embed- ded	Transistor, NPN, make-contact (NO)	Transistor, NPN, break-contact (NC)	Connector, M12	Plastic
50114212	IS 244PP/22-40N-TB.4	0 ... 32.4 mm 40 mm	150 Hz	Non-embed- ded	Transistor, NPN, make-contact (NO)	Transistor, NPN, break-contact (NC)	Terminal	Plastic
50114218	ISS 244PP/44-40N-S12	0 ... 32.4 mm 40 mm	150 Hz	Non-embed- ded	Transistor, PNP, make-contact (NO)	Transistor, PNP, break-contact (NC)	Connector, M12	Plastic
50114214	IS 244PP/44-40N-TB.4	0 ... 32.4 mm 40 mm	150 Hz	Non-embed- ded	Transistor, PNP, make-contact (NO)	Transistor, PNP, break-contact (NC)	Terminal	Plastic

# //STANDARD SENSORS, CYLINDRIC HOUSING

## ROBUST SENSORS IN CYLINDRICAL DESIGN

The cylindrical inductive sensors are the perfect solution for many applications thanks to their short, slim metal housing. Due to their extra short versions from M8 to M30, they are particularly well-suited for tight installation situations.

### /// IS 208



With a diameter of just 8 mm, this small standard sensor can be custom-integrated in applications.



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#### Benefits:

- Large scanning ranges allow you to choose a smaller construction and thus save space and costs for the mechanical machine parts
- The sensor can be mounted at a greater distance from moving parts. This helps to avoid damage and ensures the machine availability
- The high sensitivity of the sensors makes them the inexpensive solution for special applications, e.g. for close-range detection of small parts

Part no.	Part description	Operating range Sa Typ. operating range limit Sn	Switching frequency	Type of installation	Switching output 1	Connection	Material
50109656	IS 208MM/2NO-2E0-S8.3	0 ... 1.6 mm 2 mm	5,000 Hz	Embedded	Transistor, NPN, make-contact (NO)	Connector, M8	Stainless steel
50109655	IS 208MM/2NO-2E0	0 ... 1.6 mm 2 mm	5,000 Hz	Embedded	Transistor, NPN, make-contact (NO)	Cable, 2,000 mm	Stainless steel
50109654	IS 208MM/4NC-2E0-S8.3	0 ... 1.6 mm 2 mm	5,000 Hz	Embedded	Transistor, PNP, break-contact (NC)	Connector, M8	Stainless steel
50113211	IS 208MM/4NC-2E0	0 ... 1.6 mm 2 mm	5,000 Hz	Embedded	Transistor, PNP, break-contact (NC)	Cable, 2,000 mm	Stainless steel
50117201	ISS 208MM/4NO-2E0-S8.3	0 ... 1.6 mm 2 mm	5,000 Hz	Embedded	Transistor, PNP, make-contact (NO)	Connector, M8	Stainless steel
50109653	IS 208MM/4NO-2E0-S8.3	0 ... 1.6 mm 2 mm	5,000 Hz	Embedded	Transistor, PNP, make-contact (NO)	Connector, M8	Stainless steel
50109652	IS 208MM/4NO-2E0	0 ... 1.6 mm 2 mm	5,000 Hz	Embedded	Transistor, PNP, make-contact (NO)	Cable, 2,000 mm	Stainless steel
50114051	IS 208MM/4NO-2E0,200-S8.3	0 ... 1.6 mm 2 mm	5,000 Hz	Embedded	Transistor, PNP, make-contact (NO)	Cable with connector, 200 mm, M8	Stainless steel
50118369	ISS 208MM/4NO-2E0,200-S8.3	0 ... 1.6 mm 2 mm	5,000 Hz	Embedded	Transistor, PNP, make-contact (NO)	Cable with connector, 200 mm, M8	Stainless steel
50113207	IS 208MM/2NC-1E5	0 ... 1.2 mm 1.5 mm	5,000 Hz	Embedded	Transistor, NPN, break-contact (NC)	Cable, 2,000 mm	Stainless steel
50109642	IS 208MM/2NO-1E5	0 ... 1.2 mm 1.5 mm	5,000 Hz	Embedded	Transistor, NPN, make-contact (NO)	Cable, 2,000 mm	Stainless steel
50112444	IS 208MM/4NC-1E5	0 ... 1.2 mm 1.5 mm	5,000 Hz	Embedded	Transistor, PNP, break-contact (NC)	Cable, 2,000 mm	Stainless steel
50109641	IS 208MM/4NO-1E5-S12	0 ... 1.2 mm 1.5 mm	5,000 Hz	Embedded	Transistor, PNP, make-contact (NO)	Connector, M12	Stainless steel
50109640	IS 208MM/4NO-1E5-S8.3	0 ... 1.2 mm 1.5 mm	5,000 Hz	Embedded	Transistor, PNP, make-contact (NO)	Connector, M8	Stainless steel
50122455	IS 208MM/4NO-1E5,5000	0 ... 1.2 mm 1.5 mm	5,000 Hz	Embedded	Transistor, PNP, make-contact (NO)	Cable, 5,000 mm	Stainless steel
50109639	IS 208MM/4NO-1E5	0 ... 1.2 mm 1.5 mm	5,000 Hz	Embedded	Transistor, PNP, make-contact (NO)	Cable, 2,000 mm	Stainless steel
50109662	IS 208MM/2NO-4NO-S8.3	0 ... 3.2 mm 4 mm	3,500 Hz	Non-embed- ded	Transistor, NPN, make-contact (NO)	Connector, M8	Stainless steel
50109661	IS 208MM/2NO-4NO	0 ... 3.2 mm 4 mm	3,500 Hz	Non-embed- ded	Transistor, NPN, make-contact (NO)	Cable, 2,000 mm	Stainless steel
50109660	IS 208MM/4NC-4NO-S8.3	0 ... 3.2 mm 4 mm	3,500 Hz	Non-embed- ded	Transistor, PNP, break-contact (NC)	Connector, M8	Stainless steel
50109659	IS 208MM/4NO-4NO-S8.3	0 ... 3.2 mm 4 mm	3,500 Hz	Non-embed- ded	Transistor, PNP, make-contact (NO)	Connector, M8	Stainless steel
50109658	IS 208MM/4NO-4NO	0 ... 3.2 mm 4 mm	3,500 Hz	Non-embed- ded	Transistor, PNP, make-contact (NO)	Cable, 2,000 mm	Stainless steel
50109649	IS 208MM/2NO-2N5	0 ... 2 mm 2.5 mm	5,000 Hz	Non-embed- ded	Transistor, NPN, make-contact (NO)	Cable, 2,000 mm	Stainless steel
50109647	IS 208MM/4NO-2N5-S12	0 ... 2 mm 2.5 mm	5,000 Hz	Non-embed- ded	Transistor, PNP, make-contact (NO)	Connector, M12	Stainless steel
50109646	IS 208MM/4NO-2N5-S8.3	0 ... 2 mm 2.5 mm	5,000 Hz	Non-embed- ded	Transistor, PNP, make-contact (NO)	Connector, M8	Stainless steel
50114490	ISS 208MM/4NO-2N5-S8.3	0 ... 2 mm 2.5 mm	5,000 Hz	Non-embed- ded	Transistor, PNP, make-contact (NO)	Connector, M8	Stainless steel
50109645	IS 208MM/4NO-2N5	0 ... 2 mm 2.5 mm	5,000 Hz	Non-embed- ded	Transistor, PNP, make-contact (NO)	Cable, 2,000 mm	Stainless steel

## /// IS 212



Even this standard design with M12 external thread has its special features: Increased scanning ranges with a small design save space and money.

**Benefits:**

- Large scanning ranges allow you to choose a smaller construction and thus save space and costs
- The sensor can be mounted at a greater distance from moving parts
- The high sensitivity of the sensors makes them the inexpensive solution for special applications, e.g. for close-range detection of small parts
- Sturdy all-metal housing for permanent operation

Part no.	Part description	Operating range Sa Typ. operating range limit Sn	Switching frequency	Type of installation	Switching output 1	Connection	Material
50109688	ISS 212MM/2NO-6E0-S12	0 ... 4.8 mm 6 mm	800 Hz	Embedded	Transistor, NPN, make-contact (NO)	Connector, M12	Metal
50109682	IS 212MM/2NO-6E0	0 ... 4.8 mm 6 mm	800 Hz	Embedded	Transistor, NPN, make-contact (NO)	Cable, 2,000 mm	Metal
50109679	ISS 212MM/4NO-6E0-S12	0 ... 4.8 mm 6 mm	800 Hz	Embedded	Transistor, PNP, make-contact (NO)	Connector, M12	Metal
50109678	IS 212MM/4NO-6E0	0 ... 4.8 mm 6 mm	800 Hz	Embedded	Transistor, PNP, make-contact (NO)	Cable, 2,000 mm	Metal
50109677	IS 212MM/2NC-4E0-S12	0 ... 3.2 mm 4 mm	2,000 Hz	Embedded	Transistor, NPN, break-contact (NC)	Connector, M12	Metal
50114380	IS 212MM/2NC-4E0	0 ... 3.2 mm 4 mm	2,000 Hz	Embedded	Transistor, NPN, break-contact (NC)	Cable, 2,000 mm	Metal
50109687	ISS 212MM/2NO-4E0-S12	0 ... 3.2 mm 4 mm	2,000 Hz	Embedded	Transistor, NPN, make-contact (NO)	Connector, M12	Metal
50109675	IS 212MM/2NO-4E0	0 ... 3.2 mm 4 mm	2,000 Hz	Embedded	Transistor, NPN, make-contact (NO)	Cable, 2,000 mm	Metal
50109674	IS 212MM/4NC-4E0-S12	0 ... 3.2 mm 4 mm	2,000 Hz	Embedded	Transistor, PNP, break-contact (NC)	Connector, M12	Metal
50109676	ISS 212MM/4NC-4E0-S12	0 ... 3.2 mm 4 mm	2,000 Hz	Embedded	Transistor, PNP, break-contact (NC)	Connector, M12	Metal
50109685	ISS 212MM/4NO-4E0-S12	0 ... 3.2 mm 4 mm	2,000 Hz	Embedded	Transistor, PNP, make-contact (NO)	Connector, M12	Metal
50109673	IS 212MM/4NO-4E0-S12	0 ... 3.2 mm 4 mm	2,000 Hz	Embedded	Transistor, PNP, make-contact (NO)	Connector, M12	Metal
50109672	IS 212MM/4NO-4E0	0 ... 3.2 mm 4 mm	2,000 Hz	Embedded	Transistor, PNP, make-contact (NO)	Cable, 2,000 mm	Metal
50109684	ISS 212MM/4NO-4E0	0 ... 3.2 mm 4 mm	2,000 Hz	Embedded	Transistor, PNP, make-contact (NO)	Cable, 2,000 mm	Metal
50109666	IS 212MM/2NO-2E0	0 ... 1.6 mm 2 mm	3,000 Hz	Embedded	Transistor, NPN, make-contact (NO)	Cable, 2,000 mm	Metal
50111870	IS 212MM/4NC-2E0-S12	0 ... 1.6 mm 2 mm	3,000 Hz	Embedded	Transistor, PNP, break-contact (NC)	Connector, M12	Metal
50109665	IS 212MM/4NO-2E0-S12	0 ... 1.6 mm 2 mm	3,000 Hz	Embedded	Transistor, PNP, make-contact (NO)	Connector, M12	Metal
50109664	IS 212MM/4NO-2E0	0 ... 1.6 mm 2 mm	3,000 Hz	Embedded	Transistor, PNP, make-contact (NO)	Cable, 2,000 mm	Metal
50111952	IS 212MM/2NO-10N	0 ... 8.1 mm 10 mm	400 Hz	Non-embedded	Transistor, NPN, make-contact (NO)	Cable, 2,000 mm	Metal
50114052	IS 212MM/4NC-10N-S12	0 ... 8.1 mm 10 mm	400 Hz	Non-embedded	Transistor, PNP, break-contact (NC)	Connector, M12	Metal
50109680	ISS 212MM/4NO-10N-S12	0 ... 8.1 mm 10 mm	400 Hz	Non-embedded	Transistor, PNP, make-contact (NO)	Connector, M12	Metal
50109689	IS 212MM/4NO-10N	0 ... 8.1 mm 10 mm	400 Hz	Non-embedded	Transistor, PNP, make-contact (NO)	Cable, 2,000 mm	Metal
50120274	IS 212MM/2NO-8NO-S12	0 ... 6.4 mm 8 mm	1,500 Hz	Non-embedded	Transistor, NPN, make-contact (NO)	Connector, M12	Metal
50112806	IS 212MM/2NO-8NO	0 ... 6.4 mm 8 mm	1,500 Hz	Non-embedded	Transistor, NPN, make-contact (NO)	Cable, 2,000 mm	Metal
50112808	IS 212MM/4NO-8NO-S12	0 ... 6.4 mm 8 mm	1,500 Hz	Non-embedded	Transistor, PNP, make-contact (NO)	Connector, M12	Metal
50112807	IS 212MM/4NO-8NO	0 ... 6.4 mm 8 mm	1,500 Hz	Non-embedded	Transistor, PNP, make-contact (NO)	Cable, 2,000 mm	Metal
50121012	IS 212MM/2NC-4NO-S12	0 ... 3.2 mm 4 mm	2,000 Hz	Non-embedded	Transistor, NPN, break-contact (NC)	Connector, M12	Metal
50109671	IS 212MM/2NO-4NO-S12	0 ... 3.2 mm 4 mm	1,500 Hz	Non-embedded	Transistor, NPN, make-contact (NO)	Connector, M12	Metal
50109670	IS 212MM/2NO-4NO	0 ... 3.2 mm 4 mm	1,500 Hz	Non-embedded	Transistor, NPN, make-contact (NO)	Cable, 2,000 mm	Metal
50112209	ISS 212MM/2NO-4NO	0 ... 3.2 mm 4 mm	2,000 Hz	Non-embedded	Transistor, NPN, make-contact (NO)	Cable, 2,000 mm	Metal
50112914	IS 212MM/4NC-4NO-S12	0 ... 3.2 mm 4 mm	2,000 Hz	Non-embedded	Transistor, PNP, break-contact (NC)	Connector, M12	Metal

Part no.	Part description	Operating range Sa Typ. operating range limit Sn	Switching frequency	Type of installation	Switching output 1	Connection	Material
50109669	IS 212MM/4NO-4NO-S12	0 ... 3.2 mm 4 mm	2,000 Hz	Non-embedded	Transistor, PNP, make-contact (NO)	Connector, M12	Metal
50111963	ISS 212MM/4NO-4NO-S12	0 ... 3.2 mm 4 mm	2,000 Hz	Non-embedded	Transistor, PNP, make-contact (NO)	Connector, M12	Metal
50109668	IS 212MM/4NO-4NO	0 ... 3.2 mm 4 mm	2,000 Hz	Non-embedded	Transistor, PNP, make-contact (NO)	Cable, 2,000 mm	Metal

/// IS 218



In spite of the compact design in an M18 housing, these sensors don't skimp on power and can be quickly and easily integrated in the machine.



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**Benefits:**

- Wide spectrum of available scanning ranges enables application in limited spaces
- The sensor can be mounted at a greater distance from moving parts
- The high sensitivity of the sensors makes them the inexpensive solution for special applications, e. g. for close-range detection of small parts
- Sturdy all-metal housing for permanent operation

Switching Sensors

Measuring Sensors

Part no.	Part description	Operating range Sa Typ. operating range limit Sn	Switching frequency	Type of installation	Switching output 1	Connection	Material
50109708	ISS 218MM/2NO-12E-S12	0 ... 9.7 mm 12 mm	500 Hz	Embedded	Transistor, NPN, make-contact (NO)	Connector, M12	Metal
50111954	IS 218MM/2NO-12E	0 ... 9.7 mm 12 mm	500 Hz	Embedded	Transistor, NPN, make-contact (NO)	Cable, 2,000 mm	Metal
50120273	ISS 218MM/4NC-12E-S12	0 ... 9.7 mm 12 mm	500 Hz	Embedded	Transistor, PNP, break-contact (NC)	Connector, M12	Metal
50114427	IS 218 MM/4NO-12E-S12	0 ... 9.7 mm 12 mm	500 Hz	Embedded	Transistor, PNP, make-contact (NO)	Connector, M12	Metal
50109707	ISS 218MM/4NO-12E-S12	0 ... 9.7 mm 12 mm	500 Hz	Embedded	Transistor, PNP, make-contact (NO)	Connector, M12	Metal
50109706	IS 218MM/4NO-12E	0 ... 9.7 mm 12 mm	500 Hz	Embedded	Transistor, PNP, make-contact (NO)	Cable, 2,000 mm	Metal
50109703	ISS 218MM/2NO-8E0-S12	0 ... 6.4 mm 8 mm	1,500 Hz	Embedded	Transistor, NPN, make-contact (NO)	Connector, M12	Metal
50109704	IS 218MM/2NO-8E0-S12	0 ... 6.4 mm 8 mm	1,500 Hz	Embedded	Transistor, NPN, make-contact (NO)	Connector, M12	Metal
50112104	IS 218MM/2NO-8E0	0 ... 6.4 mm 8 mm	1,500 Hz	Embedded	Transistor, NPN, make-contact (NO)	Cable, 2,000 mm	Metal
50109702	IS 218MM/4NC-8E0-S12	0 ... 6.4 mm 8 mm	1,500 Hz	Embedded	Transistor, PNP, break-contact (NC)	Connector, M12	Metal
50109701	IS 218MM/4NO-8E0-S12	0 ... 6.4 mm 8 mm	1,500 Hz	Embedded	Transistor, PNP, make-contact (NO)	Connector, M12	Metal
50111743	ISS 218MM/4NO-8E0-S12	0 ... 6.4 mm 8 mm	1,500 Hz	Embedded	Transistor, PNP, make-contact (NO)	Connector, M12	Metal
50109700	IS 218MM/4NO-8E0	0 ... 6.4 mm 8 mm	1,500 Hz	Embedded	Transistor, PNP, make-contact (NO)	Cable, 2,000 mm	Metal
50109694	IS 218MM/2NO-5E0	0 ... 4 mm 5 mm	2,000 Hz	Embedded	Transistor, NPN, make-contact (NO)	Cable, 2,000 mm	Metal
50118521	IS 218MM/4NC-5E0	0 ... 4 mm 5 mm	2,000 Hz	Embedded	Transistor, PNP, break-contact (NC)	Cable, 2,000 mm	Metal
50112293	ISS 218MM/4NO-5E0-S12	0 ... 4 mm 5 mm	2,000 Hz	Embedded	Transistor, PNP, make-contact (NO)	Connector, M12	Metal
50109693	IS 218MM/4NO-5E0-S12	0 ... 4 mm 5 mm	2,000 Hz	Embedded	Transistor, PNP, make-contact (NO)	Connector, M12	Metal
50112915	ISS 218MM/4NO-5E0	0 ... 4 mm 5 mm	2,000 Hz	Embedded	Transistor, PNP, make-contact (NO)	Cable, 2,000 mm	Metal
50109692	IS 218MM/4NO-5E0	0 ... 4 mm 5 mm	2,000 Hz	Embedded	Transistor, PNP, make-contact (NO)	Cable, 2,000 mm	Metal
50111953	IS 218MM/2NO-20N	0 ... 16.2 mm 20 mm	200 Hz	Non-embedded	Transistor, NPN, make-contact (NO)	Cable, 2,000 mm	Metal
50109710	ISS 218MM/4NO-20N-S12	0 ... 16.2 mm 20 mm	200 Hz	Non-embedded	Transistor, PNP, make-contact (NO)	Connector, M12	Metal
50109709	IS 218MM/4NO-20N	0 ... 16.2 mm 20 mm	200 Hz	Non-embedded	Transistor, PNP, make-contact (NO)	Cable, 2,000 mm	Metal
50109699	IS 218MM/2NO-8N0-S12	0 ... 6.4 mm 8 mm	2,000 Hz	Non-embedded	Transistor, NPN, make-contact (NO)	Connector, M12	Stainless steel
50109698	IS 218MM/2NO-8N0	0 ... 6.4 mm 8 mm	2,000 Hz	Non-embedded	Transistor, NPN, make-contact (NO)	Cable, 2,000 mm	Metal
50109697	IS 218MM/4NO-8N0-S12	0 ... 6.4 mm 8 mm	2,000 Hz	Non-embedded	Transistor, PNP, make-contact (NO)	Connector, M12	Metal
50109696	IS 218MM/4NO-8N0	0 ... 6.4 mm 8 mm	2,000 Hz	Non-embedded	Transistor, PNP, make-contact (NO)	Cable, 2,000 mm	Metal

Products for Safety at Work

Identification

Data Transmission / Control Components

Industrial Image Processing

Accessories

## /// IS 230



With a scanning range of up to 40 mm, this series in the M30 design opens the greatest possible flexibility during mounting.



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**Benefits:**

- Wide spectrum of available scanning ranges enables application in limited spaces
- The sensor can be mounted at a greater distance from moving parts
- The high sensitivity of the sensors makes them the inexpensive solution for special applications, e. g. for close-range detection of small parts
- Sturdy all-metal housing for permanent operation

Part no.	Part description	Operating range Sa Typ. operating range limit Sn	Switching frequency	Type of installation	Switching output 1	Connection	Material
50109723	IS 230MM/2NO-22E	0 ... 17.8 mm 22 mm	200 Hz	Embedded	Transistor, NPN, make-contact (NO)	Cable, 2,000 mm	Metal
50109722	IS 230MM/4NC-22E-S12	0 ... 17.8 mm 22 mm	200 Hz	Embedded	Transistor, PNP, break-contact (NC)	Connector, M12	Metal
50109721	IS 230MM/4NO-22E-S12	0 ... 17.8 mm 22 mm	200 Hz	Embedded	Transistor, PNP, make-contact (NO)	Connector, M12	Metal
50109720	IS 230MM/4NO-22E	0 ... 17.8 mm 22 mm	200 Hz	Embedded	Transistor, PNP, make-contact (NO)	Cable, 2,000 mm	Metal
50109714	IS 230MM/2NO-10E	0 ... 8.1 mm 10 mm	1,200 Hz	Embedded	Transistor, NPN, make-contact (NO)	Cable, 2,000 mm	Metal
50111871	IS 230MM/4NC-10E-S12	0 ... 8.1 mm 10 mm	1,200 Hz	Embedded	Transistor, PNP, break-contact (NC)	Connector, M12	Metal
50109713	IS 230MM/4NO-10E-S12	0 ... 8.1 mm 10 mm	1,200 Hz	Embedded	Transistor, PNP, make-contact (NO)	Connector, M12	Metal
50109712	IS 230MM/4NO-10E	0 ... 8.1 mm 10 mm	1,200 Hz	Embedded	Transistor, PNP, make-contact (NO)	Cable, 2,000 mm	Metal
50109728	IS 230MM/2NO-40N	0 ... 32.4 mm 40 mm	100 Hz	Non-embedded	Transistor, NPN, make-contact (NO)	Cable, 2,000 mm	Metal
50109727	IS 230MM/4NO-40N-S12	0 ... 32.4 mm 40 mm	100 Hz	Non-embedded	Transistor, PNP, make-contact (NO)	Connector, M12	Metal
50109726	IS 230MM/4NO-40N	0 ... 32.4 mm 40 mm	100 Hz	Non-embedded	Transistor, PNP, make-contact (NO)	Cable, 2,000 mm	Metal
50109719	IS 230MM/2NO-15N-S12	0 ... 12.1 mm 15 mm	700 Hz	Non-embedded	Transistor, NPN, make-contact (NO)	Connector, M12	Metal
50109718	IS 230MM/2NO-15N	0 ... 12.1 mm 15 mm	700 Hz	Non-embedded	Transistor, NPN, make-contact (NO)	Cable, 2,000 mm	Metal
50109717	IS 230MM/4NO-15N-S12	0 ... 12.1 mm 15 mm	700 Hz	Non-embedded	Transistor, PNP, make-contact (NO)	Connector, M12	Metal
50109716	IS 230MM/4NO-15N	0 ... 12.1 mm 15 mm	700 Hz	Non-embedded	Transistor, PNP, make-contact (NO)	Cable, 2,000 mm	Metal

# //MINIATURE SENSORS

## SPACE IN THE SMALLEST SYSTEM

For constrained spaces and special applications, Leuze electronic offers miniature sensor versions in a wide range of designs.

### /// IS 255



This subminiature sensor in a cubic housing measuring just 5 x 5 mm doesn't need to hide.



**Benefits:**

- Laterally aligned sensor field for space and hence cost-saving integration
- Short response times for reliable detection in dynamic processes

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Switching Sensors

Measuring Sensors

Part no.	Part description	Operating range Sa Typ. operating range limit Sn	Switching frequency	Type of installation	Switching output 1	Connection	Material
50113210	IS 255MP/2NO-1E5	0 ... 1.2 mm 1.5 mm	3,000 Hz	Embedded	Transistor, NPN, make-contact (NO)	Cable, 2,000 mm	Metal
50113209	IS 255MP/4NO-1E5	0 ... 1.2 mm 1.5 mm	3,000 Hz	Embedded	Transistor, PNP, make-contact (NO)	Cable, 2,000 mm	Metal
50117200	IS 255MP/4NO-1E5,200-S8.3	0 ... 1.2 mm 1.5 mm	3,000 Hz	Embedded	Transistor, PNP, make-contact (NO)	Cable with connector, 200 mm, M8	Metal

Products for Safety at Work

### /// IS 204



A cylindrical sensor with a diameter of just 4 mm fits in every system.



**Benefits:**

- Very small construction for integration in extremely confined spaces
- Large scanning ranges offer broad application flexibility and sufficient function reserves for reliable detection even of different metals
- Short response times for reliable detection in dynamic processes

Part no.	Part description	Operating range Sa Typ. operating range limit Sn	Switching frequency	Type of installation	Switching output 1	Connection	Material
50113478	IS 204MP/4NO-1E5	0 ... 1.2 mm 1.5 mm	3,000 Hz	Embedded	Transistor, PNP, make-contact (NO)	Cable, 2,000 mm	Stainless steel

Identification

Data Transmission / Control Components

Industrial Image Processing

Accessories

## /// IS 205



With its M5 fine thread, this sensor can be very easily mounted even in constrained spaces.

**Benefits:**

- Very small construction for integration in extremely confined spaces
- Clearly visible indicator for precise alignment
- Short response times for reliable detection in dynamic processes

Part no.	Part description	Operating range Sa Typ. operating range limit Sn	Switching frequency	Type of installation	Switching output 1	Connection	Material
50113212	IS 205MM/4NO-1E5-S8.3	0 ... 1.2 mm 1.5 mm	3,000 Hz	Embedded	Transistor, PNP, make-contact (NO)	Connector, M8	Stainless steel
50113213	IS 205MM/4NO-1E5	0 ... 1.2 mm 1.5 mm	3,000 Hz	Embedded	Transistor, PNP, make-contact (NO)	Cable, 2,000 mm	Stainless steel

## /// IS 206



This miniature sensor convinces with scanning ranges of up to 3.0 mm with completely flush mounting.

**Benefits:**

- Very small construction for integration in extremely confined spaces
- Large scanning ranges offer broad application flexibility and sufficient function reserves for reliable detection even of different metals
- Short response times for reliable detection in dynamic processes

Part no.	Part description	Operating range Sa Typ. operating range limit Sn	Switching frequency	Type of installation	Switching output 1	Connection	Material
50109686	IS 206MP/4NO-3E0	0 ... 2.4 mm 3 mm	1,000 Hz	Embedded	Transistor, PNP, make-contact (NO)	Cable, 2,000 mm	Metal
50111438	ISS 206MP/4NO-2E0-S8.3	0 ... 1.6 mm 2 mm	5,000 Hz	Embedded	Transistor, PNP, make-contact (NO)	Connector, M8	Stainless steel
50111437	IS 206MP/4NO-2E0	0 ... 1.6 mm 2 mm	5,000 Hz	Embedded	Transistor, PNP, make-contact (NO)	Cable, 2,000 mm	Stainless steel
50121902	IS 206MP/4NO-2E0,300-S8.3W	0 ... 1.6 mm 2 mm	5,000 Hz	Embedded	Transistor, PNP, make-contact (NO)	Cable with M12 connector, 300 mm, M8	Stainless steel
50121901	IS 206MP/4NO-2E0,150-S8.3W	0 ... 1.6 mm 2 mm	5,000 Hz	Embedded	Transistor, PNP, make-contact (NO)	Cable with M12 connector, 150 mm, M8	Stainless steel

# //ALL STAINLESS STEEL SENSORS

## WITH CONSIDERABLE DISTANCE

When used in the food or pharmaceuticals industry, sensors must satisfy high requirements, particularly with regard to the resistance of their housings to aggressive substances. All stainless steel designs are an optimum solution here.

### /// IS 212



With their robust housing made of stainless steel, these sensors withstand even aggressive cleaning processes encountered in food and pharmaceutical production.



#### Benefits:

- Sturdy all-metal housing for high, permanent machine availability
- Housing of stainless steel 316L with degree of protection IP 69K for food & beverage applications
- Large scanning ranges on stainless steel objects for reliable detection of machine parts, e.g. on packaging machinery in the foodstuffs sector

Part no.	Part description	Operating range Sa Typ. operating range limit Sn	Switching frequency	Type of installation	Switching output 1	Connection	Material
50109738	IS 212FM/4NO.5F-10N-S12	0 ... 8.1 mm 10 mm	400 Hz	Non-embedded	Transistor, PNP, make-contact (NO)	Connector, M12	Stainless steel
50109736	IS 212FM/4NO.5F-6E0-S12	0 ... 4.8 mm 6 mm	600 Hz	Embedded	Transistor, PNP, make-contact (NO)	Connector, M12	Stainless steel

### /// IS 218



Like the IS 212 series, these sensors likewise withstand aggressive cleaning processes and, in addition, offer a larger scanning range.



#### Benefits:

- Sturdy all-metal housing for high, permanent machine availability
- Housing of stainless steel 316L with degree of protection IP 69K for food & beverage applications
- Large scanning ranges on stainless steel objects for reliable detection of machine parts, e.g. on packaging machinery in the foodstuffs sector

Part no.	Part description	Operating range Sa Typ. operating range limit Sn	Switching frequency	Type of installation	Switching output 1	Connection	Material
50109734	IS 218FM/4NO.5F-20N-S12	0 ... 16.2 mm 20 mm	200 Hz	Non-embedded	Transistor, PNP, make-contact (NO)	Connector, M12	Stainless steel
50109732	IS 218FM/4NO.5F-10E-S12	0 ... 8.1 mm 10 mm	300 Hz	Embedded	Transistor, PNP, make-contact (NO)	Connector, M12	Stainless steel

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## /// IS 230



With a scanning range of up to 40 mm, this series in the M30 all stainless steel design offers the greatest possible flexibility during mounting.

**Benefits:**

- Sturdy all-metal housing for high, permanent machine availability
- Housing of stainless steel 316L with degree of protection IP 69K for food & beverage applications
- Large scanning ranges on stainless steel objects for reliable detection of machine parts, e.g. on packaging machinery in the foodstuffs sector

Part no.	Part description	Operating range Sa Typ. operating range limit Sn	Switching frequency	Type of installation	Switching output 1	Connection	Material
50111436	IS 230FM/4N0.5F-40N-S12	0 ... 32.4 mm 40 mm	90 Hz	Non-embedded	Transistor, PNP, make-contact (NO)	Connector, M12	Stainless steel
50111435	IS 230FM/4N0.5F-20E-S12	0 ... 16.2 mm 20 mm	100 Hz	Embedded	Transistor, PNP, make-contact (NO)	Connector, M12	Stainless steel

# / ULTRASONIC SENSORS

## THE ALL-ROUNDERS AMONG THE SENSORS

Ultrasonic sensors are used whenever optical systems reach their limits. Hence, partially and fully transparent or extremely dark objects can be detected just as easily as objects with reflecting surfaces or objects in dusty, vaporous or humid environments.

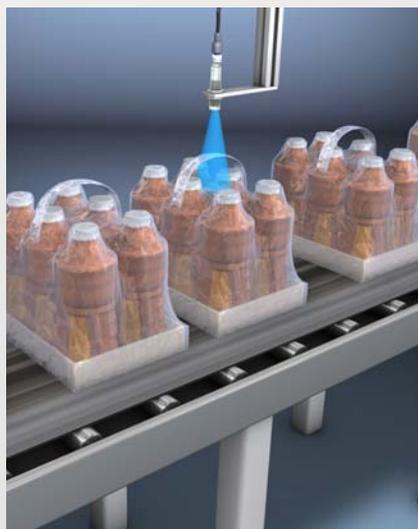


**Ultrasonic Sensors, Cubic Housing**

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**Ultrasonic Sensors, Cylindric Housing**

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# //ULTRASONIC SENSORS, CUBIC HOUSING

## SPECIALISTS FOR REFLECTIVE SURFACES

Our ultrasonic sensors in the cubic design feature a very good background suppression based on the reliable runtime measurement. Due to the largely surface-independent switching behavior, they are particularly well-suited for sound-reflecting materials.

### /// 18 Series



This ultrasonic sensor features a high sound pressure and is thus suitable even for air transport systems.



#### Benefits:

- Detection of narrow gaps
- Reliable object detection even in humid and foggy environment
- Metal housing
- Sensitivity adjustment via step switch
- Insensitive to dust

Part no.	Part description	Operating range	Switching frequency	Switching output 1	Switching output 2	Ultrasonic lobe	Connection
50103365	▶ LSSU 18-S12	0 ... 0.65 m	100 Hz			standard	Connector, M12
50103364	◀ LSEU 18/24-S12	0 ... 0.65 m	100 Hz	Transistor, PNP, make-contact (NO)	Transistor, NPN, make-contact (NO)	standard	Connector, M12

Operating range: over the whole temperature range, measured object  $\geq 20 \times 20 \text{ mm}^2$   
 ▶ transmitter / ◀ receiver

### /// 420 Series



From narrow to wide, this diffuse reflection ultrasonic scanner offers three different opening angles and sound lobes.



#### Benefits:

- Small ultrasonic scanner in plastic housing with degree of protection IP 67
- Various opening angles and sound cone geometries
- Switching behavior largely independent of surface properties
- Precise switching point adjustment through teach-in on the device and via a cable
- Protection against erroneous operation by automatically locking teach button

Part no.	Part description	Operating range	Switching frequency	Switching output 1	Ultrasonic lobe	Connection
50113989	HRTU 420/4NC.2-S-S8	0.01 ... 0.2 m	50 Hz	Transistor, PNP, break-contact (NC)	Narrow	Connector, M8
50113992	HRTU 420/4NO.2-S-S8	0.01 ... 0.2 m	50 Hz	Transistor, PNP, make-contact (NO)	Narrow	Connector, M8
50113983	HRTU 420/2NC.2-S-S8	0.01 ... 0.2 m	50 Hz	Transistor, NPN, break-contact (NC)	Narrow	Connector, M8
50113986	HRTU 420/2NO.2-S-S8	0.01 ... 0.2 m	50 Hz	Transistor, NPN, make-contact (NO)	Narrow	Connector, M8
50113988	HRTU 420/4NC.2-S8	0.04 ... 0.4 m	20 Hz	Transistor, PNP, break-contact (NC)	standard	Connector, M8
50113991	HRTU 420/4NO.2-S8	0.04 ... 0.4 m	20 Hz	Transistor, PNP, make-contact (NO)	standard	Connector, M8
50113982	HRTU 420/2NC.2-S8	0.04 ... 0.4 m	20 Hz	Transistor, NPN, break-contact (NC)	standard	Connector, M8
50113985	HRTU 420/2NO.2-S8	0.04 ... 0.4 m	20 Hz	Transistor, NPN, make-contact (NO)	standard	Connector, M8
50113987	HRTU 420/4NC.2-L-S8	0.1 ... 1 m	10 Hz	Transistor, PNP, break-contact (NC)	Wide	Connector, M8
50113990	HRTU 420/4NO.2-L-S8	0.1 ... 1 m	10 Hz	Transistor, PNP, make-contact (NO)	Wide	Connector, M8
50113981	HRTU 420/2NC.2-L-S8	0.1 ... 1 m	10 Hz	Transistor, NPN, break-contact (NC)	Wide	Connector, M8
50113984	HRTU 420/2NO.2-L-S8	0.1 ... 1 m	10 Hz	Transistor, NPN, make-contact (NO)	Wide	Connector, M8

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# //ULTRASONIC SENSORS, CYLINDRIC HOUSING

## EXPERTS IN CYLINDRICAL DESIGN

The cylindrical ultrasonic sensors with particularly thin sound cone are specially designed for the detection of small objects or objects in very small openings and for distance, height and dimension measurements of objects in many different areas of application.

### /// 412 Series



The cylindrical M12 design with two different opening angles ensures high flexibility during installation and use.



**Benefits:**

- Metal housing M12
- Precise switching point adjustment via line teach
- Especially narrow sound cone available

Part no.	Part description	Operating range	Switching frequency	Switching output 1	Ultrasonic lobe	Connection
50113995	HRTU 412/4NC.2-S-S12	0.01 ... 0.2 m	50 Hz	Transistor, PNP, break-contact (NC)	Narrow	Connector, M12
50113993	HRTU 412/4NO.2-S-S12	0.01 ... 0.2 m	50 Hz	Transistor, PNP, make-contact (NO)	Narrow	Connector, M12
50113999	HRTU 412/2NC.2-S-S12	0.01 ... 0.2 m	50 Hz	Transistor, NPN, break-contact (NC)	Narrow	Connector, M12
50113997	HRTU 412/2NO.2-S-S12	0.01 ... 0.2 m	50 Hz	Transistor, NPN, make-contact (NO)	Narrow	Connector, M12
50113996	HRTU 412/4NC.2-S12	0.04 ... 0.4 m	20 Hz	Transistor, PNP, break-contact (NC)	Narrow	Connector, M12
50113994	HRTU 412/4NO.2-S12	0.04 ... 0.4 m	20 Hz	Transistor, PNP, make-contact (NO)	Narrow	Connector, M12
50114000	HRTU 412/2NC.2-S12	0.04 ... 0.4 m	20 Hz	Transistor, NPN, break-contact (NC)	Narrow	Connector, M12
50113998	HRTU 412/2NO.2-S12	0.04 ... 0.4 m	20 Hz	Transistor, NPN, make-contact (NO)	Narrow	Connector, M12

### /// 418 Series



Short design, teachable and up to two independent switching outputs are the key features of this series. Also optionally available with angled head, which enables a sound outlet at 90° to the longitudinal axis of the M18 sensor. Versions available with temperature compensation and IO-Link.



**Benefits:**

- Precise switching point adjustment through teach or via IO-Link
- One teach button per switching output
- Models with temperature compensation
- Operating mode setting and configuration via IO-Link (multiplex, parallel, throughbeam)
- Small dead zone at long range

\*1 not for 418B series

Part no.	Part description	Operating range	Switching frequency	Switching output 1	Switching output 2	Interface	Ultrasonic lobe	Connection
50038636	HRTU 418WM/P-5020-200-S12	0.03 ... 0.2 m	10 Hz	Transistor, PNP, make-contact (NO)			standard	Connector, M12
50124268	HTU418B-400/4T4-M12	0.025 ... 0.4 m	7 Hz	Transistor, PNP, break-contact/make-contact	Transistor, PNP, break-contact/make-contact		standard	Connector, M12
50124269	HTU418B-400/4TX-M12	0.025 ... 0.4 m	7 Hz	Transistor, PNP, break-contact/make-contact			standard	Connector, M12
50109017	HRTU 418WM/P-5220-400-S12	0.025 ... 0.4 m	10 Hz	Transistor, PNP, make-contact (NO)	Transistor, PNP, break-contact/make-contact		standard	Connector, M12

Part no.	Part description	Operating range	Switching frequency	Switching output 1	Switching output 2	Interface	Ultrasonic lobe	Connection
50124267	HTU418B-400.X3/LT4-M12	0.025 ... 0.4 m	7 Hz	Transistor, push-pull, break-contact/make-contact	Transistor, PNP, break-contact/make-contact	IO-Link	standard	Connector, M12
50038640	HRTU 418WM/P-3020-700-S12	0.1 ... 0.7 m	5 Hz	Transistor, PNP, make-contact (NO)			standard	Connector, M12
50109019	HRTU 418WM/P-5220-700-S12	0.05 ... 0.7 m	5 Hz	Transistor, PNP, make-contact (NO)	Transistor, PNP, break-contact/make-contact		standard	Connector, M12
50124270	HTU418B-1000/4TX-M12	0.15 ... 1 m	8 Hz	Transistor, PNP, break-contact/make-contact			standard	Connector, M12
50124272	HTU418B-1300/4T4-M12	0.15 ... 1.3 m	8 Hz	Transistor, PNP, break-contact/make-contact	Transistor, PNP, break-contact/make-contact		standard	Connector, M12
50124271	HTU418B-1300.X3/LT4-M12	0.15 ... 1.3 m	8 Hz	Transistor, push-pull, break-contact/make-contact	Transistor, PNP, break-contact/make-contact	IO-Link	standard	Connector, M12

### /// 430 Series



Whenever large ranges are needed, the M30 sensors from the 430 series are the right choice. Two separate switching outputs can be set independently by means of teach button or IO-Link. A total of ten of these sensors can be easily synchronized with a cable.



#### Benefits:

- Particularly compact design: M30
- Precise switching point adjustment through teach or via IO-Link
- One teach button per switching output
- Operating mode setting and configuration via IO-Link (multiplex, parallel, throughbeam)
- High accuracy through temperature compensation
- Small dead zone at long range

Part no.	Part description	Operating range	Switching frequency	Switching output 1	Switching output 2	Ultrasonic lobe	Connection
50036263	VRTU 430M/P-2110-3000-S12	0.4 ... 3 m	2 Hz	Transistor, PNP, break-contact/make-contact	Transistor, PNP, break-contact/make-contact	standard	Connector, M12
50036264	VRTU 430M/P-1110-6000-S12	0.6 ... 6 m	1 Hz	Transistor, PNP, break-contact/make-contact	Transistor, PNP, break-contact/make-contact	standard	Connector, M12

# / FIBER OPTIC SENSORS

## HOW TO BEND LIGHT AROUND A CORNER

With the use of fiber optics and appropriate amplifiers, the area of application of optoelectronic sensors is considerably expanded. The flexible fiber optics with various head shapes can be integrated in nearly any system design. The detection range is dependent on the fiber optics and amplifiers used.

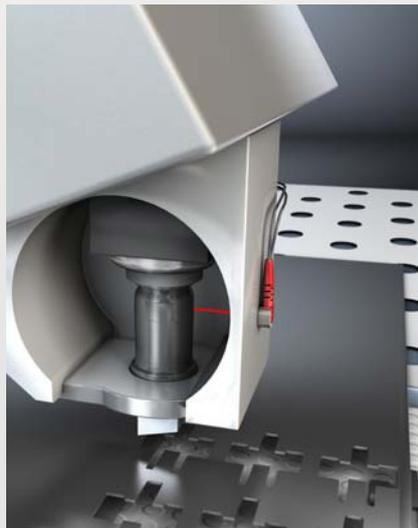


**Amplifiers**

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# //AMPLIFIERS

## SIMPLE SETUP AND CONTROL

The optical fibers are plugged into the amplifier. Depending on the model, the ranges of the fibers and the available functions vary.

### /// LV461



The series satisfies all basic requirements: 20-turn potentiometer for high-resolution sensitivity adjustments, two switches for light/dark switching and for selecting between larger range or higher switching frequency.



#### Benefits:

- Mode changeover: range/response time
- Light/dark switching
- 20-turn potentiometer for sensitivity adjustment

Part no.	Part description	Light source	Switching output 1	Switching output 2	Supply voltage	Connection	Operational controls
50118399	LV461.1/P2-150-M8	LED, red	Transistor, PNP	Transistor, NPN	DC	Connector, 150 mm, M8	Multiturn potentiometer
50118398	LV461.1/P2	LED, red	Transistor, PNP	Transistor, NPN	DC	Cable, 2,000 mm	Multiturn potentiometer Control buttons

### /// LV462



The series has a 4-digit display for displaying the switching threshold. The setting is made with the +/- button. A switch for light/dark switching and simple menu functions for setting the range and various timing functions complement the device features.



#### Benefits:

- 4-digit display
- High dynamics
- Time functions configurable on the device
- Sensitivity levels configurable on the device
- Light/dark switching
- Easy sensitivity adjustment via AutoSet function

Part no.	Part description	Light source	Switching output 1	Supply voltage	Connection	Operational controls
50118400	LV462.4/4	LED, red	Transistor, PNP	DC	Cable, 2,000 mm	Control buttons Slide switch
50118401	LV462.4/4X-150-M8	LED, red	Transistor, PNP	DC	Cable with M12 connector, 150 mm, M8	Control buttons Slide switch
50118402	LV462.4/2	LED, red	Transistor, NPN	DC	Cable, 2,000 mm	Control buttons Slide switch
50118403	LV462.4/2X-150-M8	LED, red	Transistor, NPN	DC	Cable with M12 connector, 1,500 mm, M8	Control buttons Slide switch

/// LV463



The high-performance LV463 fiber optic sensor convinces with its extensive setting options for operating ranges, sensitivities and time functions. The signal value, and at the same time the switching threshold, are shown on two easy-to-read displays. Three different teach modes considerably simplify configuration. Also available as IO-Link variant.



**Benefits:**

- Double display to show signals and switching thresholds in parallel
- 3 different teach modes for fast sensor setting
- Extensive configuration options, e. g. for operating range, sensitivity or time functions
- Internal multiplex operation of up to six units for preventing mutual interference
- Also available as IO-Link variant

Part no.	Part description	Light source	Switching output 1	Switching output 2	Supply voltage	Connection	Operational controls
50122456	LV463.7/L4-M8	LED, red	Transistor, PNP, IO-Link	Transistor, push-pull	DC	Connector, M8	Slide switch Rocker pressure switch
50122460	LV463.7/L4	LED, red	Transistor, PNP, IO-Link	Transistor, push-pull	DC	Cable, 2,000 mm	Slide switch Rocker pressure switch
50122457	LV463.7/L4-150-M12	LED, red	Transistor, PNP, IO-Link	Transistor, push-pull	DC	Cable with M12 connector, 150 mm, M12	Slide switch Rocker pressure switch
50122459	LV463.7/L4-150-M8	LED, red	Transistor, PNP, IO-Link	Transistor, push-pull	DC	Cable with M12 connector, 150 mm, M8	Slide switch Rocker pressure switch
50118405	LV463.7/4T-M8	LED, red	Transistor, PNP		DC	Connector, M8	Slide switch Rocker pressure switch
50118404	LV463.7/4T	LED, red	Transistor, PNP		DC	Cable, 2,000 mm	Slide switch Rocker pressure switch
50118407	LV463.7/4T-150-M12	LED, red	Transistor, PNP		DC	Cable with M12 connector, 150 mm, M12	Slide switch Rocker pressure switch
50118406	LV463.7/4T-150-M8	LED, red	Transistor, PNP		DC	Cable with M12 connector, 150 mm, M8	Slide switch Rocker pressure switch
50119070	LV463.7/4-150-M8.3	LED, red	Transistor, PNP		DC	Cable with M12 connector, 150 mm, M8	Slide switch Rocker pressure switch
50118409	LV463.7/2T-M8	LED, red	Transistor, NPN		DC	Connector, M8	Slide switch Rocker pressure switch
50118408	LV463.7/2T	LED, red	Transistor, NPN		DC	Cable, 2,000 mm	Slide switch Rocker pressure switch
50118411	LV463.7/2T-150-M12	LED, red	Transistor, NPN		DC	Cable with M12 connector, 150 mm, M12	Slide switch Rocker pressure switch
50119071	LV463.7/2-150-M8.3	LED, red	Transistor, NPN		DC	Cable with M12 connector, 150 mm, M8	Slide switch Rocker pressure switch
50118410	LV463.7/2T-150-M8	LED, red	Transistor, NPN		DC	Cable with M12 connector, 150 mm, M8	Slide switch Rocker pressure switch

Switching Sensors

Measuring Sensors

Products for Safety at Work

Identification

/// LVSR 325



Typical for this series of fiber optic cable control devices are the simple calibration by means of teach-in for optimum sensitivity adjustment and a control input for activation or for remote calibration. This design is available in variants for Ø 4 mm fiber optics.



**Benefits:**

- For plastic or glass fiber optics
- Teach-in for optimum sensitivity adjustment
- Activation or teach input, warning output

Direct access to the online product selector at [www.leuze.com/en/lvsr325](http://www.leuze.com/en/lvsr325)

Part no.	Part description	Light source	Switching output 1	Supply voltage	Connection	Operational controls
50081301	LVSR 325K/P-402-S8	LED, red	Transistor, PNP	DC	Connector, M8	Control buttons
50081300	LVSR 325K/P-401	LED, red	Transistor, PNP	DC	Cable, 2,000 mm	Control buttons

Data Transmission / Control Components

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Accessories

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# //FIBER OPTICS

## PLASTIC OR GLASS – DEPENDING ON THE AREA OF APPLICATION

For simple integration, each is available in a range of different designs and fiber optics cross sections.

### /// Plastic Fiber Optics



Plastic fiber optic cables are available for scanner operation or for the throughbeam principle. The selection is made depending on the design of the fiber head and the functional characteristics of the fibers. A very wide selection of different fiber optics are available, including with bend protection.

#### Benefits:

- Large selection of fiber optics
- Fiber optics with injection-molded bending protection
- Fiber optics with lateral optics
- Cross-section converter
- Fiber optics with V-optics
- Attachment lens for greater ranges or higher precision

Part no.	Part description	Operating principle	Design	Fiber length	Outer diameter	Light beam exit	Minimum object diameter	Fiber sheathing material
50117738	KF-LE-220	One-way principle	Cylindrical	2,000 mm	1 mm	Front	0.03 mm	PE
50117775	KFX-LD-320-Q	One-way principle	Cylindrical	2,000 mm	1.25 mm	Front	0.05 mm	PE
50117771	KFX-LD-320	One-way principle	Cylindrical	2,000 mm	1.25 mm	Front	0.05 mm	PE
50117767	KFX-LD-420	One-way principle	Cylindrical	2,000 mm	1.25 mm	Front	0.05 mm	PE
50117776	KFX-LA-220	One-way principle	Cylindrical	2,000 mm	1.25 mm	Front	0.03 mm	PE
50117777	KFX-LD-120	One-way principle	Cylindrical	2,000 mm	1.25 mm	Front	0.05 mm	PE
50117741	KF-LD-210-32	One-way principle	Cylindrical	2,000 mm	1.25 mm	Lateral	0.05 mm	PE
50117768	KFX-LH-420	One-way principle	Cylindrical	2,000 mm	2.2 mm	Front	0.5 mm	PE
50117772	KFX-LH-320	One-way principle	Cylindrical	2,000 mm	2.2 mm	Front	0.5 mm	PE
50117769	KFX-LY-420	One-way principle	Cylindrical	2,000 mm	2.2 mm	Front	0.5 mm	PE
50117750	KF-LY-77TZ-20	One-way principle	Cylindrical	2,000 mm	2.2 mm	Lateral	0.5 mm	PE
50117766	KFX-L-420	One-way principle	Cylindrical	2,000 mm	2.2 mm	Front	0.5 mm	PE
50117774	KFX-L-320-Q	One-way principle	Cylindrical	2,000 mm	2.2 mm	Front	0.5 mm	PE
50117770	KFX-L-320	One-way principle	Cylindrical	2,000 mm	2.2 mm	Front	0.5 mm	PE
50117739	KF-L-320-D-T14L	One-way principle	Cylindrical	2,000 mm	2.2 mm	Lateral	0.1 mm	PE
50117773	KFX-LY-320	One-way principle	Cylindrical	2,000 mm	2.2 mm	Front	0.5 mm	PE
50117740	KF-LH-305-D	One-way principle	Cylindrical	2,000 mm	2.2 mm	Lateral	0.1 mm	PE
50117749	KF-LC32-12	One-way principle	Cylindrical	900 mm	2.8 mm	Lateral	0.1 mm	PE
50122327	KF-LP-FU96-520-Q	One-way principle	Cylindrical	2,000 mm	4 mm	Lateral	0.5 mm	PTFE
50122328	KF-LP-FU92-520-Q	One-way principle	Cylindrical	2,000 mm	4 mm	Front	0.5 mm	PTFE
50117737	KF-ETE-220	Scanning principle	Cylindrical	2,000 mm	1 mm	Front	0.05 mm	PE
50117761	KFX-ETC-320-Q	Scanning principle	Cylindrical	2,000 mm	1.25 mm	Front	0.05 mm	PE
50117758	KFX-ETA-320	Scanning principle	Cylindrical	2,000 mm	1.25 mm	Front	0.05 mm	PE
50117756	KFX-ETC-420	Scanning principle	Cylindrical	2,000 mm	1.25 mm	Front	0.05 mm	PE
50117755	KFX-ETA-420	Scanning principle	Cylindrical	2,000 mm	1.25 mm	Front	0.05 mm	PE
50117762	KFX-ETD-320-Q	Scanning principle	Cylindrical	2,000 mm	1.25 mm	Front	0.05 mm	PE
50117759	KFX-ETC-320	Scanning principle	Cylindrical	2,000 mm	1.25 mm	Front	0.05 mm	PE
50117760	KFX-ETD-320	Scanning principle	Cylindrical	2,000 mm	1.25 mm	Front	0.1 mm	PE
50117757	KFX-ETD-420	Scanning principle	Cylindrical	2,000 mm	1.25 mm	Front	0.1 mm	PE
50117763	KFX-ETC7-120	Scanning principle	Cylindrical	2,000 mm	1.25 mm	Front	0.05 mm	PE
50117764	KFX-ETY-67TZ-20	Scanning principle	Cylindrical	2,000 mm	2.2 mm	Lateral	0.2 mm	PE
50117753	KFX-ETC-620	Scanning principle	Cylindrical	2,000 mm	2.2 mm	Front	0.1 mm	PE
50117752	KFX-ET-620	Scanning principle	Cylindrical	2,000 mm	2.2 mm	Front	0.2 mm	PE
50117754	KFX-ETH-620	Scanning principle	Cylindrical	2,000 mm	2.2 mm	Front	0.2 mm	PE
50121079	KFX-ET-605	Scanning principle	Cylindrical	500 mm	2.2 mm	Front	0.2 mm	PE
50117748	KF-LW-FU53-20	One-way principle	Cubic	2,000 mm	1 mm	Lateral	0.1 mm	PE
50117745	KF-LW-FU57-20	One-way principle	Cubic	2,000 mm	1 mm	Lateral	0.1 mm	PE
50117743	KF-L-10MLD-20	One-way principle	Cubic	2,000 mm	2.2 mm	Lateral	1 mm	PE
50117744	KF-L-15MLD-10	One-way principle	Cubic	2,000 mm	2.2 mm	Lateral	1 mm	PE
50117751	KF-LY-U09-20	One-way principle	Cubic	2,000 mm	2.2 mm	Lateral		PE
50117747	KF-L-50ML-20	One-way principle	Cubic	2,000 mm	2.2 mm	Lateral	2 mm	PE

A LV4xx series amplifier is required for operation!

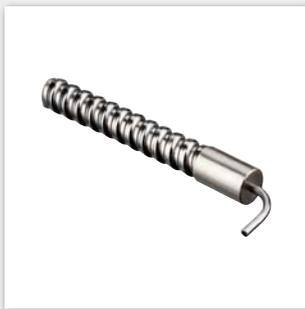
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Part no.	Part description	Operating principle	Design	Fiber length	Outer diameter	Light beam exit	Minimum object diameter	Fiber sheathing material
50117742	KF-L-10ML-10	One-way principle	Cubic	1,000 mm	2.2 mm	Front	1 mm	PE
50117778	KFX-L-20ML-20	One-way principle	Cubic	2,000 mm	2.8 mm	Front	1 mm	PE
50117746	KF-L-30ML-20	One-way principle	Cubic	2,000 mm	2.8 mm	Lateral	1 mm	PE
50117733	KF-ETW-FU47-20	Scanning principle	Cubic	2,000 mm	1 mm	Lateral	0.1 mm	PE
50117734	KF-ETW-K10-20	Scanning principle	Cubic	2,000 mm	1 mm	Lateral	0.1 mm	PE
50117735	KF-ETB-38V-20	Scanning principle	Cubic	2,000 mm	1.3 mm	Lateral		PE
50117727	KF-ET-10ML-20	Scanning principle	Cubic	2,000 mm	1.25 mm	Front	1 mm	PE
50117728	KF-ET-15MLD-20	Scanning principle	Cubic	1,000 mm	1.25 mm	Lateral	1 mm	PE
50117736	KF-ETH-38H-20	Scanning principle	Cubic	2,000 mm	2.2 mm	Lateral		PE
50117732	KF-ETY-20MLSD-20	Scanning principle	Cubic	2,000 mm	2.2 mm	Lateral	0.5 mm	PE
50117765	KFX-ET-20ML-20	Scanning principle	Cubic	2,000 mm	2.2 mm	Front	1 mm	PE
50117730	KF-ET-30ML-20	Scanning principle	Cubic	2,000 mm	2.2 mm	Lateral	1 mm	PE
50117731	KF-ET-50ML-20	Scanning principle	Cubic	2,000 mm	2.2 mm	Lateral	2 mm	PE
50117729	KF-ET-20MLS-20	Scanning principle	Cubic	2,000 mm	2.2 mm	Front	1 mm	PE

A LV4xx series amplifier is required for operation!

Switching Sensors

### /// Glass Fiber Optics



For applications with high temperature resistance, glass fiber optics are often used. The selection is made depending on the design of the fiber head and the sheathing material. For connecting to LVSR 325 fiber optic amplifiers.

**Benefits:**

- Wide variety of types of glass fiber optics
- Mechanically robust metal sheathing designs, partially from corrosion-proof stainless steel
- Use also possible at high temperatures
- Special solutions for vacuum-sealed light feed-throughs

Measuring Sensors

Products for Safety at Work

Part no.	Part description	Operating principle	Design	Fiber length	Outer diameter	Light beam exit	Fiber sheathing material
50022139	GF 5000/4 LS-VA	One-way principle	Cylindrical	5,000 mm	4.5 mm	Front	Stainless steel
50024604	GF 3000/4 LS-MS	One-way principle	Cylindrical	3,000 mm	4.5 mm	Front	Brass nickel-plated
50039145	GF 3000/4 LS-VA	One-way principle	Cylindrical	3,000 mm	4.5 mm	Front	Stainless steel
50009331	GF 2000/4 LS-VA	One-way principle	Cylindrical	2,000 mm	4.5 mm	Front	Stainless steel
50000051	GF 2000/4 LS-MS	One-way principle	Cylindrical	2,000 mm	4.5 mm	Front	Brass nickel-plated
50021192	GF 1500/4 LS-MS	One-way principle	Cylindrical	1,500 mm	4.5 mm	Front	Brass nickel-plated
50018698	GF 1500/4 LS-VA	One-way principle	Cylindrical	1,500 mm	4.5 mm	Front	Stainless steel
50001033	GF 1000/4 LS-MS	One-way principle	Cylindrical	1,000 mm	4.5 mm	Front	Brass nickel-plated
50000044	GF 1000/1 LS-VA	One-way principle	Cylindrical	1,000 mm	4.5 mm	Front	Stainless steel
50001032	GF 1000/1 LS-MS	One-way principle	Cylindrical	1,000 mm	4.5 mm	Front	Brass nickel-plated
50000036	GF 1000/1 LS-SI	One-way principle	Cylindrical	1,000 mm	4.5 mm	Front	Silicone
50000045	GF 1000/4 LS-VA	One-way principle	Cylindrical	1,000 mm	4.5 mm	Front	Stainless steel
50006779	GF 500/1 LS-SI	One-way principle	Cylindrical	500 mm	4.5 mm	Front	Silicone
50001031	GF 500/4 LS-MS	One-way principle	Cylindrical	500 mm	4.5 mm	Front	Brass nickel-plated
50001030	GF 500/1 LS-MS	One-way principle	Cylindrical	500 mm	4.5 mm	Front	Brass nickel-plated
50000043	GF 500/4 LS-VA	One-way principle	Cylindrical	500 mm	4.5 mm	Front	Stainless steel
50000042	GF 500/1 LS-VA	One-way principle	Cylindrical	500 mm	4.5 mm	Front	Stainless steel
50036128	GF 3000/4 LS-SI	One-way principle	Cylindrical	3,000 mm	5.4 mm	Front	Silicone
50121081	GF 3000/4 LS-SI-W.1	One-way principle	Cylindrical	3,000 mm	5.4 mm	Lateral	Silicone
50121080	GF 2000/4 LS-SI-W.1	One-way principle	Cylindrical	2,000 mm	5.4 mm	Lateral	Silicone
50041611	GF 2000/4 LS-SI	One-way principle	Cylindrical	2,000 mm	5.4 mm	Front	Silicone
50000037	GF 1000/4 LS-SI	One-way principle	Cylindrical	1,000 mm	5.4 mm	Front	Silicone
50000035	GF 500/4 LS-SI	One-way principle	Cylindrical	500 mm	5.4 mm	Front	Silicone
50105340	GF 600/1 RT-MS-D5-L10	Scanning principle	Cylindrical	600 mm	4.5 mm	Front	Brass nickel-plated
50034368	GF 600/1 RT-SI-W-1,5	Scanning principle	Cylindrical	600 mm	4.5 mm	Lateral	Silicone
50000040	GF 1000/1 RT-SI	Scanning principle	Cylindrical	1,000 mm	5.4 mm	Front	Silicone
50000038	GF 500/1 RT-SI	Scanning principle	Cylindrical	500 mm	5.4 mm	Front	Silicone
50041477	GF 6000/4 RT-MS	Scanning principle	Cylindrical	6,000 mm	6 mm	Front	Brass nickel-plated
50105274	GF 5000/4 RT-MS	Scanning principle	Cylindrical	5,000 mm	6 mm	Front	Brass nickel-plated
50022551	GF 3000/4 RT-MS	Scanning principle	Cylindrical	3,000 mm	6 mm	Front	Brass nickel-plated
50039392	GF 2500/4 RT-MS	Scanning principle	Cylindrical	2,500 mm	6 mm	Front	Brass nickel-plated

A LVSR 325 series amplifier is required for operation!

Identification

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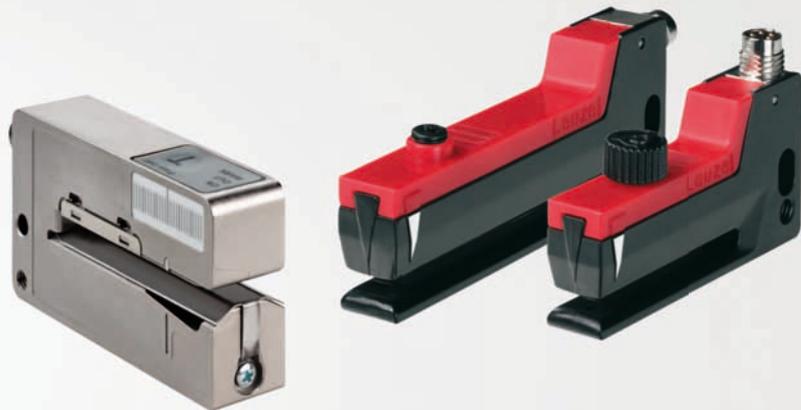
Part no.	Part description	Operating principle	Design	Fiber length	Outer diameter	Light beam exit	Fiber sheathing material
50000053	GF 2000/4 RT-MS	Scanning principle	Cylindrical	2,000 mm	6 mm	Front	Brass nickel-plated
50019341	GF 1500/1 RT-MS	Scanning principle	Cylindrical	1,500 mm	6 mm	Front	Brass nickel-plated
50023019	GF 1500/4 RT-MS	Scanning principle	Cylindrical	1,500 mm	6 mm	Front	Brass nickel-plated
50001037	GF 1000/4 RT-MS	Scanning principle	Cylindrical	1,000 mm	6 mm	Front	Brass nickel-plated
50001036	GF 1000/1 RT-MS	Scanning principle	Cylindrical	1,000 mm	6 mm	Front	Brass nickel-plated
50000048	GF 1000/1 RT-VA	Scanning principle	Cylindrical	1,000 mm	6 mm	Front	Stainless steel
50000046	GF 500/1 RT-VA	Scanning principle	Cylindrical	500 mm	6 mm	Front	Stainless steel
50001034	GF 500/1 RT-MS	Scanning principle	Cylindrical	500 mm	6 mm	Front	Brass nickel-plated
50001035	GF 500/4 RT-MS	Scanning principle	Cylindrical	500 mm	6 mm	Front	Brass nickel-plated
50011508	GF 1000/1 RT-MS.1	Scanning principle	Cylindrical	1,000 mm	6.5 mm	Lateral	Brass nickel-plated
50041742	GF 3500/4 RT-VA	Scanning principle	Cylindrical	3,500 mm	7 mm	Front	Stainless steel
50041741	GF 2500/4 RT-VA	Scanning principle	Cylindrical	2,500 mm	7 mm	Front	Stainless steel
50000054	GF 2000/4 RT-VA	Scanning principle	Cylindrical	2,000 mm	7 mm	Front	Stainless steel
50010567	GF 1500/4 RT-VA	Scanning principle	Cylindrical	1,500 mm	7 mm	Front	Stainless steel
50000049	GF 1000/4 RT-VA	Scanning principle	Cylindrical	1,000 mm	7 mm	Front	Stainless steel
50000047	GF 500/4 RT-VA	Scanning principle	Cylindrical	500 mm	7 mm	Front	Stainless steel
50060384	GF 3000/4 RT-SI	Scanning principle	Cylindrical	3,000 mm	7.5 mm	Front	Silicone
50010820	GF 2000/4 RT-SI	Scanning principle	Cylindrical	2,000 mm	7.5 mm	Front	Silicone
50000041	GF 1000/4 RT-SI	Scanning principle	Cylindrical	1,000 mm	7.5 mm	Front	Silicone
50000039	GF 500/4 RT-SI	Scanning principle	Cylindrical	500 mm	7.5 mm	Front	Silicone

A LVSR 325 series amplifier is required for operation!

# / FORKED SENSORS

## NOTHING GETS PAST THESE FORKS

Sensors of this series combine transmitter and receiver into a single device and therefore feature high operational safety. They are characterized by simple mounting without alignment work as well as high sensitivity. The sensors are used for detecting small parts or for detecting labels and print marks, even on transparent foils.

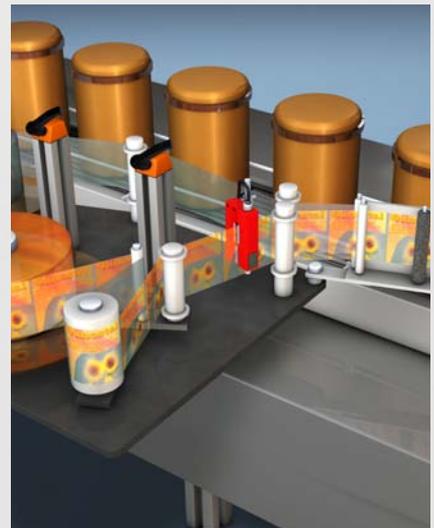
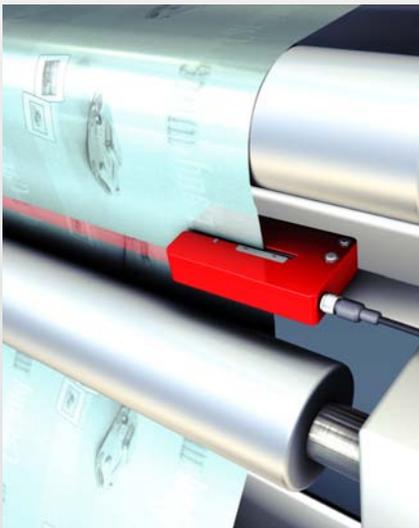


**Forked Sensors for Object Detection**

**Page 96**

**Forked Sensors for Label Detection**

**Page 97**



# //FORKED SENSORS FOR OBJECT DETECTION

## MAXIMUM PRECISION FOR THE SMALLEST PARTS

The design of these sensors makes them the ideal choice for the detection of small parts. High sensitivities and fast reaction times facilitate simple and reliable integration of these sensors in fast automation processes.

### /// GS 04



This series, with mouth widths from 20 to 220 mm, can be optimally adapted to a given application by means of their sensitivity adjustment and light/dark switching. Laser variants can be used to reliably detect even the smallest parts.



#### Benefits:

- Sensitivity adjustment and light/dark switching for optimum adaptation to the application
- Sensitivity adjustment on the back of the fork
- Robust metal housing and glass optics for protection against environmental influences
- Transmitter and receiver are installed in the same housing, therefore easy and fast mounting (complex mounting brackets and extensive alignment not necessary)

Part no.	Part description	Mouth width	Switching frequency	Light source	Switching output	Response time	Connection
50110793	GSL 04M/P-30-S8	30 mm	5,000 Hz	Laser, red	Transistor, PNP, light/dark reversible	0.1 ms	Connector, M8
50124703	GSL 04M/N-30-S8	30 mm	5,000 Hz	Laser, red	Transistor, NPN, light/dark reversible	0.1 ms	Connector, M8
50110794	GSL 04M/P-50-S8	50 mm	5,000 Hz	Laser, red	Transistor, PNP, light/dark reversible	0.1 ms	Connector, M8
50110795	GSL 04M/P-80-S8	80 mm	5,000 Hz	Laser, red	Transistor, PNP, light/dark reversible	0.1 ms	Connector, M8
50110792	GS 04M/P-20-S8	20 mm	1,500 Hz	LED, red	Transistor, PNP, light/dark reversible	0.33 ms	Connector, M8
50110782	GS 04M/P-30-S8	30 mm	1,500 Hz	LED, red	Transistor, PNP, light/dark reversible	0.33 ms	Connector, M8
50110791	GS 04M/N-30-S8	30 mm	1,500 Hz	LED, red	Transistor, NPN, light/dark reversible	0.33 ms	Connector, M8
50110783	GS 04M/P-50-S8	50 mm	1,500 Hz	LED, red	Transistor, PNP, light/dark reversible	0.33 ms	Connector, M8
50110789	GS 04M/N-50-S8	50 mm	1,500 Hz	LED, red	Transistor, NPN, light/dark reversible	0.33 ms	Connector, M8
50110784	GS 04M/P-80-S8	80 mm	1,500 Hz	LED, red	Transistor, PNP, light/dark reversible	0.33 ms	Connector, M8
50110790	GS 04M/N-80-S8	80 mm	1,500 Hz	LED, red	Transistor, NPN, light/dark reversible	0.33 ms	Connector, M8
50110785	GS 04M/P-120-S8	120 mm	1,500 Hz	LED, red	Transistor, PNP, light/dark reversible	0.33 ms	Connector, M8
50110787	GS 04M/N-120-S8	120 mm	1,500 Hz	LED, red	Transistor, NPN, light/dark reversible	0.33 ms	Connector, M8
50110786	GS 04M/P-220-S8	220 mm	1,500 Hz	LED, red	Transistor, PNP, light/dark reversible	0.33 ms	Connector, M8
50110788	GS 04M/N-220-S8	220 mm	1,500 Hz	LED, red	Transistor, NPN, light/dark reversible	0.33 ms	Connector, M8

### /// GS 21



The compact forked photoelectric sensor with a mouth width of 8 mm and a switching frequency of 1000 Hz is suitable for the detection of small parts and aperture discs.



#### Benefits:

- GaAs top photoelectric sensor in constant light operation with gallium arsenide transmitter diode ensures a long lifetime
- Fast amplifier with high switching frequency for detection of short events (e. g. gaps between labels)
- Transistor output – separate switching amplifier not required

Part no.	Part description	Mouth width	Switching frequency	Light source	Switching output	Response time	Connection
50013967	GS 21/4 G,5000	8 mm	1,000 Hz	LED, infrared	Transistor, PNP, light switching	0.5 ms	Cable, 5,000 mm

# //FORKED SENSORS FOR LABEL DETECTION

## RELIABLE DETECTION IN A WIDE RANGE OF DIFFERENT APPLICATIONS

Precise and fast detection – even at high web speeds – and the reliable detection of a wide range of material combinations and surfaces. These are the criteria professional sensors must meet for labeling applications. And here we offer the right solution for every application with our wide line of different designs and operating principles, from light to ultrasonics.

### /// GS 61



Optical forked photoelectric sensor in slim-line design with 3 mm mouth width for exact detection of labels on base material.

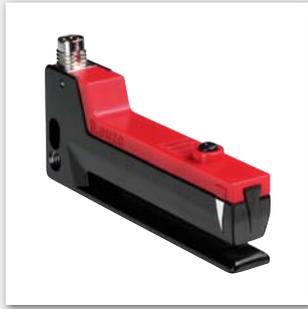


#### Benefits:

- Simple sensitivity adjustment via multiturn potentiometer or optionally via teach-in function
- Slimline-design (reduced fork height) for installation directly at the dispensing edge
- Removable operating head for comfortable potentiometer adjustment
- Without tool
- Smallest dimensions of all industrial forked photoelectric sensors with an excellent price/performance ratio

Part no.	Part description	Principle of physics	Mouth width	Switching frequency	Light source	Switching output 1	Response time	Connection
50110765	GS 61/6.2-S8.3	Optical	3 mm	10,000 Hz	LED, infrared	Transistor, push-pull, switching signal in label gap	0.05 ms	Connector, M8
50110108	GS 61/6.2-S8	Optical	3 mm	10,000 Hz	LED, infrared	Transistor, push-pull, switching signal in label gap	0.05 ms	Connector, M8
50110761	GS 61/6-S8.3	Optical	3 mm	10,000 Hz	LED, infrared	Transistor, push-pull, switching signal in label gap	0.05 ms	Connector, M8
50110763	GS 61/6.2-S8V	Optical	3 mm	10,000 Hz	LED, infrared	Transistor, push-pull, switching signal in label gap	0.05 ms	Connector, M8
50110112	GS 61/6-S8V	Optical	3 mm	10,000 Hz	LED, infrared	Transistor, push-pull, switching signal in label gap	0.05 ms	Connector, M8
50110110	GS 61/6-S8	Optical	3 mm	10,000 Hz	LED, infrared	Transistor, push-pull, switching signal in label gap	0.05 ms	Connector, M8
50112425	GS 61/6.3	Optical	3 mm	10,000 Hz	LED, infrared	Transistor, push-pull, switching signal in label gap	0.05 ms	Cable, 2,000 mm
50110769	GS 61/6	Optical	3 mm	10,000 Hz	LED, infrared	Transistor, push-pull, switching signal in label gap	0.05 ms	Cable, 2,000 mm
50112424	GS 61/6.3,200-S12	Optical	3 mm	10,000 Hz	LED, infrared	Transistor, push-pull, switching signal in label gap	0.05 ms	Cable with connector, M12, 200 mm
50112422	GS 61/6.2,200-S12	Optical	3 mm	10,000 Hz	LED, infrared	Transistor, push-pull, switching signal in label gap	0.05 ms	Cable with connector, M12, 200 mm
50112423	GS 61/6,200-S12	Optical	3 mm	10,000 Hz	LED, infrared	Transistor, push-pull, switching signal in label gap	0.05 ms	Cable with connector, M12, 200 mm
50110766	GS 61/6D.2-S8.3	Optical	3 mm	10,000 Hz	LED, infrared	Transistor, push-pull, switching signal on label	0.05 ms	Connector, M8
50110762	GS 61/6D-S8.3	Optical	3 mm	10,000 Hz	LED, infrared	Transistor, push-pull, switching signal on label	0.05 ms	Connector, M8
50110109	GS 61/6D.2-S8	Optical	3 mm	10,000 Hz	LED, infrared	Transistor, push-pull, switching signal on label	0.05 ms	Connector, M8
50110111	GS 61/6D-S8	Optical	3 mm	10,000 Hz	LED, infrared	Transistor, push-pull, switching signal on label	0.05 ms	Connector, M8
50110113	GS 61/6D-S8V	Optical	3 mm	10,000 Hz	LED, infrared	Transistor, push-pull, switching signal on label	0.05 ms	Connector, M8
50110764	GS 61/6D.2-S8V	Optical	3 mm	10,000 Hz	LED, infrared	Transistor, push-pull, switching signal on label	0.05 ms	Connector, M8
50110770	GS 61/6D	Optical	3 mm	10,000 Hz	LED, infrared	Transistor, push-pull, switching signal on label	0.05 ms	Cable, 2,000 mm
50110767	GS 61/6.2	Optical	3 mm	10,000 Hz	LED, infrared	Transistor, push-pull, switching signal on label	0.05 ms	Cable, 2,000 mm
50110768	GS 61/6D.2	Optical	3 mm	10,000 Hz	LED, infrared	Transistor, push-pull, switching signal on label	0.05 ms	Cable, 2,000 mm
50112426	GS 61/6D.2,200-S12	Optical	3 mm	10,000 Hz	LED, infrared	Transistor, push-pull, switching signal on label	0.05 ms	Cable with connector, M12, 200 mm
50112427	GS 61/6D,200-S12	Optical	3 mm	10,000 Hz	LED, infrared	Transistor, push-pull, switching signal on label	0.05 ms	Cable with connector, M12, 200 mm

## /// GS 63



This optical forked photoelectric sensor in metal housing with 3 mm mouth width and 60 mm mouth depth and low response time is ideally suited for wider labels.

**Benefits:**

- High switching frequency and short response time guarantee very good repeatability
- Easy adjustment via lockable teach button or teach input
- Slimline-design (reduced fork height) for installation directly at the dispensing edge
- ALC (auto level control) function: maximum performance reserve via automatic online optimization of the switching threshold
- Warning output for the display of teach or function errors

Direct access to the online product selector at [www.leuze.com/en/gS63](http://www.leuze.com/en/gS63)

Part no.	Part description	Principle of physics	Mouth width	Switching frequency	Light source	Switching output 1	Switching output 2	Response time	Connection
50112617	GS 63/6-S8	Optical	3 mm	10,000 Hz	LED, infrared	Transistor, push-pull, switching signal in label gap		0.05 ms	Connector, M8
50110104	GS 63/6.3-S8	Optical	3 mm	10,000 Hz	LED, infrared	Transistor, push-pull, switching signal in label gap		0.05 ms	Connector, M8
50112618	GS 63/6-S8V	Optical	3 mm	10,000 Hz	LED, infrared	Transistor, push-pull, switching signal in label gap		0.05 ms	Connector, M8
50110106	GS 63/6.3-S8V	Optical	3 mm	10,000 Hz	LED, infrared	Transistor, push-pull, switching signal in label gap		0.05 ms	Connector, M8
50110759	IGS 63/6.3	Optical	3 mm	10,000 Hz	LED, infrared	Transistor, push-pull, switching signal in label gap	Transistor, push-pull, 0V switching	0.05 ms	Cable, 2,000 mm
50112615	GS 63/6	Optical	3 mm	10,000 Hz	LED, infrared	Transistor, push-pull, switching signal in label gap		0.05 ms	Cable, 2,000 mm
50112428	IGS 63/6.3,200-S12	Optical	3 mm	10,000 Hz	LED, infrared	Transistor, push-pull, switching signal in label gap	Transistor, push-pull, 0V switching	0.05 ms	Cable with connector, M12, 200 mm
50112616	GS 63/6,200-S12	Optical	3 mm	10,000 Hz	LED, infrared	Transistor, push-pull, switching signal in label gap		0.05 ms	Cable with connector, M12, 200 mm
50112620	GS 63/6D-S8	Optical	3 mm	10,000 Hz	LED, infrared	Transistor, push-pull, switching signal on label		0.05 ms	Connector, M8
50110105	GS 63/6D.3-S8	Optical	3 mm	10,000 Hz	LED, infrared	Transistor, push-pull, switching signal on label		0.05 ms	Connector, M8
50110107	GS 63/6D.3-S8V	Optical	3 mm	10,000 Hz	LED, infrared	Transistor, push-pull, switching signal on label		0.05 ms	Connector, M8
50110760	IGS 63/6D.3	Optical	3 mm	10,000 Hz	LED, infrared	Transistor, push-pull, switching signal on label	Transistor, push-pull, 0V switching	0.05 ms	Cable, 2,000 mm
50112619	GS 63/6D	Optical	3 mm	10,000 Hz	LED, infrared	Transistor, push-pull, switching signal on label		0.05 ms	Cable, 2,000 mm
50112429	IGS 63/6D.3,200-S12	Optical	3 mm	10,000 Hz	LED, infrared	Transistor, push-pull, switching signal on label	Transistor, push-pull, 0V switching	0.05 ms	Cable with connector, M12, 200 mm
50113790	GS 63/6D,200-S12	Optical	3 mm	10,000 Hz	LED, infrared	Transistor, push-pull, switching signal on label		0.05 ms	Cable with connector, M12, 200 mm
50118090	GS 63/6D,200-S8	Optical	3 mm	10,000 Hz	LED, infrared	Transistor, push-pull, switching signal on label		0.05 ms	Cable with connector, M8, 200 mm

## /// GK 14



The capacitive forked sensor is particularly well suited for transparent labels without metallic coating.

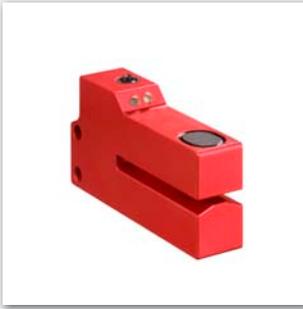
**Benefits:**

- Forked sensor for reliable detection of transparent and opaque labels
- PNP and NPN transistor output for optimum adaptation to the controller
- Robust metal housing with beveled inlet edges
- Inverting input for easy adaptation of the output signal level

Part no.	Part description	Principle of physics	Mouth width	Switching frequency	Switching output 1	Switching output 2	Response time	Connection
50026371	GK 14/24 L	Capacitive	1 mm	5,000 Hz	Transistor, PNP, switching signal in label gap, reversible	Transistor, NPN, switching signal in label gap, reversible	0.1 ms	Connector, M12
50031714	GK 14/24 L.2	Capacitive	1 mm	5,000 Hz	Transistor, PNP, switching signal in label gap, reversible	Transistor, NPN, switching signal in label gap, reversible	0.1 ms	Connector, M12

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/// GSU 06



This forked sensor with metal housing is very well suited for the detection of foil labels, metallic-coated foil labels and thin metal foils. A special variant for paper tear monitoring is also available .



**Benefits:**

- Reliable detection of foil labels on foil carriers or paper carriers, paper labels on paper carriers, metallic foil labels and thin metal foils
- Simple adjustment via teach-in by pressing a button or remote calibration 1
- Static PNP and NPN transistor outputs for optimum adaptation to the controller
- M8/M12 connector or cable version

Direct access to the online product selector at [www.leuze.com/en/gsu06](http://www.leuze.com/en/gsu06)

Part no.	Part description	Principle of physics	Mouth width	Switching output 1	Switching output 2	Response time	Connection
50039638	GSU 06/24-2-S8	Ultrasonics	2.5 mm	Transistor, PNP, switching signal in label gap	Transistor, NPN, switching signal in label gap	0.3 ms	Connector, M8
50040191	GSU 06/24-2	Ultrasonics	2.5 mm	Transistor, PNP, switching signal in label gap	Transistor, NPN, switching signal in label gap	0.3 ms	Cable, 2,000 mm
50040190	GSU 06/24D-2-S8	Ultrasonics	2.5 mm	Transistor, PNP, switching signal on label	Transistor, NPN, switching signal on label	0.3 ms	Connector, M8
50040192	GSU 06/24D-2	Ultrasonics	2.5 mm	Transistor, PNP, switching signal on label	Transistor, NPN, switching signal on label	0.3 ms	Cable, 2,000 mm
50108819	GSU 06/24D-2,200-S12	Ultrasonics	2.5 mm	Transistor, PNP, switching signal on label	Transistor, NPN, switching signal on label	0.3 ms	Cable with connector, M12, 200 mm

The switching frequency is dependent on the conveyor speed, label length and spacing between labels

/// GSU 14C



Ultrasonic forked sensor for reliable detection and universal application. With its large mouth width, this ultrasonic forked sensor is also suitable for fan-fold flyers and booklets.



**Benefits:**

- Reliable detection of foil labels on foil carriers, foil labels on paper carriers, paper labels on paper carriers, metallic foil labels and thin metal foils

Part no.	Part description	Principle of physics	Mouth width	Switching output 1	Switching output 2	Response time	Connection
50116933	GSU 14C/66.3-S12	Ultrasonics	4 mm	Transistor, push-pull, switching signal in label gap	Transistor, push-pull, switching signal on label	0.2 ms	Connector, M12
50116934	GSU 14C/66D.3-S12	Ultrasonics	4 mm	Transistor, push-pull, switching signal on label	Transistor, push-pull, switching signal in label gap	0.2 ms	Connector, M12
50116935	GSU 14C/66D.31-S12	Ultrasonics	4 mm	Transistor, push-pull, switching signal on label	Transistor, push-pull, switching signal in label gap	0.2 ms	Connector, M12

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## /// IGSU 14C



Worth special mention are EasyTeach (press button – dispense labels – done!), ALC function and a warning output for signalization of teach or function errors. With the large mouth width, the forked sensor is also suitable for fan-fold flyers or booklets.

**Benefits:**

- Forked sensor for reliable detection of foil labels on foil carriers or paper carriers, paper labels on paper carriers, metallic foil labels and thin metal foils
- Model for the reliable detection of splice on paper web or plastic web
- easyTeach function: press button – dispense labels – done
- ALC function (auto level control): maximum performance reserve via automatic online optimization of the switching threshold

Direct access to the online product selector at [www.leuze.com/en/igsu14c](http://www.leuze.com/en/igsu14c)

Part no.	Part description	Principle of physics	Mouth width	Switching frequency	Switching output 1	Switching output 2	Response time	Connection
50116937	IGSU 14C/6.31-S12	Ultrasonics	4 mm	2,000 Hz	Transistor, push-pull, switching signal in label gap, reversible	Transistor, push-pull, 0 V switching	0.2 ms	Connector, M12
50116936	IGSU 14C/6.3-S12	Ultrasonics	4 mm	2,000 Hz	Transistor, push-pull, switching signal in label gap, reversible	Transistor, push-pull, 0 V switching	0.2 ms	Connector, M12
50116938	IGSU 14C/6D.3-S12	Ultrasonics	4 mm	2,000 Hz	Transistor, push-pull, switching signal on label, reversible	Transistor, push-pull, 0 V switching	0.2 ms	Connector, M12

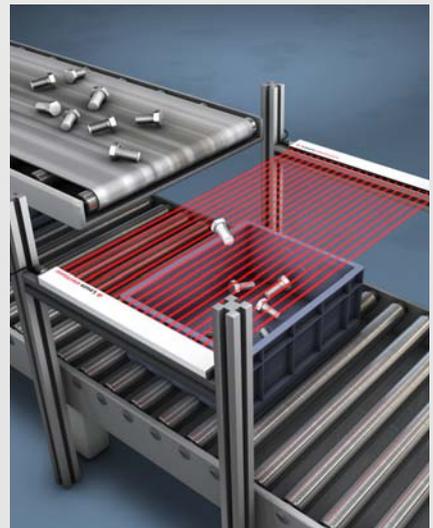
**Splice inspection**

50115736	IGSU 14C/6.3SD-S12	Ultrasonics	4 mm	2,000 Hz	Transistor, push-pull, switching signal on splice, reversible	Transistor, push-pull, 0 V switching	0.25 ms	Connector, M12
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# / LIGHT CURTAINS

## OBJECT DETECTION MADE EASY

The switching light curtains from Leuze electronic are able to monitor a large measurement field and respond if sensor beams in the field are interrupted. Various resolutions and measurement field lengths enable reliable use in a variety of applications.



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**/// VARIO B**



The system, which consists of transmitter and receiver, generates a monitoring field of many infrared light beams and produces a reliable switching signal as soon as objects penetrate this monitoring field. Easy installation, its small design as well as the integrated, configurable evaluation unit make the VARIO B an economical and flexible sensor solution.



**Benefits:**

- Beam spacing from 5 to 100 mm
- Monitoring height from 35 to 3100 mm
- Modular construction 8 to 64 beams
- Measurement field range from 700 to 5000 mm
- Parallel and diagonal beams for increased detection reliability
- Independently configurable PNP or NPN outputs
- Assignment of different monitoring areas to switching outputs
- Warning signal in the case of soiling
- Electronic calibration of the light barrier optimizes object detection in every situation
- Very small housing dimensions, therefore flexible application possibilities (10 × 27 mm or 12 × 85 mm)
- Low installation effort
- Adaptability to tricky applications through configuration via software on the PC (VARIOsoft)

PART NUMBER CODES – light curtains VARIO B, transmitters

V B T - 1 2 . 5 - 6 8 8 - S 8

**Model**

VBT VARIO B transmitter

**Beam spacing**

5	5 mm
12.5	12.5 mm
25	25 mm
50	50 mm
100	100 mm

**Measurement field length**

XXXX Measurement field length [mm], dependent on beam spacing

**Electrical connection**

S8	M8 connector, 4-pin, axial
4000	Connection cable 4 m

PART NUMBER CODES – light curtains VARIO B, receivers

I V B R / 2 - 1 2 . 5 - 6 8 8 - 0 0 - S 8

**Model**

IVBR VARIO B receiver with warning output

**Output**

2	NPN
4	PNP

**Beam spacing**

5	5 mm
12.5	12.5 mm
25	25 mm
50	50 mm
100	100 mm

**Measurement field length**

XXXX Measurement field length [mm], dependent on beam spacing

**Measurement function**

00	Parallel beam method, light switching
01	Parallel and diagonal beam method, light switching
02	Parallel beam method, dark switching
03	Parallel and diagonal beam method, dark switching

**Electrical connection**

S8	M8 connector, 4-pin, axial
4000	Connection cable 4 m

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Part no.	Part description	Beam spacing	Measurement field length	No. of beams	Operating range	Switching outputs	Switching output	Output functions	Connection
50107869	▶ VBT-5-35-S8	5 mm	35 mm	8	0.7 ... 5 m				Connector, M8
50107869-00	◀ IVBR/4-5-35-00-S8	5 mm	35 mm	8		2	Transistor, PNP, light switching	Switching output, warning output	Connector, M8
50107869-10	◀ IVBR/2-5-35-00-S8	5 mm	35 mm	8		2	Transistor, NPN, light switching	Switching output, warning output	Connector, M8
50107888	▶ VBT-12.5-88-S8	12.5 mm	88 mm	8	0.7 ... 5 m				Connector, M8
50107888-00	◀ IVBR/4-12.5-88-00-S8	12.5 mm	88 mm	8		2	Transistor, PNP, light switching	Switching output, warning output	Connector, M8
50107888-10	◀ IVBR/2-12.5-88-00-S8	12.5 mm	88 mm	8		2	Transistor, NPN, light switching	Switching output, warning output	Connector, M8
50107911	▶ VBT-25-175-S8	25 mm	175 mm	8	0.7 ... 5 m				Connector, M8
50107911-00	◀ IVBR/4-25-175-00-S8	25 mm	175 mm	8		2	Transistor, PNP, light switching	Switching output, warning output	Connector, M8
50107911-10	◀ IVBR/2-25-175-00-S8	25 mm	175 mm	8		2	Transistor, NPN, light switching	Switching output, warning output	Connector, M8
50107936	▶ VBT-25-2175.4000	25 mm	2,175 mm	88	0.7 ... 5 m				Cable, 4,000 mm
50107936-00	◀ IVBR/4-25-2175-00.4000	25 mm	2,175 mm	88		2	Transistor, PNP, light switching	Switching output, warning output	Cable, 4,000 mm
50107939	▶ VBT-50-350-S8	50 mm	350 mm	8	0.7 ... 5 m				Connector, M8
50107939-00	◀ IVBR/4-50-350-00-S8	50 mm	350 mm	8		2	Transistor, PNP, light switching	Switching output, warning output	Connector, M8
50107939-10	◀ IVBR/2-50-350-00-S8	50 mm	350 mm	8		2	Transistor, NPN, light switching	Switching output, warning output	Connector, M8
50107970	▶ VBT-100-700-S8	100 mm	700 mm	8	0.7 ... 5 m				Connector, M8
50107970-00	◀ IVBR/4-100-700-00-S8	100 mm	700 mm	8		2	Transistor, PNP, light switching	Switching output, warning output	Connector, M8
50107970-10	◀ IVBR/2-100-700-00-S8	100 mm	700 mm	8		2	Transistor, NPN, light switching	Switching output, warning output	Connector, M8

Switching Sensors

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# / SPECIAL SENSORS

## RELIABLE, EVEN WHEN THINGS GET CHALLENGING

Under this heading are sensor solutions that must perform special detection tasks or which were developed for specific applications. Here you will find contrast scanners and luminescence scanners as well as color sensors.



**Contrast Scanners**

**Page 105**

**Luminescence Scanners**

**Page 107**

**Color Sensors**

**Page 108**



# //CONTRAST SCANNERS

## THE CONTRAST MAKES THE DIFFERENCE

This sensor type can use various light sources – such as white light, laser-generated red light or RGB light – to very precisely detect and compare contrasts and report the results to the process with minimal signal jitter. Through the automatic selection of the right transmitter colors, various color or gray value combinations can be reliably detected.

### /// KRT 3B



The contrast scanners of the KRT 3B series distinguish between grayscale values, enabling them to detect minimal contrasts. As a result, a check can be performed for the presence of text or imprints or so-called marks detected.



#### Benefits:

- Scanning range 14.5 mm/60 mm (laser)
- Multicolor (RGB), white or laser light
- Various teach-in processes,
- Switching-threshold correction via EasyTune
- Min. response time 50 µs
- Switching frequency up to 10 kHz
- Pulse stretching
- IO-Link interface

Part no.	Part description	Operating range	Switching frequency	Light source	Digital switching output	Interface	Connection
50110592	KRTL 3B/4.3111-S8	0.04 ... 0.08 m	4,000 Hz	Laser, red	Transistor, PNP, light/dark reversible		Connector, M8
50110594	KRTL 3B/4.3111,200-S12	0.04 ... 0.08 m	4,000 Hz	Laser, red	Transistor, PNP, light/dark reversible		Cable with connector, 200 mm, M12
50110593	KRTL 3B/2.3111-S8	0.04 ... 0.08 m	4,000 Hz	Laser, red	Transistor, NPN, light/dark reversible		Connector, M8
50110595	KRTL 3B/2.3111,200-S12	0.04 ... 0.08 m	4,000 Hz	Laser, red	Transistor, NPN, light/dark reversible		Cable with connector, 200 mm, M12
50111321	KRTL 3B/6.3111-S8	0.04 ... 0.08 m	4,000 Hz	Laser, red	Transistor, push-pull, light/dark reversible	IO-Link	Connector, M8
50110580	KRTW 3B/4.1321-S8	0.0125 ... 0.0165 m	10,000 Hz	LED, white	Transistor, PNP, light/dark reversible		Connector, M8
50111769	KRTW 3B/4.2121-S8	0.0125 ... 0.0165 m	10,000 Hz	LED, white	Transistor, PNP, light/dark reversible		Connector, M8
50110576	KRTW 3B/4.1121-S8	0.0125 ... 0.0165 m	10,000 Hz	LED, white	Transistor, PNP, light/dark reversible		Connector, M8
50110572	KRTW 3B/4.1110-S8	0.0125 ... 0.0165 m	6,000 Hz	LED, white	Transistor, PNP, light/dark reversible		Connector, M8
50110578	KRTW 3B/4.1121,200-S12	0.0125 ... 0.0165 m	10,000 Hz	LED, white	Transistor, PNP, light/dark reversible		Cable with connector, 200 mm, M12
50110582	KRTW 3B/4.1321,200-S12	0.0125 ... 0.0165 m	10,000 Hz	LED, white	Transistor, PNP, light/dark reversible		Cable with connector, 200 mm, M12
50110577	KRTW 3B/2.1121-S8	0.0125 ... 0.0165 m	10,000 Hz	LED, white	Transistor, NPN, light/dark reversible		Connector, M8
50110573	KRTW 3B/2.1110-S8	0.0125 ... 0.0165 m	6,000 Hz	LED, white	Transistor, NPN, light/dark reversible		Connector, M8
50110581	KRTW 3B/2.1321-S8	0.0125 ... 0.0165 m	10,000 Hz	LED, white	Transistor, NPN, light/dark reversible		Connector, M8
50110579	KRTW 3B/2.1121,200-S12	0.0125 ... 0.0165 m	10,000 Hz	LED, white	Transistor, NPN, light/dark reversible		Cable with connector, 200 mm, M12
50110583	KRTW 3B/2.1321,200-S12	0.0125 ... 0.0165 m	10,000 Hz	LED, white	Transistor, NPN, light/dark reversible		Cable with connector, 200 mm, M12
50111320	KRTW 3B/6.1321-S8	0.0125 ... 0.0165 m	10,000 Hz	LED, white	Transistor, push-pull, light/dark reversible	IO-Link	Connector, M8
50111319	KRTW 3B/6.1121-S8	0.0125 ... 0.0165 m	10,000 Hz	LED, white	Transistor, push-pull, light/dark reversible	IO-Link	Connector, M8
50110584	KRTM 3B/4.1121-S8	0.0125 ... 0.0165 m	10,000 Hz	LED, RGB	Transistor, PNP, light/dark reversible		Connector, M8
50110588	KRTM 3B/4.1221-S8	0.0125 ... 0.0165 m	10,000 Hz	LED, RGB	Transistor, PNP, light/dark reversible		Connector, M8
50111768	KRTM 3B/4.2121-S8	0.0125 ... 0.0165 m	10,000 Hz	LED, RGB	Transistor, PNP, light/dark reversible		Connector, M8
50110586	KRTM 3B/4.1121,200-S12	0.0125 ... 0.0165 m	10,000 Hz	LED, RGB	Transistor, PNP, light/dark reversible		Cable with connector, 200 mm, M12
50110590	KRTM 3B/4.1221,200-S12	0.0125 ... 0.0165 m	10,000 Hz	LED, RGB	Transistor, PNP, light/dark reversible		Cable with connector, 200 mm, M12
50110589	KRTM 3B/2.1221-S8	0.0125 ... 0.0165 m	10,000 Hz	LED, RGB	Transistor, NPN, light/dark reversible		Connector, M8
50110585	KRTM 3B/2.1121-S8	0.0125 ... 0.0165 m	10,000 Hz	LED, RGB	Transistor, NPN, light/dark reversible		Connector, M8
50110587	KRTM 3B/2.1121,200-S12	0.0125 ... 0.0165 m	10,000 Hz	LED, RGB	Transistor, NPN, light/dark reversible		Cable with connector, 200 mm, M12
50110591	KRTM 3B/2.1221,200-S12	0.0125 ... 0.0165 m	10,000 Hz	LED, RGB	Transistor, NPN, light/dark reversible		Cable with connector, 200 mm, M12
50118393	KRTM 3B/6.2121-S8	0.0125 ... 0.0165 m	10,000 Hz	LED, RGB	Transistor, push-pull, light/dark reversible	IO-Link	Connector, M8
50111312	KRTM 3B/6.1121-S8	0.0125 ... 0.0165 m	10,000 Hz	LED, RGB	Transistor, push-pull, light/dark reversible	IO-Link	Connector, M8
50111313	KRTM 3B/6.1221-S8	0.0125 ... 0.0165 m	10,000 Hz	LED, RGB	Transistor, push-pull, light/dark reversible	IO-Link	Connector, M8

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## /// KRT 55



Wherever food, beverages, pharmaceutical products or even cosmetics are manufactured, processed and packaged, hygienic design has become a central requirement. These contrast scanners in WASH-DOWN design can withstand even more intensive cleaning and disinfection cycles. The IO-Link interface facilitates simple adaptation to complex applications.

**Benefits:**

- Stainless steel housing AISI 316L
- Scanning range 13 mm
- RGB or white light
- Various teach-in processes
- Switching-threshold correction via EasyTune
- Response time 50 µs
- Switching frequency 10 kHz
- Pulse stretching
- IO-Link interface

Part no.	Part description	Operating range	Switching frequency	Light source	Digital switching output	Interface	Connection
50111642	KRTW 55/4.1121-S8	0.011 ... 0.015 m	10,000 Hz	LED, white	Transistor, PNP, light/dark reversible		Connector, M8
50114075	KRTW 55/4.1121,5000	0.011 ... 0.015 m	10,000 Hz	LED, white	Transistor, PNP, light/dark reversible		Cable, 5,000 mm
50110602	KRTW 55/4.1121,200-S12	0.011 ... 0.015 m	10,000 Hz	LED, white	Transistor, PNP, light/dark reversible		Cable with connector, 200 mm, M12
50110601	KRTW 55/2.1121-S8	0.011 ... 0.015 m	10,000 Hz	LED, white	Transistor, NPN, light/dark reversible		Connector, M8
50110603	KRTW 55/2.1121,200-S12	0.011 ... 0.015 m	10,000 Hz	LED, white	Transistor, NPN, light/dark reversible		Cable with connector, 200 mm, M12
50111641	KRTW 55/6.1121-S8	0.011 ... 0.015 m	10,000 Hz	LED, white	Transistor, push-pull, light/dark reversible	IO-Link	Connector, M8
50110613	KRTM 55/4.1221-S8	0.011 ... 0.015 m	10,000 Hz	LED, RGB	Transistor, PNP, light/dark reversible		Connector, M8
50111644	KRTM 55/4.1121-S8	0.011 ... 0.015 m	10,000 Hz	LED, RGB	Transistor, PNP, light/dark reversible		Connector, M8
50114074	KRTM 55/4.1121,5000	0.011 ... 0.015 m	10,000 Hz	LED, RGB	Transistor, PNP, light/dark reversible		Cable, 5,000 mm
50110615	KRTM 55/4.1221,200-S12	0.011 ... 0.015 m	10,000 Hz	LED, RGB	Transistor, PNP, light/dark reversible		Cable with connector, 200 mm, M12
50110611	KRTM 55/4.1121,200-S12	0.011 ... 0.015 m	10,000 Hz	LED, RGB	Transistor, PNP, light/dark reversible		Cable with connector, 200 mm, M12
50110614	KRTM 55/2.1221-S8	0.011 ... 0.015 m	10,000 Hz	LED, RGB	Transistor, NPN, light/dark reversible		Connector, M8
50110610	KRTM 55/2.1121-S8	0.011 ... 0.015 m	10,000 Hz	LED, RGB	Transistor, NPN, light/dark reversible		Connector, M8
50110616	KRTM 55/2.1221,200-S12	0.011 ... 0.015 m	10,000 Hz	LED, RGB	Transistor, NPN, light/dark reversible		Cable with connector, 200 mm, M12
50110612	KRTM 55/2.1121,200-S12	0.011 ... 0.015 m	10,000 Hz	LED, RGB	Transistor, NPN, light/dark reversible		Cable with connector, 200 mm, M12
50111643	KRTM 55/6.1121-S8	0.011 ... 0.015 m	10,000 Hz	LED, RGB	Transistor, push-pull, light/dark reversible	IO-Link	Connector, M8

## /// KRT 20



With jitter times < 7 µs, with precise, round and small light spots, with memory bank administration and freely programmable interface, with perfect temperature compensation, these devices in a robust metal housing can handle even the fastest processes.

**Benefits:**

- Metal housing with interchangeable lenses
- Scanning ranges of 12/20 mm and 50 mm
- Very high resolution
- Response time 10 ms
- Switching frequency 50 kHz
- Switching and analog output
- Temperature compensation
- Pulse stretching
- Switching-threshold changeover
- Freely programmable
- Rectangular or round light-spot profile

Part no.	Part description	Operating range	Switching frequency	Light source	Digital switching output	Analog switching output	Connection
50116177	KRTM 20M/P-50-6320-S12	0.045 ... 0.055 m	50,000 Hz	LED, RGB	Transistor, PNP, light/dark reversible		Connector, M12
50041007	KRTM 20M/V-20-0004-S12	0.018 ... 0.022 m	16,000 Hz	LED, RGB	Transistor, PNP, light switching	Current	Connector, M12
50035674	KRTM 20M/V-20-0001-S12	0.018 ... 0.022 m	16,000 Hz	LED, RGB	Transistor, PNP, light switching	Current	Connector, M12
50113435	KRTM 20M/P-20-6320-S12	0.018 ... 0.022 m	50,000 Hz	LED, RGB	Transistor, PNP, light/dark reversible		Connector, M12
50114202	KRTM 20M/P-20-3320-S12	0.018 ... 0.022 m	50,000 Hz	LED, RGB	Transistor, PNP, light/dark reversible		Connector, M12
50113438	KRTM 20M/C-20-6526-S12	0.018 ... 0.022 m	50,000 Hz	LED, RGB	Transistor, PNP, light/dark reversible	Current	Connector, M12
50113437	KRTM 20M/C-20-6626-S12	0.018 ... 0.022 m	50,000 Hz	LED, RGB	Transistor, NPN, light/dark reversible	Current	Connector, M12
50114201	KRTM 20M/N-20-3320-S12	0.018 ... 0.022 m	50,000 Hz	LED, RGB	Transistor, NPN, light/dark reversible		Connector, M12
50113436	KRTM 20M/N-20-6320-S12	0.018 ... 0.022 m	50,000 Hz	LED, RGB	Transistor, NPN, light/dark reversible		Connector, M12
50116474	KRTM 20M/P-12-6420-S12	0.011 ... 0.013 m	50,000 Hz	LED, RGB	Transistor, PNP, light/dark reversible		Connector, M12

Other scanning ranges of 12 ± 1 mm, 20 ± 2 mm or 50 ± 5 mm are possible by changing the lens

# //LUMINESCENCE SCANNERS

## I SEE WHAT YOU DON'T SEE

This sensor detects both visible as well as invisible luminescent markings. It sends the result as switching output or analog value and is used primarily for sorting and inspection tasks in areas in which other detection methods fail to supply reliable results or where the markings should not or must not be visible.

### /// LRT 8



With various light spot profiles, filters, transmitter variants and accessories, this compact design includes everything needed for detecting luminescent objects.



#### Benefits:

- Scanning ranges up to 200 mm
- Very compact metal construction
- Switching frequency 1.5 kHz
- Sensitivity adjustment via potentiometer
- Turnable M12 connector
- Filter variants

Part no.	Part description	Operating range	Light source	Switching frequency	Switching output 1	Switching output 2	Connection
50119032	LRT 8/24.14-150-S12	0 ... 0.4 m	LED, UV	1,500 Hz	Transistor, PNP, light switching	Transistor, NPN, light switching	Connector, M12
50124693	LRT 8/44.14-150-S12	0 ... 0.4 m	LED, UV	1,500 Hz	Transistor, PNP, light switching	Transistor, PNP, dark switching	Connector, M12
50116732	LRT 8/24.16-80-S12	0 ... 0.1 m	LED, UV	1,500 Hz	Transistor, PNP, light switching	Transistor, NPN, light switching	Connector, M12
50109343	LRT 8/24.04-100-S12	0 ... 0.22 m	LED, UV	1,500 Hz	Transistor, PNP, light switching	Transistor, NPN, light switching	Connector, M12
50124694	LRT 8/44.04-100-S12	0 ... 0.22 m	LED, UV	1,500 Hz	Transistor, PNP, light switching	Transistor, PNP, dark switching	Connector, M12
50041840	LRT 8/24.04-50-S12	0 ... 0.15 m	LED, UV	1,500 Hz	Transistor, PNP, light switching	Transistor, NPN, light switching	Connector, M12
50119033	LRT 8/24.10-150-S12	0 ... 0.5 m	LED, blue	1,500 Hz	Transistor, PNP, light switching	Transistor, NPN, light switching	Connector, M12

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# //COLOR SENSORS

## ALWAYS GOOD WHEN THINGS GET COLORFUL

This sensor type detects colors and compares them to a stored reference value. They are the right solution whenever the color of an object or marking can serve as a sorting or inspection criteria. Depending on the configuration and specified tolerance values of the system, the result is output as a switching signal.

### /// CRT 20B



Thanks to extensive configuration options and 1 or 4 color channels with individually adjustable color tolerance, this series can be used for fast processes with short response times.



#### Benefits:

- 12.5 mm or 60 mm scanning range
- Very robust metal construction
- Simple teach-in of up to four reference colors
- Sensitivity adjustment following teach-in
- Color tolerance separately adjustable per color channel
- Switching frequency up to 6 kHz
- Extensive configuration options
- Turnable M12 connector

Part no.	Part description	Operating range	Switching frequency	Light source	Switching outputs	Connection	Application
50109597	CRT 20B M/P-60-001-S12	0.051 ... 0.069 m	6,000 Hz	LED, RGB	1	Connector, M12	Detection of one color
50109595	CRT 20B M/N-60-001-S12	0.051 ... 0.069 m	6,000 Hz	LED, RGB	1	Connector, M12	Detection of one color
50109599	CRT 20B M/N-60-004-S12	0.051 ... 0.069 m	3,500 Hz	LED, RGB	4	Connector, M12	Detection of four colors
50109601	CRT 20B M/P-60-004-S12	0.051 ... 0.069 m	3,500 Hz	LED, RGB	4	Connector, M12	Detection of four colors
50109596	CRT 20B M/P-12-001-S12	0.0095 ... 0.0155 m	6,000 Hz	LED, RGB	1	Connector, M12	Detection of one color
50109594	CRT 20B M/N-12-001-S12	0.0095 ... 0.0155 m	6,000 Hz	LED, RGB	1	Connector, M12	Detection of one color
50109598	CRT 20B M/N-12-004-S12	0.0095 ... 0.0155 m	3,500 Hz	LED, RGB	4	Connector, M12	Detection of four colors
50109600	CRT 20B M/P-12-004-S12	0.0095 ... 0.0155 m	3,500 Hz	LED, RGB	4	Connector, M12	Detection of four colors

### /// CRT 442



If only one color channel is needed, this compact design is both a simple as well as a reliable solution.



#### Benefits:

- 12.5 mm scanning range
- Very small plastic construction
- Simple teach-in of the reference color
- One color channel
- Adjustable color tolerance
- 1.5 kHz switching frequency
- M12 connector

Part no.	Part description	Operating range	Switching frequency	Light source	Switching outputs	Connection	Application
50109602	CRT 442 K/N-12-001-S12	0.0105 ... 0.0145 m	1,500 Hz	LED, RGB	1	Connector, M12	Detection of one color
50109603	CRT 442 K/P-12-001-S12	0.0105 ... 0.0145 m	1,500 Hz	LED, RGB	1	Connector, M12	Detection of one color

/// CRT 448



This series with 3 color channels and the scan function for color gradients can be used flexibly in many areas of applications.



**Benefits:**

- 22 mm or 32 mm scanning range
- Small plastic construction
- Simple teach-in of three reference colors
- Scan function for color gradients
- Color tolerance separately adjustable per color channel
- 500 Hz switching frequency
- Configuration options
- Turnable M12 connector

Part no.	Part description	Operating range	Switching frequency	Light source	Switching outputs	Connection	Application
50121293	CRT 448.S3/222-M12	0.012 ... 0.032 m	500 Hz	LED, white	3	Connector, M12	Detection of three colors
50121294	CRT 448.S3/444-M12	0.012 ... 0.032 m	500 Hz	LED, white	3	Connector, M12	Detection of three colors
50121292	CRT 448.L3/444-M12	0.018 ... 0.022 m	500 Hz	LED, white	3	Connector, M12	Detection of three colors
50121291	CRT 448.L3/222-M12	0.018 ... 0.022 m	500 Hz	LED, white	3	Connector, M12	Detection of three colors

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# / DISTANCE SENSORS

## YOUR YARDSTICK

Our distance sensors stand for maximum accuracy - over small as well as large distances. They are used everywhere geometric parameters such as height or width need to be determined. They are characterized by high resolving capacity at high measurement rates. Especially our ultrasonic sensors facilitate reliable measurement results with transparent objects – even under difficult environmental conditions.

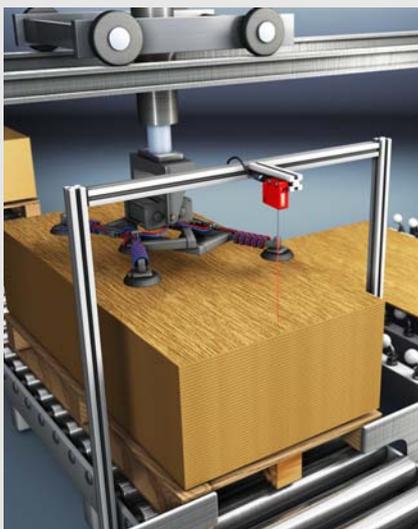


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# //OPTICAL DISTANCE SENSORS

## LIGHTS ON – MEASUREMENT STARTS

These sensors use laser or LED light to quickly and precisely measure distances on a wide range of materials, even at large ranges.

### /// ODSL 8



The compact laser distance sensors of this series in a compact metal housing supply reflection-independent distance information. The sensor can be quickly commissioned through teach-in.



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#### Benefits:

- Measurement range from 20 mm to 500 mm
- Robust metal housing
- Teachable analog and switching outputs
- Turnable M12 connector

Part no.	Part description	Measurement range	Light source Laser protection class	Light spot dimensions	Analog outputs	Digital switching outputs	Resolution	Measurement time
50108361	ODSL 8/C66-500-S12	20 ... 500 mm	Laser, red, 2	2 mm × 6 mm	1, current	2	0.1 ... 0.5 mm	2 ... 7 ms
50111175	ODSL 8/V66.01-500-S12	20 ... 500 mm	Laser, red, 2	2 mm × 6 mm	1, voltage	2	0.1 ... 0.5 mm	2 ... 7 ms
50101880	ODSL 8/66-500-S12	20 ... 500 mm	Laser, red, 2	2 mm × 6 mm		2	0.1 ... 0.5 mm	2 ... 7 ms
50101879	ODSL 8/V66-500-S12	20 ... 500 mm	Laser, red, 2	2 mm × 6 mm	1, voltage	2	0.1 ... 0.5 mm	2 ... 7 ms
50108362	ODSL 8/C66-200-S12	20 ... 200 mm	Laser, red, 2	1 mm	1, current	2	0.1 ... 0.2 mm	2 ... 7 ms
50105761	ODSL 8/V66-200-S12	20 ... 200 mm	Laser, red, 2	1 mm	1, voltage	2	0.1 ... 0.2 mm	2 ... 7 ms
50108364	ODSL 8/C66-45-S12	25 ... 45 mm	Laser, red, 2	1 mm	1, current	2	0.03 mm	2 ... 7 ms
50108363	ODSL 8/V66-45-S12	25 ... 45 mm	Laser, red, 2	1 mm	1, voltage	2	0.03 mm	2 ... 7 ms

### /// ODSL 9



The ODSL 9 optical distance sensors set new standards in precision and ease of use. The sensor enables accurate measurements even under difficult conditions, e.g., with glossy objects. The integrated display shows the measurement values and facilitates easy adjustment of the sensor. The distance sensors reveal their enormous potential for precision when used in combination with digital interfaces.



\*1 only selected models: products with laser class 1, which are designated with C1 in the part number code, do not have UL approval.

### ODSL 9

This series measures very precisely even over longer distances making it suitable for the positioning of actuators and robots.

#### Benefits:

- Large accuracy up to 650 mm
- Reflection-independent distance measurement
- Display for measured value display and configuration
- Analog current/voltage output
- Switching outputs adjustable with millimeter accuracy
- IO-Link, serial interface RS 232/485

Part no.	Part description	Measurement range	Light source Laser protection class	Light spot dimensions	Analog outputs	Digital switching outputs	Interface	Resolution	Measurement time
50120825	ODSL 9/L-650-S12	50 ... 650 mm	Laser, red, 2	1 mm			IO-Link	0.1 ... 0.5 mm	2 ms
50114627	ODSL 9/V6-650-S12	50 ... 650 mm	Laser, red, 2	1 mm	1, voltage	1		0.1 ... 0.5 mm	2 ms
50113583	ODSL 9/C6-650-S12	50 ... 650 mm	Laser, red, 2	1 mm	1, current	1		0.1 ... 0.5 mm	2 ms
50120000	ODSL 9/D36-650-S12	50 ... 650 mm	Laser, red, 2	1 mm		1	RS 485	0.1 ... 0.5 mm	2 ms

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Part no.	Part description	Measurement range	Light source Laser protection class	Light spot dimensions	Analog outputs	Digital switching outputs	Interface	Resolution	Measurement time
50111166	ODSL 9/L-450-S12	50 ... 450 mm	Laser, red, 2	1 mm			IO-Link	0.1 mm	2 ms
50111158	ODSL 9/V6-450-S12	50 ... 450 mm	Laser, red, 2	1 mm	1, voltage	1		0.1 mm	2 ms
50111160	ODSL 9/D36-450-S12	50 ... 450 mm	Laser, red, 2	1 mm		1	RS 485	0.1 mm	2 ms
50111159	ODSL 9/D26-450-S12	50 ... 450 mm	Laser, red, 2	1 mm		1	RS 232	0.1 mm	2 ms
50111161	ODSL 9/C66-450-S12	50 ... 450 mm	Laser, red, 2	1 mm	1, current	2		0.1 mm	2 ms
50111157	ODSL 9/C6-450-S12	50 ... 450 mm	Laser, red, 2	1 mm	1, current	1		0.1 mm	2 ms
50111162	ODSL 9/V6-450-S12	50 ... 450 mm	Laser, red, 2	1 mm	1, voltage	2		0.1 mm	2 ms
50115030	ODSL 9/V6.C1-450-S12	50 ... 450 mm	Laser, red, 1	1 mm	1, voltage	1		0.1 mm	4 ms
50115029	ODSL 9/C6.C1-450-S12	50 ... 450 mm	Laser, red, 1	1 mm	1, current	1		0.1 mm	4 ms

## ODSL 9 high resolution

With a resolution of 0.01 mm, the sensors are designed for the contour measurement of small objects and quality control on assembly lines.

### Benefits:

- Maximum accuracy in compact design
- Resolution 0.01 mm with a measurement range of 50 mm
- Reflection-independent distance measurement
- Display for measured value display and configuration
- Analog voltage/current output, switching outputs
- IO-Link, serial interface RS 232

Part no.	Part description	Measurement range	Light source Laser protection class	Light spot dimensions	Analog outputs	Digital switching outputs	Interface	Resolution	Measurement time
50111168	ODSL 9/V6-100-S12	50 ... 100 mm	Laser, red, 2	1 mm	1, voltage	1		0.01 mm	2 ms
50111174	ODSL 9/L-100-S12	50 ... 100 mm	Laser, red, 2	1 mm			IO-Link	0.01 mm	2 ms
50111167	ODSL 9/C6-100-S12	50 ... 100 mm	Laser, red, 2	1 mm	1, current	1		0.01 mm	2 ms
50111172	ODSL 9/V66-100-S12	50 ... 100 mm	Laser, red, 2	1 mm	1, voltage	2		0.01 mm	2 ms
50111171	ODSL 9/C66-100-S12	50 ... 100 mm	Laser, red, 2	1 mm	1, current	2		0.01 mm	2 ms
50111170	ODSL 9/D36-100-S12	50 ... 100 mm	Laser, red, 2	1 mm		1	RS 485	0.01 mm	2 ms
50111169	ODSL 9/D26-100-S12	50 ... 100 mm	Laser, red, 2	1 mm		1	RS 232	0.01 mm	2 ms

## /// ODS 96B



Series ODS 96B distance sensors with large measurement ranges of 60 to 25000 mm are suitable for many different applications and, thanks to the metal housing, are extremely robust. They measure in the ms range. The integrated display shows the measurement values and allows the sensor to be easily adapted to the measurement task. Apart from analog current/voltage interfaces and binary switching outputs, digital interfaces are also available. Digital interfaces prevent conversion losses in the sensor, control and during measurement data transfer.



## ODS(R) 96B

Measures with either red LED light or infrared light and is suitable for large-area objects, such as bulk material.

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### Benefits:

- For measurements on objects with large surface area, e. g. bulk material, band materials, plate materials
- Robust metal housing
- High accuracy – reflection-independent distance measurement
- Display for measured value display and configuration

Part no.	Part description	Measurement range	Light source Laser protection class	Light spot dimensions	Analog outputs	Digital switching outputs	Resolution	Measurement time
50110231	ODS 96B M/V6-1400-S12	120 ... 1,400 mm	LED, infrared	15 mm × 15 mm	1, voltage	1	0.1 ... 2.0 mm	1 ... 5 ms
50106727	ODS 96B M/C66.01-1400-S12	120 ... 1,400 mm	LED, infrared	15 mm × 15 mm	1, current	2	0.1 ... 0.5 mm	1 ... 5 ms
50106730	ODSR 96B M/C6-600-S12	100 ... 600 mm	LED, red	15 mm × 15 mm	1, current	1	0.1 ... 0.5 mm	1 ... 5 ms
50106731	ODSR 96B M/V6-600-S12	100 ... 600 mm	LED, red	15 mm × 15 mm	1, voltage	1	0.1 ... 0.5 mm	1 ... 5 ms
50106720	ODS 96B M/C6-600-S12	100 ... 600 mm	LED, infrared	15 mm × 15 mm	1, current	1	0.1 ... 0.5 mm	1 ... 5 ms
50106721	ODS 96B M/V6-600-S12	100 ... 600 mm	LED, infrared	15 mm × 15 mm	1, voltage	1	0.1 ... 0.5 mm	1 ... 5 ms

## ODSL 96B-S

Small laser light spot for the precise measurement of small objects, objects with color structures or for glossy surfaces.

### Benefits:

- Small laser light spot
- Precise measurement on small objects and objects with colored structure
- For measurement on metallic surfaces

Part no.	Part description	Measurement range	Light source Laser protection class	Light spot dimensions	Analog outputs	Digital switching outputs	Interface	Resolution	Measurement time
50123687	ODSL 96B M/C6.C1S-1500-S12	150 ... 1,500 mm	Laser, red, 1	1 mm	1, current	1		0.1 ... 2.0 mm	12 ... 60 ms
50123686	ODSL 96B M/V6.C1S-1500-S12	150 ... 1,500 mm	Laser, red, 1	1 mm	1, voltage	1		0.1 ... 2.0 mm	12 ... 60 ms
50106729	ODSL 96B M/V6.S-800-S12	150 ... 800 mm	Laser, red, 2	1 mm	1, voltage	1		0.1 ... 0.8 mm	1 ... 5 ms
50112065	ODSL 96B M/D36.S-800-S12	150 ... 800 mm	Laser, red, 2	1 mm		1	RS 485	0.1 ... 0.8 mm	1 ... 5 ms
50111035	ODSL 96B M/D26.S-800-S12	150 ... 800 mm	Laser, red, 2	1 mm		1	RS 232	0.1 ... 0.8 mm	1 ... 5 ms
50106728	ODSL 96B M/C6.S-800-S12	150 ... 800 mm	Laser, red, 2	1 mm	1, current	1		0.1 ... 0.8 mm	1 ... 5 ms

## ODSL 96B-XL

Elongated light spot for precise measurements on porous objects and objects with openings (e. g. corrugated cardboard) as well as on objects that are not aligned precisely.

### Benefits:

- Elongated light spot for precise measurement

Part no.	Part description	Measurement range	Light source Laser protection class	Light spot dimensions	Analog outputs	Digital switching outputs	Resolution	Measurement time
50106737	ODSL 96B M/V6.XL-1200-S12	150 ... 1,200 mm	Laser, red, 2	15 mm × 4 mm	1, voltage	1	0.1 ... 1.5 mm (XL)	1 ... 5 ms
50106736	ODSL 96B M/C6.XL-1200-S12	150 ... 1,200 mm	Laser, red, 2	15 mm × 4 mm	1, current	1	0.1 ... 1.5 mm (XL)	1 ... 5 ms

## ODSL(R) 96B

Even over large ranges of up to 2 m, this sensor measures in the ms range with millimeter precision. High resolving power in compact, robust design.

### Benefits:

- For measurements in ms cycle at large ranges
- Stable and precise measurement values, even at varying temperatures and objects
- Robust: IP 67, IP 69K

Part no.	Part description	Measurement range	Light source Laser protection class	Light spot dimensions	Analog outputs	Digital switching outputs	Interface	Resolution	Measurement time
50106732	ODSLR 96B M/C6-2000-S12	60 ... 2,000 mm	Laser, red, 2 / LED, red	2 mm × 6 mm	1, current	1		1.0 ... 5.0 mm	1 ... 5 ms
50106733	ODSLR 96B M/V6-2000-S12	60 ... 2,000 mm	Laser, red, 2 / LED, red	2 mm × 6 mm	1, voltage	1		1.0 ... 5.0 mm	1 ... 5 ms
50106594	ODSL 96B M/V6-2000-S12	150 ... 2,000 mm	Laser, red, 2	2 mm × 6 mm	1, voltage	1		1.0 ... 3.0 mm	1 ... 5 ms
50106735	ODSL 96B M/C6-2000 Ex d	150 ... 2,000 mm	Laser, red, 2	2 mm × 6 mm	1, current	1		1.0 ... 3.0 mm	1 ... 5 ms
50106599	ODSL 96B M/66-2000-S12	150 ... 2,000 mm	Laser, red, 2	2 mm × 6 mm		2		1.0 ... 3.0 mm	1 ... 5 ms
50106598	ODSL 96B M/D36-2000-S12	150 ... 2,000 mm	Laser, red, 2	2 mm × 6 mm		1	RS 485	1.0 ... 3.0 mm	1 ... 5 ms
50106593	ODSL 96B M/C6-2000-S12	150 ... 2,000 mm	Laser, red, 2	2 mm × 6 mm	1, current	1		1.0 ... 3.0 mm	1 ... 5 ms
50111164	ODSL 96B M/L-2000-S12	150 ... 2,000 mm	Laser, red, 2	2 mm × 6 mm			IO-Link	1.0 ... 3.0 mm	1 ... 5 ms
50106597	ODSL 96B M/D26-2000-S12	150 ... 2,000 mm	Laser, red, 2	2 mm × 6 mm		1	RS 232	1.0 ... 3.0 mm	1 ... 5 ms

## ODSL 96-Teach

For simple applications, these sensors with plastic housing offer a large measurement range. The sensor can be quickly commissioned through teach-in.

### Benefits:

- Reflection-independent distance information
- 2 teachable switching outputs (push-pull)
- Easy alignment through visible red light
- Degree of protection IP 67
- Measurement range/operating range up to 2300 mm

Part no.	Part description	Measurement range	Light source Laser protection class	Light spot dimensions	Analog outputs	Digital switching outputs	Resolution	Measurement time
50101882	ODSL 96K/66-2300-S12	150 ... 2,300 mm	Laser, red, 2	3 mm × 8 mm		2	1.0 ... 5.0 mm	2 ... 7 ms
50101881	ODSL 96K/V66-2300-S12	150 ... 2,300 mm	Laser, red, 2	3 mm × 8 mm	1, voltage	2	1.0 ... 5.0 mm	2 ... 7 ms

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## ODSL 96B-TOF

Large range also with dark objects. Measurement according to the “time of flight” principle.

### Benefits:

- Large range even with dark objects
- Various operating modes for fast or precise measurement
- Robust measurement procedure
- Very high immunity to ambient light
- Display for measured value display and configuration

Part no.	Part description	Measurement range	Light source Laser protection class	Light spot dimensions	Analog outputs	Digital switching outputs	Interface	Resolution	Measurement time
50109292	ODSL 96B M/D26-S12	300 ... 10,000 mm	Laser, red, 2	7 mm × 7 mm		1	RS 232	3.0 mm	1.4 ... 50 ms
50109294	ODSL 96B M/L-S12	300 ... 10,000 mm	Laser, red, 2	7 mm × 7 mm			IO-Link	3.0 mm	1.4 ... 50 ms
50109291	ODSL 96B M/V6-S12	300 ... 10,000 mm	Laser, red, 2	7 mm × 7 mm	1, voltage	1		3.0 mm	1.4 ... 50 ms
50109293	ODSL 96B M/D36-S12	300 ... 10,000 mm	Laser, red, 2	7 mm × 7 mm		1	RS 485	3.0 mm	1.4 ... 50 ms
50109295	ODSL 96B M/C66-S12	300 ... 10,000 mm	Laser, red, 2	7 mm × 7 mm	1, current	2		3.0 mm	1.4 ... 50 ms
50109290	ODSL 96B M/C6-S12	300 ... 10,000 mm	Laser, red, 2	7 mm × 7 mm	1, current	1		3.0 mm	1.4 ... 50 ms
50109303	ODSL 96B M/V6-S12	300 ... 10,000 mm	Laser, infrared, 1	7 mm × 7 mm	1, voltage	1		3.0 mm	2.8 ... 100 ms
50109302	ODSL 96B M/C6-S12	300 ... 10,000 mm	Laser, infrared, 1	7 mm × 7 mm	1, current	1		3.0 mm	2.8 ... 100 ms

## ODKL 96B

A visible light spot ensures easy alignment. By measuring on reflectors, ranges of up to 25 m are no problem.

### Benefits:

- Fast and easy alignment due to highly visible laser light spot
- Very high range by measuring on reflective tape
- Compact design

Part no.	Part description	Measurement range	Light source Laser protection class	Light spot dimensions	Analog outputs	Digital switching outputs	Interface	Resolution	Measurement time
50109300	ODKL 96B M/D36-S12	300 ... 25,000 mm	Laser, red, 2	7 mm × 7 mm		1	RS 485	3.0 mm	1.4 ... 50 ms
50109299	ODKL 96B M/D26-S12	300 ... 25,000 mm	Laser, red, 2	7 mm × 7 mm		1	RS 232	3.0 mm	1.4 ... 50 ms
50109298	ODKL 96B M/V6-S12	300 ... 25,000 mm	Laser, red, 2	7 mm × 7 mm	1, voltage	1		3.0 mm	1.4 ... 50 ms
50109297	ODKL 96B M/C6-S12	300 ... 25,000 mm	Laser, red, 2	7 mm × 7 mm	1, current	1		3.0 mm	1.4 ... 50 ms
50109301	ODKL 96B M/L-S12	300 ... 25,000 mm	Laser, red, 2	7 mm × 7 mm			IO-Link	3.0 mm	1.4 ... 50 ms

## /// ODSL 30



The ODSL 30 measures distances on black objects up to 30 m away and on bright objects as far as 65 m away. The sensor resolution of 1 mm enables highly accurate measurements over the complete measurement range. The integrated display shows the measurement values and allows the sensor to be easily adapted to the measurement task. Apart from analog current/voltage interfaces and binary switching outputs, digital interfaces are also available. The distance sensors reveal their enormous potential for precision when used in combination with digital interfaces.

### Benefits:

- Absolute measurement accuracy +/- 2 mm over the entire measuring range
- Distances of 0.2–30 m on bright and black objects
- Referencing function for preventing fluctuations in measurement values
- Display for measured value display and configuration
- Ex model available



Part no.	Part description	Measurement range	Light source Laser protection class	Light spot dimensions	Analog outputs	Digital switching outputs	Interface	Resolution	Measurement time
50041204	ODSL 30/D485-30M-S12	0 ... 65,000 mm	Laser, red, 2	6 mm		2	RS 485	1.0 mm	30 ... 100 ms
50041203	ODSL 30/D232-30M-S12	0 ... 65,000 mm	Laser, red, 2	6 mm		2	RS 232	1.0 mm	30 ... 100 ms
50122319	ODSL 30/V-30M Ex d	0 ... 30,000 mm	Laser, red, 2	6 mm	2, current, voltage	1		1.0 mm	30 ... 100 ms
50039447	ODSL 30/V-30M-S12	0 ... 30,000 mm	Laser, red, 2	6 mm	2, current, voltage	1		1.0 mm	30 ... 100 ms
50040720	ODSL 30/24-30M-S12	0 ... 30,000 mm	Laser, red, 2	6 mm		3		1.0 mm	30 ... 100 ms

# //ULTRASONIC DISTANCE SENSORS

## WHEN LIGHT ISN'T ENOUGH

With ultrasonic technology, it is possible to reliably detect even partially or completely transparent objects and to perform reliable distance measurements. In addition, measurements can be performed in dusty, hazy or humid environments.

### /// 418 Series



With its small, cylindrical design, this ultrasonic distance sensor can be integrated problem-free. The full-metal housing and temperature compensation make use possible under adverse conditions.



#### Benefits:

- Color and transmission independent detection of objects
- Current or voltage output configurable via PC software
- To avoid mutual interference, max. 10 sensors may be synchronized via one cable
- Sensitivity, average value calculation, reduction of the response time and outputs configurable via IO-Link
- Teach button

Part no.	Part description	Measurement range	Digital switching output	Analog output	Interface	Connection	Resolution
50124261	DMU418B-400.X3/LTV-M12	25 ... 400 mm	Transistor, push-pull, break-contact/ make-contact	Voltage	IO-Link	Connector, M12	1.0 mm
50124260	DMU418B-400.X3/LTC-M12	25 ... 400 mm	Transistor, push-pull, break-contact/ make-contact	Current	IO-Link	Connector, M12	1.0 mm
50124263	DMU418B-1300.X3/LTC-M12	150 ... 1,300 mm	Transistor, push-pull, break-contact/ make-contact	Current	IO-Link	Connector, M12	1.0 mm
50124264	DMU418B-1300.X3/LTV-M12	150 ... 1,300 mm	Transistor, push-pull, break-contact/ make-contact	Voltage	IO-Link	Connector, M12	1.0 mm

### /// 430 Series



The new M30 models in metal housing are much more compact and ideal for detecting levels of liquids and bulk material. High accuracy through temperature compensation.



#### Benefits:

- Ideal for detection of levels of liquids, bulk material, transparent media and highly reflective objects
- Distance information largely independent of surface properties
- Current or voltage output and a switching output configurable via PC software
- To avoid mutual interference, max. 10 sensors may be synchronized via one cable
- Sensitivity, average value calculation, reduction of the response time and outputs configurable via IO-Link
- Teach button

Part no.	Part description	Measurement range	Digital switching output	Analog output	Connection	Resolution
50040771	VRTU 430M/V-5510-300-S12	60 ... 300 mm	Transistor	Voltage	Connector, M12	1.0 mm
50036266	VRTU 430M/V-5710-300-S12	60 ... 300 mm	Transistor	Current	Connector, M12	1.0 mm
50040772	VRTU 430M/V-3510-1300-S12	200 ... 1,300 mm	Transistor	Voltage	Connector, M12	1.0 mm
50036267	VRTU 430M/V-3710-1300-S12	200 ... 1,300 mm	Transistor	Current	Connector, M12	1.0 mm
50036268	VRTU 430M/V-2710-3000-S12	400 ... 3,000 mm	Transistor	Current	Connector, M12	1.0 mm
50107096	VRTU 430M/V-2510-3000-S12	400 ... 3,000 mm	Transistor	Voltage	Connector, M12	1.0 mm
50036269	VRTU 430M/V-1710-6000-S12	600 ... 6,000 mm	Transistor	Current	Connector, M12	1.0 mm

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# / SENSORS FOR POSITIONING

## AT THE RIGHT POSITION WITH MILLIMETER ACCURACY

With moving system parts that need to automatically work together, the positioning of parts or work pieces with millimeter accuracy is of great importance. We offer devices here with two operating principles. One is a laser distance measurement device that measures against a reflector and the other is a bar code positioning system that has a red light laser which determines the position and speed relative to a bar code tape.

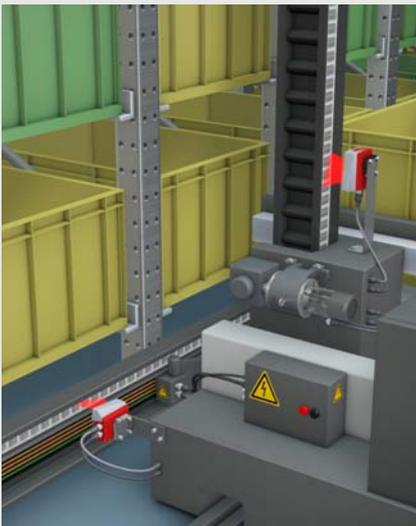


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**Bar Code Positioning Systems**

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# //OPTICAL LASER MEASUREMENT SYSTEMS

## THE POWER OF OPTICAL LASER DISTANCE MEASUREMENT

The AMS 300i sensor calculates distances to moving system parts contact-free, fast and with absolute precision at ranges up to 300 m. In cycles lasting just milliseconds, the laser distance measuring system provides the distances required for dynamic control functions with millimeter accuracy using a unique selection of Industrial Ethernet and fieldbus interfaces.

### /// AMS 300i



With the AMS 300i, distances of up to 300 m can be calculated with maximum accuracy and in intervals on the order of milliseconds through the use of the latest signal processors. Borderline situations are detected and indicated with the integrated, extensive functionality catalog.



#### Benefits:

- Repeatability of 1 mm, with tested absolute measurement accuracy from  $\pm 2$  mm to  $\pm 5$  mm at a range of 300 m
- Simultaneous calculation and monitoring of position and speed
- Integrated interface diversity for problem-free integration into a large array of systems
- Red light laser for simple alignment and real-time position measurement
- Integrated intelligent mounting solution for simple alignment and fastening
- Plain-text display in five languages for international use

Part no.	Part description	Measurement range	Reproducibility (1 sigma)	Interface	Light source	Housing material	Functions
<b>CANopen interface</b>							
50113693	AMS 335i 40	200 ... 40,000 mm	0.3 mm	CANopen	Laser, red	Metal	
50113697	AMS 335i 40 H	200 ... 40,000 mm	0.3 mm	CANopen	Laser, red	Metal	Heating
50113694	AMS 335i 120	200 ... 120,000 mm	0.5 mm	CANopen	Laser, red	Metal	
50113698	AMS 335i 120 H	200 ... 120,000 mm	0.5 mm	CANopen	Laser, red	Metal	Heating
50113695	AMS 335i 200	200 ... 200,000 mm	0.7 mm	CANopen	Laser, red	Metal	
50113699	AMS 335i 200 H	200 ... 200,000 mm	0.7 mm	CANopen	Laser, red	Metal	Heating
50113696	AMS 335i 300	200 ... 300,000 mm	1 mm	CANopen	Laser, red	Metal	
50113700	AMS 335i 300 H	200 ... 300,000 mm	1 mm	CANopen	Laser, red	Metal	Heating
<b>DeviceNet interface</b>							
50113717	AMS 355i 40	200 ... 40,000 mm	0.3 mm	DeviceNet	Laser, red	Metal	
50113721	AMS 355i 40 H	200 ... 40,000 mm	0.3 mm	DeviceNet	Laser, red	Metal	Heating
50113718	AMS 355i 120	200 ... 120,000 mm	0.5 mm	DeviceNet	Laser, red	Metal	
50113722	AMS 355i 120 H	200 ... 120,000 mm	0.5 mm	DeviceNet	Laser, red	Metal	Heating
50113719	AMS 355i 200	200 ... 200,000 mm	0.7 mm	DeviceNet	Laser, red	Metal	
50113723	AMS 355i 200 H	200 ... 200,000 mm	0.7 mm	DeviceNet	Laser, red	Metal	Heating
50113720	AMS 355i 300	200 ... 300,000 mm	1 mm	DeviceNet	Laser, red	Metal	
50113724	AMS 355i 300 H	200 ... 300,000 mm	1 mm	DeviceNet	Laser, red	Metal	Heating
<b>EtherCAT interface</b>							
50113701	AMS 338i 40	200 ... 40,000 mm	0.3 mm	EtherCAT	Laser, red	Metal	
50113705	AMS 338i 40 H	200 ... 40,000 mm	0.3 mm	EtherCAT	Laser, red	Metal	Heating
50113702	AMS 338i 120	200 ... 120,000 mm	0.5 mm	EtherCAT	Laser, red	Metal	
50113706	AMS 338i 120 H	200 ... 120,000 mm	0.5 mm	EtherCAT	Laser, red	Metal	Heating
50113703	AMS 338i 200	200 ... 200,000 mm	0.7 mm	EtherCAT	Laser, red	Metal	
50113707	AMS 338i 200 H	200 ... 200,000 mm	0.7 mm	EtherCAT	Laser, red	Metal	Heating
50113704	AMS 338i 300	200 ... 300,000 mm	1 mm	EtherCAT	Laser, red	Metal	
50113708	AMS 338i 300 H	200 ... 300,000 mm	1 mm	EtherCAT	Laser, red	Metal	Heating

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Part no.	Part description	Measurement range	Reproducibility (1 sigma)	Interface	Light source	Housing material	Functions
<b>EtherNet IP interface</b>							
50113725	AMS 358i 40	200 ... 40,000 mm	0.3 mm	EtherNet IP	Laser, red	Metal	
50113729	AMS 358i 40 H	200 ... 40,000 mm	0.3 mm	EtherNet IP	Laser, red	Metal	Heating
50113726	AMS 358i 120	200 ... 120,000 mm	0.5 mm	EtherNet IP	Laser, red	Metal	
50113730	AMS 358i 120 H	200 ... 120,000 mm	0.5 mm	EtherNet IP	Laser, red	Metal	Heating
50113727	AMS 358i 200	200 ... 200,000 mm	0.7 mm	EtherNet IP	Laser, red	Metal	
50113731	AMS 358i 200 H	200 ... 200,000 mm	0.7 mm	EtherNet IP	Laser, red	Metal	Heating
50113728	AMS 358i 300	200 ... 300,000 mm	1 mm	EtherNet IP	Laser, red	Metal	
50113732	AMS 358i 300 H	200 ... 300,000 mm	1 mm	EtherNet IP	Laser, red	Metal	Heating
<b>Ethernet interface</b>							
50113685	AMS 308i 40	200 ... 40,000 mm	0.3 mm	Ethernet	Laser, red	Metal	
50113689	AMS 308i 40 H	200 ... 40,000 mm	0.3 mm	Ethernet	Laser, red	Metal	Heating
50113686	AMS 308i 120	200 ... 120,000 mm	0.5 mm	Ethernet	Laser, red	Metal	
50113690	AMS 308i 120 H	200 ... 120,000 mm	0.5 mm	Ethernet	Laser, red	Metal	Heating
50113687	AMS 308i 200	200 ... 200,000 mm	0.7 mm	Ethernet	Laser, red	Metal	
50113691	AMS 308i 200 H	200 ... 200,000 mm	0.7 mm	Ethernet	Laser, red	Metal	Heating
50113688	AMS 308i 300	200 ... 300,000 mm	1 mm	Ethernet	Laser, red	Metal	
50113692	AMS 308i 300 H	200 ... 300,000 mm	1 mm	Ethernet	Laser, red	Metal	Heating
<b>Interbus-S interface</b>							
50113733	AMS 384i 40	200 ... 40,000 mm	0.3 mm	Interbus-S	Laser, red	Metal	
50113737	AMS 384i 40 H	200 ... 40,000 mm	0.3 mm	Interbus-S	Laser, red	Metal	Heating
50113734	AMS 384i 120	200 ... 120,000 mm	0.5 mm	Interbus-S	Laser, red	Metal	
50113738	AMS 384i 120 H	200 ... 120,000 mm	0.5 mm	Interbus-S	Laser, red	Metal	Heating
50113735	AMS 384i 200	200 ... 200,000 mm	0.7 mm	Interbus-S	Laser, red	Metal	
50113739	AMS 384i 200 H	200 ... 200,000 mm	0.7 mm	Interbus-S	Laser, red	Metal	Heating
50113736	AMS 384i 300	200 ... 300,000 mm	1 mm	Interbus-S	Laser, red	Metal	
50113740	AMS 384i 300 H	200 ... 300,000 mm	1 mm	Interbus-S	Laser, red	Metal	Heating
<b>PROFIBUS DP, SSI interface</b>							
50113677	AMS 304i 40	200 ... 40,000 mm	0.3 mm	PROFIBUS DP, SSI	Laser, red	Metal	
50113681	AMS 304i 40 H	200 ... 40,000 mm	0.3 mm	PROFIBUS DP, SSI	Laser, red	Metal	Heating
50113678	AMS 304i 120	200 ... 120,000 mm	0.5 mm	PROFIBUS DP, SSI	Laser, red	Metal	
50113682	AMS 304i 120 H	200 ... 120,000 mm	0.5 mm	PROFIBUS DP, SSI	Laser, red	Metal	Heating
50113679	AMS 304i 200	200 ... 200,000 mm	0.7 mm	PROFIBUS DP, SSI	Laser, red	Metal	
50113683	AMS 304i 200 H	200 ... 200,000 mm	0.7 mm	PROFIBUS DP, SSI	Laser, red	Metal	Heating
50113680	AMS 304i 300	200 ... 300,000 mm	1 mm	PROFIBUS DP, SSI	Laser, red	Metal	
50113684	AMS 304i 300 H	200 ... 300,000 mm	1 mm	PROFIBUS DP, SSI	Laser, red	Metal	Heating
<b>PROFINET interface</b>							
50113709	AMS 348i 40	200 ... 40,000 mm	0.3 mm	PROFINET	Laser, red	Metal	
50113713	AMS 348i 40 H	200 ... 40,000 mm	0.3 mm	PROFINET	Laser, red	Metal	Heating
50113710	AMS 348i 120	200 ... 120,000 mm	0.5 mm	PROFINET	Laser, red	Metal	
50113714	AMS 348i 120 H	200 ... 120,000 mm	0.5 mm	PROFINET	Laser, red	Metal	Heating
50113711	AMS 348i 200	200 ... 200,000 mm	0.7 mm	PROFINET	Laser, red	Metal	
50113715	AMS 348i 200 H	200 ... 200,000 mm	0.7 mm	PROFINET	Laser, red	Metal	Heating
50113712	AMS 348i 300	200 ... 300,000 mm	1 mm	PROFINET	Laser, red	Metal	
50113716	AMS 348i 300 H	200 ... 300,000 mm	1 mm	PROFINET	Laser, red	Metal	Heating
<b>RS 232, RS 422 interface</b>							
50113661	AMS 300i 40	200 ... 40,000 mm	0.3 mm	RS 232, RS 422	Laser, red	Metal	
50113665	AMS 300i 40 H	200 ... 40,000 mm	0.3 mm	RS 232, RS 422	Laser, red	Metal	Heating
50113662	AMS 300i 120	200 ... 120,000 mm	0.5 mm	RS 232, RS 422	Laser, red	Metal	
50113666	AMS 300i 120 H	200 ... 120,000 mm	0.5 mm	RS 232, RS 422	Laser, red	Metal	Heating
50113663	AMS 300i 200	200 ... 200,000 mm	0.7 mm	RS 232, RS 422	Laser, red	Metal	
50113667	AMS 300i 200 H	200 ... 200,000 mm	0.7 mm	RS 232, RS 422	Laser, red	Metal	Heating
50113664	AMS 300i 300	200 ... 300,000 mm	1 mm	RS 232, RS 422	Laser, red	Metal	
50113668	AMS 300i 300 H	200 ... 300,000 mm	1 mm	RS 232, RS 422	Laser, red	Metal	Heating
<b>RS 485 Interface</b>							
50113669	AMS 301i 40	200 ... 40,000 mm	0.3 mm	RS 485	Laser, red	Metal	
50113673	AMS 301i 40 H	200 ... 40,000 mm	0.3 mm	RS 485	Laser, red	Metal	Heating
50113670	AMS 301i 120	200 ... 120,000 mm	0.5 mm	RS 485	Laser, red	Metal	
50113674	AMS 301i 120 H	200 ... 120,000 mm	0.5 mm	RS 485	Laser, red	Metal	Heating
50113671	AMS 301i 200	200 ... 200,000 mm	0.7 mm	RS 485	Laser, red	Metal	
50113675	AMS 301i 200 H	200 ... 200,000 mm	0.7 mm	RS 485	Laser, red	Metal	Heating
50113672	AMS 301i 300	200 ... 300,000 mm	1 mm	RS 485	Laser, red	Metal	
50113676	AMS 301i 300 H	200 ... 300,000 mm	1 mm	RS 485	Laser, red	Metal	Heating

# //BAR CODE POSITIONING SYSTEMS

## POSITION DATA WITHOUT LIMIT – “INFINITE”, CURVE-GOING AND WITH MILLIMETER ACCURACY

The read head of the bar code positioning system is moved along a bar code tape. It calculates the absolute position data in the direction of travel with millimeter accuracy up to a distance of 10,000 m. The bar code tape is extremely simple to use and can be bonded both in straight lines and in curves. Maximum flexibility, simple mounting, transparent diagnosis as well as a large selection of integrated interfaces are the strengths of this system.

### /// BPS 8



Our BPS 8 compact bar code positioning system convinces with its robust metal housing and turnable M12 connector. The RS 232 or RS 485 interface allows the system to be incorporated in your system architecture. The BPS 8 is available with either front beam exit or with a deflection mirror.



#### Benefits:

- Absolute position measurement up to 10,000 m
- Curve-going, horizontal as well as vertical
- Degree of protection: IP 67
- Various protocols on RS 232, RS 485 via MA 8
- Reproducibility: +/- 1 mm
- Exact positioning at switches by means of special labels

Direct access to the online product selector at [www.leuze.com/en/bps8](http://www.leuze.com/en/bps8)

Part no.	Part description	Working range	Reproducibility (3 sigma)	Measurement value output	Interface	Light beam exit	Display element	Ambient temperature, operation
50104784	BPS 8 SM 100-01	60 ... 120 mm	1 mm	3.3 ms	RS 232	Lateral with deflection mirror	LED	0 ... 40 °C
50104783	BPS 8 SM 102-01	80 ... 140 mm	1 mm	3.3 ms	RS 232	Front	LED	0 ... 40 °C

Necessary accessories: A bar code tape is required for operation!

### /// BPS 300i



The BPS 300i is the second generation of bar code positioning and sets standards both in performance characteristics and in handling. The new “availability control” function allows diagnosis to be performed during operation. The large working range of +/- 60 mm makes mechanical installation easier and precise measurements possible even if the distance to the tape varies.



#### Benefits:

- Availability control: To reliably prevent failures resulting from contamination, the device constantly reports its performance reserve, thereby indicating possible problems due to contamination
- Easy handling: Fast, secure mounting and precise positioning of replacement devices through easy-mount mounting technology
- Absolute positioning up to 10,000 m with reproducible accuracy of +/- 0.15 mm
- Maximum speed 10 m/s
- Modularity: three selectable connection technologies, heating and display

Part no.	Part description	Working range	Reproducibility (3 sigma)	Measurement value output	Interface	Light beam exit	Display element	Ambient temperature, operation
50124983	BPS 348i SM 100	50 ... 170 mm	0.15 mm	1 ms	PROFINET	Lateral	LED	-5 ... 50 °C
50124982	BPS 348i SM 100 D	50 ... 170 mm	0.15 mm	1 ms	PROFINET	Lateral	LED Monochromatic graphic display 128 x 32 pixels	-5 ... 50 °C
50124981	BPS 348i SM 100 D H	50 ... 170 mm	0.15 mm	1 ms	PROFINET	Lateral	LED Monochromatic graphic display 128 x 32 pixels	-35 ... 50 °C

Necessary accessories: A modular connector hood or terminal hood and a bar code tape are required for operation of the BPS 300i!

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**/// BPS 34/37**



The BPS 34 (with PROFIBUS interface) and BPS 37 (with SSI interface) bar code positioning systems are used wherever the system places complex demands in the areas of configuration, velocity measurement and traverse rate. In addition, optional optics heating facilitates the use of the devices even at temperatures below the freezing point.



**Benefits:**

- Absolute positioning up to 10,000 m
- Curve-going, horizontal as well as vertical
- Degree of protection: IP 65
- With PROFIBUS or SSI interface
- Maximum speed 10 m/s
- If areas of the bar code tape are damaged, a repair kit can be downloaded from the Internet
- Special labels permit the precise and problem-free positioning on/at switches

Part no.	Part description	Working range	Reproducibility (3 sigma)	Measurement value output	Interface	Light beam exit	Ambient temperature, operation
50038007	BPS 34 S M 100	90 ... 170 mm	1 mm	2 ms	PROFIBUS DP	Lateral at angle less than 100 °	0 ... 40 °C
50038008	BPS 34 S M 100 H	90 ... 170 mm	1 mm	2 ms	PROFIBUS DP	Lateral at angle less than 100 °	-30 ... 40 °C
50103179	BPS 34 S M 100 HT	90 ... 170 mm	1 mm	2 ms	PROFIBUS DP	Lateral at angle less than 100 °	0 ... 50 °C
50037188	BPS 37 S M 100	90 ... 170 mm	1 mm	2 ms	SSI	Lateral at angle less than 100 °	0 ... 40 °C
50038009	BPS 37 S M 100 H	90 ... 170 mm	1 mm	2 ms	SSI	Lateral at angle less than 100 °	-30 ... 40 °C
50103180	BPS 37 S M 100 HT	90 ... 170 mm	1 mm	2 ms	SSI	Lateral at angle less than 100 °	0 ... 50 °C

Necessary accessories: A bar code tape is required for operation!

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# / 3D SENSORS

## WOULD YOU LIKE ANOTHER DIMENSION WITH THAT?

These sensors determine height contours. 3D data can be easily generated for moving objects or by moving the sensor. The measurement data can either be output for external processing or preprocessed in the sensor for convenient object measurement or detection.

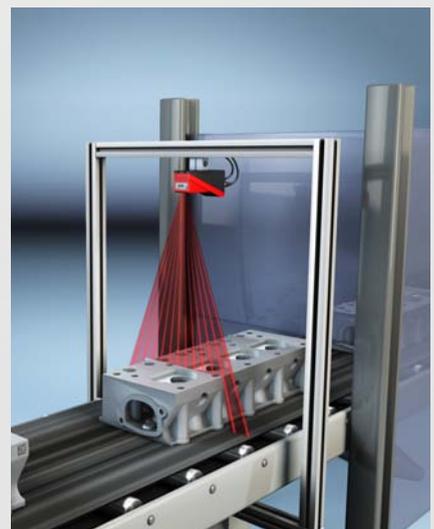
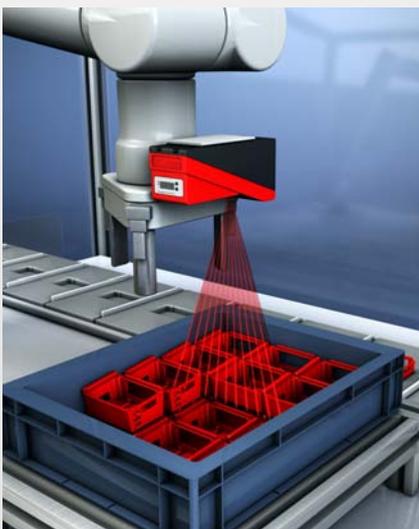


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Products for  
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Data Transmission /  
Control Components

Industrial Image  
Processing

Accessories

# //LIGHT SECTION SENSORS

## ALONG THE LINE

Light section sensors measure height profiles along a projected laser line. With these sensors, objects with high resolution can be detected quickly and reliably in 3D. Depending on the model, the function range extends from simply presence monitoring to edge measurement to 3D measurement of objects.

### /// LPS 36



The LPS 36 profile camera is used wherever height profiles need to be determined for moving or static objects. An additional encoder port supports the generation of calibrated 3D data. This opens numerous application possibilities, such as robot guidance as well as contour/volume measurements.



#### Benefits:

- Laser measurement technology with light-section method
- Laser line 600 mm at a distance of 800 mm
- Measurement time: 10 ms
- Measurement range: 200–800 mm
- Compact construction: 160 × 74 × 56 mm
- Interface: Ethernet
- Optional: encoder input

Direct access to the online product selector at [www.leuze.com/en/lps36](http://www.leuze.com/en/lps36)

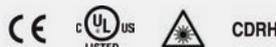
Part no.	Part description	Measurement range, z-axis	Measurement range, x-axis	Resolution	Interface	Light source Laser protection class	Switching inputs Switching outputs
50111325	LPS 36	200 ... 800 mm	150 ... 600 mm	1 ... 3 mm	Ethernet	Laser, red, 2M	2 2
50111324	LPS 36/EN	200 ... 800 mm	150 ... 600 mm	1 ... 3 mm	Ethernet	Laser, red, 2M	2 2
50111334	LPS 36HI/EN	200 ... 600 mm	46 ... 140 mm	0.1 ... 0.9 mm	Ethernet	Laser, red, 2M	2 2

Measurement ranges: luminosity coefficient 6 ... 90 %, entire measurement range, at 20 °C after 30 minutes warmup time, medium range U<sub>g</sub>  
Resolution: minimum and maximum value depend on measurement distance

### /// LES 36



The integrated edge detection of LES sensors determines the dimensions of objects or measures the exterior edges of web material products. The calibrated measurement data can easily be further processed via Ethernet, analog interface or fieldbus. Height, width and position measurements can be quickly and easily realized through configuration.



#### Benefits:

- Laser measurement technology with light-section method
- Up to 4 measurement fields in 16 inspection tasks
- Measurement time: 10 ms
- Measurement range: 200–800 mm
- Data calculation and processing directly inside the sensor
- Compact construction: 160 × 74 × 56 mm
- Interface: Ethernet, analog or fieldbus

Part no.	Part description	Measurement range, z-axis	Measurement range, x-axis	Resolution	Minimum object size	Interface	Light source Laser protection class	Analog output	Switching inputs Switching outputs
50111327	LES 36/PB	200 ... 800 mm	150 ... 600 mm	1 ... 3 mm	2 ... 6 mm	Ethernet, PROFIBUS DP	Laser, red, 2M		2 2
50111333	LES 36/VC6	200 ... 800 mm	150 ... 600 mm	1 ... 3 mm	2 ... 6 mm	Ethernet	Laser, red, 2M	Current, voltage	5 6
50111329	LES 36HI/VC6	200 ... 600 mm	50 ... 140 mm	0.1 ... 0.9 mm	0.4 ... 3 mm	Ethernet	Laser, red, 2M	Current, voltage	5 6

Measurement ranges: luminosity coefficient 6 ... 90 %, entire measurement range, at 20 °C after 30 minutes warmup time, medium range U<sub>g</sub>  
Resolution: minimum and maximum value depend on measurement distance

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/// LRS 36



Line range sensors are designed to perform scanning, two-dimensional object detection along a laser line. A maximum of 16 objects can be detected with one sensor. Through configuration settings, complex detection tasks can be mastered with just one sensor. Results are output via Ethernet, fieldbus interfaces or binary switching outputs. A perfect solution, e. g., for multiple track transport or completeness monitoring.

**Benefits:**

- Laser scanning using the light section method
- Up to 16 detection fields in 16 inspection tasks
- Measurement time: 10 ms
- Scanning area: 200-800 mm
- Data calculation and processing directly inside the sensor
- Compact construction: 160 × 74 × 56 mm
- Interface: Ethernet, I/O or fieldbus



Part no.	Part description	Detection range, z-axis	Detection range, x-axis	Minimum object size	Interface	Light source Laser protection class	Switching inputs Switching outputs
50111330	LRS 36/6	200 ... 800 mm	150 ... 600 mm	2 ... 6 mm	Ethernet	Laser, red, 2M	5 6
50115418	LRS 36/6.10	200 ... 800 mm	150 ... 600 mm	2 ... 6 mm	Ethernet	Laser, red, 2M	5 6
50111332	LRS 36/PB	200 ... 800 mm	150 ... 600 mm	2 ... 6 mm	Ethernet, PROFIBUS DP	Laser, red, 2M	2 2

Measurement ranges: luminosity coefficient 6 ... 90 %, entire measurement range, at 20 °C after 30 minutes warmup time, medium range U<sub>0</sub>  
Resolution: minimum and maximum value depend on measurement distance

**SMARTER PRODUCT USABILITY**

**A<sup>2</sup>LS.**  
Active ambient light suppression for reliable detection

**integrated** laser alignment.  
Convenient alignment function for large distances

**brightvision**<sup>®</sup>  
Simplified commissioning of sensors through highly visible light spot

**omnimount.**  
Integrated mounting and alignment concept without additional components

**thinkmodular.**  
Freely selectable range of functions

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# //LASER SCANNERS

## HIGH OPERATING RANGES WITH LARGE VIEWING ANGLES

Laser scanners detect their environment using a quickly-rotating laser measurement beam. This allows objects to be detected over large distances with very large viewing angles and also enables contours to be measured.

### /// ROD 4



Contactless laser scanners for object detection and contour measurement. A laser measurement beam is deflected by a rotating mirror and covers an area of 190° with a radius of up to 65 m. The measurement contour is output via Ethernet or a serial interface. In addition, there are models for object detection in up to four simultaneous detection fields.



#### Benefits:

- Measurement range 0 ... 65 m with detection field radius of up to 50 m
- 7 configurable and selectable detection field pairs (near and far) for object detection
- Simple device exchange without PC by means of config. connector
- Reference contour for presence/absence checks of objects
- Independent, simultaneous monitoring of 4 detection fields
- Interference suppression in the event of particles in the air
- ROD 4-36 with heating and ROD 4-38 with heating, dust-insensitive version.

Part no.	Part description	Measurement range	Light source Laser protection class	Scanning rate	Digital switching outputs	Number of connections	Interface	Special design
50106481	ROD4 plus	0 ... 65,000 mm	Laser, 1	25 scans/s	4	4	Ethernet, RS 232, RS 422	Warning output
50106480	ROD4-08 plus	0 ... 25,000 mm	Laser, 1	25 scans/s	4	4	Ethernet, RS 232, RS 422	Dust suppression Heating Warning output
50113226	ROD4-50 plus	0 ... 65,000 mm	Laser, 1	50 scans/s		4	Ethernet, RS 232, RS 422	Warning output
50113225	ROD4-58 plus	0 ... 25,000 mm	Laser, 1	50 scans/s		4	Ethernet, RS 232, RS 422	Dust suppression Heating Warning output
50110238	ROD4-30	0 ... 65,000 mm	Laser, 1	25 scans/s	4	2	RS 232, RS 422	Warning output
50110666	ROD4-36	0 ... 65,000 mm	Laser, 1	25 scans/s	4	2	RS 232, RS 422	Heating Warning output
50110667	ROD4-38	0 ... 25,000 mm	Laser, 1	25 scans/s	4	2	RS 232, RS 422	Dust suppression Heating Warning output

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**/// CML700i**



Integrated interfaces enable the quick and easy integration of these measuring light curtains into fieldbus environments without additional gateway boxes and corresponding space requirements and mounting effort. Cascade mounting with a dead zone of just 23 mm between beams, fast response times and the detection of transparent media enable e.g. continuous object tracing on a transport system.



PART NUMBER CODES – measuring light curtains CML 720i

C M L 7 x 0 i - T 0 5 - 1 9 2 0 . A - M 1 2

C M L 7 x 0 i - R 0 5 - 1 9 2 0 . A / C N - M 1 2

**Operating principle**

CML Measuring light curtain

**Series**

720i 720i series  
730i 730i series

**Function**

T Transmitter  
R Receiver

**Beam spacing**

05 5 mm  
10 10 mm  
20 20 mm  
40 40 mm

**Measurement field length**

xxxx Measurement field length [mm], dependent on beam spacing

**Equipment**

A Plug outlet axial  
R Plug outlet rear side

**Interface**

L IO-Link  
CN CANopen  
PB PROFIBUS-DP  
CV Analog, current and voltage  
D3 RS 485

**Electrical connection**

M12 M12 connector

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## CML720i

6 m operating range and a response time of 30  $\mu$ s per beam make the light curtains of the CML720i series the perfect introduction to reliable detection and measurement even of moving objects.

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### Benefits:

- Operating range of up to 6 m for larger performance reserve
- Response time of 30  $\mu$ s per beam for the reliable detection of even fast processes
- Integrated Profibus, CANopen, RS485 and IO-Link interfaces for direct configuration via the control
- Large, easy-to-read display with robust membrane keyboard and bar graph display for easy alignment
- Maximum measurement field length of nearly 3 m for measurement on large objects
- Sturdy metal housing also for use in rough industrial environments
- Connection via M12 connector for fast installation

Part no.	Part description	Beam spacing	No. of beams	Measurement field length	Cycle time	Operating range	Interface	Analog outputs	Switching inputs/outputs	Connection
50119458	▶ CML720i-T05-800.R-M12	5 mm	160	800 mm	5.2 ms	0.1 ... 3 m				Connector, M12, rear side
50120131	◀ CML720i-R05-800.R/CV-M12	5 mm	160	800 mm	5.2 ms			Voltage, current	2	Connector, M12, rear side
50119913	◀ CML720i-R05-800.R/CN-M12	5 mm	160	800 mm	5.2 ms		CANopen		2	Connector, M12, rear side
50119994	◀ CML720i-R05-800.R/L-M12	5 mm	160	800 mm	5.2 ms		IO-Link		4	Connector, M12, rear side
50122957	◀ CML720i-R05-800.R/PB-M12	5 mm	160	800 mm	5.2 ms		PROFIBUS DP		2	Connector, M12, rear side
50123584	◀ CML720i-R05-800.R/D3-M12	5 mm	160	800 mm	5.2 ms		RS 485		2	Connector, M12, rear side
50119377	▶ CML720i-T05-800.A-M12	5 mm	160	800 mm	5.2 ms	0.1 ... 3 m				Connector, M12, axial
50119805	◀ CML720i-R05-800.A/CV-M12	5 mm	160	800 mm	5.2 ms			Voltage, current	2	Connector, M12, axial
50119615	◀ CML720i-R05-800.A/CN-M12	5 mm	160	800 mm	5.2 ms		CANopen		2	Connector, M12, axial
50119724	◀ CML720i-R05-800.A/L-M12	5 mm	160	800 mm	5.2 ms		IO-Link		4	Connector, M12, axial
50122954	◀ CML720i-R05-800.A/PB-M12	5 mm	160	800 mm	5.2 ms		PROFIBUS DP		2	Connector, M12, axial
50123449	◀ CML720i-R05-800.A/D3-M12	5 mm	160	800 mm	5.2 ms		RS 485		2	Connector, M12, axial
50119409	▶ CML720i-T10-800.A-M12	10 mm	80	800 mm	2.8 ms	0.3 ... 6 m				Connector, M12, axial
50119837	◀ CML720i-R10-800.A/CV-M12	10 mm	80	800 mm	2.8 ms			Voltage, current	2	Connector, M12, axial
50119647	◀ CML720i-R10-800.A/CN-M12	10 mm	80	800 mm	2.8 ms		CANopen		2	Connector, M12, axial
50119756	◀ CML720i-R10-800.A/L-M12	10 mm	80	800 mm	2.8 ms		IO-Link		4	Connector, M12, axial
50122989	◀ CML720i-R10-800.A/PB-M12	10 mm	80	800 mm	2.8 ms		PROFIBUS DP		2	Connector, M12, axial
50123482	◀ CML720i-R10-800.A/D3-M12	10 mm	80	800 mm	2.8 ms		RS 485		2	Connector, M12, axial
50119491	▶ CML720i-T10-800.R-M12	10 mm	80	800 mm	2.8 ms	0.3 ... 6 m				Connector, M12, rear side
50120164	◀ CML720i-R10-800.R/CV-M12	10 mm	80	800 mm	2.8 ms			Voltage, current	2	Connector, M12, rear side
50119945	◀ CML720i-R10-800.R/CN-M12	10 mm	80	800 mm	2.8 ms		CANopen		2	Connector, M12, rear side
50120080	◀ CML720i-R10-800.R/L-M12	10 mm	80	800 mm	2.8 ms		IO-Link		4	Connector, M12, rear side
50122998	◀ CML720i-R10-800.R/PB-M12	10 mm	80	800 mm	2.8 ms		PROFIBUS DP		2	Connector, M12, rear side
50123616	◀ CML720i-R10-800.R/D3-M12	10 mm	80	800 mm	2.8 ms		RS 485		2	Connector, M12, rear side
50119427	▶ CML720i-T20-790.A-M12	20 mm	40	790 mm	1.6 ms	0.3 ... 6 m				Connector, M12, axial
50119855	◀ CML720i-R20-790.A/CV-M12	20 mm	40	790 mm	1.6 ms			Voltage, current	2	Connector, M12, axial
50119665	◀ CML720i-R20-790.A/CN-M12	20 mm	40	790 mm	1.6 ms		CANopen		2	Connector, M12, axial
50119774	◀ CML720i-R20-790.A/L-M12	20 mm	40	790 mm	1.6 ms		IO-Link		4	Connector, M12, axial
50123046	◀ CML720i-R20-790.A/PB-M12	20 mm	40	790 mm	1.6 ms		PROFIBUS DP		2	Connector, M12, axial
50123553	◀ CML720i-R20-790.A/D3-M12	20 mm	40	790 mm	1.6 ms		RS 485		2	Connector, M12, axial
50119509	▶ CML720i-T20-790.R-M12	20 mm	40	790 mm	1.6 ms	0.3 ... 6 m				Connector, M12, rear side
50120182	◀ CML720i-R20-790.R/CV-M12	20 mm	40	790 mm	1.6 ms			Voltage, current	2	Connector, M12, rear side
50119963	◀ CML720i-R20-790.R/CN-M12	20 mm	40	790 mm	1.6 ms		CANopen		2	Connector, M12, rear side
50120098	◀ CML720i-R20-790.R/L-M12	20 mm	40	790 mm	1.6 ms		IO-Link		4	Connector, M12, rear side
50123037	◀ CML720i-R20-790.R/PB-M12	20 mm	40	790 mm	1.6 ms		PROFIBUS DP		2	Connector, M12, rear side
50123634	◀ CML720i-R20-790.R/D3-M12	20 mm	40	790 mm	1.6 ms		RS 485		2	Connector, M12, rear side

Switching Sensors

Measuring Sensors

Products for Safety at Work

Identification

Data Transmission / Control Components

Industrial Image Processing

Accessories

Part no.	Part description	Beam spacing	No. of beams	Measurement field length	Cycle time	Operating range	Interface	Analog outputs	Switching inputs/outputs	Connection
50119525	► CML720i-T40-930.R-M12	40 mm	24	930 mm	1.12 ms	0.3 ... 6 m				Connector, M12, rear side
50120198	◄ CML720i-R40-930.R/CV-M12	40 mm	23	930 mm	1.09 ms			Voltage, current	2	Connector, M12, rear side
50119979	◄ CML720i-R40-930.R/CN-M12	40 mm	23	930 mm	1.09 ms		CANopen		2	Connector, M12, rear side
50120115	◄ CML720i-R40-930.R/L-M12	40 mm	23	930 mm	1.09 ms		IO-Link		4	Connector, M12, rear side
50123062	◄ CML720i-R40-930.R/PB-M12	40 mm	23	930 mm	1.09 ms		PROFIBUS DP		2	Connector, M12, rear side
50123652	◄ CML720i-R40-930.R/D3-M12	40 mm	23	930 mm	1.09 ms		RS 485		2	Connector, M12, rear side
50119443	► CML720i-T40-930.A-M12	40 mm	24	930 mm	1.12 ms	0.3 ... 6 m				Connector, M12, axial
50119871	◄ CML720i-R40-930.A/CV-M12	40 mm	23	930 mm	1.09 ms			Voltage, current	2	Connector, M12, axial
50119681	◄ CML720i-R40-930.A/CN-M12	40 mm	23	930 mm	1.09 ms		CANopen		2	Connector, M12, axial
50119790	◄ CML720i-R40-930.A/L-M12	40 mm	23	930 mm	1.09 ms		IO-Link		4	Connector, M12, axial
50123057	◄ CML720i-R40-930.A/PB-M12	40 mm	23	930 mm	1.09 ms		PROFIBUS DP		2	Connector, M12, axial
50123569	◄ CML720i-R40-930.A/D3-M12	40 mm	23	930 mm	1.09 ms		RS 485		2	Connector, M12, axial

Further products of this series can be found on our website  
 ► transmitter / ◄ receiver

## CML730i

In addition to its integrated interfaces and the innovative plug outlets for gapless object tracing, the CML730i measuring light curtain stands out in particular due to its range of up to 8 m and a unique measurement cycle of 10 µs per beam. In addition, it reliably detects even transparent objects up to 3.5 m.

### Switches Unlimited

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### Benefits:

- Integrated Profibus, CANopen, RS485 and IO-Link interfaces for direct configuration via the control
- Large, easy-to-read display with robust membrane keyboard and bar graph display for easy alignment
- Reliable detection of even transparent media up to 3.5 m
- Operating range of up to 8 m for larger performance reserves
- Extremely short response time of 10 µs per beam for the reliable detection of even fast processes
- Maximum measurement field length of nearly 3 m for measurement on large objects.
- Sturdy metal housing also for use in rough industrial environments
- Connection via M12 connector for fast installation

Part no.	Part description	Beam spacing	No. of beams	Measurement field length	Cycle time	Operating range	Interface	Analog outputs	Switching inputs/outputs	Connection
50118921	► CML730i-T05-800.R-M12	5 mm	160	800 mm	1.8 ms	0.1 ... 4 m				Connector, M12, rear side
50119219	◄ CML730i-R05-800.R/CV-M12	5 mm	160	800 mm	1.75 ms			Voltage, current	2	Connector, M12, rear side
50119002	◄ CML730i-R05-800.R/CN-M12	5 mm	160	800 mm	1.75 ms		CANopen		2	Connector, M12, rear side
50119139	◄ CML730i-R05-800.R/L-M12	5 mm	160	800 mm	1.75 ms		IO-Link		4	Connector, M12, rear side
50123137	◄ CML730i-R05-800.R/PB-M12	5 mm	160	800 mm	1.75 ms		PROFIBUS DP		2	Connector, M12, rear side
50123362	◄ CML730i-R05-800.R/D3-M12	5 mm	160	800 mm	1.75 ms		RS 485		2	Connector, M12, rear side
50118585	► CML730i-T05-800.A-M12	5 mm	160	800 mm	1.8 ms	0.1 ... 4 m				Connector, M12, axial
50118827	◄ CML730i-R05-800.A/CV-M12	5 mm	160	800 mm	1.75 ms			Voltage, current	2	Connector, M12, axial
50118664	◄ CML730i-R05-800.A/CN-M12	5 mm	160	800 mm	1.75 ms		CANopen		2	Connector, M12, axial
50118746	◄ CML730i-R05-800.A/L-M12	5 mm	160	800 mm	1.75 ms		IO-Link		4	Connector, M12, axial
50123130	◄ CML730i-R05-800.A/PB-M12	5 mm	160	800 mm	1.75 ms		PROFIBUS DP		2	Connector, M12, axial
50123279	◄ CML730i-R05-800.A/D3-M12	5 mm	160	800 mm	1.75 ms		RS 485		2	Connector, M12, axial
50118616	► CML730i-T10-800.A-M12	10 mm	80	800 mm	1 ms	0.3 ... 8 m				Connector, M12, axial
50118872	◄ CML730i-R10-800.A/CV-M12	10 mm	80	800 mm	1 ms			Voltage, current	2	Connector, M12, axial
50118697	◄ CML730i-R10-800.A/CN-M12	10 mm	80	800 mm	1 ms		CANopen		2	Connector, M12, axial
50118778	◄ CML730i-R10-800.A/L-M12	10 mm	80	800 mm	1 ms		IO-Link		4	Connector, M12, axial
50123173	◄ CML730i-R10-800.A/PB-M12	10 mm	80	800 mm	1 ms		PROFIBUS DP		2	Connector, M12, axial
50123312	◄ CML730i-R10-800.A/D3-M12	10 mm	80	800 mm	1 ms		RS 485		2	Connector, M12, axial

Part no.	Part description	Beam spacing	No. of beams	Measurement field length	Cycle time	Operating range	Interface	Analog outputs	Switching inputs/outputs	Connection
50118953	▶ CML730i-T10-800.R-M12	10 mm	80	800 mm	1 ms	0.3 ... 8 m				Connector, M12, rear side
50119251	◀ CML730i-R10-800.R/CV-M12	10 mm	80	800 mm	1 ms			Voltage, current	2	Connector, M12, rear side
50119090	◀ CML730i-R10-800.R/CN-M12	10 mm	80	800 mm	1 ms		CANopen		2	Connector, M12, rear side
50119171	◀ CML730i-R10-800.R/L-M12	10 mm	80	800 mm	1 ms		IO-Link		4	Connector, M12, rear side
50123179	◀ CML730i-R10-800.R/PB-M12	10 mm	80	800 mm	1 ms		PROFIBUS DP		2	Connector, M12, rear side
50123394	◀ CML730i-R10-800.R/D3-M12	10 mm	80	800 mm	1 ms		RS 485		2	Connector, M12, rear side
50118633	▶ CML730i-T20-790.A-M12	20 mm	40	790 mm	1 ms	0.3 ... 8 m				Connector, M12, axial
50118890	◀ CML730i-R20-790.A/CV-M12	20 mm	40	790 mm	1 ms			Voltage, current	2	Connector, M12, axial
50118715	◀ CML730i-R20-790.A/CN-M12	20 mm	40	790 mm	1 ms		CANopen		2	Connector, M12, axial
50118796	◀ CML730i-R20-790.A/L-M12	20 mm	40	790 mm	1 ms		IO-Link		4	Connector, M12, axial
50123206	◀ CML730i-R20-790.A/PB-M12	20 mm	40	790 mm	1 ms		PROFIBUS DP		2	Connector, M12, axial
50123330	◀ CML730i-R20-790.A/D3-M12	20 mm	40	790 mm	1 ms		RS 485		2	Connector, M12, axial
50118970	▶ CML730i-T20-790.R-M12	20 mm	40	790 mm	1 ms	0.3 ... 8 m				Connector, M12, rear side
50119269	◀ CML730i-R20-790.R/CV-M12	20 mm	40	790 mm	1 ms			Voltage, current	2	Connector, M12, rear side
50119108	◀ CML730i-R20-790.R/CN-M12	20 mm	40	790 mm	1 ms		CANopen		2	Connector, M12, rear side
50119188	◀ CML730i-R20-790.R/L-M12	20 mm	40	790 mm	1 ms		IO-Link		4	Connector, M12, rear side
50123221	◀ CML730i-R20-790.R/PB-M12	20 mm	40	790 mm	1 ms		PROFIBUS DP		2	Connector, M12, rear side
50123412	◀ CML730i-R20-790.R/D3-M12	20 mm	40	790 mm	1 ms		RS 485		2	Connector, M12, rear side
50118649	▶ CML730i-T40-930.A-M12	40 mm	24	930 mm	1 ms	0.3 ... 8 m				Connector, M12, axial
50118906	◀ CML730i-R40-930.A/CV-M12	40 mm	23	930 mm	1 ms			Voltage, current	2	Connector, M12, axial
50118731	◀ CML730i-R40-930.A/CN-M12	40 mm	23	930 mm	1 ms		CANopen		2	Connector, M12, axial
50118812	◀ CML730i-R40-930.A/L-M12	40 mm	23	930 mm	1 ms		IO-Link		4	Connector, M12, axial
50123216	◀ CML730i-R40-930.A/PB-M12	40 mm	23	930 mm	1 ms		PROFIBUS DP		2	Connector, M12, axial
50123346	◀ CML730i-R40-930.A/D3-M12	40 mm	23	930 mm	1 ms		RS 485		2	Connector, M12, axial
50118986	▶ CML730i-T40-930.R-M12	40 mm	24	930 mm	1 ms	0.3 ... 8 m				Connector, M12, rear side
50119285	◀ CML730i-R40-930.R/CV-M12	40 mm	23	930 mm	1 ms			Voltage, current	2	Connector, M12, rear side
50119124	◀ CML730i-R40-930.R/CN-M12	40 mm	23	930 mm	1 ms		CANopen		2	Connector, M12, rear side
50119204	◀ CML730i-R40-930.R/L-M12	40 mm	23	930 mm	1 ms		IO-Link		4	Connector, M12, rear side
50123231	◀ CML730i-R40-930.R/PB-M12	40 mm	23	930 mm	1 ms		PROFIBUS DP		2	Connector, M12, rear side
50123432	◀ CML730i-R40-930.R/D3-M12	40 mm	23	930 mm	1 ms		RS 485		2	Connector, M12, rear side

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/// GS 754B



With mouth widths of 27 or 100 mm, this forking photoelectric sensor delivers accurate measurement results over a 25 mm long measurement range thanks to its CCD line. Depending on the configuration, it is possible to measure transparent edges, the diameters of wires, threads and much more.



**Benefits:**

- Measurement range 25 mm
- Resolution: 14 µm
- Configurable measurement range and measure mode
- Teach-in function, switching or warning output
- Multiple object detection
- Standard interface (RS 232) for configuration and visualization
- M12 data interface (process interface) with analog or digital data output
- M12 turning connector

Part no.	Part description	Mouth width	Mouth depth	Measurement field length	Light source	Analog output	Switching inputs/outputs	Interface
50117818	GS 754B/V4-98-S12	98 mm	42 mm	25 mm	LED, infrared	Voltage	Switching output/switching state Teach input	
50119710	GS 754B/D24-98-S12	98 mm	42 mm	25 mm	LED, infrared		Switching output/switching state Teach input	RS 232
50119712	GS 754B/C4-98-S12	98 mm	42 mm	25 mm	LED, infrared	Current	Switching output/switching state Teach input	
50119711	GS 754B/D3-98-S12	98 mm	42 mm	25 mm	LED, infrared			RS 422
50115807	GS 754B/D24-27-S12	27 mm	42 mm	25 mm	LED, infrared		Teach input Switching output/switching state	RS 232
50115806	GS 754B/D3-27-S12	27 mm	42 mm	25 mm	LED, infrared			RS 422
50115809	GS 754B/V4-27-S12	27 mm	42 mm	25 mm	LED, infrared	Voltage	Teach input Switching output/switching state	
50115803	GS 754B/C4-27-S12	27 mm	42 mm	25 mm	LED, infrared	Current	Teach input Switching output/switching state	

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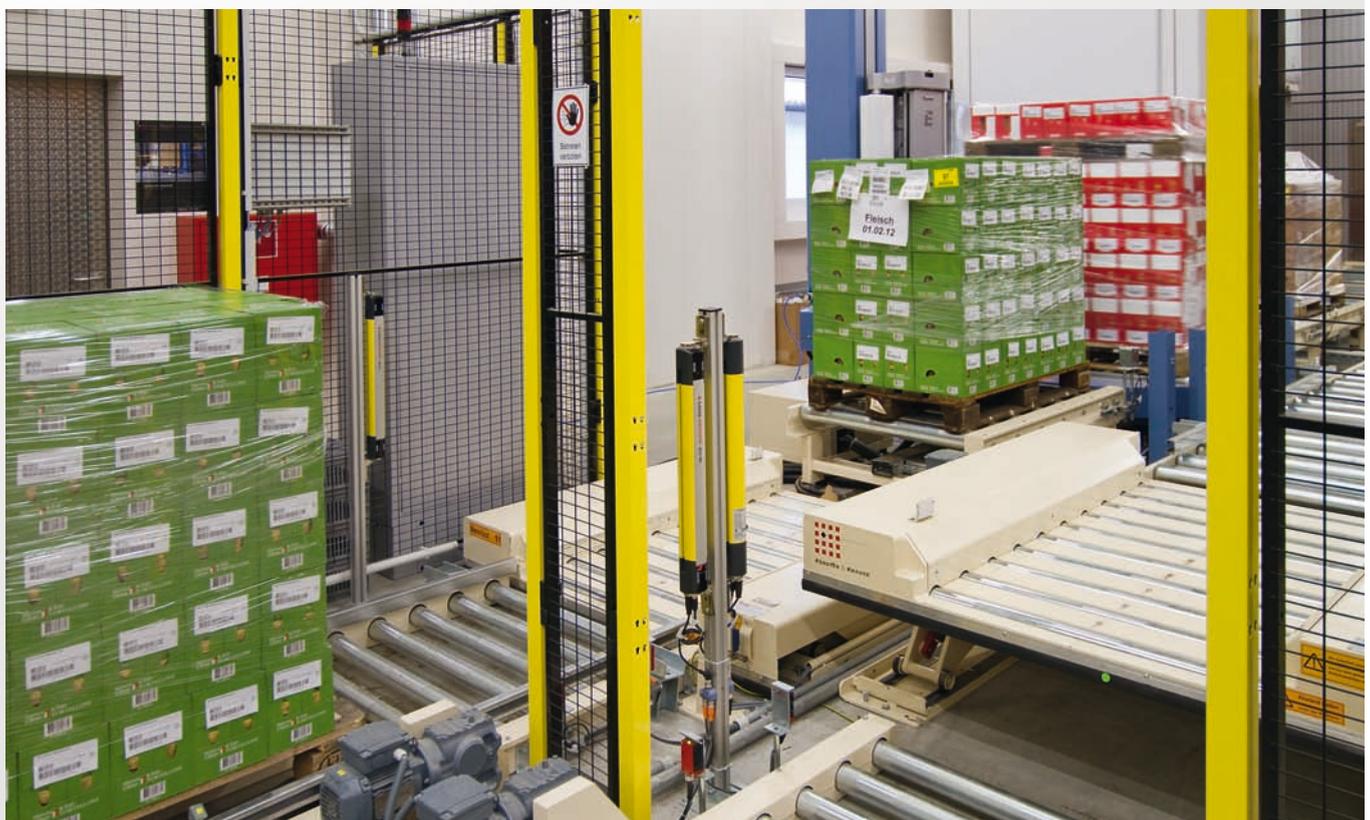
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# / OPTOELECTRONIC SAFETY SENSORS

## EVERYTHING FOR SAFETY

Whether individual devices or optimally matched sets: in our extensive line of safety sensors, you will always find a suitable and efficient safety solution for point-of-operation, danger-zone and access guarding. All devices satisfy the applicable legal regulations and standards.



**Safety Light Curtains**

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**Multiple Light Beam Safety Devices**

**Page 146**

**Single Light Beam Safety Devices**

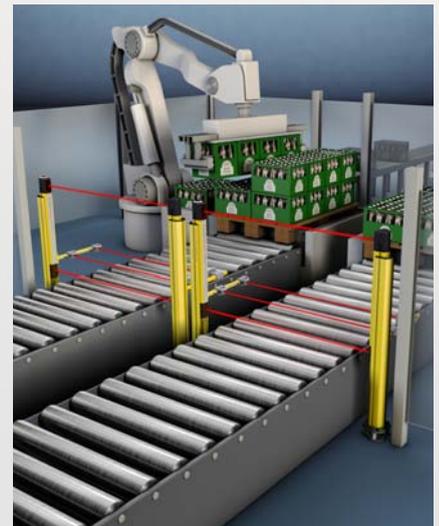
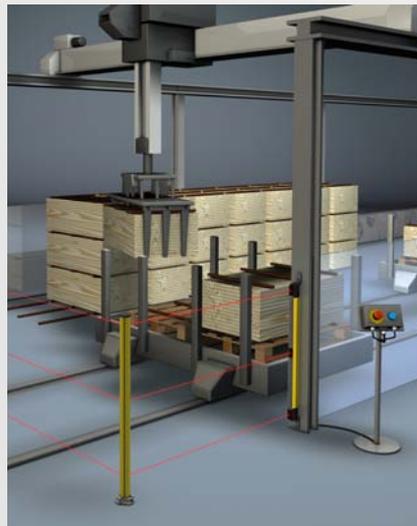
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**Safety Laser Scanners**

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**Protective Sensor Sets**

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# //SAFETY LIGHT CURTAINS

## CURTAIN FOR EFFICIENT SAFETY

Reliable and interference-immune sensor safety technology ensures high system availability and productivity. Wherever man and machine work "hand in hand", our safety light curtains can be used vertically as hand and finger protection, as access guarding as well as horizontally as area protection. With respect to integration capability, availability and cost effectiveness, they meet the highest requirements.

### /// MLC 500



The MLC 500 series includes the newest generation of extremely sturdy type 4 safety light curtains. Three function classes – Basic, Standard and Extended – enable the most efficient use of devices from simple standard applications to complex controlled special safeguarding processes. The devices can be used universally, due to metal end caps, a flexible fastening concept and the option of form-locking installation. There are also variants which have an AIDA-compliant pin assignment.



PART NUMBER CODES – safety light curtains MLC 500 and MLC 300

MLC 3 0 0 T 1 4 h h h h H

<b>Model</b>	MLC	Safety light curtain
<b>Series</b>	3	MLC 300
	5	MLC 500
<b>Function</b>	00	Transmitter
	01	Transmitter (AIDA)
	10	Automatic restart
	11	Automatic restart (AIDA)
	20	EDM/RES selectable
	30	Muting/Blanking/Linkage (only MLC 530)
<b>Device type (only MLC 520)</b>	T	Transmitter
	R	Receiver
<b>Resolution</b>	14	14 mm / range 0 – 6 m (only MLC 500)
	20	20 mm / range 0 – 14 m
	30	30 mm / range 0 – 10 m
	40	40 mm / range 0 – 20 m
	90	90 mm / range 0 – 20 m
<b>Protective field height</b>	hhhh	150...3000 mm
<b>Host/guest (only MLC 520)</b>	H	Host
	MG	MiddleGuest
	G	Guest

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## MLC 510

This Basic version of the type 4 safety light curtains provides the most important functions. Range reduction on the transmitter, reversible transmission channels, a LED display as well as an automatic start/restart interlock round out the range of service.

### Benefits:

- Automatic start/restart
- Optimal handling
- Prevention of mutual interference of the sensors by selectable transmission channels and range reduction, if applicable
- Universal application due to standard functions
- Short delivery times and global availability
- QR code on the sensor for quick service information

Part no.	Part description	Protective field height	Resolution	Operating range	Connection	No. of pins	Function package
68001101	▶ MLC510R14-150	150 mm	14 mm		Connector, M12, metal	5	Basic
68000101	◀ MLC500T14-150	150 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	
68001103	▶ MLC510R14-300	300 mm	14 mm		Connector, M12, metal	5	Basic
68000103	◀ MLC500T14-300	300 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	
68001104	▶ MLC510R14-450	450 mm	14 mm		Connector, M12, metal	5	Basic
68000104	◀ MLC500T14-450	450 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	
68001106	▶ MLC510R14-600	600 mm	14 mm		Connector, M12, metal	5	Basic
68000106	◀ MLC500T14-600	600 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	
68001107	▶ MLC510R14-750	750 mm	14 mm		Connector, M12, metal	5	Basic
68000107	◀ MLC500T14-750	750 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	
68001109	▶ MLC510R14-900	900 mm	14 mm		Connector, M12, metal	5	Basic
68000109	◀ MLC500T14-900	900 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	
68001110	▶ MLC510R14-1050	1,050 mm	14 mm		Connector, M12, metal	5	Basic
68000110	◀ MLC500T14-1050	1,050 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	
68001112	▶ MLC510R14-1200	1,200 mm	14 mm		Connector, M12, metal	5	Basic
68000112	◀ MLC500T14-1200	1,200 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	
68001113	▶ MLC510R14-1350	1,350 mm	14 mm		Connector, M12, metal	5	Basic
68000113	◀ MLC500T14-1350	1,350 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	
68001115	▶ MLC510R14-1500	1,500 mm	14 mm		Connector, M12, metal	5	Basic
68000115	◀ MLC500T14-1500	1,500 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	
68001116	▶ MLC510R14-1650	1,650 mm	14 mm		Connector, M12, metal	5	Basic
68000116	◀ MLC500T14-1650	1,650 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	
68001118	▶ MLC510R14-1800	1,800 mm	14 mm		Connector, M12, metal	5	Basic
68000118	◀ MLC500T14-1800	1,800 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	
68001119	▶ MLC510R14-1950	1,950 mm	14 mm		Connector, M12, metal	5	Basic
68000119	◀ MLC500T14-1950	1,950 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	
68001121	▶ MLC510R14-2100	2,100 mm	14 mm		Connector, M12, metal	5	Basic
68000121	◀ MLC500T14-2100	2,100 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	
68001122	▶ MLC510R14-2250	2,250 mm	14 mm		Connector, M12, metal	5	Basic
68000122	◀ MLC500T14-2250	2,250 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	
68001124	▶ MLC510R14-2400	2,400 mm	14 mm		Connector, M12, metal	5	Basic
68000124	◀ MLC500T14-2400	2,400 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	
68001125	▶ MLC510R14-2550	2,550 mm	14 mm		Connector, M12, metal	5	Basic
68000125	◀ MLC500T14-2550	2,550 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	
68001127	▶ MLC510R14-2700	2,700 mm	14 mm		Connector, M12, metal	5	Basic
68000127	◀ MLC500T14-2700	2,700 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	
68001128	▶ MLC510R14-2850	2,850 mm	14 mm		Connector, M12, metal	5	Basic
68000128	◀ MLC500T14-2850	2,850 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	
68001130	▶ MLC510R14-3000	3,000 mm	14 mm		Connector, M12, metal	5	Basic
68000130	◀ MLC500T14-3000	3,000 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	

Included in delivery: sliding blocks.

Part numbers of the components are found on the website.

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## MLC 511

The devices have a plug connection with AIDA-compliant M12 pin assignment (Automatisierungs-Initiative deutscher Automobilisten (AIDA) = Automation Initiative of German automobile manufacturers).

### Benefits:

- Automatic start/restart
- Optimal handling
- Range reduction on demand
- Universal application due to standard functions
- Short delivery times and global availability
- QR code on the sensor for quick service information

Part no.	Part description	Protective field height	Resolution	Operating range	Connection	No. of pins	Function package
68005103	▶ MLC511R14-300	300 mm	14 mm		Connector, M12, metal	4	Basic
68004103	◀ MLC501T14-300	300 mm	14 mm	0 ... 6 m	Connector, M12, metal	4	
68005104	▶ MLC511R14-450	450 mm	14 mm		Connector, M12, metal	4	Basic
68004104	◀ MLC501T14-450	450 mm	14 mm	0 ... 6 m	Connector, M12, metal	4	
68005106	▶ MLC511R14-600	600 mm	14 mm		Connector, M12, metal	4	Basic
68004106	◀ MLC501T14-600	600 mm	14 mm	0 ... 6 m	Connector, M12, metal	4	
68005107	▶ MLC511R14-750	750 mm	14 mm		Connector, M12, metal	4	Basic
68004107	◀ MLC501T14-750	750 mm	14 mm	0 ... 6 m	Connector, M12, metal	4	
68005109	▶ MLC511R14-900	900 mm	14 mm		Connector, M12, metal	4	Basic
68004109	◀ MLC501T14-900	900 mm	14 mm	0 ... 6 m	Connector, M12, metal	4	
68005110	▶ MLC511R14-1050	1,050 mm	14 mm		Connector, M12, metal	4	Basic
68004110	◀ MLC501T14-1050	1,050 mm	14 mm	0 ... 6 m	Connector, M12, metal	4	
68005112	▶ MLC511R14-1200	1,200 mm	14 mm		Connector, M12, metal	4	Basic
68004112	◀ MLC501T14-1200	1,200 mm	14 mm	0 ... 6 m	Connector, M12, metal	4	
68005113	▶ MLC511R14-1350	1,350 mm	14 mm		Connector, M12, metal	4	Basic
68004113	◀ MLC501T14-1350	1,350 mm	14 mm	0 ... 6 m	Connector, M12, metal	4	
68005115	▶ MLC511R14-1500	1,500 mm	14 mm		Connector, M12, metal	4	Basic
68004115	◀ MLC501T14-1500	1,500 mm	14 mm	0 ... 6 m	Connector, M12, metal	4	
68005116	▶ MLC511R14-1650	1,650 mm	14 mm		Connector, M12, metal	4	Basic
68004116	◀ MLC501T14-1650	1,650 mm	14 mm	0 ... 6 m	Connector, M12, metal	4	
68005118	▶ MLC511R14-1800	1,800 mm	14 mm		Connector, M12, metal	4	Basic
68004118	◀ MLC501T14-1800	1,800 mm	14 mm	0 ... 6 m	Connector, M12, metal	4	

Included in delivery: sliding blocks.

## MLC 520

The Standard version of these type 4 safety light curtains features a start/restart interlock (RES) and contactor monitoring (EDM) for increased performance – and it is simple to handle and integrate into your systems.

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### Benefits:

- Basic functions such as automatic start/restart, start/restart interlock (RES), contactor monitoring (EDM)
- Optimal handling due to function selection without PC as well as LED and 7-segment display with integrated 3-zone alignment aid
- Prevention of mutual interference of the sensors by selectable transmission channels and range reduction, if applicable
- Short delivery times and global availability
- QR code on the sensor for quick service information

Part no.	Part description	Protective field height	Resolution	Operating range	Connection	No. of pins	Function package
68002101	▶ MLC520R14-150	150 mm	14 mm		Connector, M12, metal	8	Standard
68000101	◀ MLC500T14-150	150 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	
68002103	▶ MLC520R14-300	300 mm	14 mm		Connector, M12, metal	8	Standard
68000103	◀ MLC500T14-300	300 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	
68002104	▶ MLC520R14-450	450 mm	14 mm		Connector, M12, metal	8	Standard
68000104	◀ MLC500T14-450	450 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	
68002106	▶ MLC520R14-600	600 mm	14 mm		Connector, M12, metal	8	Standard
68000106	◀ MLC500T14-600	600 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	
68002107	▶ MLC520R14-750	750 mm	14 mm		Connector, M12, metal	8	Standard
68000107	◀ MLC500T14-750	750 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	
68002109	▶ MLC520R14-900	900 mm	14 mm		Connector, M12, metal	8	Standard
68000109	◀ MLC500T14-900	900 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	
68002110	▶ MLC520R14-1050	1,050 mm	14 mm		Connector, M12, metal	8	Standard
68000110	◀ MLC500T14-1050	1,050 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	

Included in delivery: sliding blocks.

Part no.	Part description	Protective field height	Resolution	Operating range	Connection	No. of pins	Function package
68002112	► MLC520R14-1200	1,200 mm	14 mm		Connector, M12, metal	8	Standard
68000112	◄ MLC500T14-1200	1,200 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	
68002113	► MLC520R14-1350	1,350 mm	14 mm		Connector, M12, metal	8	Standard
68000113	◄ MLC500T14-1350	1,350 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	
68002115	► MLC520R14-1500	1,500 mm	14 mm		Connector, M12, metal	8	Standard
68000115	◄ MLC500T14-1500	1,500 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	
68002116	► MLC520R14-1650	1,650 mm	14 mm		Connector, M12, metal	8	Standard
68000116	◄ MLC500T14-1650	1,650 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	
68002118	► MLC520R14-1800	1,800 mm	14 mm		Connector, M12, metal	8	Standard
68000118	◄ MLC500T14-1800	1,800 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	
68002119	► MLC520R14-1950	1,950 mm	14 mm		Connector, M12, metal	8	Standard
68000119	◄ MLC500T14-1950	1,950 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	
68002121	► MLC520R14-2100	2,100 mm	14 mm		Connector, M12, metal	8	Standard
68000121	◄ MLC500T14-2100	2,100 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	
68002122	► MLC520R14-2250	2,250 mm	14 mm		Connector, M12, metal	8	Standard
68000122	◄ MLC500T14-2250	2,250 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	
68002124	► MLC520R14-2400	2,400 mm	14 mm		Connector, M12, metal	8	Standard
68000124	◄ MLC500T14-2400	2,400 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	
68002125	► MLC520R14-2550	2,550 mm	14 mm		Connector, M12, metal	8	Standard
68000125	◄ MLC500T14-2550	2,550 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	
68002127	► MLC520R14-2700	2,700 mm	14 mm		Connector, M12, metal	8	Standard
68000127	◄ MLC500T14-2700	2,700 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	
68002128	► MLC520R14-2850	2,850 mm	14 mm		Connector, M12, metal	8	Standard
68000128	◄ MLC500T14-2850	2,850 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	
68002130	► MLC520R14-3000	3,000 mm	14 mm		Connector, M12, metal	8	Standard
68000130	◄ MLC500T14-3000	3,000 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	

Included in delivery: sliding blocks.

## MLC 530

Whenever you need additional control functions, the MLC 530 Extended version is the perfect choice. With its 5 different operating modes, the integrated muting function and 3 different scan modes, the sensor leaves almost nothing to be desired. Device linking enables the construction of 2-channel, contact-based safety circuits as well as serial connections of several devices with safety-related switching outputs (OSSD).

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### Benefits:

- Integrated function for timing controlled muting for temporary proper bridging of the protective function, e. g. when transporting materials through the protective field
- Fixed or floating beam blanking, reduced resolution: necessary whenever objects must be in the protective field for operational reasons.
- Different scan modes: to adjust availability, select SingleScan, DoubleScan or MaxiScan.
- Teaching without PC: configuration and teaching, e. g. of floating beam blanking, is quick and easy.

Part no.	Part description	Protective field height	Resolution	Operating range	Connection	No. of pins	Function package
68003101	► MLC530R14-150	150 mm	14 mm		Connector, M12, metal	8	Extended
68000101	◄ MLC500T14-150	150 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	
68003103	► MLC530R14-300	300 mm	14 mm		Connector, M12, metal	8	Extended
68000103	◄ MLC500T14-300	300 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	
68003104	► MLC530R14-450	450 mm	14 mm		Connector, M12, metal	8	Extended
68000104	◄ MLC500T14-450	450 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	
68003106	► MLC530R14-600	600 mm	14 mm		Connector, M12, metal	8	Extended
68000106	◄ MLC500T14-600	600 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	
68003107	► MLC530R14-750	750 mm	14 mm		Connector, M12, metal	8	Extended
68000107	◄ MLC500T14-750	750 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	
68003109	► MLC530R14-900	900 mm	14 mm		Connector, M12, metal	8	Extended
68000109	◄ MLC500T14-900	900 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	
68003110	► MLC530R14-1050	1,050 mm	14 mm		Connector, M12, metal	8	Extended
68000110	◄ MLC500T14-1050	1,050 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	
68003112	► MLC530R14-1200	1,200 mm	14 mm		Connector, M12, metal	8	Extended
68000112	◄ MLC500T14-1200	1,200 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	
68003113	► MLC530R14-1350	1,350 mm	14 mm		Connector, M12, metal	8	Extended
68000113	◄ MLC500T14-1350	1,350 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	
68003115	► MLC530R14-1500	1,500 mm	14 mm		Connector, M12, metal	8	Extended
68000115	◄ MLC500T14-1500	1,500 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	

Included in delivery: sliding blocks.

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Part no.	Part description	Protective field height	Resolution	Operating range	Connection	No. of pins	Function package
68003116	▶ MLC530R14-1650	1,650 mm	14 mm		Connector, M12, metal	8	Extended
68000116	◀ MLC500T14-1650	1,650 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	
68003118	▶ MLC530R14-1800	1,800 mm	14 mm		Connector, M12, metal	8	Extended
68000118	◀ MLC500T14-1800	1,800 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	
68003119	▶ MLC530R14-1950	1,950 mm	14 mm		Connector, M12, metal	8	Extended
68000119	◀ MLC500T14-1950	1,950 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	
68003121	▶ MLC530R14-2100	2,100 mm	14 mm		Connector, M12, metal	8	Extended
68000121	◀ MLC500T14-2100	2,100 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	
68003122	▶ MLC530R14-2250	2,250 mm	14 mm		Connector, M12, metal	8	Extended
68000122	◀ MLC500T14-2250	2,250 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	
68003124	▶ MLC530R14-2400	2,400 mm	14 mm		Connector, M12, metal	8	Extended
68000124	◀ MLC500T14-2400	2,400 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	
68003125	▶ MLC530R14-2550	2,550 mm	14 mm		Connector, M12, metal	8	Extended
68000125	◀ MLC500T14-2550	2,550 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	
68003127	▶ MLC530R14-2700	2,700 mm	14 mm		Connector, M12, metal	8	Extended
68000127	◀ MLC500T14-2700	2,700 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	
68003128	▶ MLC530R14-2850	2,850 mm	14 mm		Connector, M12, metal	8	Extended
68000128	◀ MLC500T14-2850	2,850 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	
68003130	▶ MLC530R14-3000	3,000 mm	14 mm		Connector, M12, metal	8	Extended
68000130	◀ MLC500T14-3000	3,000 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	

Included in delivery: sliding blocks.

## MLC 520 Host

The so-called host-guest devices enable the combination of access guarding or point of operation guarding with area protection. In this way, it is possible, for example, to eliminate additional measures such as guards to protect against stepping behind machines. Furthermore, the MLC HG devices offer all of the advantages of the MLC 500 series.

### Benefits:

- Point of operation guarding with area protection
- Multi-side guarding thanks to optimized cable routing

Part no.	Part description	Protective field height	Resolution	Operating range	Connection	No. of pins	Function package
68012103	▶ MLC520R14-300H	300 mm	14 mm		Connector, M12, metal	8	Standard
68010103	◀ MLC500T14-300H	300 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	
68012104	▶ MLC520R14-450H	450 mm	14 mm		Connector, M12, metal	8	Standard
68010104	◀ MLC500T14-450H	450 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	
68012106	▶ MLC520R14-600H	600 mm	14 mm		Connector, M12, metal	8	Standard
68010106	◀ MLC500T14-600H	600 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	
68012107	▶ MLC520R14-750H	750 mm	14 mm		Connector, M12, metal	8	Standard
68010107	◀ MLC500T14-750H	750 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	
68012109	▶ MLC520R14-900H	900 mm	14 mm		Connector, M12, metal	8	Standard
68010109	◀ MLC500T14-900H	900 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	
68012110	▶ MLC520R14-1050H	1,050 mm	14 mm		Connector, M12, metal	8	Standard
68010110	◀ MLC500T14-1050H	1,050 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	
68012112	▶ MLC520R14-1200H	1,200 mm	14 mm		Connector, M12, metal	8	Standard
68010112	◀ MLC500T14-1200H	1,200 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	
68012113	▶ MLC520R14-1350H	1,350 mm	14 mm		Connector, M12, metal	8	Standard
68010113	◀ MLC500T14-1350H	1,350 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	
68012115	▶ MLC520R14-1500H	1,500 mm	14 mm		Connector, M12, metal	8	Standard
68010115	◀ MLC500T14-1500H	1,500 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	
68012116	▶ MLC520R14-1650H	1,650 mm	14 mm		Connector, M12, metal	8	Standard
68010116	◀ MLC500T14-1650H	1,650 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	
68012118	▶ MLC520R14-1800H	1,800 mm	14 mm		Connector, M12, metal	8	Standard
68010118	◀ MLC500T14-1800H	1,800 mm	14 mm	0 ... 6 m	Connector, M12, metal	5	

Included in delivery: sliding blocks.

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## MLC 520 MiddleGuest

The so-called host-guest devices enable the combination of access guarding or point of operation guarding with area protection. In this way, it is possible, for example, to eliminate additional measures such as guards to protect against stepping behind machines. The MiddleGuest devices can be used as the middle segment of a three-link chain.

### Benefits:

- Point of operation guarding with area protection
- Multi-side guarding thanks to optimized cable routing

Part no.	Part description	Protective field height	Resolution	Operating range	Connection	No. of pins
68023103	▶ MLC520R14-300MG	300 mm	14 mm		Connector, M12, plastic	8
68022103	◀ MLC500T14-300MG	300 mm	14 mm	0 ... 6 m	Connector, M12, plastic	8
68023104	▶ MLC520R14-450MG	450 mm	14 mm		Connector, M12, plastic	8
68022104	◀ MLC500T14-450MG	450 mm	14 mm	0 ... 6 m	Connector, M12, plastic	8
68023106	▶ MLC520R14-600MG	600 mm	14 mm		Connector, M12, plastic	8
68022106	◀ MLC500T14-600MG	600 mm	14 mm	0 ... 6 m	Connector, M12, plastic	8
68023107	▶ MLC520R14-750MG	750 mm	14 mm		Connector, M12, plastic	8
68022107	◀ MLC500T14-750MG	750 mm	14 mm	0 ... 6 m	Connector, M12, plastic	8
68023109	▶ MLC520R14-900MG	900 mm	14 mm		Connector, M12, plastic	8
68022109	◀ MLC500T14-900MG	900 mm	14 mm	0 ... 6 m	Connector, M12, plastic	8
68023110	▶ MLC520R14-1050MG	1,050 mm	14 mm		Connector, M12, plastic	8
68022110	◀ MLC500T14-1050MG	1,050 mm	14 mm	0 ... 6 m	Connector, M12, plastic	8
68023112	▶ MLC520R14-1200MG	1,200 mm	14 mm		Connector, M12, plastic	8
68022112	◀ MLC500T14-1200MG	1,200 mm	14 mm	0 ... 6 m	Connector, M12, plastic	8
68023113	▶ MLC520R14-1350MG	1,350 mm	14 mm		Connector, M12, plastic	8
68022113	◀ MLC500T14-1350MG	1,350 mm	14 mm	0 ... 6 m	Connector, M12, plastic	8
68023115	▶ MLC520R14-1500MG	1,500 mm	14 mm		Connector, M12, plastic	8
68022115	◀ MLC500T14-1500MG	1,500 mm	14 mm	0 ... 6 m	Connector, M12, plastic	8
68023116	▶ MLC520R14-1650MG	1,650 mm	14 mm		Connector, M12, plastic	8
68022116	◀ MLC500T14-1650MG	1,650 mm	14 mm	0 ... 6 m	Connector, M12, plastic	8
68023118	▶ MLC520R14-1800MG	1,800 mm	14 mm		Connector, M12, plastic	8
68022118	◀ MLC500T14-1800MG	1,800 mm	14 mm	0 ... 6 m	Connector, M12, plastic	8

Included in delivery: sliding blocks.

## MLC 520 Guest

The so-called host-guest devices enable the combination of access guarding or point of operation guarding with area protection. In this way, it is possible, for example, to eliminate additional measures such as guards to protect against stepping behind machines. The guest devices are always the final device in a 2 to 3-link chain.

### Benefits:

- Point of operation guarding with area protection
- Multi-side guarding thanks to optimized cable routing

Part no.	Part description	Protective field height	Resolution	Operating range	Connection	No. of pins
68021103	▶ MLC520R14-300G	300 mm	14 mm		Connector, M12, plastic	8
68020103	◀ MLC500T14-300G	300 mm	14 mm	0 ... 6 m	Connector, M12, plastic	8
68021104	▶ MLC520R14-450G	450 mm	14 mm		Connector, M12, plastic	8
68020104	◀ MLC500T14-450G	450 mm	14 mm	0 ... 6 m	Connector, M12, plastic	8
68021106	▶ MLC520R14-600G	600 mm	14 mm		Connector, M12, plastic	8
68020106	◀ MLC500T14-600G	600 mm	14 mm	0 ... 6 m	Connector, M12, plastic	8
68021107	▶ MLC520R14-750G	750 mm	14 mm		Connector, M12, plastic	8
68020107	◀ MLC500T14-750G	750 mm	14 mm	0 ... 6 m	Connector, M12, plastic	8
68021109	▶ MLC520R14-900G	900 mm	14 mm		Connector, M12, plastic	8
68020109	◀ MLC500T14-900G	900 mm	14 mm	0 ... 6 m	Connector, M12, plastic	8
68021110	▶ MLC520R14-1050G	1,050 mm	14 mm		Connector, M12, plastic	8
68020110	◀ MLC500T14-1050G	1,050 mm	14 mm	0 ... 6 m	Connector, M12, plastic	8
68021112	▶ MLC520R14-1200G	1,200 mm	14 mm		Connector, M12, plastic	8
68020112	◀ MLC500T14-1200G	1,200 mm	14 mm	0 ... 6 m	Connector, M12, plastic	8
68021113	▶ MLC520R14-1350G	1,350 mm	14 mm		Connector, M12, plastic	8
68020113	◀ MLC500T14-1350G	1,350 mm	14 mm	0 ... 6 m	Connector, M12, plastic	8
68021115	▶ MLC520R14-1500G	1,500 mm	14 mm		Connector, M12, plastic	8
68020115	◀ MLC500T14-1500G	1,500 mm	14 mm	0 ... 6 m	Connector, M12, plastic	8
68021116	▶ MLC520R14-1650G	1,650 mm	14 mm		Connector, M12, plastic	8
68020116	◀ MLC500T14-1650G	1,650 mm	14 mm	0 ... 6 m	Connector, M12, plastic	8
68021118	▶ MLC520R14-1800G	1,800 mm	14 mm		Connector, M12, plastic	8
68020118	◀ MLC500T14-1800G	1,800 mm	14 mm	0 ... 6 m	Connector, M12, plastic	8

Included in delivery: sliding blocks.

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/// MLC 300



The 300 series MLC safety light curtains are the latest generation of extremely slim and robust type 2 devices with slightly set back front screen and reinforced side walls. The devices are available in the Basic and Standard versions, thereby fulfilling various requirements. They can be used universally, due to metal end caps, a flexible fastening concept and the option of form-locking installation. There are also variants which have an AIDA-compliant pin assignment.



PART NUMBER CODES – safety light curtains MLC 500 and MLC 300

MLC 300 T 14 h h h H

<b>Model</b>	MLC Safety light curtain
<b>Series</b>	3 MLC 300 5 MLC 500
<b>Function</b>	00 Transmitter 01 Transmitter (AIDA) 10 Automatic restart 11 Automatic restart (AIDA) 20 EDM/RES selectable 30 Muting/Blanking/Linkage (only MLC 530)
<b>Device type (only MLC 520)</b>	T Transmitter R Receiver
<b>Resolution</b>	14 14 mm / range 0 – 6 m (only MLC 500) 20 20 mm / range 0 – 14 m 30 30 mm / range 0 – 10 m 40 40 mm / range 0 – 20 m 90 90 mm / range 0 – 20 m
<b>Protective field height</b>	hhhh 150...3000 mm
<b>Host/guest (only MLC 520)</b>	H Host MG MiddleGuest G Guest

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## MLC 310

This type 2 Basic version provides the most important functions. Range reduction on the transmitter, reversible transmission channels, a LED display as well as an automatic start/restart interlock round out the range of service.

### Benefits:

- Automatic start/restart
- Optimal handling
- Prevention of mutual interference of the sensors by selectable transmission channels and range reduction, if applicable
- Universal application due to standard functions
- Short delivery times and global availability
- QR code on the sensor for quick service information

Part no.	Part description	Protective field height	Resolution	Operating range	Connection	No. of pins	Function package
68091201	▶ MLC310R20-150	150 mm	20 mm		Connector, M12, metal	5	Basic
68090201	◀ MLC300T20-150	150 mm	20 mm	0 ... 15 m	Connector, M12, metal	5	
68091202	▶ MLC310R20-225	225 mm	20 mm		Connector, M12, metal	5	Basic
68090202	◀ MLC300T20-225	225 mm	20 mm	0 ... 15 m	Connector, M12, metal	5	
68091203	▶ MLC310R20-300	300 mm	20 mm		Connector, M12, metal	5	Basic
68090203	◀ MLC300T20-300	300 mm	20 mm	0 ... 15 m	Connector, M12, metal	5	
68091204	▶ MLC310R20-450	450 mm	20 mm		Connector, M12, metal	5	Basic
68090204	◀ MLC300T20-450	450 mm	20 mm	0 ... 15 m	Connector, M12, metal	5	
68091206	▶ MLC310R20-600	600 mm	20 mm		Connector, M12, metal	5	Basic
68090206	◀ MLC300T20-600	600 mm	20 mm	0 ... 15 m	Connector, M12, metal	5	
68091207	▶ MLC310R20-750	750 mm	20 mm		Connector, M12, metal	5	Basic
68090207	◀ MLC300T20-750	750 mm	20 mm	0 ... 15 m	Connector, M12, metal	5	
68091209	▶ MLC310R20-900	900 mm	20 mm		Connector, M12, metal	5	Basic
68090209	◀ MLC300T20-900	900 mm	20 mm	0 ... 15 m	Connector, M12, metal	5	
68091210	▶ MLC310R20-1050	1,050 mm	20 mm		Connector, M12, metal	5	Basic
68090210	◀ MLC300T20-1050	1,050 mm	20 mm	0 ... 15 m	Connector, M12, metal	5	
68091212	▶ MLC310R20-1200	1,200 mm	20 mm		Connector, M12, metal	5	Basic
68090212	◀ MLC300T20-1200	1,200 mm	20 mm	0 ... 15 m	Connector, M12, metal	5	
68091213	▶ MLC310R20-1350	1,350 mm	20 mm		Connector, M12, metal	5	Basic
68090213	◀ MLC300T20-1350	1,350 mm	20 mm	0 ... 15 m	Connector, M12, metal	5	
68091215	▶ MLC310R20-1500	1,500 mm	20 mm		Connector, M12, metal	5	Basic
68090215	◀ MLC300T20-1500	1,500 mm	20 mm	0 ... 15 m	Connector, M12, metal	5	
68091216	▶ MLC310R20-1650	1,650 mm	20 mm		Connector, M12, metal	5	Basic
68090216	◀ MLC300T20-1650	1,650 mm	20 mm	0 ... 15 m	Connector, M12, metal	5	
68091218	▶ MLC310R20-1800	1,800 mm	20 mm		Connector, M12, metal	5	Basic
68090218	◀ MLC300T20-1800	1,800 mm	20 mm	0 ... 15 m	Connector, M12, metal	5	

Included in delivery: sliding blocks.

## MLC 311

The devices have a plug connection with AIDA-compliant M12 pin assignment (Automatisierungs-Initiative deutscher Automobilisten (AIDA) = Automation Initiative of German automobile manufacturers).

### Benefits:

- Basic functions such as automatic start/restart, start/restart interlock (RES), contactor monitoring (EDM)
- Optimal handling due to function selection without PC as well as LED and 7-segment display with integrated 3-zone alignment aid
- Range reduction on demand
- Universal application due to standard functions
- Short delivery times and global availability
- QR code on the sensor for quick service information

Part no.	Part description	Protective field height	Resolution	Operating range	Connection	No. of pins	Function package
68095403	▶ MLC311R40-300	300 mm	40 mm		Connector, M12, metal	4	Basic
68094403	◀ MLC301T40-300	300 mm	40 mm	0 ... 20 m	Connector, M12, metal	4	
68095404	▶ MLC311R40-450	450 mm	40 mm		Connector, M12, metal	4	Basic
68094404	◀ MLC301T40-450	450 mm	40 mm	0 ... 20 m	Connector, M12, metal	4	
68095406	▶ MLC311R40-600	600 mm	40 mm		Connector, M12, metal	4	Basic
68094406	◀ MLC301T40-600	600 mm	40 mm	0 ... 20 m	Connector, M12, metal	4	
68095407	▶ MLC311R40-750	750 mm	40 mm		Connector, M12, metal	4	Basic
68094407	◀ MLC301T40-750	750 mm	40 mm	0 ... 20 m	Connector, M12, metal	4	

Included in delivery: sliding blocks.

Part no.	Part description	Protective field height	Resolution	Operating range	Connection	No. of pins	Function package
68095409	▶ MLC311R40-900	900 mm	40 mm		Connector, M12, metal	4	Basic
68094409	◀ MLC301T40-900	900 mm	40 mm	0 ... 20 m	Connector, M12, metal	4	
68095410	▶ MLC311R40-1050	1,050 mm	40 mm		Connector, M12, metal	4	Basic
68094410	◀ MLC301T40-1050	1,050 mm	40 mm	0 ... 20 m	Connector, M12, metal	4	
68095412	▶ MLC311R40-1200	1,200 mm	40 mm		Connector, M12, metal	4	Basic
68094412	◀ MLC301T40-1200	1,200 mm	40 mm	0 ... 20 m	Connector, M12, metal	4	

Included in delivery: sliding blocks.

## MLC 320

The Standard version of this type 2 safety light curtain, with a start/restart interlock (RES) and contactor monitoring (EDM), also features practical function extensions for increased performance – still being simple to handle and integrate into your systems.

### Benefits:

- Basic functions such as automatic start/restart, start/restart interlock (RES), contactor monitoring (EDM)
- Optimal handling due to function selection without PC as well as LED and 7-segment display with integrated 3-zone alignment aid
- Prevention of mutual interference of the sensors by selectable transmission channels and range reduction, if applicable
- Universal application due to standard functions
- Short delivery times and global availability
- QR code on the sensor for quick service information

Part no.	Part description	Protective field height	Resolution	Operating range	Connection	No. of pins	Function package
68092201	▶ MLC320R20-150	150 mm	20 mm		Connector, M12, metal	8	Standard
68090201	◀ MLC300T20-150	150 mm	20 mm	0 ... 15 m	Connector, M12, metal	5	
68092202	▶ MLC320R20-225	225 mm	20 mm		Connector, M12, metal	8	Standard
68090202	◀ MLC300T20-225	225 mm	20 mm	0 ... 15 m	Connector, M12, metal	5	
68092203	▶ MLC320R20-300	300 mm	20 mm		Connector, M12, metal	8	Standard
68090203	◀ MLC300T20-300	300 mm	20 mm	0 ... 15 m	Connector, M12, metal	5	
68092204	▶ MLC320R20-450	450 mm	20 mm		Connector, M12, metal	8	Standard
68090204	◀ MLC300T20-450	450 mm	20 mm	0 ... 15 m	Connector, M12, metal	5	
68092206	▶ MLC320R20-600	600 mm	20 mm		Connector, M12, metal	8	Standard
68090206	◀ MLC300T20-600	600 mm	20 mm	0 ... 15 m	Connector, M12, metal	5	
68092207	▶ MLC320R20-750	750 mm	20 mm		Connector, M12, metal	8	Standard
68090207	◀ MLC300T20-750	750 mm	20 mm	0 ... 15 m	Connector, M12, metal	5	
68092209	▶ MLC320R20-900	900 mm	20 mm		Connector, M12, metal	8	Standard
68090209	◀ MLC300T20-900	900 mm	20 mm	0 ... 15 m	Connector, M12, metal	5	
68092210	▶ MLC320R20-1050	1,050 mm	20 mm		Connector, M12, metal	8	Standard
68090210	◀ MLC300T20-1050	1,050 mm	20 mm	0 ... 15 m	Connector, M12, metal	5	
68092212	▶ MLC320R20-1200	1,200 mm	20 mm		Connector, M12, metal	8	Standard
68090212	◀ MLC300T20-1200	1,200 mm	20 mm	0 ... 15 m	Connector, M12, metal	5	
68092213	▶ MLC320R20-1350	1,350 mm	20 mm		Connector, M12, metal	8	Standard
68090213	◀ MLC300T20-1350	1,350 mm	20 mm	0 ... 15 m	Connector, M12, metal	5	
68092215	▶ MLC320R20-1500	1,500 mm	20 mm		Connector, M12, metal	8	Standard
68090215	◀ MLC300T20-1500	1,500 mm	20 mm	0 ... 15 m	Connector, M12, metal	5	
68092216	▶ MLC320R20-1650	1,650 mm	20 mm		Connector, M12, metal	8	Standard
68090216	◀ MLC300T20-1650	1,650 mm	20 mm	0 ... 15 m	Connector, M12, metal	5	
68092218	▶ MLC320R20-1800	1,800 mm	20 mm		Connector, M12, metal	8	Standard
68090218	◀ MLC300T20-1800	1,800 mm	20 mm	0 ... 15 m	Connector, M12, metal	5	

Included in delivery: sliding blocks.

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# //MULTIPLE LIGHT BEAM SAFETY DEVICES

## WHEN FUNCTIONALITY BECOMES ECONOMICAL

Multiple light beam safety devices with muting function ensure constant personnel protection (access guarding) with unobstructed material infeed, e. g., in conveyor systems. Options such as the integrated Laser Alignment Aid, an integrated muting indicator and the patented swivel mount for easy fastening and alignment round out the program.

### /// MLD 500



This type 4 series can be used both for access guarding as well as for applications with muting. Through various function classes (MLD 510, 520, 530, 535), the optimum design can always be selected. Configuration via PC or DIP switch is not necessary.



PART NUMBER CODES – multiple light beam safety devices MLD 500 and MLD 300

MLD 3 0 0 T 2 L -

**Model**

MLD Multiple light beam safety device

**Series**

3 MLD 300  
5 MLD 500

**Function**

00 Transmitter  
10 Automatic restart  
12 External testing (only MLD 300)  
20 Start/restart interlock selectable, contactor monitoring selectable  
30 2-sensor muting (timing controlled, sequence controlled)  
35 4-sensor muting (timing controlled)

**Device type**

T Transmitter  
R Receiver  
RT Transceiver  
xT Transmitter for high range  
xR Receiver for high range

**No. of beams**

2 2-beam  
3 3-beam  
4 4-beam

**Option**

L Integrated laser alignment aid  
M Integrated indicator  
E Connection socket for external muting indicator (only AS-i variants)

**Safety-related switching outputs (OSSD), connection system**

- Transistor output, M12 plug  
A Integrated AS-Interface, M12 connector (safety bus systems)

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## MLD 510

These multiple light beam safety devices are equipped with an automatic restart.

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### Benefits:

- The configuration is simply performed by means of wiring, i. e. no software, PC or DIP switch are necessary
- The use at ambient temperatures as low as -30 °C is possible
- Options: integrated laser alignment aid, integrated muting indicator

Part no.	Part description	Beam spacing	Number of beams	Operating range	Connection	No. of pins	Interface	Special design
66533500	► MLD510-XR2	500 mm	2		Connector, M12, metal	5		
66501500	◄ MLD500-XT2	500 mm	2	20 ... 70 m	Connector, M12, metal	5		
66533100	► MLD510-R2	500 mm	2		Connector, M12, metal	5		
66501100	◄ MLD500-T2	500 mm	2	0.5 ... 50 m	Connector, M12, metal	5		
66536500	► MLD510-XR2L	500 mm	2		Connector, M12, metal	5		Reflective element for laser alignment aid
66502500	◄ MLD500-XT2L	500 mm	2	20 ... 70 m	Connector, M12, metal	5		Integrated laser alignment aid
66536100	► MLD510-R2L	500 mm	2		Connector, M12, metal	5		Reflective element for laser alignment aid
66502100	◄ MLD500-T2L	500 mm	2	0.5 ... 50 m	Connector, M12, metal	5		Integrated laser alignment aid
66533501	► MLD510-XR2/A	500 mm	2		Connector, M12, metal	5	AS-Interface Safety at Work	
66501501	◄ MLD500-XT2/A	500 mm	2	20 ... 70 m	Connector, M12, metal	5	AS-Interface Safety at Work	
66533101	► MLD510-R2/A	500 mm	2		Connector, M12, metal	5	AS-Interface Safety at Work	
66501101	◄ MLD500-T2/A	500 mm	2	0.5 ... 50 m	Connector, M12, metal	5	AS-Interface Safety at Work	
66533502	► MLD510-XR2E/A	500 mm	2		Connector, M12, metal	5	AS-Interface Safety at Work	Connection socket for external muting indicator
66501501	◄ MLD500-XT2/A	500 mm	2	20 ... 70 m	Connector, M12, metal	5	AS-Interface Safety at Work	
66533102	► MLD510-R2E/A	500 mm	2		Connector, M12, metal	5	AS-Interface Safety at Work	Connection socket for external muting indicator
66501101	◄ MLD500-T2/A	500 mm	2	0.5 ... 50 m	Connector, M12, metal	5	AS-Interface Safety at Work	
66534101	► MLD510-R2M/A	500 mm	2		Connector, M12, metal	5	AS-Interface Safety at Work	Integrated muting indicator Integrated status indicator
66501101	◄ MLD500-T2/A	500 mm	2	0.5 ... 50 m	Connector, M12, metal	5	AS-Interface Safety at Work	
66535101	► MLD510-R2LM/A	500 mm	2		Connector, M12, metal	5	AS-Interface Safety at Work	Integrated muting indicator Integrated status indicator Reflective element for laser alignment aid
66502101	◄ MLD500-T2L/A	500 mm	2	0.5 ... 50 m	Connector, M12, metal	5	AS-Interface Safety at Work	Integrated laser alignment aid
66536501	► MLD510-XR2L/A	500 mm	2		Connector, M12, metal	5	AS-Interface Safety at Work	Reflective element for laser alignment aid
66502501	◄ MLD500-XT2L/A	500 mm	2	20 ... 70 m	Connector, M12, metal	5	AS-Interface Safety at Work	Integrated laser alignment aid
66536101	► MLD510-R2L/A	500 mm	2		Connector, M12, metal	5	AS-Interface Safety at Work	Reflective element for laser alignment aid
66502101	◄ MLD500-T2L/A	500 mm	2	0.5 ... 50 m	Connector, M12, metal	5	AS-Interface Safety at Work	Integrated laser alignment aid
66536502	► MLD510-XR2LE/A	500 mm	2		Connector, M12, metal	5	AS-Interface Safety at Work	Reflective element for laser alignment aid Connection socket for external muting indicator
66502501	◄ MLD500-XT2L/A	500 mm	2	20 ... 70 m	Connector, M12, metal	5	AS-Interface Safety at Work	Integrated laser alignment aid
66536102	► MLD510-R2LE/A	500 mm	2		Connector, M12, metal	5	AS-Interface Safety at Work	Reflective element for laser alignment aid Connection socket for external muting indicator
66502101	◄ MLD500-T2L/A	500 mm	2	0.5 ... 50 m	Connector, M12, metal	5	AS-Interface Safety at Work	Integrated laser alignment aid
66533600	► MLD510-XR3	400 mm	3		Connector, M12, metal	5		
66501600	◄ MLD500-XT3	400 mm	3	20 ... 70 m	Connector, M12, metal	5		
66533200	► MLD510-R3	400 mm	3		Connector, M12, metal	5		
66501200	◄ MLD500-T3	400 mm	3	0.5 ... 50 m	Connector, M12, metal	5		
66536600	► MLD510-XR3L	400 mm	3		Connector, M12, metal	5		Reflective element for laser alignment aid
66502600	◄ MLD500-XT3L	400 mm	3	20 ... 70 m	Connector, M12, metal	5		Integrated laser alignment aid
66536200	► MLD510-R3L	400 mm	3		Connector, M12, metal	5		Reflective element for laser alignment aid
66502200	◄ MLD500-T3L	400 mm	3	0.5 ... 50 m	Connector, M12, metal	5		Integrated laser alignment aid
66533601	► MLD510-XR3/A	400 mm	3		Connector, M12, metal	5	AS-Interface Safety at Work	
66501601	◄ MLD500-XT3/A	400 mm	3	20 ... 70 m	Connector, M12, metal	5	AS-Interface Safety at Work	
66533201	► MLD510-R3/A	400 mm	3		Connector, M12, metal	5	AS-Interface Safety at Work	
66501201	◄ MLD500-T3/A	400 mm	3	0.5 ... 50 m	Connector, M12, metal	5	AS-Interface Safety at Work	
66533602	► MLD510-XR3E/A	400 mm	3		Connector, M12, metal	5	AS-Interface Safety at Work	Connection socket for external muting indicator
66501601	◄ MLD500-XT3/A	400 mm	3	20 ... 70 m	Connector, M12, metal	5	AS-Interface Safety at Work	
66533202	► MLD510-R3E/A	400 mm	3		Connector, M12, metal	5	AS-Interface Safety at Work	Connection socket for external muting indicator
66501201	◄ MLD500-T3/A	400 mm	3	0.5 ... 50 m	Connector, M12, metal	5	AS-Interface Safety at Work	
66536602	► MLD510-XR3LE/A	400 mm	3		Connector, M12, metal	5	AS-Interface Safety at Work	Reflective element for laser alignment aid Connection socket for external muting indicator
66502601	◄ MLD500-XT3L/A	400 mm	3	20 ... 70 m	Connector, M12, metal	5	AS-Interface Safety at Work	Integrated laser alignment aid
66536202	► MLD510-R3LE/A	400 mm	3		Connector, M12, metal	5	AS-Interface Safety at Work	Reflective element for laser alignment aid Connection socket for external muting indicator
66502201	◄ MLD500-T3L/A	400 mm	3	0.5 ... 50 m	Connector, M12, metal	5	AS-Interface Safety at Work	Integrated laser alignment aid
66534201	► MLD510-R3M/A	400 mm	3		Connector, M12, metal	5	AS-Interface Safety at Work	Integrated muting indicator Integrated status indicator
66501201	◄ MLD500-T3/A	400 mm	3	0.5 ... 50 m	Connector, M12, metal	5	AS-Interface Safety at Work	
66535201	► MLD510-R3LM/A	400 mm	3		Connector, M12, metal	5	AS-Interface Safety at Work	Integrated muting indicator Integrated status indicator Reflective element for laser alignment aid
66502201	◄ MLD500-T3L/A	400 mm	3	0.5 ... 50 m	Connector, M12, metal	5	AS-Interface Safety at Work	Integrated laser alignment aid

Included in delivery: sliding blocks  
► receiver / ◄ transmitter

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Accessories

Part no.	Part description	Beam spacing	Number of beams	Operating range	Connection	No. of pins	Interface	Special design
66536601	▶ MLD510-XR3L/A	400 mm	3		Connector, M12, metal	5	AS-Interface Safety at Work	Reflective element for laser alignment aid
66502601	◀ MLD500-XT3L/A	400 mm	3	20 ... 70 m	Connector, M12, metal	5	AS-Interface Safety at Work	Integrated laser alignment aid
66536201	▶ MLD510-R3L/A	400 mm	3		Connector, M12, metal	5	AS-Interface Safety at Work	Reflective element for laser alignment aid
66502201	◀ MLD500-T3L/A	400 mm	3	0.5 ... 50 m	Connector, M12, metal	5	AS-Interface Safety at Work	Integrated laser alignment aid
66533700	▶ MLD510-XR4	300 mm	4		Connector, M12, metal	5		
66501700	◀ MLD500-XT4	300 mm	4	20 ... 70 m	Connector, M12, metal	5		
66533300	▶ MLD510-R4	300 mm	4		Connector, M12, metal	5		
66501300	◀ MLD500-T4	300 mm	4	0.5 ... 50 m	Connector, M12, metal	5		
66536700	▶ MLD510-XR4L	300 mm	4		Connector, M12, metal	5		Reflective element for laser alignment aid
66502700	◀ MLD500-XT4L	300 mm	4	20 ... 70 m	Connector, M12, metal	5		Integrated laser alignment aid
66536300	▶ MLD510-R4L	300 mm	4		Connector, M12, metal	5		Reflective element for laser alignment aid
66502300	◀ MLD500-T4L	300 mm	4	0.5 ... 50 m	Connector, M12, metal	5		Integrated laser alignment aid
66533701	▶ MLD510-XR4/A	300 mm	4		Connector, M12, metal	5	AS-Interface Safety at Work	
66501701	◀ MLD500-XT4/A	300 mm	4	20 ... 70 m	Connector, M12, metal	5	AS-Interface Safety at Work	
66533301	▶ MLD510-R4/A	300 mm	4		Connector, M12, metal	5	AS-Interface Safety at Work	
66501301	◀ MLD500-T4/A	300 mm	4	0.5 ... 50 m	Connector, M12, metal	5	AS-Interface Safety at Work	
66533702	▶ MLD510-XR4E/A	300 mm	4		Connector, M12, metal	5	AS-Interface Safety at Work	Connection socket for external muting indicator
66501701	◀ MLD500-XT4/A	300 mm	4	20 ... 70 m	Connector, M12, metal	5	AS-Interface Safety at Work	
66533302	▶ MLD510-R4E/A	300 mm	4		Connector, M12, metal	5	AS-Interface Safety at Work	Connection socket for external muting indicator
66501301	◀ MLD500-T4/A	300 mm	4	0.5 ... 50 m	Connector, M12, metal	5	AS-Interface Safety at Work	
66534301	▶ MLD510-R4M/A	300 mm	4		Connector, M12, metal	5	AS-Interface Safety at Work	Integrated muting indicator Integrated status indicator
66501301	◀ MLD500-T4/A	300 mm	4	0.5 ... 50 m	Connector, M12, metal	5	AS-Interface Safety at Work	
66535301	▶ MLD510-R4LM/A	300 mm	4		Connector, M12, metal	5	AS-Interface Safety at Work	Integrated muting indicator Integrated status indicator Reflective element for laser alignment aid
66502301	◀ MLD500-T4L/A	300 mm	4	0.5 ... 50 m	Connector, M12, metal	5	AS-Interface Safety at Work	Integrated laser alignment aid
66536701	▶ MLD510-XR4L/A	300 mm	4		Connector, M12, metal	5	AS-Interface Safety at Work	Reflective element for laser alignment aid
66502701	◀ MLD500-XT4L/A	300 mm	4	20 ... 70 m	Connector, M12, metal	5	AS-Interface Safety at Work	Integrated laser alignment aid
66536301	▶ MLD510-R4L/A	300 mm	4		Connector, M12, metal	5	AS-Interface Safety at Work	Reflective element for laser alignment aid
66502301	◀ MLD500-T4L/A	300 mm	4	0.5 ... 50 m	Connector, M12, metal	5	AS-Interface Safety at Work	Integrated laser alignment aid
66536702	▶ MLD510-XR4LE/A	300 mm	4		Connector, M12, metal	5	AS-Interface Safety at Work	Reflective element for laser alignment aid Connection socket for external muting indicator
66502701	◀ MLD500-XT4L/A	300 mm	4	20 ... 70 m	Connector, M12, metal	5	AS-Interface Safety at Work	Integrated laser alignment aid
66536302	▶ MLD510-R4LE/A	300 mm	4		Connector, M12, metal	5	AS-Interface Safety at Work	Reflective element for laser alignment aid Connection socket for external muting indicator
66502301	◀ MLD500-T4L/A	300 mm	4	0.5 ... 50 m	Connector, M12, metal	5	AS-Interface Safety at Work	Integrated laser alignment aid

Included in delivery: sliding blocks  
▶ receiver / ◀ transmitter

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## MLD 520

These multiple light beam safety devices offer a selectable start/restart interlock (RES) and contactor monitoring (EDM).

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### Benefits:

- The configuration is simply performed by means of wiring, i. e. no software, PC or DIP switch are necessary
- The use at ambient temperatures as low as -30 °C is possible
- Start/restart interlock (RES), selectable
- Contactor monitoring (EDM), selectable
- Options: integrated laser alignment aid, integrated muting indicator

Part no.	Part description	Beam spacing	Number of beams	Operating range	Connection	No. of pins	Special design
66553500	► MLD520-XR2	500 mm	2		Connector, M12, metal	8	
66501500	◄ MLD500-XT2	500 mm	2	20 ... 70 m	Connector, M12, metal	5	
66553100	► MLD520-R2	500 mm	2		Connector, M12, metal	8	
66501100	◄ MLD500-T2	500 mm	2	0.5 ... 50 m	Connector, M12, metal	5	
66554500	► MLD520-XR2M	500 mm	2		Connector, M12, metal	8	Integrated status indicator
66501500	◄ MLD500-XT2	500 mm	2	20 ... 70 m	Connector, M12, metal	5	
66554100	► MLD520-R2M	500 mm	2		Connector, M12, metal	8	Integrated status indicator
66501100	◄ MLD500-T2	500 mm	2	0.5 ... 50 m	Connector, M12, metal	5	
66555500	► MLD520-XR2LM	500 mm	2		Connector, M12, metal	8	Integrated status indicator Reflective element for laser alignment aid
66502500	◄ MLD500-XT2L	500 mm	2	20 ... 70 m	Connector, M12, metal	5	Integrated laser alignment aid
66555100	► MLD520-R2LM	500 mm	2		Connector, M12, metal	8	Integrated status indicator Reflective element for laser alignment aid
66502100	◄ MLD500-T2L	500 mm	2	0.5 ... 50 m	Connector, M12, metal	5	Integrated laser alignment aid
66556500	► MLD520-XR2L	500 mm	2		Connector, M12, metal	8	Reflective element for laser alignment aid
66502500	◄ MLD500-XT2L	500 mm	2	20 ... 70 m	Connector, M12, metal	5	Integrated laser alignment aid
66556100	► MLD520-R2L	500 mm	2		Connector, M12, metal	8	Reflective element for laser alignment aid
66502100	◄ MLD500-T2L	500 mm	2	0.5 ... 50 m	Connector, M12, metal	5	Integrated laser alignment aid
66553600	► MLD520-XR3	400 mm	3		Connector, M12, metal	8	
66501600	◄ MLD500-XT3	400 mm	3	20 ... 70 m	Connector, M12, metal	5	
66553200	► MLD520-R3	400 mm	3		Connector, M12, metal	8	
66501200	◄ MLD500-T3	400 mm	3	0.5 ... 50 m	Connector, M12, metal	5	
66554600	► MLD520-XR3M	400 mm	3		Connector, M12, metal	8	Integrated status indicator
66501600	◄ MLD500-XT3	400 mm	3	20 ... 70 m	Connector, M12, metal	5	
66554200	► MLD520-R3M	400 mm	3		Connector, M12, metal	8	Integrated status indicator
66501200	◄ MLD500-T3	400 mm	3	0.5 ... 50 m	Connector, M12, metal	5	
66555600	► MLD520-XR3LM	400 mm	3		Connector, M12, metal	8	Integrated status indicator Reflective element for laser alignment aid
66502600	◄ MLD500-XT3L	400 mm	3	20 ... 70 m	Connector, M12, metal	5	Integrated laser alignment aid
66555200	► MLD520-R3LM	400 mm	3		Connector, M12, metal	8	Integrated status indicator Reflective element for laser alignment aid
66502200	◄ MLD500-T3L	400 mm	3	0.5 ... 50 m	Connector, M12, metal	5	Integrated laser alignment aid
66556600	► MLD520-XR3L	400 mm	3		Connector, M12, metal	8	Reflective element for laser alignment aid
66502600	◄ MLD500-XT3L	400 mm	3	20 ... 70 m	Connector, M12, metal	5	Integrated laser alignment aid
66556200	► MLD520-R3L	400 mm	3		Connector, M12, metal	8	Reflective element for laser alignment aid
66502200	◄ MLD500-T3L	400 mm	3	0.5 ... 50 m	Connector, M12, metal	5	Integrated laser alignment aid
66553700	► MLD520-XR4	300 mm	4		Connector, M12, metal	8	
66501700	◄ MLD500-XT4	300 mm	4	20 ... 70 m	Connector, M12, metal	5	
66553300	► MLD520-R4	300 mm	4		Connector, M12, metal	8	
66501300	◄ MLD500-T4	300 mm	4	0.5 ... 50 m	Connector, M12, metal	5	
66554700	► MLD520-XR4M	300 mm	4		Connector, M12, metal	8	Integrated status indicator
66501700	◄ MLD500-XT4	300 mm	4	20 ... 70 m	Connector, M12, metal	5	
66554300	► MLD520-R4M	300 mm	4		Connector, M12, metal	8	Integrated status indicator
66501300	◄ MLD500-T4	300 mm	4	0.5 ... 50 m	Connector, M12, metal	5	
66555700	► MLD520-XR4LM	300 mm	4		Connector, M12, metal	8	Integrated status indicator Reflective element for laser alignment aid
66502700	◄ MLD500-XT4L	300 mm	4	20 ... 70 m	Connector, M12, metal	5	Integrated laser alignment aid
66555300	► MLD520-R4LM	300 mm	4		Connector, M12, metal	8	Integrated status indicator Reflective element for laser alignment aid
66502300	◄ MLD500-T4L	300 mm	4	0.5 ... 50 m	Connector, M12, metal	5	Integrated laser alignment aid
66556700	► MLD520-XR4L	300 mm	4		Connector, M12, metal	8	Reflective element for laser alignment aid
66502700	◄ MLD500-XT4L	300 mm	4	20 ... 70 m	Connector, M12, metal	5	Integrated laser alignment aid
66556300	► MLD520-R4L	300 mm	4		Connector, M12, metal	8	Reflective element for laser alignment aid
66502300	◄ MLD500-T4L	300 mm	4	0.5 ... 50 m	Connector, M12, metal	5	Integrated laser alignment aid

Included in delivery: sliding blocks  
► receiver / ◄ transmitter

Switching  
Sensors

Measuring  
Sensors

Products for  
Safety at Work

Identification

Data Transmission /  
Control Components

Industrial Image  
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Accessories

## MLD 530

Many functions, such as start/restart interlock, contactor monitoring, timing controlled 2-sensor muting and sequence controlled 2-sensor muting, ensure great flexibility.

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### Benefits:

- The configuration is simply performed by means of wiring, i. e. no software, PC or DIP switch are necessary
- The use at ambient temperatures as low as  $-30^{\circ}\text{C}$  is possible
- Start/restart interlock (RES), selectable
- Contactor monitoring (EDM), selectable
- Configurable operating modes
- Integrated muting function, no additional muting module is necessary
- 2-sensor muting, (timing controlled, sequential)
- Options: integrated laser alignment aid, integrated muting indicator, 7-segment display

Part no.	Part description	Beam spacing	Number of beams	Operating range	Connection	No. of pins	Special design
66563500	► MLD530-XR2	500 mm	2		Connector, M12, metal	8	
66501500	◄ MLD500-XT2	500 mm	2	20 ... 70 m	Connector, M12, metal	5	
66563100	► MLD530-R2	500 mm	2		Connector, M12, metal	8	
66501100	◄ MLD500-T2	500 mm	2	0.5 ... 50 m	Connector, M12, metal	5	
66564100	► MLD530-R2M	500 mm	2		Connector, M12, metal	8	Integrated muting indicator Integrated status indicator
66501100	◄ MLD500-T2	500 mm	2	0.5 ... 50 m	Connector, M12, metal	5	
66565100	► MLD530-R2LM	500 mm	2		Connector, M12, metal	8	Integrated muting indicator Integrated status indicator Reflective element for laser alignment aid
66502100	◄ MLD500-T2L	500 mm	2	0.5 ... 50 m	Connector, M12, metal	5	Integrated laser alignment aid
66566500	► MLD530-XR2L	500 mm	2		Connector, M12, metal	8	Reflective element for laser alignment aid
66502500	◄ MLD500-XT2L	500 mm	2	20 ... 70 m	Connector, M12, metal	5	Integrated laser alignment aid
66566100	► MLD530-R2L	500 mm	2		Connector, M12, metal	8	Reflective element for laser alignment aid
66502100	◄ MLD500-T2L	500 mm	2	0.5 ... 50 m	Connector, M12, metal	5	Integrated laser alignment aid
66563600	► MLD530-XR3	400 mm	3		Connector, M12, metal	8	
66501600	◄ MLD500-XT3	400 mm	3	20 ... 70 m	Connector, M12, metal	5	
66563200	► MLD530-R3	400 mm	3		Connector, M12, metal	8	
66501200	◄ MLD500-T3	400 mm	3	0.5 ... 50 m	Connector, M12, metal	5	
66564200	► MLD530-R3M	400 mm	3		Connector, M12, metal	8	Integrated muting indicator Integrated status indicator
66501200	◄ MLD500-T3	400 mm	3	0.5 ... 50 m	Connector, M12, metal	5	
66565200	► MLD530-R3LM	400 mm	3		Connector, M12, metal	8	Integrated muting indicator Integrated status indicator Reflective element for laser alignment aid
66502200	◄ MLD500-T3L	400 mm	3	0.5 ... 50 m	Connector, M12, metal	5	Integrated laser alignment aid
66566600	► MLD530-XR3L	400 mm	3		Connector, M12, metal	8	Reflective element for laser alignment aid
66502600	◄ MLD500-XT3L	400 mm	3	20 ... 70 m	Connector, M12, metal	5	Integrated laser alignment aid
66566200	► MLD530-R3L	400 mm	3		Connector, M12, metal	8	Reflective element for laser alignment aid
66502200	◄ MLD500-T3L	400 mm	3	0.5 ... 50 m	Connector, M12, metal	5	Integrated laser alignment aid
66563700	► MLD530-XR4	300 mm	4		Connector, M12, metal	8	
66501700	◄ MLD500-XT4	300 mm	4	20 ... 70 m	Connector, M12, metal	5	
66563300	► MLD530-R4	300 mm	4		Connector, M12, metal	8	
66501300	◄ MLD500-T4	300 mm	4	0.5 ... 50 m	Connector, M12, metal	5	
66564300	► MLD530-R4M	300 mm	4		Connector, M12, metal	8	Integrated muting indicator Integrated status indicator
66501300	◄ MLD500-T4	300 mm	4	0.5 ... 50 m	Connector, M12, metal	5	
66565300	► MLD530-R4LM	300 mm	4		Connector, M12, metal	8	Integrated muting indicator Integrated status indicator Reflective element for laser alignment aid
66502300	◄ MLD500-T4L	300 mm	4	0.5 ... 50 m	Connector, M12, metal	5	Integrated laser alignment aid
66566700	► MLD530-XR4L	300 mm	4		Connector, M12, metal	8	Reflective element for laser alignment aid
66502700	◄ MLD500-XT4L	300 mm	4	20 ... 70 m	Connector, M12, metal	5	Integrated laser alignment aid
66566300	► MLD530-R4L	300 mm	4		Connector, M12, metal	8	Reflective element for laser alignment aid
66502300	◄ MLD500-T4L	300 mm	4	0.5 ... 50 m	Connector, M12, metal	5	Integrated laser alignment aid

Included in delivery: sliding blocks  
 ► receiver / ◄ transmitter

## MLD 535

Through extensive functions, such as start/restart interlock, contactor monitoring, timing controlled 2-sensor muting, sequence controlled 2-sensor muting and timing controlled 4-sensor muting, these multiple light beam safety devices can be used in different areas.

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### Benefits:

- The configuration is simply performed by means of wiring, i. e. no software, PC or DIP switch are necessary
- The use at ambient temperatures as low as -30 °C is possible
- Start/restart interlock (RES), selectable
- Contactor monitoring (EDM), selectable
- Configurable operating modes
- Integrated muting function, no additional muting module is necessary
- 2-sensor muting, (timing controlled, sequential)
- Timing controlled 4-sensor muting
- Options: integrated laser alignment aid, integrated muting indicator, 7-segment display

Part no.	Part description	Beam spacing	Number of beams	Operating range	Connection	No. of pins	Special design
66573500	► MLD535-XR2	500 mm	2		Connector, M12, metal	8	
66501500	◄ MLD500-XT2	500 mm	2	20 ... 70 m	Connector, M12, metal	5	
66573100	► MLD535-R2	500 mm	2		Connector, M12, metal	8	
66501100	◄ MLD500-T2	500 mm	2	0.5 ... 50 m	Connector, M12, metal	5	
66574100	► MLD535-R2M	500 mm	2		Connector, M12, metal	8	Integrated muting indicator Integrated status indicator
66501100	◄ MLD500-T2	500 mm	2	0.5 ... 50 m	Connector, M12, metal	5	
66575100	► MLD535-R2LM	500 mm	2		Connector, M12, metal	8	Integrated muting indicator Integrated status indicator Reflective element for laser alignment aid
66502100	◄ MLD500-T2L	500 mm	2	0.5 ... 50 m	Connector, M12, metal	5	Integrated laser alignment aid
66576500	► MLD535-XR2L	500 mm	2		Connector, M12, metal	8	Reflective element for laser alignment aid
66502500	◄ MLD500-XT2L	500 mm	2	20 ... 70 m	Connector, M12, metal	5	Integrated laser alignment aid
66576100	► MLD535-R2L	500 mm	2		Connector, M12, metal	8	Reflective element for laser alignment aid
66502100	◄ MLD500-T2L	500 mm	2	0.5 ... 50 m	Connector, M12, metal	5	Integrated laser alignment aid
66573600	► MLD535-XR3	400 mm	3		Connector, M12, metal	8	
66501600	◄ MLD500-XT3	400 mm	3	20 ... 70 m	Connector, M12, metal	5	
66573200	► MLD535-R3	400 mm	3		Connector, M12, metal	8	
66501200	◄ MLD500-T3	400 mm	3	0.5 ... 50 m	Connector, M12, metal	5	
66574200	► MLD535-R3M	400 mm	3		Connector, M12, metal	8	Integrated muting indicator Integrated status indicator
66501200	◄ MLD500-T3	400 mm	3	0.5 ... 50 m	Connector, M12, metal	5	
66575200	► MLD535-R3LM	400 mm	3		Connector, M12, metal	8	Integrated muting indicator Integrated status indicator Reflective element for laser alignment aid
66502200	◄ MLD500-T3L	400 mm	3	0.5 ... 50 m	Connector, M12, metal	5	Integrated laser alignment aid
66576200	► MLD535-R3L	400 mm	3		Connector, M12, metal	8	Reflective element for laser alignment aid
66502200	◄ MLD500-T3L	400 mm	3	0.5 ... 50 m	Connector, M12, metal	5	Integrated laser alignment aid
66576600	► MLD535-XR3L	400 mm	3		Connector, M12, metal	8	Reflective element for laser alignment aid
66502600	◄ MLD500-XT3L	400 mm	3	20 ... 70 m	Connector, M12, metal	5	Integrated laser alignment aid
66573700	► MLD535-XR4	300 mm	4		Connector, M12, metal	8	
66501700	◄ MLD500-XT4	300 mm	4	20 ... 70 m	Connector, M12, metal	5	
66573300	► MLD535-R4	300 mm	4		Connector, M12, metal	8	
66501300	◄ MLD500-T4	300 mm	4	0.5 ... 50 m	Connector, M12, metal	5	
66574300	► MLD535-R4M	300 mm	4		Connector, M12, metal	8	Integrated muting indicator Integrated status indicator
66501300	◄ MLD500-T4	300 mm	4	0.5 ... 50 m	Connector, M12, metal	5	
66575300	► MLD535-R4LM	300 mm	4		Connector, M12, metal	8	Integrated muting indicator Integrated status indicator Reflective element for laser alignment aid
66502300	◄ MLD500-T4L	300 mm	4	0.5 ... 50 m	Connector, M12, metal	5	Integrated laser alignment aid
66576700	► MLD535-XR4L	300 mm	4		Connector, M12, metal	8	Reflective element for laser alignment aid
66502700	◄ MLD500-XT4L	300 mm	4	20 ... 70 m	Connector, M12, metal	5	Integrated laser alignment aid
66576300	► MLD535-R4L	300 mm	4		Connector, M12, metal	8	Reflective element for laser alignment aid
66502300	◄ MLD500-T4L	300 mm	4	0.5 ... 50 m	Connector, M12, metal	5	Integrated laser alignment aid

Included in delivery: sliding blocks  
► receiver / ◄ transmitter

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### /// MLD 500 Transceiver



With this type 4 design, all active components, such as transmitter, receiver and the integrated evaluation unit, are contained in a common housing. This reduces wiring considerably.



PART NUMBER CODES – multiple light beam safety devices MLD 500 and MLD 300

**M L D 3 0 0 T 2 L -**

**Model**

MLD Multiple light beam safety device

**Series**

3 MLD 300  
5 MLD 500

**Function**

00 Transmitter  
10 Automatic restart  
12 External testing (only MLD 300)  
20 Start/restart interlock selectable, contactor monitoring selectable  
30 2-sensor muting (timing controlled, sequence controlled)  
35 4-sensor muting (timing controlled)

**Device type**

T Transmitter  
R Receiver  
RT Transceiver  
xT Transmitter for high range  
xR Receiver for high range

**No. of beams**

2 2-beam  
3 3-beam  
4 4-beam

**Option**

L Integrated laser alignment aid  
M Integrated indicator  
E Connection socket for external muting indicator (only AS-i variants)

**Safety-related switching outputs (OSSD), connection system**

- Transistor output, M12 plug  
A Integrated AS-Interface, M12 connector (safety bus systems)

## MLD 510

These multiple light beam safety devices are equipped with an automatic restart.

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### Benefits:

- The configuration is simply performed by means of wiring, i. e. no software, PC or DIP switch are necessary
- The use at ambient temperatures as low as -30 °C is possible
- Options: integrated laser alignment aid, integrated muting indicator

Part no.	Part description	Beam spacing	Number of beams	Operating range	Connection	No. of pins	Interface	Special design
66537100	▶ MLD510-RT2	500 mm	2	0.5 ... 8 m	Connector, M12, metal	5		
66500100	◀ MLD-M002	500 mm	2					
66537101	▶ MLD510-RT2/A	500 mm	2	0.5 ... 8 m	Connector, M12, metal	5	AS-Interface Safety at Work	
66500100	◀ MLD-M002	500 mm	2					
66537102	▶ MLD510-RT2E/A	500 mm	2	0.5 ... 8 m	Connector, M12, metal	5	AS-Interface Safety at Work	Connection socket for external muting indicator
66500100	◀ MLD-M002	500 mm	2					
66538101	▶ MLD510-RT2M/A	500 mm	2	0.5 ... 8 m	Connector, M12, metal	5	AS-Interface Safety at Work	Integrated muting indicator Integrated status indicator
66500100	◀ MLD-M002	500 mm	2					
66538102	▶ MLD510-RT2ME/A	500 mm	2	0.5 ... 8 m	Connector, M12, metal	5	AS-Interface Safety at Work	Integrated muting indicator Integrated status indicator Connection socket for external muting indicator
66500100	◀ MLD-M002	500 mm	2					
66537200	▶ MLD510-RT3	400 mm	3	0.5 ... 6 m	Connector, M12, metal	5		
66500200	◀ MLD-M003	400 mm	3	0.5 ... 6 m				
66500201	◀ MLD-XM03	400 mm	3	0.5 ... 8 m				
66537201	▶ MLD510-RT3/A	400 mm	3	0.5 ... 6 m	Connector, M12, metal	5	AS-Interface Safety at Work	
66500200	◀ MLD-M003	400 mm	3	0.5 ... 6 m				
66500201	◀ MLD-XM03	400 mm	3	0.5 ... 8 m				
66537202	▶ MLD510-RT3E/A	400 mm	3	0.5 ... 6 m	Connector, M12, metal	5	AS-Interface Safety at Work	Connection socket for external muting indicator
66500200	◀ MLD-M003	400 mm	3	0.5 ... 6 m				
66500201	◀ MLD-XM03	400 mm	3	0.5 ... 8 m				
66538201	▶ MLD510-RT3M/A	400 mm	3	0.5 ... 6 m	Connector, M12, metal	5	AS-Interface Safety at Work	Integrated muting indicator Integrated status indicator
66500200	◀ MLD-M003	400 mm	3	0.5 ... 6 m				
66500201	◀ MLD-XM03	400 mm	3	0.5 ... 8 m				
66538202	▶ MLD510-RT3ME/A	400 mm	3	0.5 ... 6 m	Connector, M12, metal	5	AS-Interface Safety at Work	Integrated muting indicator Integrated status indicator Connection socket for external muting indicator
66500200	◀ MLD-M003	400 mm	3	0.5 ... 6 m				
66500201	◀ MLD-XM03	400 mm	3	0.5 ... 8 m				

Included in delivery: sliding blocks  
▶ transceiver / ◀ mirror

## MLD 520

These multiple light beam safety devices offer a selectable start/restart interlock (RES) and contactor monitoring (EDM).

### Benefits:

- The configuration is simply performed by means of wiring, i.e. no software, PC or DIP switch are necessary
- The use at ambient temperatures as low as -30 °C is possible
- Start/restart interlock (RES), selectable
- Contactor monitoring (EDM), selectable
- Options: integrated laser alignment aid, integrated muting indicator

Part no.	Part description	Beam spacing	Number of beams	Operating range	Connection	No. of pins	Special design
66557100	▶ MLD520-RT2	500 mm	2	0.5 ... 8 m	Connector, M12, metal	8	
66500100	◀ MLD-M002	500 mm	2				
66558100	▶ MLD520-RT2M	500 mm	2	0.5 ... 8 m	Connector, M12, metal	8	Integrated status indicator
66500100	◀ MLD-M002	500 mm	2	0.5 ... 8 m			
66557200	▶ MLD520-RT3	400 mm	3	0.5 ... 6 m	Connector, M12, metal	8	
66500200	◀ MLD-M003	400 mm	3	0.5 ... 6 m			
66500201	◀ MLD-XM03	400 mm	3	0.5 ... 8 m			
66558200	▶ MLD520-RT3M	400 mm	3	0.5 ... 6 m	Connector, M12, metal	8	Integrated status indicator
66500200	◀ MLD-M003	400 mm	3	0.5 ... 6 m			
66500201	◀ MLD-XM03	400 mm	3	0.5 ... 8 m			

Included in delivery: sliding blocks  
▶ transceiver / ◀ mirror

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## MLD 530

Many functions, such as start/restart interlock, contactor monitoring, timing controlled 2-sensor muting and sequence controlled 2-sensor muting, ensure great flexibility.

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### Benefits:

- The configuration is simply performed by means of wiring, i. e. no software, PC or DIP switch are necessary
- The use at ambient temperatures as low as  $-30^{\circ}\text{C}$  is possible
- Start/restart interlock (RES), selectable
- Contactor monitoring (EDM), selectable
- Configurable operating modes
- Integrated muting function, no additional muting module is necessary
- 2-sensor muting, (timing controlled, sequential)
- Options: integrated laser alignment aid, integrated muting indicator, 7-segment display

Part no.	Part description	Beam spacing	Number of beams	Operating range	Connection	No. of pins	Special design
66567100	► MLD530-RT2	500 mm	2	0.5 ... 8 m	Connector, M12, metal	8	
66500100	◄ MLD-M002	500 mm	2				
66568100	► MLD530-RT2M	500 mm	2	0.5 ... 8 m	Connector, M12, metal	8	Integrated muting indicator Integrated status indicator
66500100	◄ MLD-M002	500 mm	2				
66567200	► MLD530-RT3	400 mm	3	0.5 ... 6 m	Connector, M12, metal	8	
66500200	◄ MLD-M003	400 mm	3	0.5 ... 6 m			
66500201	◄ MLD-XM03	400 mm	3	0.5 ... 8 m			
66568200	► MLD530-RT3M	400 mm	3	0.5 ... 6 m	Connector, M12, metal	8	Integrated muting indicator Integrated status indicator
66500200	◄ MLD-M003	400 mm	3	0.5 ... 6 m			
66500201	◄ MLD-XM03	400 mm	3	0.5 ... 8 m			

Included in delivery: sliding blocks  
 ► transceiver / ◄ mirror

## MLD 535

Through extensive functions, such as start/restart interlock, contactor monitoring, timing controlled 2-sensor muting, sequence controlled 2-sensor muting and timing controlled 4-sensor muting, these multiple light beam safety devices can be used in different areas.

### Benefits:

- The configuration is simply performed by means of wiring, i. e. no software, PC or DIP switch are necessary
- The use at ambient temperatures as low as  $-30^{\circ}\text{C}$  is possible
- Start/restart interlock (RES), selectable
- Contactor monitoring (EDM), selectable
- Configurable operating modes
- Integrated muting function, no additional muting module is necessary
- 2-sensor muting, (timing controlled, sequential)
- Timing controlled 4-sensor muting
- Options: integrated laser alignment aid, integrated muting indicator, 7-segment display

Part no.	Part description	Beam spacing	Number of beams	Operating range	Connection	No. of pins	Special design
66577100	► MLD535-RT2	500 mm	2	0.5 ... 8 m	Connector, M12, metal	8	
66500100	◄ MLD-M002	500 mm	2				
66578100	► MLD535-RT2M	500 mm	2	0.5 ... 8 m	Connector, M12, metal	8	Integrated muting indicator Integrated status indicator
66500100	◄ MLD-M002	500 mm	2				
66577200	► MLD535-RT3	400 mm	3	0.5 ... 6 m	Connector, M12, metal	8	
66500200	◄ MLD-M003	400 mm	3	0.5 ... 6 m			
66500201	◄ MLD-XM03	400 mm	3	0.5 ... 8 m			
66578200	► MLD535-RT3M	400 mm	3	0.5 ... 6 m	Connector, M12, metal	8	Integrated muting indicator Integrated status indicator
66500200	◄ MLD-M003	400 mm	3	0.5 ... 6 m			
66500201	◄ MLD-XM03	400 mm	3	0.5 ... 8 m			

Included in delivery: sliding blocks  
 ► transceiver / ◄ mirror

**/// MLD 300**



Like the protective sensors of the MLD 500 series (type 4), these type 2 multiple light beam safety devices are also available in various function classes (MLD 310, 312, 320, 330, 335). Configuration via PC or DIP switch is not necessary.



PART NUMBER CODES – multiple light beam safety devices MLD 500 and MLD 300

**MLD 300 T 2 L -**

<b>Model</b>	MLD	Multiple light beam safety device
<b>Series</b>	3	MLD 300
	5	MLD 500
<b>Function</b>	00	Transmitter
	10	Automatic restart
	12	External testing (only MLD 300)
	20	Start/restart interlock selectable, contactor monitoring selectable
	30	2-sensor muting (timing controlled, sequence controlled)
	35	4-sensor muting (timing controlled)
<b>Device type</b>	T	Transmitter
	R	Receiver
	RT	Transceiver
	xT	Transmitter for high range
	xR	Receiver for high range
<b>No. of beams</b>	2	2-beam
	3	3-beam
	4	4-beam
<b>Option</b>	L	Integrated laser alignment aid
	M	Integrated indicator
	E	Connection socket for external muting indicator (only AS-i variants)
<b>Safety-related switching outputs (OSSD), connection system</b>	-	Transistor output, M12 plug
	A	Integrated AS-Interface, M12 connector (safety bus systems)

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**MLD 310**

These multiple light beam safety devices are equipped with an automatic restart.

**Benefits:**

- The configuration is simply performed by means of wiring, i. e. no software, PC or DIP switch are necessary
- The use at ambient temperatures as low as -30 °C is possible
- Options: integrated laser alignment aid, integrated muting indicator

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Part no.	Part description	Beam spacing	Number of beams	Operating range	Connection	No. of pins	Special design
66033500	▶ MLD310-XR2	500 mm	2		Connector, M12, metal	5	
66001500	◀ MLD300-XT2	500 mm	2	20 ... 70 m	Connector, M12, metal	5	
66033100	▶ MLD310-R2	500 mm	2		Connector, M12, metal	5	
66001100	◀ MLD300-T2	500 mm	2	0.5 ... 50 m	Connector, M12, metal	5	

Included in delivery: sliding blocks  
▶ receiver / ◀ transmitter

Accessories

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Part no.	Part description	Beam spacing	Number of beams	Operating range	Connection	No. of pins	Special design
66036500	► MLD310-XR2L	500 mm	2		Connector, M12, metal	5	Reflective element for laser alignment aid
66002500	◄ MLD300-XT2L	500 mm	2	20 ... 70 m	Connector, M12, metal	5	Integrated laser alignment aid
66036100	► MLD310-R2L	500 mm	2		Connector, M12, metal	5	Reflective element for laser alignment aid
66002100	◄ MLD300-T2L	500 mm	2	0.5 ... 50 m	Connector, M12, metal	5	Integrated laser alignment aid
66033600	► MLD310-XR3	400 mm	3		Connector, M12, metal	5	
66001600	◄ MLD300-XT3	400 mm	3	20 ... 70 m	Connector, M12, metal	5	
66033200	► MLD310-R3	400 mm	3		Connector, M12, metal	5	
66001200	◄ MLD300-T3	400 mm	3	0.5 ... 50 m	Connector, M12, metal	5	
66036600	► MLD310-XR3L	400 mm	3		Connector, M12, metal	5	Reflective element for laser alignment aid
66002600	◄ MLD300-XT3L	400 mm	3	20 ... 70 m	Connector, M12, metal	5	Integrated laser alignment aid
66036200	► MLD310-R3L	400 mm	3		Connector, M12, metal	5	Reflective element for laser alignment aid
66002200	◄ MLD300-T3L	400 mm	3	0.5 ... 50 m	Connector, M12, metal	5	Integrated laser alignment aid
66033700	► MLD310-XR4	300 mm	4		Connector, M12, metal	5	
66001700	◄ MLD300-XT4	300 mm	4	20 ... 70 m	Connector, M12, metal	5	
66033300	► MLD310-R4	300 mm	4		Connector, M12, metal	5	
66001300	◄ MLD300-T4	300 mm	4	0.5 ... 50 m	Connector, M12, metal	5	
66036700	► MLD310-XR4L	300 mm	4		Connector, M12, metal	5	Reflective element for laser alignment aid
66002700	◄ MLD300-XT4L	300 mm	4	20 ... 70 m	Connector, M12, metal	5	Integrated laser alignment aid
66036300	► MLD310-R4L	300 mm	4		Connector, M12, metal	5	Reflective element for laser alignment aid
66002300	◄ MLD300-T4L	300 mm	4	0.5 ... 50 m	Connector, M12, metal	5	Integrated laser alignment aid

Included in delivery: sliding blocks  
 ► receiver / ◄ transmitter

## MLD 312

These multiple light beam safety devices are equipped with an automatic restart. The receivers are equipped with a test input for the periodic function test by means of an external safety monitoring device.

### Benefits:

- The configuration is simply performed by means of wiring, i. e. no software, PC or DIP switch are necessary
- The use at ambient temperatures as low as  $-30^{\circ}\text{C}$  is possible
- Test input for periodic function test
- Options: integrated laser alignment aid, integrated muting indicator

Part no.	Part description	Beam spacing	Number of beams	Operating range	Connection	No. of pins	Special design
66043500	► MLD312-XR2	500 mm	2		Connector, M12, metal	5	
66001500	◄ MLD300-XT2	500 mm	2	20 ... 70 m	Connector, M12, metal	5	
66043100	► MLD312-R2	500 mm	2		Connector, M12, metal	5	
66001100	◄ MLD300-T2	500 mm	2	0.5 ... 50 m	Connector, M12, metal	5	
66046500	► MLD312-XR2L	500 mm	2		Connector, M12, metal	5	Reflective element for laser alignment aid
66002500	◄ MLD300-XT2L	500 mm	2	20 ... 70 m	Connector, M12, metal	5	Integrated laser alignment aid
66046100	► MLD312-R2L	500 mm	2		Connector, M12, metal	5	Reflective element for laser alignment aid
66002100	◄ MLD300-T2L	500 mm	2	0.5 ... 50 m	Connector, M12, metal	5	Integrated laser alignment aid
66043600	► MLD312-XR3	400 mm	3		Connector, M12, metal	5	
66001600	◄ MLD300-XT3	400 mm	3	20 ... 70 m	Connector, M12, metal	5	
66043200	► MLD312-R3	400 mm	3		Connector, M12, metal	5	
66001200	◄ MLD300-T3	400 mm	3	0.5 ... 50 m	Connector, M12, metal	5	
66046600	► MLD312-XR3L	400 mm	3		Connector, M12, metal	5	Reflective element for laser alignment aid
66002600	◄ MLD300-XT3L	400 mm	3	20 ... 70 m	Connector, M12, metal	5	Integrated laser alignment aid
66046200	► MLD312-R3L	400 mm	3		Connector, M12, metal	5	Reflective element for laser alignment aid
66002200	◄ MLD300-T3L	400 mm	3	0.5 ... 50 m	Connector, M12, metal	5	Integrated laser alignment aid
66043700	► MLD312-XR4	300 mm	4		Connector, M12, metal	5	
66001700	◄ MLD300-XT4	300 mm	4	20 ... 70 m	Connector, M12, metal	5	
66043300	► MLD312-R4	300 mm	4		Connector, M12, metal	5	
66001300	◄ MLD300-T4	300 mm	4	0.5 ... 50 m	Connector, M12, metal	5	
66046700	► MLD312-XR4L	300 mm	4		Connector, M12, metal	5	Reflective element for laser alignment aid
66002700	◄ MLD300-XT4L	300 mm	4	20 ... 70 m	Connector, M12, metal	5	Integrated laser alignment aid
66046300	► MLD312-R4L	300 mm	4		Connector, M12, metal	5	Reflective element for laser alignment aid
66002300	◄ MLD300-T4L	300 mm	4	0.5 ... 50 m	Connector, M12, metal	5	Integrated laser alignment aid

Included in delivery: sliding blocks  
 ► receiver / ◄ transmitter

## MLD 320

These multiple light beam safety devices offer a selectable start/restart interlock (RES) and contactor monitoring (EDM).

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### Benefits:

- The configuration is simply performed by means of wiring, i. e. no software, PC or DIP switch are necessary
- The use at ambient temperatures as low as -30 °C is possible
- Start/restart interlock (RES), selectable
- Contactor monitoring (EDM), selectable
- Options: integrated laser alignment aid, integrated muting indicator

Part no.	Part description	Beam spacing	Number of beams	Operating range	Connection	No. of pins	Special design
66053500	► MLD320-XR2	500 mm	2		Connector, M12, metal	8	
66001500	◄ MLD300-XT2	500 mm	2	20 ... 70 m	Connector, M12, metal	5	
66053100	► MLD320-R2	500 mm	2		Connector, M12, metal	8	
66001100	◄ MLD300-T2	500 mm	2	0.5 ... 50 m	Connector, M12, metal	5	
66054500	► MLD320-XR2M	500 mm	2		Connector, M12, metal	8	Integrated status indicator
66001500	◄ MLD300-XT2	500 mm	2	20 ... 70 m	Connector, M12, metal	5	
66054100	► MLD320-R2M	500 mm	2		Connector, M12, metal	8	Integrated status indicator
66001100	◄ MLD300-T2	500 mm	2	0.5 ... 50 m	Connector, M12, metal	5	
66055500	► MLD320-XR2LM	500 mm	2		Connector, M12, metal	8	Integrated status indicator Reflective element for laser alignment aid
66002500	◄ MLD300-XT2L	500 mm	2	20 ... 70 m	Connector, M12, metal	5	Integrated laser alignment aid
66055100	► MLD320-R2LM	500 mm	2		Connector, M12, metal	8	Integrated status indicator Reflective element for laser alignment aid
66002100	◄ MLD300-T2L	500 mm	2	0.5 ... 50 m	Connector, M12, metal	5	Integrated laser alignment aid
66056500	► MLD320-XR2L	500 mm	2		Connector, M12, metal	8	Reflective element for laser alignment aid
66002500	◄ MLD300-XT2L	500 mm	2	20 ... 70 m	Connector, M12, metal	5	Integrated laser alignment aid
66056100	► MLD320-R2L	500 mm	2		Connector, M12, metal	8	Reflective element for laser alignment aid
66002100	◄ MLD300-T2L	500 mm	2	0.5 ... 50 m	Connector, M12, metal	5	Integrated laser alignment aid
66053600	► MLD320-XR3	400 mm	3		Connector, M12, metal	8	
66001600	◄ MLD300-XT3	400 mm	3	20 ... 70 m	Connector, M12, metal	5	
66053200	► MLD320-R3	400 mm	3		Connector, M12, metal	8	
66001200	◄ MLD300-T3	400 mm	3	0.5 ... 50 m	Connector, M12, metal	5	
66054600	► MLD320-XR3M	400 mm	3		Connector, M12, metal	8	Integrated status indicator
66001600	◄ MLD300-XT3	400 mm	3	20 ... 70 m	Connector, M12, metal	5	
66054200	► MLD320-R3M	400 mm	3		Connector, M12, metal	8	Integrated status indicator
66001200	◄ MLD300-T3	400 mm	3	0.5 ... 50 m	Connector, M12, metal	5	
66055600	► MLD320-XR3LM	400 mm	3		Connector, M12, metal	8	Integrated status indicator Reflective element for laser alignment aid
66002600	◄ MLD300-XT3L	400 mm	3	20 ... 70 m	Connector, M12, metal	5	Integrated laser alignment aid
66055200	► MLD320-R3LM	400 mm	3		Connector, M12, metal	8	Integrated status indicator Reflective element for laser alignment aid
66002200	◄ MLD300-T3L	400 mm	3	0.5 ... 50 m	Connector, M12, metal	5	Integrated laser alignment aid
66056600	► MLD320-XR3L	400 mm	3		Connector, M12, metal	8	Reflective element for laser alignment aid
66002600	◄ MLD300-XT3L	400 mm	3	20 ... 70 m	Connector, M12, metal	5	Integrated laser alignment aid
66056200	► MLD320-R3L	400 mm	3		Connector, M12, metal	8	Reflective element for laser alignment aid
66002200	◄ MLD300-T3L	400 mm	3	0.5 ... 50 m	Connector, M12, metal	5	Integrated laser alignment aid
66053700	► MLD320-XR4	300 mm	4		Connector, M12, metal	8	
66001700	◄ MLD300-XT4	300 mm	4	20 ... 70 m	Connector, M12, metal	5	
66053300	► MLD320-R4	300 mm	4		Connector, M12, metal	8	
66001300	◄ MLD300-T4	300 mm	4	0.5 ... 50 m	Connector, M12, metal	5	
66054700	► MLD320-XR4M	300 mm	4		Connector, M12, metal	8	Integrated status indicator
66001700	◄ MLD300-XT4	300 mm	4	20 ... 70 m	Connector, M12, metal	5	
66054300	► MLD320-R4M	300 mm	4		Connector, M12, metal	8	Integrated status indicator
66001300	◄ MLD300-T4	300 mm	4	0.5 ... 50 m	Connector, M12, metal	5	
66055700	► MLD320-XR4LM	300 mm	4		Connector, M12, metal	8	Integrated status indicator Reflective element for laser alignment aid
66002700	◄ MLD300-XT4L	300 mm	4	20 ... 70 m	Connector, M12, metal	5	Integrated laser alignment aid
66055300	► MLD320-R4LM	300 mm	4		Connector, M12, metal	8	Integrated status indicator Reflective element for laser alignment aid
66002300	◄ MLD300-T4L	300 mm	4	0.5 ... 50 m	Connector, M12, metal	5	Integrated laser alignment aid
66056700	► MLD320-XR4L	300 mm	4		Connector, M12, metal	8	Reflective element for laser alignment aid
66002700	◄ MLD300-XT4L	300 mm	4	20 ... 70 m	Connector, M12, metal	5	Integrated laser alignment aid
66056300	► MLD320-R4L	300 mm	4		Connector, M12, metal	8	Reflective element for laser alignment aid
66002300	◄ MLD300-T4L	300 mm	4	0.5 ... 50 m	Connector, M12, metal	5	Integrated laser alignment aid

Included in delivery: sliding blocks  
► receiver / ◄ transmitter

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## MLD 330

Many functions, such as start/restart interlock, contactor monitoring, timing controlled 2-sensor muting, sequence controlled 2-sensor muting, ensure great flexibility.

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### Benefits:

- The configuration is simply performed by means of wiring, i. e. no software, PC or DIP switch are necessary
- The use at ambient temperatures as low as  $-30\text{ }^{\circ}\text{C}$  is possible
- Start/restart interlock (RES), selectable
- Contactor monitoring (EDM), selectable
- Configurable operating modes
- Integrated muting function, no additional muting module is necessary
- 2-sensor muting, (timing controlled, sequential)
- Options: integrated laser alignment aid, integrated muting indicator, 7-segment display

Part no.	Part description	Beam spacing	Number of beams	Operating range	Connection	No. of pins	Special design
66063500	► MLD330-XR2	500 mm	2		Connector, M12, metal	8	
66001500	◄ MLD300-XT2	500 mm	2	20 ... 70 m	Connector, M12, metal	5	
66063100	► MLD330-R2	500 mm	2		Connector, M12, metal	8	
66001100	◄ MLD300-T2	500 mm	2	0.5 ... 50 m	Connector, M12, metal	5	
66064100	► MLD330-R2M	500 mm	2		Connector, M12, metal	8	Integrated muting indicator Integrated status indicator
66001100	◄ MLD300-T2	500 mm	2	0.5 ... 50 m	Connector, M12, metal	5	
66065100	► MLD330-R2LM	500 mm	2		Connector, M12, metal	8	Integrated muting indicator Integrated status indicator Reflective element for laser alignment aid
66002100	◄ MLD300-T2L	500 mm	2	0.5 ... 50 m	Connector, M12, metal	5	Integrated laser alignment aid
66066500	► MLD330-XR2L	500 mm	2		Connector, M12, metal	8	Reflective element for laser alignment aid
66002500	◄ MLD300-XT2L	500 mm	2	20 ... 70 m	Connector, M12, metal	5	Integrated laser alignment aid
66066100	► MLD330-R2L	500 mm	2		Connector, M12, metal	8	Reflective element for laser alignment aid
66002100	◄ MLD300-T2L	500 mm	2	0.5 ... 50 m	Connector, M12, metal	5	Integrated laser alignment aid
66063600	► MLD330-XR3	400 mm	3		Connector, M12, metal	8	
66001600	◄ MLD300-XT3	400 mm	3	20 ... 70 m	Connector, M12, metal	5	
66063200	► MLD330-R3	400 mm	3		Connector, M12, metal	8	
66001200	◄ MLD300-T3	400 mm	3	0.5 ... 50 m	Connector, M12, metal	5	
66064200	► MLD330-R3M	400 mm	3		Connector, M12, metal	8	Integrated muting indicator Integrated status indicator
66001200	◄ MLD300-T3	400 mm	3	0.5 ... 50 m	Connector, M12, metal	5	
66065200	► MLD330-R3LM	400 mm	3		Connector, M12, metal	8	Integrated muting indicator Integrated status indicator Reflective element for laser alignment aid
66002200	◄ MLD300-T3L	400 mm	3	0.5 ... 50 m	Connector, M12, metal	5	Integrated laser alignment aid
66066600	► MLD330-XR3L	400 mm	3		Connector, M12, metal	8	Reflective element for laser alignment aid
66002600	◄ MLD300-XT3L	400 mm	3	20 ... 70 m	Connector, M12, metal	5	Integrated laser alignment aid
66066200	► MLD330-R3L	400 mm	3		Connector, M12, metal	8	Reflective element for laser alignment aid
66002200	◄ MLD300-T3L	400 mm	3	0.5 ... 50 m	Connector, M12, metal	5	Integrated laser alignment aid
66063700	► MLD330-XR4	300 mm	4		Connector, M12, metal	8	
66001700	◄ MLD300-XT4	300 mm	4	20 ... 70 m	Connector, M12, metal	5	
66063300	► MLD330-R4	300 mm	4		Connector, M12, metal	8	
66001300	◄ MLD300-T4	300 mm	4	0.5 ... 50 m	Connector, M12, metal	5	
66064300	► MLD330-R4M	300 mm	4		Connector, M12, metal	8	Integrated muting indicator Integrated status indicator
66001300	◄ MLD300-T4	300 mm	4	0.5 ... 50 m	Connector, M12, metal	5	
66065300	► MLD330-R4LM	300 mm	4		Connector, M12, metal	8	Integrated muting indicator Integrated status indicator Reflective element for laser alignment aid
66002300	◄ MLD300-T4L	300 mm	4	0.5 ... 50 m	Connector, M12, metal	5	Integrated laser alignment aid
66066700	► MLD330-XR4L	300 mm	4		Connector, M12, metal	8	Reflective element for laser alignment aid
66002700	◄ MLD300-XT4L	300 mm	4	20 ... 70 m	Connector, M12, metal	5	Integrated laser alignment aid
66066300	► MLD330-R4L	300 mm	4		Connector, M12, metal	8	Reflective element for laser alignment aid
66002300	◄ MLD300-T4L	300 mm	4	0.5 ... 50 m	Connector, M12, metal	5	Integrated laser alignment aid

Included in delivery: sliding blocks  
 ► receiver / ◄ transmitter

## MLD 335

Through extensive functions, such as start/restart interlock, contactor monitoring, timing controlled 2-sensor muting, sequence controlled 2-sensor muting and timing controlled 4-sensor muting, these multiple light beam safety devices can be used in different areas.

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### Benefits:

- The configuration is simply performed by means of wiring, i. e. no software, PC or DIP switch are necessary
- The use at ambient temperatures as low as -30 °C is possible
- Start/restart interlock (RES), selectable
- Contactor monitoring (EDM), selectable
- Configurable operating modes
- Integrated muting function, no additional muting module is necessary
- 2-sensor muting, (timing controlled, sequential)
- Timing controlled 4-sensor muting
- Options: integrated laser alignment aid, integrated muting indicator, 7-segment display

Part no.	Part description	Beam spacing	Number of beams	Operating range	Connection	No. of pins	Special design
66073500	► MLD335-XR2	500 mm	2		Connector, M12, metal	8	
66001500	◄ MLD300-XT2	500 mm	2	20 ... 70 m	Connector, M12, metal	5	
66073100	► MLD335-R2	500 mm	2		Connector, M12, metal	8	
66001100	◄ MLD300-T2	500 mm	2	0.5 ... 50 m	Connector, M12, metal	5	
66074100	► MLD335-R2M	500 mm	2		Connector, M12, metal	8	Integrated muting indicator Integrated status indicator
66001100	◄ MLD300-T2	500 mm	2	0.5 ... 50 m	Connector, M12, metal	5	
66075100	► MLD335-R2LM	500 mm	2		Connector, M12, metal	8	Integrated muting indicator Integrated status indicator Reflective element for laser alignment aid
66002100	◄ MLD300-T2L	500 mm	2	0.5 ... 50 m	Connector, M12, metal	5	Integrated laser alignment aid
66076500	► MLD335-XR2L	500 mm	2		Connector, M12, metal	8	Reflective element for laser alignment aid
66002500	◄ MLD300-XT2L	500 mm	2	20 ... 70 m	Connector, M12, metal	5	Integrated laser alignment aid
66076100	► MLD335-R2L	500 mm	2		Connector, M12, metal	8	Reflective element for laser alignment aid
66002100	◄ MLD300-T2L	500 mm	2	0.5 ... 50 m	Connector, M12, metal	5	Integrated laser alignment aid
66073600	► MLD335-XR3	400 mm	3		Connector, M12, metal	8	
66001600	◄ MLD300-XT3	400 mm	3	20 ... 70 m	Connector, M12, metal	5	
66073200	► MLD335-R3	400 mm	3		Connector, M12, metal	8	
66001200	◄ MLD300-T3	400 mm	3	0.5 ... 50 m	Connector, M12, metal	5	
66074200	► MLD335-R3M	400 mm	3		Connector, M12, metal	8	Integrated muting indicator Integrated status indicator
66001200	◄ MLD300-T3	400 mm	3	0.5 ... 50 m	Connector, M12, metal	5	
66075200	► MLD335-R3LM	400 mm	3		Connector, M12, metal	8	Integrated muting indicator Integrated status indicator Reflective element for laser alignment aid
66002200	◄ MLD300-T3L	400 mm	3	0.5 ... 50 m	Connector, M12, metal	5	Integrated laser alignment aid
66076600	► MLD335-XR3L	400 mm	3		Connector, M12, metal	8	Reflective element for laser alignment aid
66002600	◄ MLD300-XT3L	400 mm	3	20 ... 70 m	Connector, M12, metal	5	Integrated laser alignment aid
66073700	► MLD335-XR4	300 mm	4		Connector, M12, metal	8	
66001700	◄ MLD300-XT4	300 mm	4	20 ... 70 m	Connector, M12, metal	5	
66076200	► MLD335-R3L	400 mm	3		Connector, M12, metal	8	Reflective element for laser alignment aid
66002200	◄ MLD300-T3L	400 mm	3	0.5 ... 50 m	Connector, M12, metal	5	Integrated laser alignment aid
66073300	► MLD335-R4	300 mm	4		Connector, M12, metal	8	
66001300	◄ MLD300-T4	300 mm	4	0.5 ... 50 m	Connector, M12, metal	5	
66074300	► MLD335-R4M	300 mm	4		Connector, M12, metal	8	Integrated muting indicator Integrated status indicator
66001300	◄ MLD300-T4	300 mm	4	0.5 ... 50 m	Connector, M12, metal	5	
66075300	► MLD335-R4LM	300 mm	4		Connector, M12, metal	8	Integrated muting indicator Integrated status indicator Reflective element for laser alignment aid
66002300	◄ MLD300-T4L	300 mm	4	0.5 ... 50 m	Connector, M12, metal	5	Integrated laser alignment aid
66076700	► MLD335-XR4L	300 mm	4		Connector, M12, metal	8	Reflective element for laser alignment aid
66002700	◄ MLD300-XT4L	300 mm	4	20 ... 70 m	Connector, M12, metal	5	Integrated laser alignment aid
66076300	► MLD335-R4L	300 mm	4		Connector, M12, metal	8	Reflective element for laser alignment aid
66002300	◄ MLD300-T4L	300 mm	4	0.5 ... 50 m	Connector, M12, metal	5	Integrated laser alignment aid

Included in delivery: sliding blocks  
► receiver / ◄ transmitter

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**/// MLD 300 Transceiver**



With this type 2 design, all active components, such as transmitter, receiver and the integrated evaluation unit, are contained in a common housing. This reduces wiring considerably.



PART NUMBER CODES - multiple light beam safety devices MLD 500 and MLD 300

**MLD 300 T 2 L -**

**Model**

MLD Multiple light beam safety device

**Series**

3 MLD 300  
5 MLD 500

**Function**

00 Transmitter  
10 Automatic restart  
12 External testing (only MLD 300)  
20 Start/restart interlock selectable, contactor monitoring selectable  
30 2-sensor muting (timing controlled, sequence controlled)  
35 4-sensor muting (timing controlled)

**Device type**

T Transmitter  
R Receiver  
RT Transceiver  
xT Transmitter for high range  
xR Receiver for high range

**No. of beams**

2 2-beam  
3 3-beam  
4 4-beam

**Option**

L Integrated laser alignment aid  
M Integrated indicator  
E Connection socket for external muting indicator (only AS-i variants)

**Safety-related switching outputs (OSSD), connection system**

- Transistor output, M12 plug  
A Integrated AS-Interface, M12 connector (safety bus systems)

### MLD 310

These multiple light beam safety devices are equipped with an automatic restart.

**Benefits:**

- The configuration is simply performed by means of wiring, i. e. no software, PC or DIP switch are necessary
- The use at ambient temperatures as low as -30 °C is possible
- Options: integrated laser alignment aid, integrated muting indicator

Part no.	Part description	Beam spacing	Number of beams	Operating range	Connection	No. of pins
66037100	► MLD310-RT2	500 mm	2	0.5 ... 8 m	Connector, M12, metal	5
66500100	◄ MLD-M002	500 mm	2			
66037200	► MLD310-RT3	400 mm	3	0.5 ... 6 m	Connector, M12, metal	5
66500200	◄ MLD-M003	400 mm	3	0.5 ... 6 m		
66500201	◄ MLD-XM03	400 mm	3	0.5 ... 8 m		

Included in delivery: sliding blocks  
► transceiver / ◄ mirror

### MLD 312

These multiple light beam safety devices are equipped with an automatic restart. The transceivers are equipped with a test input for the periodic function test by means of an external safety monitoring device.

**Benefits:**

- The configuration is simply performed by means of wiring, i. e. no software, PC or DIP switch are necessary
- The use at ambient temperatures as low as -30 °C is possible
- Test input for periodic function test
- Options: integrated laser alignment aid, integrated muting indicator

Part no.	Part description	Beam spacing	Number of beams	Operating range	Connection	No. of pins
66047100	► MLD312-RT2	500 mm	2	0.5 ... 8 m	Connector, M12, metal	5
66500100	◄ MLD-M002	500 mm	2			
66047200	► MLD312-RT3	400 mm	3	0.5 ... 6 m	Connector, M12, metal	5
66500200	◄ MLD-M003	400 mm	3	0.5 ... 6 m		
66500201	◄ MLD-XM03	400 mm	3	0.5 ... 8 m		

Included in delivery: sliding blocks  
► transceiver / ◄ mirror

### MLD 320

These multiple light beam safety devices offer a selectable start/restart interlock (RES) and contactor monitoring (EDM).

**Benefits:**

- The configuration is simply performed by means of wiring, i. e. no software, PC or DIP switch are necessary
- The use at ambient temperatures as low as -30 °C is possible
- Start/restart interlock (RES), selectable
- Contactor monitoring (EDM), selectable
- Options: integrated laser alignment aid, integrated muting indicator

Part no.	Part description	Beam spacing	Number of beams	Operating range	Connection	No. of pins	Special design
66057100	► MLD320-RT2	500 mm	2	0.5 ... 8 m	Connector, M12, metal	8	
66500100	◄ MLD-M002	500 mm	2				
66058100	► MLD320-RT2M	500 mm	2	0.5 ... 8 m	Connector, M12, metal	8	Integrated status indicator
66500100	◄ MLD-M002	500 mm	2				
66057200	► MLD320-RT3	400 mm	3	0.5 ... 6 m	Connector, M12, metal	8	
66500200	◄ MLD-M003	400 mm	3	0.5 ... 6 m			
66500201	◄ MLD-XM03	400 mm	3	0.5 ... 8 m			
66058200	► MLD320-RT3M	400 mm	3	0.5 ... 6 m	Connector, M12, metal	8	Integrated status indicator
66500200	◄ MLD-M003	400 mm	3	0.5 ... 6 m			
66500201	◄ MLD-XM03	400 mm	3	0.5 ... 8 m			

Included in delivery: sliding blocks  
► transceiver / ◄ mirror

## MLD 330

Many functions, such as start/restart interlock, contactor monitoring, timing controlled 2-sensor muting, sequence controlled 2-sensor muting, ensure great flexibility.

### Benefits:

- The configuration is simply performed by means of wiring, i. e. no software, PC or DIP switch are necessary
- The use at ambient temperatures as low as  $-30^{\circ}\text{C}$  is possible
- Start/restart interlock (RES), selectable
- Contactor monitoring (EDM), selectable
- Configurable operating modes
- Integrated muting function, no additional muting module is necessary
- 2-sensor muting, (timing controlled, sequential)
- Options: integrated laser alignment aid, integrated muting indicator, 7-segment display

Part no.	Part description	Beam spacing	Number of beams	Operating range	Connection	No. of pins	Special design
66067100	► MLD330-RT2	500 mm	2	0.5 ... 8 m	Connector, M12, metal	8	
66500100	◄ MLD-M002	500 mm	2				
66068100	► MLD330-RT2M	500 mm	2	0.5 ... 8 m	Connector, M12, metal	8	Integrated muting indicator Integrated status indicator
66500100	◄ MLD-M002	500 mm	2				
66067200	► MLD330-RT3	400 mm	3	0.5 ... 6 m	Connector, M12, metal	8	
66500200	◄ MLD-M003	400 mm	3	0.5 ... 6 m			
66500201	◄ MLD-XM03	400 mm	3	0.5 ... 8 m			
66068200	► MLD330-RT3M	400 mm	3	0.5 ... 6 m	Connector, M12, metal	8	Integrated muting indicator Integrated status indicator
66500200	◄ MLD-M003	400 mm	3	0.5 ... 6 m			
66500201	◄ MLD-XM03	400 mm	3	0.5 ... 8 m			

Included in delivery: sliding blocks  
 ► transceiver / ◄ mirror

## MLD 335

Through extensive functions, such as start/restart interlock, contactor monitoring, timing controlled 2-sensor muting, sequence controlled 2-sensor muting and timing controlled 4-sensor muting, these multiple light beam safety devices can be used in different areas.

### Benefits:

- The configuration is simply performed by means of wiring, i. e. no software, PC or DIP switch are necessary
- The use at ambient temperatures as low as  $-30^{\circ}\text{C}$  is possible
- Start/restart interlock (RES), selectable
- Contactor monitoring (EDM), selectable
- Configurable operating modes
- Integrated muting function, no additional muting module is necessary
- 2-sensor muting, (timing controlled, sequential)
- Timing controlled 4-sensor muting
- Options: integrated laser alignment aid, integrated muting indicator, 7-segment display

Part no.	Part description	Beam spacing	Number of beams	Operating range	Connection	No. of pins	Special design
66077100	► MLD335-RT2	500 mm	2	0.5 ... 8 m	Connector, M12, metal	8	
66500100	◄ MLD-M002	500 mm	2				
66078100	► MLD335-RT2M	500 mm	2	0.5 ... 8 m	Connector, M12, metal	8	Integrated muting indicator Integrated status indicator
66500100	◄ MLD-M002	500 mm	2				
66077200	► MLD335-RT3	400 mm	3	0.5 ... 6 m	Connector, M12, metal	8	
66500200	◄ MLD-M003	400 mm	3	0.5 ... 6 m			
66500201	◄ MLD-XM03	400 mm	3	0.5 ... 8 m			
66078200	► MLD335-RT3M	400 mm	3	0.5 ... 6 m	Connector, M12, metal	8	Integrated muting indicator Integrated status indicator
66500200	◄ MLD-M003	400 mm	3	0.5 ... 6 m			
66500201	◄ MLD-XM03	400 mm	3	0.5 ... 8 m			

Included in delivery: sliding blocks  
 ► transceiver / ◄ mirror

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# //SINGLE LIGHT BEAM SAFETY DEVICES

## SAFETY CAN ALSO BE FLEXIBLE

Due to their compact dimensions, single beam safety devices are able to make full use of their advantages in constrained spaces or where no flat planar areas exist. They can be very flexibly integrated in various installation heights as well as in existing machine designs and very reliably perform a wide range of detection, identification and protection tasks here.

### Type 4 Single Light Beam Safety Devices

All Single Light Beam Safety Devices of this category are self-monitoring, i.e., no additional test components are necessary for operation. Furthermore, they convince with ranges of up to 100 m and can, thus, be used very flexibly in a wide range of applications. Configuration is simply performed without a PC via the wiring.

### /// MLD 510



These single light beam safety devices are equipped with an automatic restart.



#### Benefits:

- The configuration is simply performed by means of wiring, i.e. no software, PC or DIP switch are necessary
- The use at ambient temperatures as low as  $-30^{\circ}\text{C}$  is possible
- Options: integrated laser alignment aid

Part no.	Part description	Operating range	Connection	No. of pins/ No. of conductors	Interface	Special design
66533400	► MLD510-XR1		Connector, M12, metal	5		
66501400	◄ MLD500-XT1	20 ... 100 m	Connector, M12, metal	5		
66533000	► MLD510-R1		Connector, M12, metal	5		
66501000	◄ MLD500-T1	0.5 ... 70 m	Connector, M12, metal	5		
66536000	► MLD510-R1L		Connector, M12, metal	5		Reflective element for laser alignment aid
66502000	◄ MLD500-T1L	0.5 ... 70 m	Connector, M12, metal	5		Integrated laser alignment aid
66533401	► MLD510-XR1/A		Connector, M12, metal	5	AS-Interface Safety at Work	
66501401	◄ MLD500-XT1/A	20 ... 100 m	Connector, M12, metal	5	AS-Interface Safety at Work	
66533001	► MLD510-R1/A		Connector, M12, metal	5	AS-Interface Safety at Work	
66501001	◄ MLD500-T1/A	0.5 ... 70 m	Connector, M12, metal	5	AS-Interface Safety at Work	
66533402	► MLD510-XR1E/A		Connector, M12, metal	5	AS-Interface Safety at Work	Connection socket for external muting indicator
66501401	◄ MLD500-XT1/A	20 ... 100 m	Connector, M12, metal	5	AS-Interface Safety at Work	
66533002	► MLD510-R1E/A		Connector, M12, metal	5	AS-Interface Safety at Work	Connection socket for external muting indicator
66501001	◄ MLD500-T1/A	0.5 ... 70 m	Connector, M12, metal	5	AS-Interface Safety at Work	
66536002	► MLD510-R1LE/A		Connector, M12, metal	5	AS-Interface Safety at Work	Reflective element for laser alignment aid Connection socket for external muting indicator
66502001	◄ MLD500-T1L/A	0.5 ... 70 m	Connector, M12, metal	5	AS-Interface Safety at Work	Integrated laser alignment aid
66536001	► MLD510-R1L/A		Connector, M12, metal	5	AS-Interface Safety at Work	Reflective element for laser alignment aid
66502001	◄ MLD500-T1L/A	0.5 ... 70 m	Connector, M12, metal	5	AS-Interface Safety at Work	Integrated laser alignment aid

Included in delivery: sliding blocks  
► receiver / ◄ transmitter

### /// MLD 520



These single light beam safety devices offer a selectable start/restart interlock (RES) and contactor monitoring (EDM).



**Benefits:**

- The configuration is simply performed by means of wiring, i. e. no software, PC or DIP switch are necessary
- The use at ambient temperatures as low as -30 °C is possible
- Start/restart interlock (RES), selectable
- Contactor monitoring (EDM), selectable
- Options: integrated laser alignment aid

Part no.	Part description	Operating range	Connection	No. of pins/ No. of conductors	Special design
66553400	► MLD520-XR1		Connector, M12, metal	8	
66501400	◄ MLD500-XT1	20 ... 100 m	Connector, M12, metal	5	
66553000	► MLD520-R1		Connector, M12, metal	8	
66501000	◄ MLD500-T1	0.5 ... 70 m	Connector, M12, metal	5	
66556000	► MLD520-R1L		Connector, M12, metal	8	Reflective element for laser alignment aid
66502000	◄ MLD500-T1L	0.5 ... 70 m	Connector, M12, metal	5	Integrated laser alignment aid

Included in delivery: sliding blocks  
 ► receiver / ◄ transmitter

### /// MLD 530



Many functions, such as start/restart interlock, contactor monitoring, timing controlled 2-sensor muting and sequence controlled 2-sensor muting, ensure great flexibility.



**Benefits:**

- The configuration is simply performed by means of wiring, i. e. no software, PC or DIP switch are necessary
- The use at ambient temperatures as low as -30 °C is possible
- Start/restart interlock (RES), selectable
- Contactor monitoring (EDM), selectable
- Configurable operating modes
- 2-sensor muting (parallel, sequential)
- Integrated muting function, no additional muting module is necessary
- Options: integrated laser alignment aid, 7-segment display

Part no.	Part description	Operating range	Connection	No. of pins/ No. of conductors	Special design
66563400	► MLD530-XR1		Connector, M12, metal	8	
66501400	◄ MLD500-XT1	20 ... 100 m	Connector, M12, metal	5	
66563000	► MLD530-R1		Connector, M12, metal	8	
66501000	◄ MLD500-T1	0.5 ... 70 m	Connector, M12, metal	5	
66566000	► MLD530-R1L		Connector, M12, metal	8	Reflective element for laser alignment aid
66502000	◄ MLD500-T1L	0.5 ... 70 m	Connector, M12, metal	5	Integrated laser alignment aid

Included in delivery: sliding blocks  
 ► receiver / ◄ transmitter

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## Type 2 Single Light Beam Safety Devices

These single beam safety devices are operated in combination with a suitable test unit. Together with these, they form type 2 electro-sensitive protective equipment. They are a cost-optimized alternative if shorter ranges are needed. With their compact housing dimensions, they can be easily integrated.

### /// SLSR 46B



The SLSR 46B light beam safety device convinces with ranges of up to 40 m at an attractive price. With the aid of the LED on the receiver, it can very easily be aligned and adjusted. Its status display is highly visible over the entire range for reliable operation.



#### Benefits:

- Single light beam safety device with visible red light and high functional reserve
- Solid plastic housing, degree of protection IP 67 for industrial application
- Wide voltage range from 10 to 30 V with pnp transistor output for PLC applications
- Clearly visible alignment indicator in the front screen

Part no.	Part description	Operating range	Connection	No. of pins	Special design
50108539	► SLSR 46B.8	0 ... 40 m	Cable, 2,000 mm, PUR		Activation input
50108541	◄ SLSR 46B/66		Cable, 2,000 mm, PUR		
50108538	► SLSR 46B.8-S12	0 ... 40 m	Connector, M12, plastic	4	Activation input
50108540	◄ SLSR 46B/66-S12		Connector, M12, plastic	4	

► transmitter / ◄ receiver

### /// SLSR 25B



The SLSR 25B light beam safety device scores with its optimized light beam propagation (opening angle) with time-saving alignment. In combination with a safety-relevant control system (testing according to EN IEC 61496-1), it forms a category 2 contactless protective device and works with a range of up to 22 m.



#### Benefits:

- Single light beam safety device with visible red light and high functional reserve
- Solid plastic housing, degree of protection IP 67 for industrial application
- Wide voltage range from 10 to 30 V with pnp transistor output for PLC applications
- All common connection variants

Part no.	Part description	Operating range	Connection	No. of pins	Special design
50108489	► SLSR 25B.8-S12	0 ... 20 m	Connector, M12, plastic	4	Activation input
50108492	◄ SLSR 25B/66-S12		Connector, M12, plastic	4	
50108491	► SLSR 25B.8	0 ... 20 m	Cable, 2,000 mm, PUR		Activation input
50108494	◄ SLSR 25B/66		Cable, 2,000 mm, PUR		
50108490	► SLSR 25B.8-S8	0 ... 20 m	Connector, M8, plastic	4	Activation input
50108493	◄ SLSR 25B/66-S8		Connector, M8, plastic	4	
50110151	► SLSR 25B.8,200-S12	0 ... 20 m	Cable with connector, M12, metal, 200 mm, PUR	4	Activation input
50110152	◄ SLSR 25B/66,200-S12		Cable with connector, M12, metal, 200 mm, PUR	4	

► transmitter / ◄ receiver

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### /// SLS 318



The case often arises in which single beam safety devices have to be integrated into very tight installation areas. In this instance, SLS 318 protective sensors are the preferred choice. Because of their slender cylindrical construction they can be mounted quickly and easily, even in areas where space is restricted.



#### Benefits:

- Protective throughbeam photoelectric sensors with high performance reserve in visible red light and straight optics
- Sturdy stainless steel or plastic housing with cylindrical M18 design
- Degree of protection IP 67 for industrial application
- Activation input for testing and interlinking of the sensor
- Complementary switching outputs for light/dark switching or as a control function
- Very short construction for application in limited spaces
- LED display in transmitter and receiver

Part no.	Part description	Operating range	Connection	No. of pins	Special design
50083116	▶ SLSS 318K-S12	0 ... 10 m	Connector, M12, plastic	4	Activation input
50083117	◀ SLSE 318K/P-S12		Connector, M12, plastic	4	
50082199	▶ SLSS 318M-S12	0 ... 10 m	Connector, M12, plastic	4	Activation input
50082200	◀ SLSE 318M/P-S12		Connector, M12, plastic	4	
50083132	▶ SLSS 318K	0 ... 10 m	Cable, 2,000 mm, PVC		Activation input
50083133	◀ SLSE 318K/P		Cable, 2,000 mm, PVC		

▶ transmitter / ◀ receiver

### /// SLS 96 M/P



With its robust metal housing and the optional optics heating, the SLS 96 M/P light Beam Safety Device is the right choice for even extreme environmental conditions in rough industrial applications.



#### Benefits:

- High functional reserve in the visible red light and infrared light range
- Wide voltage range from 10 to 30 V with pnp transistor output for PLC applications
- 2 displays on transmitter and receiver for status display with start-up and running operation
- Optics heating for use with low temperatures

Direct access to the online product selector at [www.leuze.com/en/sls96m\\_p](http://www.leuze.com/en/sls96m_p)

Part no.	Part description	Operating range	Connection	No. of pins	Special design
50025209	▶ SLSS 96M-1210-T2-24	0 ... 30 m	Terminal	3	Activation input
50031562	◀ SLSE 96M/P-1200-T2-21		Terminal	3	
50031249	▶ SLSS 96M-1210-T2-45	0 ... 30 m	Connector, M12, metal	4	Activation input
50031250	◀ SLSE 96M/P-1200-T2-41		Connector, M12, metal	4	
50025215	▶ SLSS 96M-1080-T2-45	0 ... 50 m	Connector, M12, metal	4	Activation input
50025193	◀ SLSE 96M/P-1070-T2-41		Connector, M12, metal	4	
50025213	▶ SLSS 96M-1080-T2-24	0 ... 50 m	Terminal	3	Activation input
50025192	◀ SLSE 96M/P-1070-T2-21		Terminal	3	
50111085	▶ SLSS 96M-1089-T2-24 Ex n	0 ... 50 m	Terminal	3	Activation input Ex-protected
50111086	◀ SLSE 96M/P-1079-T2-21 Ex n		Terminal	3	Ex-protected
50029454	▶ SLSS 96M-1090-T2-24	0 ... 50 m	Terminal	3	Activation input Heating
50029455	◀ SLSE 96M/P-1071-T2-21		Terminal	3	Heating
50080478	▶ SLSS 96M-1090-T2-45	0 ... 50 m	Connector, M12, metal	4	Activation input Heating
50080479	◀ SLSE 96M/P-1071-T2-41		Connector, M12, metal	4	Heating

▶ transmitter / ◀ receiver

/// SLS 96 K/P



The unique feature of the SLS 96 K/P light beam safety device is its solid plastic housing in protection rating IP 67. With the SLS 96 K/P-1207, a model for multiple axis operation is also available.



**Benefits:**

- High functional reserve in the visible red light and infrared light range
- Wide voltage range from 10 to 30 V with pnp transistor output for PLC applications
- 2 displays on transmitter and receiver for status display with start-up and running operation
- Variants for multi-axis operation

Part no.	Part description	Operating range	Connection	No. of pins	Special design
50028011	▶ SLSS 96K-1210-T2-45	0 ... 30 m	Connector, M12, metal	4	Activation input
50028012	◀ SLSE 96K/P-1200-T2-41		Connector, M12, metal	4	
50041109	◀ SLSE 96K/P-1207-T2-41		Connector, M12, metal	4	
50028009	▶ SLSS 96K-1210-T2-24	0 ... 30 m	Terminal	3	Activation input
50028010	◀ SLSE 96K/P-1200-T2-21		Terminal	3	
50035078	◀ SLSE 96K/P-1207-T2-21		Terminal	3	
50031559	▶ SLSS 96K-1080-T2-45	0 ... 50 m	Connector, M12, metal	4	Activation input
50031561	◀ SLSE 96K/P-1070-T2-41		Connector, M12, metal	4	
50081292	▶ SLSS 96K-1080-T2-24	0 ... 50 m	Terminal	3	Activation input
50081293	◀ SLSE 96K/P-1070-T2-21		Terminal	3	

▶ transmitter / ◀ receiver

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# //SAFETY LASER SCANNERS

## FLEXIBLE FIELD MONITORING

The immense flexibility of the safety laser scanners is the result of the independent protective/warning field pairs, which can assume any field contours as well as the ability to change over between these pairs. Because of their compact construction, the ROTOSCAN RS4 safety laser scanners enable a very flexible installation position and use in mobile applications.

### /// Safety Laser Scanners "Basic" function package



Even the basic function package is enough to secure a danger zone in accordance with the latest safety standards.



**Benefits:**

- Any type of protective/warning field contours
- Start/restart interlock (RES), selectable
- Monitored field pair changeover
- Warning field monitoring
- Selectable resolution
- Additional alarm output
- Start test

Part no.	Part description	Number of protective fields	Resolution	Operating range	Safety-related switching outputs
50034195	RS4-4	4	70/150 mm	4 m/4 m	2, transistor, PNP

Included in delivery: RS4soft and RS4-MG-X1-Set, RS4-MG-X2-Set plugs

### /// Safety Laser Scanners "Extended" function package



This function package enables a high level of flexibility in the safeguarding of entries and points of operation through eight reversible protective field/warning field pairs.



**Benefits:**

- Any type of protective/warning field contours
- Start/restart interlock (RES), selectable
- Monitored field pair changeover
- Warning field monitoring
- Selectable resolution
- Reference boundary monitoring
- Additional alarm output
- Start test

Part no.	Part description	Number of protective fields	Resolution	Operating range	Safety-related switching outputs
520082	RS4-2E	4	70/150 mm	2.15 m/2.15 m	2, transistor, PNP
520085	RS4-4E	8	30/40/50/70/150 mm	1.6 m/2.2 m/2.8 m/4 m/4 m	2, transistor, PNP
520044	RS4-6E	8	30/40/50/70/150 mm	1.6 m/2.2 m/2.8 m/6.25 m/6.25 m	2, transistor, PNP

Included in delivery: RS4soft and RS4-MG-X1-Set, RS4-MG-X2-Set plugs

/// Safety Laser Scanners “MotionMonitoring” function package



With this function package, you can perform speed monitoring with distance measurement in the protective field without it being affected by moving personnel.



**Benefits:**

- Monitoring of side-tracking skates
- Reliable distance measurement for positioning
- Any type of protective/warning field contours
- Start/restart interlock (RES), selectable
- Monitored field pair changeover
- Warning field monitoring
- Selectable resolution
- Reference boundary monitoring
- Additional alarm output
- Start test

Part no.	Part description	Number of protective fields	Resolution	Operating range	Safety-related switching outputs
520099	RS4-4M	8	30/40/50/70/150 mm	1.6 m/2.2 m/2.8 m/4 m/4 m	2, transistor, PNP
520045	RS4-6M	8	30/40/50/70/150 mm	1.6 m/2.2 m/2.8 m/6.25 m/6.25 m	2, transistor, PNP
520098	RS4-2M	8	70/150 mm	2.15 m/2.15 m	2, transistor, PNP

Included in delivery: RS4soft and RS4-MG-X1-Set, RS4-MG-X2-Set plugs

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# //PROTECTIVE SENSOR SETS

## PLUG & PLAY FOR EFFICIENT ACCESS GUARDING

If you would like to more easily and more quickly implement access guarding with reduced logistical work, protective sensor sets are an attractive solution. Components that are electronically and mechanically optimized to one another and which are equipped with connectors ensure fast start-up of the Plug & Play complete solutions.

### /// MLDSET



These are muting systems for access guarding with 2- and 3-beam MLD transceiver devices, pre-mounted in Leuze electronic Device Columns.



#### Benefits:

- Pre-mounted and aligned muting sensors with complete wiring
- Configuration without PC via wiring in the switch cabinet
- Various muting modes (parallel, sequential, partial)
- Also for low-temperature applications down to -30 °C

Part no.	Part description	Beam spacing	Number of beams	Operating range	Muting sensors	Column height without foot	Muting type
66900022	MLDSET-M1-1300L	500 mm	2	0 ... 8 m	2 PRK 25B retro-reflective photoelectric sensors	1,300 mm	Sequence controlled 2-sensor muting
66900021	MLDSET-M1-1300T	500 mm	2	0 ... 8 m	2 PRK 25B retro-reflective photoelectric sensors	1,300 mm	Timing controlled 2-sensor muting
66900024	MLDSET-M1-1600L	500 mm	2	0 ... 8 m	2 PRK 25B retro-reflective photoelectric sensors	1,600 mm	Sequence controlled 2-sensor muting
66900023	MLDSET-M1-1600T	500 mm	2	0 ... 8 m	2 PRK 25B retro-reflective photoelectric sensors	1,600 mm	Timing controlled 2-sensor muting
66900012	MLDSET-M1-1600T4	500 mm	2	0 ... 8 m	4 PRK 25B retro-reflective photoelectric sensors	1,600 mm	Timing controlled 4-sensor muting
66900026	MLDSET-M2-1300L	400 mm	3	0 ... 6 m	2 PRK 25B retro-reflective photoelectric sensors	1,300 mm	Sequence controlled 2-sensor muting
66900025	MLDSET-M2-1300T	400 mm	3	0 ... 6 m	2 PRK 25B retro-reflective photoelectric sensors	1,300 mm	Timing controlled 2-sensor muting
66900028	MLDSET-M2-1600L	400 mm	3	0 ... 6 m	2 PRK 25B retro-reflective photoelectric sensors	1,600 mm	Sequence controlled 2-sensor muting
66900027	MLDSET-M2-1600T	400 mm	3	0 ... 6 m	2 PRK 25B retro-reflective photoelectric sensors	1,600 mm	Timing controlled 2-sensor muting
66900013	MLDSET-M2-1600T4	400 mm	3	0.5 ... 6 m	4 PRK 25B retro-reflective photoelectric sensors	1,600 mm	Timing controlled 4-sensor muting

Included in delivery: mounting kit for floor assembly

## SMARTER APPLICATION KNOW-HOW

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/// MLD-UDC



MLD 500 transceiver or transmitter-receiver systems with different numbers of beams and ranges which are pre-mounted in device columns facilitate the installation of the most diverse constructional systems even in combination with deflecting mirror columns. They are suitable for single- and multiple-sided access guarding.



**Benefits:**

- Pre-mounted safety sensors in sturdy device columns
- Configuration without PC via wiring in the switch cabinet
- Extremely diverse access guarding systems with the addition of deflecting mirror columns
- All columns with automatic resetting after mechanical impacts
- Also for low-temperature applications down to -30 °C

Part no.	Part description	Beam spacing	Number of beams	Operating range	Column height without foot
426538	▶ MLD520-RT2-UDC-900-S2	500 mm	2	0.5 ... 8 m	835 mm
426509	◀ MLD-M002-UDC-900-S2	500 mm	2		835 mm
426540	▶ MLD530-RT2M-UDC-900-S2	500 mm	2	0.5 ... 8 m	835 mm
426509	◀ MLD-M002-UDC-900-S2	500 mm	2		835 mm
426539	▶ MLD530-R2LM-UDC-900-S2	500 mm	2		835 mm
426303	◀ MLD500-T2L-UDC-900-S2	500 mm	2	0.5 ... 50 m	900 mm
426302	▶ MLD520-R2L-UDC-900-S2	500 mm	2		900 mm
426303	◀ MLD500-T2L-UDC-900-S2	500 mm	2	0.5 ... 50 m	900 mm
426535	▶ MLD530-RT2M-UDC-1000-S2	500 mm	2	0.5 ... 8 m	1,000 mm
426305	◀ MLD-M002-UDC-1000-S2	500 mm	2		1,000 mm
426304	▶ MLD520-RT2-UDC-1000-S2	500 mm	2	0.5 ... 8 m	1,000 mm
426305	◀ MLD-M002-UDC-1000-S2	500 mm	2		1,000 mm
426307	▶ MLD530-R2LM-UDC-1000-S2	500 mm	2		1,000 mm
426306	◀ MLD500-T2L-UDC-1000-S2	500 mm	2	0.5 ... 50 m	1,000 mm
426308	▶ MLD520-R2L-UDC-1000-S2	500 mm	2		1,000 mm
426306	◀ MLD500-T2L-UDC-1000-S2	500 mm	2	0.5 ... 50 m	1,000 mm
426379	▶ MLD510-R2-UDC-1000-S2-P	500 mm	2		1,000 mm
426345	◀ MLD500-T2-UDC-1000-S2-P	500 mm	2	0.5 ... 50 m	1,000 mm
905061	▶ MLD530-RT2M-UDC-1300-S2	500 mm	2	0.5 ... 8 m	1,300 mm
905065	◀ MLD-M002-UDC-1300-S2	500 mm	2		1,300 mm
426543	▶ MLD520-RT2-UDC-1300-S2	500 mm	2	0.5 ... 8 m	1,300 mm
905065	◀ MLD-M002-UDC-1300-S2	500 mm	2		1,300 mm
426313	▶ MLD535-RT2M-UDC-1600-S2	500 mm	2	0.5 ... 8 m	1,600 mm
905066	◀ MLD-M002-UDC-1600-S2	500 mm	2		1,600 mm
426534	▶ MLD520-RT2-UDC-1600-S2	500 mm	2	0.5 ... 8 m	1,600 mm
905066	◀ MLD-M002-UDC-1600-S2	500 mm	2		1,600 mm
905062	▶ MLD530-RT2M-UDC-1600-S2	500 mm	2	0.5 ... 8 m	1,600 mm
905066	◀ MLD-M002-UDC-1600-S2	500 mm	2		1,600 mm
426519	▶ MLD530-RT2M-UDC-1900-S2	500 mm	2	0.5 ... 8 m	1,900 mm
426314	◀ MLD-M002-UDC-1900-S2	500 mm	2		1,900 mm
426541	▶ MLD520-RT2-UDC-1900-S2	500 mm	2	0.5 ... 8 m	1,900 mm
426314	◀ MLD-M002-UDC-1900-S2	500 mm	2		1,900 mm
426530	▶ MLD510-R2-UDC-2500-S2-P	500 mm	2		2,500 mm
426531	◀ MLD500-T2-UDC-2500-S2-P	500 mm	2	0.5 ... 50 m	2,500 mm
426542	▶ MLD520-RT3-UDC-1300-S2	400 mm	3	0.5 ... 6 m	1,300 mm
905067	◀ MLD-M003-UDC-1300-S2	400 mm	3		1,300 mm
905063	▶ MLD530-RT3M-UDC-1300-S2	400 mm	3	0.5 ... 6 m	1,300 mm
905067	◀ MLD-M003-UDC-1300-S2	400 mm	3		1,300 mm
905064	▶ MLD530-RT3M-UDC-1600-S2	400 mm	3	0.5 ... 6 m	1,600 mm
905068	◀ MLD-M003-UDC-1600-S2	400 mm	3		1,600 mm
426537	▶ MLD535-RT3M-UDC-1600-S2	400 mm	3	0.5 ... 6 m	1,600 mm
905068	◀ MLD-M003-UDC-1600-S2	400 mm	3		1,600 mm
426536	▶ MLD520-RT3-UDC-1600-S2	400 mm	3	0.5 ... 6 m	1,600 mm
905068	◀ MLD-M003-UDC-1600-S2	400 mm	3		1,600 mm
426544	▶ MLD535-RT3M-UDC-1900-S2	400 mm	3	0.5 ... 6 m	1,900 mm
426508	◀ MLD-M003-UDC-1900-S2	400 mm	3		1,900 mm
426591	▶ MLD530-RT3M-UDC-1900-S2	400 mm	3	0.5 ... 6 m	1,900 mm
426508	◀ MLD-M003-UDC-1900-S2	400 mm	3		1,900 mm
426554	▶ MLD510-R4L-UDC-1600-S2	300 mm	4		1,600 mm
426553	◀ MLD500-T4L-UDC-1600-S2	300 mm	4	0.5 ... 50 m	1,600 mm
426558	▶ MLD510-R4L-UDC-1600-S2.1	300 mm	4		1,600 mm
426557	◀ MLD500-T4L-UDC-1600-S2.1	300 mm	4	0.5 ... 50 m	1,600 mm

Included in delivery: mounting kit for floor assembly  
▶ receiver or transceiver / ◀ transmitter or mirror

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# / SAFE LOCKING DEVICES, SWITCHES AND PROXIMITY SENSORS

## FROM EXTREMELY ECONOMICAL TO EXTREMELY TOUGH

Safety switches and magnetically coded safety systems are used for monitoring moveable safety guards, such as safety doors, sliding grilles or flaps. Opening the protective devices triggers an E-STOP command. Safety locking devices keep the protective doors locked, thereby preventing the inadmissible access of people until the guarded machine no longer poses a danger.



**Safety Switches**

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**Safety Locking Devices**

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**Safety Command Devices**

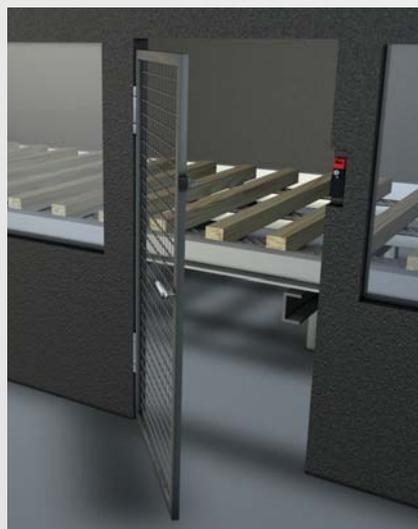
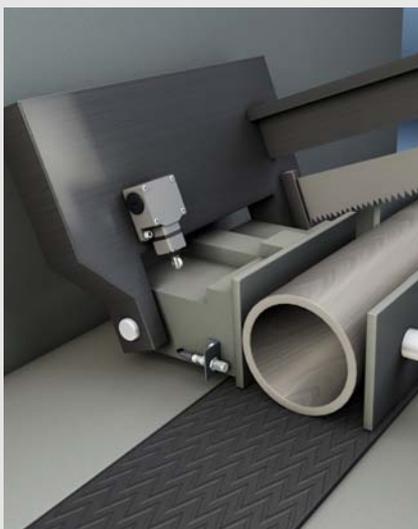
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**Magnetically Coded Sensors**

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**Safety Transponders**

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# //SAFETY SWITCHES

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## OPEN IS OFF

For doors, flaps and covers that must be closed during the operation of machines, safety switches for position monitoring and for the protection of personnel and systems are required. In addition to standard designs for universal use, safety hinge switches and safety position switches are available as alternatives to hinge switches on flaps.

### Safety Switch with Separate Actuator

Standard designs with separate actuators allow different approach directions and thereby facilitate universal use.

#### /// S20



The S20 is a safety switch without locking device that can be used, e. g., on machines and systems where the operator is protected from the point of operation by grid doors or sliding gates.



#### Benefits:

- Housing made of glass fiber reinforced plastic – degree of protection IP 67
- Suited for normal duty applications
- Easy mounting with standard construction
- Universal use with 5 actuator approach directions
- Self-centering through funnel-shaped insertion opening

Part no.	Part description	Contact equipment	Housing material	Connection	Cable entry	Approach actuation directions	Actuation force (pull-out)
63000101	S20-P1C1-M20-FH	1NC + 1NO, creep contact	Plastic	Terminal	1x, M20 x 1.5	4 x side (90°) 1 x top	10 N
63000102	S20-P1C3-M20-LH	1NC + 1NO, creep contact	Plastic	Terminal	3x, M20 x 1.5	4 x side (90°) 1 x top	10 N
63000103	S20-P4C1-M20-FH	2NC + 1NO, creep contact	Plastic	Terminal	1x, M20 x 1.5	4 x side (90°) 1 x top	10 N
63000104	S20-P4C3-M20-LH	2NC + 1NO, creep contact	Plastic	Terminal	3x, M20 x 1.5	4 x side (90°) 1 x top	10 N
63000105	S20-P4C1-M20-FH30	2NC + 1NO, creep contact	Plastic	Terminal	1x, M20 x 1.5	1 x top 4 x side (90°)	30 N
63000106	S20-P4C1-M12-FH	2NC + 1NO, creep contact	Plastic	Connector, M12, plastic		1 x top 4 x side (90°)	10 N
63000100	S20-P3C1-M20-FH	2NC, creep contact	Plastic	Terminal	1x, M20 x 1.5	4 x side (90°) 1 x top	10 N

Note: Actuators must be ordered separately!

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### /// S200



This safety switch is used, e. g., for heavy doors or rolling gates in rough environments, i. e., it is preferred for “heavy duty” applications.



#### Benefits:

- Housing made of metal – degree of protection IP 67
- Suited for heavy duty applications
- Easy mounting with standard construction
- Universal use with 5 actuator approach directions
- Self-centering through funnel-shaped insertion opening

Direct access to the online product selector at [www.leuze.com/en/s200](http://www.leuze.com/en/s200)

Part no.	Part description	Contact equipment	Housing material	Connection	Cable entry	Approach actuation directions	Actuation force (pull-out)
63000201	S200-M1C1-M20	1NC + 1NO, creep contact	Metal	Terminal	1x, M20 × 1.5	4 × side (90°) 1 × top	10 N
63000202	S200-M4C1-M20	2NC + 1NO, creep contact	Metal	Terminal	1x, M20 × 1.5	4 × side (90°) 1 × top	10 N
63000203	S200-M4C1-M12	2NC + 1NO, creep contact	Metal	Connector, M12, metal		4 × side (90°) 1 × top	10 N
63000200	S200-M3C1-M20	2NC, creep contact	Metal	Terminal	1x, M20 × 1.5	4 × side (90°) 1 × top	10 N

Note: Actuators must be ordered separately!

### Safety Position Switch

Because of their construction design, these switches are used for the position monitoring of machines or as an alternative to hinge switches – always with the prerequisite that appropriate actuation tappets or notches can actuate the switch when friction closed.

### /// S300



The S300 safety position switches have a metal housing in accordance with protection rating IP 67. The models equipped with various contact sets enable integration in control circuits up to category 4 in accordance with EN ISO 13849. In addition, models are available with different actuators and supports and connection options.



#### Benefits:

- Metal housing for “heavy duty” applications
- Switching direction selectable
- Universal use with individually set actuator approach directions and angles
- Stable lever fastening in 10 ° raster
- Models with plunger and roller actuator, extremely long-life and robust

Part no.	Part description	Contact equipment	Housing material	Connection	No. of pins	Cable entry	Approach actuation directions	Switching direction
63000307	S300-P13C1-M12-CB	2NC + 1NO, creep contact	Plastic	Connector, M12, plastic	8		4 × side (90°) 360 °	One side Both sides
63000309	S300-P13C1-M12-SB	2NC + 1NO, creep contact	Plastic	Connector, M12, plastic	8		4 × side (90°) 360 °	One side Both sides
63000310	S300-P0C1-M20-CB	1NC + 1NO, snap-action contact	Plastic	Terminal	4	1x, M20 × 1.5	4 × side (90°) 360 °	One side Both sides
63000300	S300-M0C3-M20-15	1NC + 1NO, snap-action contact	Metal	Terminal	4	3x, M20 × 1.5	4 × side (90°) 1 × top	Both sides
63000302	S300-M0C3-M20-31	1NC + 1NO, snap-action contact	Metal	Terminal	4	3x, M20 × 1.5	4 × side (90°) 360 °	Both sides One side
63000308	S300-P13C1-M20-SB	2NC + 1NO, creep contact	Plastic	Terminal	6	1x, M20 × 1.5	4 × side (90°) 360 °	One side Both sides
63000306	S300-P13C1-M20-CB	2NC + 1NO, creep contact	Plastic	Terminal	6	1x, M20 × 1.5	4 × side (90°) 360 °	One side Both sides
63000304	S300-M13C3-M20-CB	2NC + 1NO, creep contact	Metal	Terminal	6	3x, M20 × 1.5	4 × side (90°) 360 °	One side Both sides
63000305	S300-M13C3-M20-SB	2NC + 1NO, creep contact	Metal	Terminal	6	3x, M20 × 1.5	4 × side (90°) 360 °	One side Both sides
63000301	S300-M13C3-M20-15	2NC + 1NO, creep contact	Metal	Terminal	6	3x, M20 × 1.5	4 × side (90°) 1 × top	Both sides
63000303	S300-M13C3-M20-31	2NC + 1NO, creep contact	Metal	Terminal	6	3x, M20 × 1.5	4 × side (90°) 360 °	Both sides One side

Note: Actuators must be ordered separately!

## Safety Hinge Switch

Safety hinge switches are used for the position monitoring of hard guards that can rotate (e. g. protective hoods) by means of a monitoring switch (without guard interlocking) integrated into the hinge.

### /// S400



The S400 safety hinge switches unite the safety switch and door hinge functions in one component. Because external actuators are not required with this switch, it can also be used problem-free in environments with high dust concentration levels or with heavy particle loads (protection rating IP 67). By means of a repeatable setting (switching angle alignment), fault-free function is ensured even with warped or misaligned doors.



#### Benefits:

- Maximum opening angle of the protective device, 180°
- Repeatable setting (switching angle alignment) with skewed or misaligned doors
- Compact, rounded-off construction design in robust metal version, degree of protection 67
- Encapsulated, internal actuator guarantees proper functioning, even under difficult conditions
- Highly tamperproof due to covered screws
- Cable or M12 connection

Part no.	Part description	Contact equipment	Housing material	Connection	No. of pins/ No. of conductors	Side of cable entry
63000406	S400-M4-CB02M12-W	2NC + 1NO, creep contact	Metal	Cable with M12 connector, M12, metal, 200 mm, PVC	8	Wall side
63000411	S400-M4-CB2PUR-W	2NC + 1NO, creep contact	Metal	Cable, 2,000 mm, PUR	7	Wall side
63000402	S400-M4CB2-T	2NC + 1NO, creep contact	Metal	Cable, 2,000 mm, PVC	7	From above (with left installation)
63000400	S400-M4CB2-B	2NC + 1NO, creep contact	Metal	Cable, 2,000 mm, PVC	7	From below (with left installation)
63000403	S400-M4M12-T	2NC + 1NO, creep contact	Metal	Connector, M12, metal	8	From above (with left installation)
63000401	S400-M4M12-B	2NC + 1NO, creep contact	Metal	Connector, M12, metal	8	From below (with left installation)
63000407	S400-M1-CB02M12-W	2NC + 1NO, snap-action contact	Metal	Cable with M12 connector, M12, metal, 200 mm, PVC	8	Wall side

### /// S410



With its wider mounting fork, this safety hinge switch is suitable above all for use with glass or plastic parts, as larger support surfaces are needed for stability in these cases.



#### Benefits:

- Wide fork dimensions for stability on glass and plastic
- Maximum opening angle of the protective device, 180°
- Repeatable setting (switching angle alignment) with skewed or misaligned doors
- Degree of protection IP 67
- Compact, rounded-off construction design in robust metal version
- Encapsulated, internal actuator guarantees proper functioning, even under difficult conditions
- Highly tamperproof due to covered screws
- Cable or M12 connection

Direct access to the online product selector at [www.leuze.com/en/s410](http://www.leuze.com/en/s410)

Part no.	Part description	Contact equipment	Housing material	Connection	No. of pins/ No. of conductors	Side of cable entry
63000410	S410-M4-CB02M12-W	2NC + 1NO, creep contact	Metal	Cable with M12 connector, M12, metal, 200 mm, PVC	8	Wall side
63000412	S410-M4-CB2PUR-W	2NC + 1NO, creep contact	Metal	Cable, 2,000 mm, PVC	7	Wall side
63000408	S410-M1CB2-T	2NC + 1NO, snap-action contact	Metal	Cable, 2,000 mm, PVC	7	From above (with left installation)
63000404	S410-M1CB2-B	2NC + 1NO, snap-action contact	Metal	Cable, 2,000 mm, PVC	7	From below (with left installation)
63000409	S410-M1M12-T	2NC + 1NO, snap-action contact	Metal	Connector, M12, metal	8	From above (with left installation)
63000405	S410-M1M12-B	2NC + 1NO, snap-action contact	Metal	Connector, M12, metal	8	From below (with left installation)

# //SAFETY LOCKING DEVICES

## THE DOOR STAYS CLOSED!

Safety locking devices keep protective doors securely locked and thereby prevent the inadmissible access of people until the guarded machine no longer poses a danger. Not until there is no longer a danger to the machine or to the workers is access released by an electric signal. With their robust design, all Leuze electronic safety switches and locking devices are designed for rough industrial applications.

### /// L10



The compact and economical L10 safety locking device reduces wiring through manual locking and releasing.



#### Benefits:

- Particularly economical locking solution for rarely-used maintenance doors and applications without electrical control signals
- Hardly any wiring and cabling costs due to manual locking and unlocking
- 6 different heavy duty actuators for the most diverse installation conditions

Part no.	Part description	Contact equipment	Housing material	Cable entry	Approach actuation directions	Locking actuation	Locking type
63000552	L10-P3C1-M20-SB20	2NC + 1NO, creep contact	Plastic	1x, M20 × 1.5	1 × top 4 × side (90°)	Manual unlocking by means of knurled nut	Mechanical
63000558	L10-P3C1-M20-K0	2NC + 1NO, creep contact	Plastic	1x, M20 × 1.5	4 × side (90°) 1 × top	Manual unlocking by means of key	Mechanical
63000554	L10-P3C1-M20-LB10	2NC + 1NO, creep contact	Plastic	1x, M20 × 1.5	4 × side (90°) 1 × top	Manual unlocking by means of knurled nut	Mechanical
63000555	L10-P3C1-M20-LB20	2NC + 1NO, creep contact	Plastic	1x, M20 × 1.5	4 × side (90°) 1 × top	Manual unlocking by means of knurled nut	Mechanical
63000553	L10-M3C1-M20-SB20	2NC + 1NO, creep contact	Metal	1x, M20 × 1.5	1 × top 4 × side (90°)	Manual unlocking by means of knurled nut	Mechanical
63000559	L10-M3C1-M20-K0	2NC + 1NO, creep contact	Metal	1x, M20 × 1.5	4 × side (90°) 1 × top	Manual unlocking by means of key	Mechanical
63000550	L10-P2C1-M20-SB20	2NC, creep contact	Plastic	1x, M20 × 1.5	1 × top 4 × side (90°)	Manual unlocking by means of knurled nut	Mechanical
63000551	L10-M2C1-M20-SB20	2NC, creep contact	Metal	1x, M20 × 1.5	1 × top 4 × side (90°)	Manual unlocking by means of knurled nut	Mechanical

Note: Actuators must be ordered separately!

### /// L100



The versatile safety locking device is used both for personnel safety as well as for machine protection and is used to guard machines and systems that have stopping times.



#### Benefits:

- 6 different heavy duty actuators for the most diverse installation conditions
- Standard construction in models with electromagnetic or spring force-actuated interlocking type and auxiliary release function
- Adjustable switch-on current reduction

Part no.	Part description	Contact equipment	Housing material	Cable entry	Approach actuation directions	Locking actuation	Locking type
63000600	L100-P3C3-M20-SLM24	1NC, 1NC + 1NO, creep contact	Plastic	3x, M20 × 1.5	1 × top 4 × side (90°)	Spring	Spring force
63000601	L100-P3C3-M20-MLM24	1NC, 1NC + 1NO, creep contact	Plastic	3x, M20 × 1.5	1 × top 4 × side (90°)	Magnet	Electromagnetic
63000602	L100-P4C3-M20-SLM24	1NC, 2NC, creep contact	Plastic	3x, M20 × 1.5	1 × top 4 × side (90°)	Spring	Spring force

Note: Actuators must be ordered separately!

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 www.switchesunlimited.com

/// L200



The L200 safety locking device designed for highly demanding applications is predestined for guarding large protective doors and sliding gates, in logistics operations, for example, or with very big machinery, and under harsh conditions.



**Benefits:**

- Heavy duty access guarding on big machinery and systems in harsh ambient conditions
- Emergency unlock function (ergonomically optimized panic button) for manually opening the protective devices in the event of an emergency
- Suitable for extreme mechanical loads
- Auxiliary unlocking (for spring locking)
- LED status displays

Part no.	Part description	Contact equipment	Housing material	Cable entry	Approach actuation directions	Locking actuation	Locking type
63000652	L200-M1C3-SLM24-PB-L2G	1NC + 1NO, 2NC, creep contact	Metal	3x, M20 x 1.5	1 x top 4 x side (90°)	Spring	Spring force
63000650	L200-M1C3-SLM24-L2G	1NC + 1NO, 2NC, creep contact	Metal	3x, M20 x 1.5	1 x top 4 x side (90°)	Spring	Spring force
63000651	L200-M1C3-MLM24-L2G	1NC + 1NO, 2NC, creep contact	Metal	3x, M20 x 1.5	1 x top 4 x side (90°)	Magnet	Electromagnetic

Note: Actuators must be ordered separately!

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# //SAFETY COMMAND DEVICES

## AND OFF!

For stopping in emergencies, EN ISO 12100-1 stipulates protective devices and supplementary measures such as E-Stop buttons or emergency rope switches. Leuze electronic offers solutions that are optimized with respect to safety and ergonomics.

### /// ERS200



The ERS200 E-Stop rope switch is a safety command device in accordance with EN ISO 13850 and EN 60947-5-5 and is used with preference with expansive points of operation. The rope-pull activation guarantees that it is easy to reach all along the point of operation.



#### Benefits:

- Pulling the rope or rope fracture safely stops the machine
- Clicks in on both sides with friction-locking contacts
- Easy alignment with switching point indicator
- Easy integration with 3 cable approach directions
- Compact metal housing, degree of protection IP 67
- Reset button with status display
- Temperature compensation for longer rope lengths

Direct access to the online product selector at [www.leuze.com/en/ers200](http://www.leuze.com/en/ers200)

Part no.	Part description	Contact equipment	Housing material	Connection	No. of pins	Cable entry	Actuation directions	Actuation force (pull-out)	Actuating path with forced separation	Rope length, max.
63000500	ERS200-M0C3-M20-HLR	1NC + 1NO	Metal	Terminal	4	3x, M20 × 1.5	On longitudinal axis	83 N	8 mm	24 m
63000522	ERS200-M0C3-M20-HAR	1NC + 1NO	Metal	Terminal	4	3x, M20 × 1.5	To right	235 N	14 mm	70 m
63000524	ERS200-M0C3-M20-HAL	1NC + 1NO	Metal	Terminal	4	3x, M20 × 1.5	To left	235 N	14 mm	70 m
63000501	ERS200-M1C3-M20-HLR	2NC	Metal	Terminal	4	3x, M20 × 1.5	On longitudinal axis	83 N	8 mm	24 m
63000525	ERS200-M1C1-M20-HAL	2NC	Metal	Terminal	4	1x, M20 × 1.5	To left	235 N	14 mm	70 m
63000523	ERS200-M1C1-M20-HAR	2NC	Metal	Terminal	4	1x, M20 × 1.5	To right	235 N	14 mm	70 m
63000502	ERS200-M4C3-M20-HLR	2NC + 1NO	Metal	Terminal	6	3x, M20 × 1.5	On longitudinal axis	83 N	8 mm	24 m
63000503	ERS200-M4C1-M20-HLR	2NC + 1NO	Metal	Connector	6	1x, M20 × 1.5	On longitudinal axis	83 N	8 mm	24 m
63000504	ERS200-M4C1-M12-HLR	2NC + 1NO	Metal	Connector	8	1x, M20 × 1.5	On longitudinal axis	83 N	8 mm	24 m
63000520	ERS200-M4C3-M20-HAR	2NC + 1NO	Metal	Terminal	6	3x, M20 × 1.5	To right	235 N	14 mm	70 m
63000521	ERS200-M4C3-M20-HAL	2NC + 1NO	Metal	Terminal	6	3x, M20 × 1.5	To left	235 N	14 mm	70 m

Note: Steel rope, rope clamps and other accessories must be ordered separately

### /// ESB200



E-Stop buttons of the ESB200 series are used at points of operation where it makes sense to be able to enter a stop command at a specific location. The diversity of the series allows the devices to be installed, for example, on profiles as well as in control panels, etc.



#### Benefits:

- Contact sets for integration up to cat. 4 in accordance with EN ISO 13849
- 2 safety circuits, 1 signal circuit
- Either screw terminals or M12 connection
- Ergonomically optimized
- Degree of protection IP 67 and IP 69K

Part no.	Part description	Contact equipment	Housing material	Connection	No. of pins	Cable entry	Scanner actuation force
63000000	ESB200-4TR-C	2NC + 1NO	Plastic	Terminal	6	5x, M16 × 1.5	25 N
63000002	ESB200-4KR-C	2NC + 1NO	Plastic	Terminal	6	5x, M16 × 1.5	25 N
63000004	ESB200-4TR-M12p	2NC + 1NO	Plastic	Connector	8	M12	25 N
63000006	ESB200-4KR-M12p	2NC + 1NO	Plastic	Connector	8	M12	25 N

Included in delivery: mounting screws, 1 "STOP" ring, 2 keys (depending on variant)

# //MAGNETICALLY CODED SENSORS

## ACTIVE WITHOUT CONTACT

The magnetically coded safety system is predestined for use under critical environmental conditions, i. e. wherever stress due to dust and humidity is high. Easy start-up, compact housing and extremely low costs characterize this robust series.

### /// MC3



The MC3x coded magnetic sensor contains specially combined reed contacts that are contactlessly activated by the coded magnetic field of the actuator. With their cast housing, the extremely tamperproof switches are suitable for demanding applications in dusty or humid environments.



#### Benefits:

- Monitoring of moving guards on machines with sufficiently short stopping times for demanding applications
- For dusty or humid environments
- High-strength plastic housing
- Highly tamperproof
- Designs for many different types of applications
- PVC or PUR cable, M8 plug

Part no.	Part description	Contact equipment	Connection	Sao, max.	Off, min.	Sar, min.	Dimensions
63001020	MC388-S2C2-A	2NO	Cable with wire-end sleeves, 2,000 mm, PVC	9 mm	19 mm	22 mm	25 mm × 13 mm × 88 mm
63001021	MC388-S2C5-A	2NO	Cable with wire-end sleeves, 5,000 mm, PVC	9 mm	19 mm	22 mm	25 mm × 13 mm × 88 mm
63001025	MC388-S2R10-A	2NO	Cable with wire-end sleeves, 10,000 mm, PUR	9 mm	19 mm	22 mm	25 mm × 13 mm × 88 mm
63001027	MC388-S2-C02M12-A	2NO	Cable with M12 connector, M12, metal, 200 mm, PVC	9 mm	19 mm	22 mm	25 mm × 13 mm × 88 mm
63001026	MC388-S2M8-A	2NO	Connector, M8, metal	9 mm	19 mm	22 mm	25 mm × 13 mm × 88 mm
63001003	MC388-S1R2-A	1NC + 1NO	Cable with wire-end sleeves, 2,000 mm, PUR	6 mm	13 mm	30 mm	25 mm × 13 mm × 88 mm
63001000	MC388-S1C2-A	1NC + 1NO	Cable with wire-end sleeves, 2,000 mm, PVC	6 mm	13 mm	30 mm	25 mm × 13 mm × 88 mm
63001004	MC388-S1R5-A	1NC + 1NO	Cable with wire-end sleeves, 5,000 mm, PUR	6 mm	13 mm	30 mm	25 mm × 13 mm × 88 mm
63001001	MC388-S1C5-A	1NC + 1NO	Cable with wire-end sleeves, 5,000 mm, PVC	6 mm	13 mm	30 mm	25 mm × 13 mm × 88 mm
63001005	MC388-S1R10-A	1NC + 1NO	Cable with wire-end sleeves, 10,000 mm, PUR	6 mm	13 mm	30 mm	25 mm × 13 mm × 88 mm
63001002	MC388-S1C10-A	1NC + 1NO	Cable with wire-end sleeves, 10,000 mm, PVC	6 mm	13 mm	30 mm	25 mm × 13 mm × 88 mm
63001007	MC388-S1-C02M12-A	1NC + 1NO	Cable with M12 connector, M12, metal, 200 mm, PVC	6 mm	13 mm	30 mm	25 mm × 13 mm × 88 mm
63001006	MC388-S1M8-A	1NC + 1NO	Connector, M8, metal	6 mm	13 mm	30 mm	25 mm × 13 mm × 88 mm
63001070	MC336-S2C2-A	2NO	Cable with wire-end sleeves, 2,000 mm, PVC	7 mm	17 mm	20 mm	26.2 mm × 13 mm × 36 mm
63001071	MC336-S2C5-A	2NO	Cable with wire-end sleeves, 5,000 mm, PVC	7 mm	17 mm	20 mm	26.2 mm × 13 mm × 36 mm
63001077	MC336-S2-C02M12-A	2NO	Cable with M12 connector, M12, metal, 200 mm, PVC	7 mm	17 mm	20 mm	26.2 mm × 13 mm × 36 mm
63001076	MC336-S2M8-A	2NO	Connector, M8, metal	7 mm	17 mm	20 mm	26.2 mm × 13 mm × 36 mm
63001053	MC336-S1R2-A	1NC + 1NO	Cable with wire-end sleeves, 2,000 mm, PUR	3 mm	8 mm	11 mm	26.2 mm × 13 mm × 36 mm
63001050	MC336-S1C2-A	1NC + 1NO	Cable with wire-end sleeves, 2,000 mm, PVC	3 mm	8 mm	11 mm	26.2 mm × 13 mm × 36 mm
63001054	MC336-S1R5-A	1NC + 1NO	Cable with wire-end sleeves, 5,000 mm, PUR	3 mm	8 mm	11 mm	26.2 mm × 13 mm × 36 mm
63001051	MC336-S1C5-A	1NC + 1NO	Cable with wire-end sleeves, 5,000 mm, PVC	3 mm	8 mm	11 mm	26.2 mm × 13 mm × 36 mm
63001055	MC336-S1R10-A	1NC + 1NO	Cable with wire-end sleeves, 10,000 mm, PUR	3 mm	8 mm	11 mm	26.2 mm × 13 mm × 36 mm
63001052	MC336-S1C10-A	1NC + 1NO	Cable with wire-end sleeves, 10,000 mm, PVC	3 mm	8 mm	11 mm	26.2 mm × 13 mm × 36 mm
63001057	MC336-S1-C02M12-A	1NC + 1NO	Cable with M12 connector, M12, metal, 200 mm, PVC	3 mm	8 mm	11 mm	26.2 mm × 13 mm × 36 mm
63001056	MC336-S1M8-A	1NC + 1NO	Connector, M8, metal	3 mm	8 mm	11 mm	26.2 mm × 13 mm × 36 mm
63001120	MC330-S2C2-A	2NO	Cable with wire-end sleeves, 2,000 mm, PVC	6 mm	15 mm	18 mm	M30 × 36 mm
63001121	MC330-S2C5-A	2NO	Cable with wire-end sleeves, 5,000 mm, PVC	6 mm	15 mm	18 mm	M30 × 36 mm
63001127	MC330-S2-C02M12-A	2NO	Cable with M12 connector, M12, metal, 200 mm, PVC	6 mm	15 mm	18 mm	M30 × 36 mm
63001126	MC330-S2M8-A	2NO	Connector, M8, metal	6 mm	15 mm	18 mm	M30 × 36 mm
63001103	MC330-S1R2-A	1NC + 1NO	Cable with wire-end sleeves, 2,000 mm, PUR	6 mm	12 mm	14 mm	M30 × 36 mm
63001100	MC330-S1C2-A	1NC + 1NO	Cable with wire-end sleeves, 2,000 mm, PVC	6 mm	12 mm	14 mm	M30 × 36 mm
63001104	MC330-S1R5-A	1NC + 1NO	Cable with wire-end sleeves, 5,000 mm, PUR	6 mm	12 mm	14 mm	M30 × 36 mm
63001101	MC330-S1C5-A	1NC + 1NO	Cable with wire-end sleeves, 5,000 mm, PVC	6 mm	12 mm	14 mm	M30 × 36 mm
63001105	MC330-S1R10-A	1NC + 1NO	Cable with wire-end sleeves, 10,000 mm, PUR	6 mm	12 mm	14 mm	M30 × 36 mm
63001102	MC330-S1C10-A	1NC + 1NO	Cable with wire-end sleeves, 10,000 mm, PVC	6 mm	12 mm	14 mm	M30 × 36 mm
63001107	MC330-S1-C02M12-A	1NC + 1NO	Cable with M12 connector, M12, metal, 200 mm, PVC	6 mm	12 mm	14 mm	M30 × 36 mm
63001106	MC330-S1M8-A	1NC + 1NO	Connector, M8, metal	6 mm	12 mm	14 mm	M30 × 36 mm

Included in delivery: 1 actuator, mounting material  
Notice: An MSI-MC3x safety relay is required for certified application! This must be ordered separately.

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# //SAFETY TRANSPONDERS

## PURE FLEXIBILITY!

Safety transponders are well-suited for applications in which a very high level of safety and the highest protection against manipulation are necessary. Their high-strength plastic housings offer reliable protection against contamination and humidity in rough environmental conditions.

### /// RD800



No matter if you require the RD800-S for single connections or the RD800-M for multiple applications – depending on the degree of risk, you can select ready-configured systems with standard or unique code detection (S- or U-variants). Teachable P-variants are a good choice if, for example, increased flexibility on-site is necessary.



#### Benefits:

- Standard code, unique code or flexibly programmable code
- M12 connection on the left or right for the most possible freedom during assembly
- Three-sided actuator mounting for quick and easy attachment
- Four multicolored LEDs for detailed diagnostics and effective installation and testing routines
- Degree of protection IP 67 and IP 69K with smooth, stable plastic housing for easy cleaning
- Permanent laser print for the long-term readability of product data

Part no.	Part description	Application	Code type	Connection	No. of pins	Plug outlet	Sao, max.	Sar, min.
63002002	RD800-SSCA-M12L	Individual use	Standard code	Connector, M12, metal	5	On left side	10 mm	16 mm
63002000	RD800-SSCA-M12R	Individual use	Standard code	Connector, M12, metal	5	On right side	10 mm	16 mm
63002003	RD800-SUCA-M12L	Individual use	Unique code	Connector, M12, metal	5	On left side	10 mm	16 mm
63002001	RD800-SUCA-M12R	Individual use	Unique code	Connector, M12, metal	5	On right side	10 mm	16 mm
63002012	RD800-MSCA-M12L	Individual use Series use	Standard code	Connector, M12, metal	8	On left side	10 mm	16 mm
63002010	RD800-MSCA-M12R	Individual use Series use	Standard code	Connector, M12, metal	8	On right side	10 mm	16 mm
63002013	RD800-MUCA-M12L	Individual use Series use	Unique code	Connector, M12, metal	8	On left side	10 mm	16 mm
63002011	RD800-MUCA-M12R	Individual use Series use	Unique code	Connector, M12, metal	8	On right side	10 mm	16 mm
63002021	RD800-MP-M12L	Individual use Series use	Flexible programming	Connector, M12, metal	8	On left side	10 mm	16 mm
63002020	RD800-MP-M12R	Individual use Series use	Flexible programming	Connector, M12, metal	8	On right side	10 mm	16 mm

Included in delivery: 1 actuator, washers (stainless steel), caps

## SMARTER APPLICATION KNOW-HOW

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# / SAFE CONTROL COMPONENTS

## A SENSOR ALONE DOES NOT MAKE A SAFE WORKPLACE

Not until the safety sensors are efficiently and reliably integrated in the machine safety circuit can the topic of safety at work be implemented in such a way that the sensors do not interfere with the machine processes and yet still offer the best-possible protection. Our safety relays and AS-Interface solutions open all possibilities to you here.



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# //SAFETY RELAYS

## MORE SPACE IN THE CABINET

With a width of just 17.5 mm and 22.5 mm, these safety relays are characterized by very narrow housings. As a result, you can realize the one- or two-channel connection of safety-related sensors in a space-saving and simple manner over up to three switch-off circuits. The devices have interchangeable connection terminals.

### /// MSI-CM



The MSI-CM safety relay is used as a contact extension module in accordance with DIN EN 60204-1/VDE 0113 Part 1 for contact extension for E-Stop relays and two-hand control units. Depending on the wiring and proper integration of the feedback path, a Performance Level PL e in accordance with EN ISO 13849-1 is achieved.



#### Benefits:

- Contact extension module with extension block in accordance with DIN EN 60204-1/VDE 0113 Part 1
- Contact extension for E-Stop relays and two-hand control units
- 1- or 2-channel wiring
- Designs with screw terminals as well as with spring-cage terminals
- 5 release contacts, 1 signal contact, 1 feedback contact
- Detachable connection terminals for simple device swap-out

Part no.	Part description	Connection	PL	Category	STOP category
547933	MSI-CM52B-01	Screw terminal	e	4	0
547934	MSI-CM52B-02	Spring-cage terminal	e	4	0

### /// MSI-DT



This safety relay with adjustable delay time is equipped with two release current paths which release undelayed in accordance with stop category 0. Two additional release current paths release in accordance with stop category 1 with adjustable delay time.



#### Benefits:

- Adjustable delay time (can be steplessly preset from 0.1...30 s)
- Monitoring of E-Stop buttons, protective doors, AOPDs
- Monitoring of safety circuits in accordance with DIN EN 60204-1/VDE 0113-1
- 1- or 2-channel wiring with cross connection recognition
- Designs with screw terminals as well as with spring-cage terminals
- Two undelayed and two slow-release release contacts
- Automatic and manual start circuit
- Detachable connection terminals for simple device swap-out

Part no.	Part description	Connection	PL	Category	STOP category
547935	MSI-DT30B-01	Screw terminal	e	4	0
547936	MSI-DT30B-02	Spring-cage terminal	e	4	0

/// MSI-SR4



The MSI-SR4 is used for evaluating safety-sensor input signals. Light curtains, E-Stop buttons and safety switches, for example, can thereby be integrated in the machine process in a safety-oriented manner.



**Benefits:**

- Standard link between machine control and optoelectronic protective devices as well as safety switches
- Flexibly covers a wide range of applications
- Monitored start/restart button
- Automatic start/restart
- Short reaction time of just 10 ms, easy connection and time-saving mounting
- Detachable connection terminals for simple device swap-out
- Designs with screw terminals as well as with spring-cage terminals

Switching Sensors

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Part no.	Part description	Connection	PL	Category	STOP category	Number of safety-related switching outputs (OSSDs)	Switching element
547950	MSI-SR4B-01	Screw terminal	e	4	0	3	Relay, make-contact
547951	MSI-SR4B-02	Spring-cage terminal	e	4	0	3	Relay, make-contact

/// MSI-SR5



Two devices can be connected to the MSI-SR5 safety relay, either with two transistor OSSDs or by designing as a two-channel contact circuit. As a result, two sensors can be connected to a common switch-off circuit – for applications up to Performance Level PL<sub>e</sub> acc. to EN ISO 13849-1.



**Benefits:**

- Very short response time
- Monitored reset button
- Dual evaluation of different sensor technologies
- LED displays, K1 and K2, supply voltage
- Housing width 22.5 mm
- Potential-free safety-related switching outputs
- Detachable connection terminals for simple device swap-out
- Designs with screw terminals as well as with spring-cage terminals

Products for Safety at Work

Identification

Part no.	Part description	Connection	PL	Category	STOP category	Number of safety-related switching outputs (OSSDs)	Switching element
547952	MSI-SR5B-01	Screw terminal	e	4	0	2	Relay, make-contact
547953	MSI-SR5B-02	Spring-cage terminal	e	4	0	2	Relay, make-contact

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### /// MSI-RM2



With the MSI-RM2 relay module, a compact and – at the same time – economical solution is available in combination with safety sensors for applications up to Performance Level PL<sub>e</sub>. The relay module, only 17.5 mm wide, has two potential-free make contact circuits with a response time of only 10 ms.



**Benefits:**

- For converting electronic switch-off signals from safety sensors to potential-free, contact-based signals
- Detachable connection terminals for simple device swap-out
- Designs with screw terminals as well as with spring-cage terminals

Part no.	Part description	Connection	Category	Number of safety-related switching outputs (OSSDs)	Switching element
547954	MSI-RM2B-01	Screw terminal	Up to 4 (depending on the category of the upstream protective device)	2	Relay, make-contact
547955	MSI-RM2B-02	Spring-cage terminal	Up to 4 (depending on the category of the upstream protective device)	2	Relay, make-contact

### /// MSI-2H



The MSI-2H is the link between two-hand command devices and the machine control. The device checks the simultaneous activation of the two, 2-channel buttons and ensures a controlled process start. The module is used everywhere that feeding-in is not automatic, but rather has to be performed manually by people.



**Benefits:**

- Two-hand control unit for presses, punching machines and other machines that are manually loaded
- Extended simultaneity monitoring for an increased level of acceptance of the safeguards,
- Can also be used as a protective door monitor acc. to EN 60204-1 STOP-0
- Detachable connection terminals for simple device swap-out
- Designs with screw terminals as well as with spring-cage terminals

Part no.	Part description	Connection	PL	Category	STOP category	Number of safety-related switching outputs (OSSDs)	Switching element
547956	MSI-2HB-01	Screw terminal	e	4	0	2	Relay, make-contact
547957	MSI-2HB-02	Spring-cage terminal	e	4	0	2	Relay, make-contact

/// MSI-T



MSI-T is a safety monitoring device for the periodic testing of one-channel testable Optoelectronic Protective Devices of type 2 acc. to EN IEC 61496. Up to 6 type 2 sensors can be connected to the device in series.



**Benefits:**

- 2 safety relay outputs with internal monitoring
- Filter time 130 ms
- STOP 1 function
- LED indicators
- Low space requirements
- Detachable connection terminals for simple device swap-out
- Designs with screw terminals as well as with spring-cage terminals

Part no.	Part description	Connection	PL	Category	Number of safety-related switching outputs (OSSDs)	Switching element	Number of digital switching outputs	Number of digital switching inputs	Filter time	Time delay
547962	MSI-TSB-01	Screw terminal	Up to d	2	2	Relay, make-contact	3	4		600 ms
547958	MSI-TR1B-01	Screw terminal	Up to d	2	2	Relay, make-contact	3	4		
547960	MSI-TR2B-01	Screw terminal	Up to d	2	2	Relay, make-contact	3	4	130 ms	
547963	MSI-TSB-02	Spring-cage terminal	Up to d	2	2	Relay, make-contact	3	4		600 ms
547959	MSI-TR1B-02	Spring-cage terminal	Up to d	2	2	Relay, make-contact	3	4		
547961	MSI-TR2B-02	Spring-cage terminal	Up to d	2	2	Relay, make-contact	3	4	130 ms	

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/// MSI-MC3x



MSI-MC300 safety relays are suitable for integration of MC 300 magnetically coded sensors in control circuits up to category 4 and Performance Level PL<sub>e</sub> in accordance with EN ISO 13849-1. These kinds of magnetically coded safety systems are used, for example, to monitor movable guards such as protective doors, sliding grids or flaps.



**Benefits:**

- Compact controller with long mechanical life time (10 million switching cycles)
- All Magnetically Coded Sensors (1NC/1NO) from Leuze electronic are connectable
- Automatic and start/restart operation

Direct access to the online product selector at [www.leuze.com/en/msi-mc3x](http://www.leuze.com/en/msi-mc3x)

Part no.	Part description	Connection	PL	Category	STOP category	Number of safety-related switching outputs (OSSDs)	Switching element	Number of digital switching outputs	Pickup delay, automatic start	Pickup delay, manual start
549941	MSI-MC310	Screw terminal	Up to and including e	Up to and including 4: 1 sensor connected	0	2	Relay, make-contact	1	400 ms	600 ms
549942	MSI-MC311	Screw terminal	Up to and including e	Up to and including 4: 1 sensor connected	0	2	Relay, make-contact	1	30 ms	150 ms

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# //PROGRAMMABLE SAFETY CONTROLLERS

## PROGRAMMED FOR SAFETY

With the MSI 100 and MSI 200 programmable safety controllers, you obtain a system solution for small- to medium-size machines with maximum flexibility. Extension with I/O and communication modules possible. Configuration and start-up is simple and fast with the convenient MSIsafesoft programming software and its function modules.

### /// MSI 100



The relay monitors E-Stop buttons, two-hand controls, safety doors or safety sensors with two transistor outputs in machines and systems. With an overall width of just 67.5 mm, the device makes available 20 safe inputs, 4 signal outputs for diagnostics and 4 safe outputs (OSSDs).



#### Benefits:

- Freely configurable safety base module
- Monitoring of all safe functions in machines and systems
- Transfers diagnostic data to the PLC via MSI-FB fieldbus modules (option)
- Free choice of connection system: screw terminal blocks or spring-cage terminal blocks; both can be pulled off and interchanged as desired

Part no.	Part description	Connection	Number of safe inputs	Number of safe semiconductor outputs	Number of ground-switching outputs	Number of signal outputs	Number of cycle outputs
547802	MSI101	Screw terminal	20 (up to SIL 3 / IEC 62061)	4	2	4	2
547812	MSI102	Spring-cage terminal	20 (up to SIL 3 / IEC 62061)	4	2	4	2

Included in delivery: 1 terminal set, 1 data memory module, 1 TBUS safety connection plug  
 Note: Commissioning set must be ordered separately

### /// MSI 200



The relay features the same functionality as the MSI100. In addition, it can be expanded with dockable extension modules to up to 140 safe inputs or 100 inputs and 44 safe outputs – quickly and easily with the TBUS DIN rail connection system.



#### Benefits:

- Up to 10 safe MSI-EM I/O extension modules can be connected, i. e., up to a maximum of 140 inputs or 100 inputs and 44 outputs are feasible
- Convenient and fast extension or modular exchange of the components via the TBUS DIN rail connection system

Direct access to the online product selector at [www.leuze.com/en/msi200](http://www.leuze.com/en/msi200)

Part no.	Part description	Connection	Number of possible safe extension modules	Number of safe inputs	Number of safe semiconductor outputs	Number of ground-switching outputs	Number of signal outputs	Number of cycle outputs
547803	MSI201	Screw terminal	10	20 (up to SIL 3 / IEC 62061)	4	2	4	2
547813	MSI202	Spring-cage terminal	10	20 (up to SIL 3 / IEC 62061)	4	2	4	2

Included in delivery: 1 terminal set, 1 data memory module, 2 TBUS safety connection plugs  
 Note: Commissioning set must be ordered separately

/// MSI-EM



The MSI-EM extension module expands the MSI 200 programmable safety controller with 8 safe inputs and 4 freely configurable channels. These may be either safe inputs or outputs (OSSDs).



**Benefits:**

- 4 freely configurable channels-either safety outputs (OSSDs) of safe inputs
- Connect up to 10 MSI EM and realize up to 140 inputs or 100 inputs and 44 outputs
- Designs with screw terminals as well as with spring-cage terminals – both types of terminal blocks can be freely interchanged
- Simple connection via TBUS DIN rail connector
- Compact housing width 22 mm

Part no.	Part description	Connection	Number of safe inputs	Number of safe semiconductor outputs	Number of clock/signal outputs
547804	MSI-EM201-8I4IO	Screw terminal	20 (up to SIL 3 / IEC 62061)	4	2
547814	MSI-EM202-8I4IO	Spring-cage terminal	12 (up to SIL 3 / IEC 62061) of which 4 are configurable as input or output	4	2

Included in delivery: 1 TBUS safety connection plug

Switching Sensors

Measuring Sensors

/// MSI-FB



This is a fieldbus module for the MSI 100 and MSI 200 programmable safety controllers for connecting to PROFIBUS.



**Benefits:**

- Transfers diagnostic data (not safety-oriented)
- 4 additional inputs and 4 additional outputs for communication of the PLC with field devices (sensor /actuator systems)
- Certified in accordance with DPV1 specification (EN 50170)
- Simple connection via TBUS DIN rail connector
- Compact housing width 22 mm

Part no.	Part description	Connection	Interface
547806	MSI-FB-PB101	Screw terminal	PROFIBUS DP

Included in delivery: 1 TBUS safety connection plug

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# //AS-INTERFACE SAFETY AT WORK

## LEADER FOR A GOOD REASON

Compared to conventional point-to-point wiring, AS-Interface (AS-i) excels with its low installation, wiring and connection costs. The very simple retrofitability of the safety technology with larger AS-i systems can further greatly reduce installation costs.

### Safety Monitors

The ASM1 AS-i safety monitor is the core component of the AS-Interface Safety at Work system. Using configuration software, it monitors the safety-related network devices that are assigned to it, e. g., command devices, multiple light beam safety devices and safety switches.

#### /// ASM1



The ASM1 AS-i safety monitor is the core component of the AS-Interface Safety at Work system. Using configuration software, it monitors the safety-related network devices that are assigned to it, e. g., command devices, multiple light beam safety devices and safety switches.



#### Benefits:

- Housing width 45 mm
- Height/installation depth: 102/120 mm
- Degree of protection IP 20
- Performance Level PL e and category 4 acc. to EN ISO 13849-1, SIL 3 acc. to IEC 61508 as well as SILCL 3 acc. to EN IEC 62061
- Up to 31 safe AS-i slaves can be connected
- 48 system components can be configured (e. g. E-Stop monitoring devices , OR, AND, turn on/off delays)
- RS 232 interface for PC-supported system configuration and system diagnostics as well as configuration data transfer to replacement device
- SERVICE button for automatic system integration (teach-in) of AS-i sensors on sensor exchange
- Immediate switch-off STOP 0 and delayed switch-off STOP 1 of the release circuits can be configured

Part no.	Part description	Number of safety-related switching outputs (OSSDs)	Number of configurable function modules	Number of OR and AND inputs	Muting function
580020	ASM1/1	1	32	2	No
580055	ASM1E-m/1	1	48	6	Yes
580024	ASM1E/1	1	48	6	No
580021	ASM1/2	2	32	2	No
580056	ASM1E-m/2	2	48	6	Yes
580025	ASM1E/2	2	48	6	No

Included in delivery: device front cover for protection and sealing

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/// ASM2



In addition to the functions of the ASM 1, this safety monitor offers higher-level start and E-Stop functions through safe coupling of adjacent AS-i networks. Moreover, safe activation of decentrally distributed AS-i actuators with the same AS-i address is possible.



**Benefits:**

- Housing width 45 mm
- Height/installation depth: 102/120 mm
- Degree of protection IP 20
- Performance Level PL e and category 4 acc. to EN ISO 13849-1, SIL 3 acc. to IEC 61508 as well as SILCL 3 acc. to EN IEC 62061
- Up to 31 safe AS-i slaves can be connected
- 48 system components can be configured (e. g. E-Stop monitoring devices , OR, AND, turn on/off delays)
- RS 232 interface for PC-supported system configuration and system diagnostics as well as configuration data transfer to replacement device
- SERVICE button for automatic system integration (teach-in) of AS-i sensors on sensor exchange
- Immediate switch-off STOP 0 and delayed switch-off STOP 1 of the release circuits can be configured

Part no.	Part description	Number of safety-related switching outputs (OSSDs)	Number of configurable function modules	Number of OR and AND inputs	Muting function
580057	ASM2E-m/1	1	48	6	Yes
580028	ASM2E/1	1	48	6	No
580058	ASM2E-m/2	2	48	6	Yes
580029	ASM2E/2	2	48	6	No

Included in delivery: device front cover for protection and sealing

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# / MACHINE SAFETY SERVICES

## SYSTEM SAFETY IS PLANNING AND MAINTENANCE

Sustainable safety at work begins with professional planning and doesn't end with the start-up of the corresponding systems. With our engineering tools, you can efficiently plan safety at work right from the start. During operation, periodic inspections and trainings are then necessary and prescribed in order to ensure proper function and operation of the systems. We offer you an extensive and convenient package of all of these services for all of your safety at work measures.

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/// Safety Inspections



Safety at work is a management issue – this applies in principle around the world. In Germany, periodic testing of the machine is required by law. Safety inspections ensure compliance with safety and quality standards and serve as preventive maintenance measures.

**Benefits:**

- EU conformity and legal certainty with proof of safety and quality standards
- Solution proposals for the rapid removal of safety deficiencies
- Comprehensible and well-documented test results in accordance with DIN ISO 9001:2000
- Standards-specific test protocol
- Accident risk and machine downtime minimization
- High availability of the machine due to regular inspections

Part no.	Part description	Description
S991005	CS-SCP/FR	Start-up support for a simple device from Leuze electronic without using PC, for safety devices incl. stopping time measurement and initial inspection, max. 2 h, no mechanical (assembly) and electrical (wiring) work → devices and connection cables are installed, no modifications (mounted components, wiring, programming) to third-party components in environment, without travel costs and accommodation expenses.
S991016	CS-SIF/FR	Initial safety inspection for a third-party device, entry of device and machine data in a database, checking of an ESPE application in compliance with current standards and directives, compilation of a test report for each application, compilation of a collective report for all inspections of an order.
S991015	CS-SIL/FR	Initial safety inspection for a Leuze device, entry of device and machine data in a database, checking of an ESPE application in compliance with current standards and directives, compilation of a test report for each application, compilation of a collective report for all inspections of an order.
S991004	CS-SIN/FR	Follow-up safety inspection for a Leuze device, only possible if Leuze has already performed an initial inspection, checking of device and machine data and comparison with data in database, checking of an ESPE application in compliance with current standards and directives, compilation of a test report for each ESPE application, compilation of a collective report for all inspections of an order.
S991019	CS-SIO/FR	Follow-up safety inspection for a third-party device, only possible if Leuze has already performed an initial inspection, checking of device and machine data and comparison with data in database, checking of an ESPE application in compliance with current standards and directives, compilation of a test report for each application, compilation of a collective report for all inspections of an order.
S991002	CS-SRS/FR	Start-up support for a programmable device from Leuze electronic, for safety devices incl. stopping time measurement and initial inspection, max. 3 h, no mechanical (assembly) and electrical (wiring) work → devices and connection cables are installed, no modifications (mounted components, wiring, programming) to third-party components in environment, without travel costs and accommodation expenses.
S991017	CS-SSF/FR	Start-up support / service deployment for components from Leuze electronic, full-day flat-rate per person, incl. travel and (if necessary) accommodation in Germany, no mechanical (assembly) and electrical (wiring) work → devices and connection cables are installed, no modifications (mounted components, wiring, programming) to third-party components in environment, performed at location of customer's choosing.
S991018	CS-SSH/FR	Start-up support / service deployment for components from Leuze electronic, half-day flat-rate per person, incl. travel in Germany, no mechanical (assembly) and electrical (wiring) work → devices and connection cables are installed, no modifications (mounted components, wiring, programming) to third-party components in environment, performed at location of customer's choosing.
S991012	CS-THO/CT	Accommodation expenses upon presentation of an invoice
S991013	CS-THO/FR	Flat-rate for accommodation expenses per night and person
S991000	CS-TTD/KM	Personal car travel costs per kilometer
S991010	CS-TTE/KM	Travel expenses per kilometer in Germany
S991014	CS-TTX/CT	Travel costs per person according to expense report
S991006	CS-TTX/HR	Travel costs per hour and person
S991039	CS-TXE/FR	Flat-rate for single journey and accommodation expenses in NL, BE, LX, CH, AT, CZ, DK
S991011	CS-TXN/FR	Flat-rate for one-way travel in Germany without accommodation expenses
S991003	CS-TXP/FR	Travel with route planning in Germany without accommodation expenses
S991001	CS-WTM/HR	Labor costs per hour and person

For work abroad: travel costs and accommodation extra, according to expenditure

Switching Sensors

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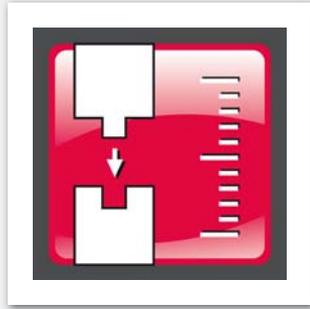
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### /// Stopping Time Measurement



Only with a sufficiently dimensioned safety distance that corresponds with the stopping time of the machine can it be guaranteed that the dangerous movement will stop before the person reaches the point of operation. Stopping time measurements are therefore an important part of a properly carried out safety inspection.

**Benefits:**

- Standards-compliant performance of 10 measurements per dangerous movement
- Graphic evaluation of the brake behavior on request
- Stop activation with "Autohand" without electrical intervention in the machine control system
- Use of appropriate measurement transducers for the respective machine type: Rotary encoder for rotation movements (e. g. rotary indexing table) and rope length transmitter for linear movements
- State-of-the-art calibrated measurement devices; documented test results in accordance with DIN ISO 9001:2000

Part no.	Part description	Description
S991007	CS-SMS/FR	"Standard" stopping time measurement on an ESPE unit, performed if an ESPE unit safeguards exactly one hazardous movement, e.g. a press with one vertical movement and an opening which is safeguarded by a light curtain. 10 measurements performed, evaluation in accordance with ISO 13855:2010, Appendix D or in accordance with EN 999.
S991008	CS-SMX/FR	"Extended" stopping time measurement on an ESPE unit, performed if an ESPE unit safeguards multiple hazardous movements, e.g. assembly machines with several valves, 10 measurements performed for each hazardous movement, evaluation in accordance with ISO 13855:2010, Appendix D or in accordance with EN 999.
S991009	CS-WT1/FR	Hour flat-rate for waiting times per person

For work abroad: travel costs and accommodation extra, according to expenditure

### /// Safety Consulting



Our experts are always up-to-date on the latest technology and standards. You can therefore be certain that our safety consulting offers you legal security. Pass the responsibility on to us - we find safety risks in good time and provide you with qualified assistance in initiating the necessary measures.

**Benefits:**

- Safety consulting helps prevent safety-related errors and also saves time and money while improving machine safety and giving the system operator legal certainty
- Responsibility is transferred to our experts for risk assessment as well as SISTEMA calculations and tests
- All Machinery Directive and CE requirements are upheld and all documents are also checked for completeness and fulfillment of legal requirements
- Our experts are independent, experienced and always up-to-date concerning standards and directives; they work effectively because they know systems both within and across sectors as well as their associated hazards and methods of resolution

Part no.	Part description	Description
S991020	CS-SCF/FR	Full-day flat-rate for training course / consultation, performed at location of customer's choosing, incl. travel costs and (if necessary) accommodation expenses if within Germany.
S991021	CS-SCH/FR	Half-day flat-rate for training course / consultation, performed at location of customer's choosing, incl. travel costs if within Germany.

For work abroad: travel costs and accommodation extra, according to expenditure

/// Seminars and Workshops



In addition to product training courses, our training program also includes seminars on the basics of machinery directives, CE certification and practical safety technology. We will also gladly provide instruction on-site at your facilities or in English.

**Benefits:**

- Compact knowledge of everything to do with safety at work
- Free safety engineering workshops with Safexpert software
- Safety seminars cover all key points concerning retrofitting and operation of machines
- After standards workshops, the participant is always up-to-date when it comes to the current standards situation
- Product trainings guarantee optimal knowledge of a product, meaning you can detect application problems and prevent production downtimes
- Direct dialog between our specialists and participants for exchanges of experiences, application tips and problem-solving
- A certificate confirms participation in our seminars

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Part no.	Part description	Description
S991030	CS-KRS/AS	Leuze product training, day rate, incl. travel costs and, if necessary, accommodation expenses in Germany
S991031	CS-KRS/NM	"Standards workshop" training course, price per participant
S991033	CS-KRS/PS	Training on Leuze product, price per participant
S991038	CS-KRS/SE	"Safexpert / SiStema application" training course, full-day flat-rate incl. travel costs and (if necessary) accommodation expenses in Germany
S991032	CS-KRS/SS	"Safety seminar" training course, price per participant

For work abroad: travel costs and accommodation extra, according to expenditure

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## /// Safety Engineering Software



The network-enabled PC program takes you step-by-step through CE conformity assessment, culminating in the CE sign of approval. It supports you with risk assessment and during the creation of the technical documentation. Safexpert also helps locate all relevant standards within seconds.

### Benefits:

- Step by step to CE marking, including systematic risk assessment, even for extensive projects
- Support in fulfilling legally mandated documentation obligation (Machinery Directive, appendix V)
- Saves time and cost-intensive research work; earlier projects can be used as templates
- Safety-relevant issues can be involved in the design process from the very beginning and integrated in the documentation
- Determination of the required SIL and Performance Level in accordance with EN 62061 and EN ISO 13849-1 as well as the interface to SISTEMA IFA software
- Update service keeps you constantly at the latest standardization status

### Safexpert basic package

The three basic packages – Basic, Compact and Professional – cover a variety of requirements with their different function ranges. The Basic version contains many important functions for industrial requirements. The other two packages supplement the software with the addition of pictograms, examples and standards packages. All configuration levels can be expanded individually with assistants or expansion modules.

Part no.	Part description	Software package	License	User interface languages	Project languages	Language version, standards	Operating instructions template	CE-compliant risk assessment	CE guidelines	Norm manager	Icons library
600146	SE-BPB/EP	Basic	Single-station license	German English French	German English French Spanish		No	Yes	Yes	No	No
600192	SE-BPB/F	Basic	First license, floating license	German English French	German English French Spanish		No	Yes	Yes	No	No
600193	SE-BPB/S	Basic	Additional license, floating license	German English French	German English French Spanish		No	Yes	Yes	No	No
600194	SE-BPC/F	Compact	First license, floating license	German English French	German English French Spanish		Yes	Yes	Yes	Yes	Yes
600195	SE-BPC/S	Compact	Additional license, floating license	German English French	German English French Spanish		Yes	Yes	Yes	Yes	Yes
600198	SE-BPP/FE	Professional	First license, floating license	German English French	German English French Spanish	English	Yes	Yes	Yes	Yes	Yes
600196	SE-BPP/FD	Professional	First license, floating license	German English French	German English French Spanish	German	Yes	Yes	Yes	Yes	Yes
600199	SE-BPP/SE	Professional	Additional license, floating license	German English French	German English French Spanish	English	Yes	Yes	Yes	Yes	Yes
600197	SE-BPP/SD	Professional	Additional license, floating license	German English French	German English French Spanish	German	Yes	Yes	Yes	Yes	Yes

### Safexpert expansion modules

With the three current expansion modules – NormManager, Operating instructions wizard and Test and acceptance wizard – you can match your software package to your individual needs.

Part no.	Part description	Type of expansion module	User interface languages	License	Suitable for
600164	SE-ASB/F	Calculation wizard	German English French	First license, floating license	Safexpert basic package Basic Safexpert basic package Compact Safexpert basic package Professional
600165	SE-ASB/S	Calculation wizard	German English French	Additional license, floating license	Safexpert basic package Basic Safexpert basic package Compact Safexpert basic package Professional
600162	SE-ASN/F	NormManager	German English French	First license, floating license	Safexpert basic package Basic
600163	SE-ASN/S	NormManager	German English French	Additional license, floating license	Safexpert basic package Basic
600166	SE-ASP/F	Test and acceptance wizard incl. test list in accordance with MRL	German English French	First license, floating license	Safexpert basic package Basic Safexpert basic package Compact Safexpert basic package Professional
600167	SE-ASP/S	Test and acceptance wizard incl. test list in accordance with MRL	German English French	Additional license, floating license	Safexpert basic package Basic Safexpert basic package Compact Safexpert basic package Professional

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### Safexpert standards packages

The Standard and StandardPlus standards packages contain full-text versions of important mechanical engineering standards as PDF files. With these packages, you have access to more than 65 European standards at a great price/performance ratio.

Part no.	Part description	Software package	Standards package	Language of standards package	Number of simultaneous accesses to standards	Type of subscriber	Suitable for
600143	SE-NPNS	Network license			5	Yearly subscription, automatic extension	Standard standards packet
600140	SE-NPNP	Network license			5	Yearly subscription, automatic extension	StandardPlus standards packet
600142	SE-NPPD	Standards package	Standard Plus	German			Safexpert basic package Professional
600145	SE-NPPE	Standards package	Standard Plus	English			Safexpert basic package Professional
600141	SE-NPSD	Standards package	standard	German			Safexpert basic package Compact Safexpert NormManager
600144	SE-NPSE	Standards package	standard	English			Safexpert basic package Compact Safexpert NormManager

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### Safexpert maintenance contracts

Safexpert is permanently being developed and adapted to current specifications, laws, directives and standards. These updates are free of charge if a maintenance contract has been concluded. Depending on the configuration level selected, the maintenance service includes maintenance of the software system, the data packages or the standards packages. During maintenance, the software also provides information on the validity of the standards and shows when projects are affected by changes to standards.

Part no.	Part description	Software package	License	Languages	Suitable for	Type of subscriber
600172	SE-MCC/F	Maintenance contract	First license		Safexpert basic package Compact, first license	Yearly subscription, automatic extension
600170	SE-MCB/F	Maintenance contract	First license		Safexpert basic package Basic, first license	Yearly subscription, automatic extension
600174	SE-MCP/F	Maintenance contract	First license		Safexpert basic package Professional, first license	Yearly subscription, automatic extension
600171	SE-MCB/S	Maintenance contract	Additional license		Safexpert basic package Basic, additional license	Yearly subscription, automatic extension
600175	SE-MCP/S	Maintenance contract	Additional license		Safexpert basic package Professional, additional license	Yearly subscription, automatic extension
600173	SE-MCC/S	Maintenance contract	Additional license		Safexpert basic package Compact, additional license	Yearly subscription, automatic extension
600178	SE-MCD/MD	Data package		German	Safexpert basic package Compact Safexpert basic package Professional	Yearly subscription, automatic extension
600179	SE-MCD/ED	Data package		German	Safexpert basic package Compact Safexpert basic package Professional	Yearly subscription, automatic extension
600169	SE-MCD/EE	Data package		English	Safexpert basic package Compact Safexpert basic package Professional Safexpert NormManager	Yearly subscription, automatic extension
600168	SE-MCD/ME	Data package		English	Safexpert basic package Compact Safexpert basic package Professional Safexpert NormManager	Yearly subscription, automatic extension
600176	SE-MCN/F	Standards package maintenance contract: StandardPlus	First license	German	Safexpert maintenance contract Professional, first license	Yearly subscription, automatic extension
600177	SE-MCN/S	Standards package maintenance contract: StandardPlus	Additional license	German	Safexpert maintenance contract Professional, additional license	Yearly subscription, automatic extension

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## Safexpert updates

Of course, you can also update your existing Safexpert version to the current version on your own, i. e. without a maintenance contract. It's easy and inexpensive. To do this, we offer corresponding packages, depending on which legacy version you own. Of course, existing data is transferred.

Part no.	Part description	License	Update	Suitable for
600132	SE-UP-1/S	Additional license, floating license	Safexpert from version current-1 to the current version	Safexpert basic package Basic Safexpert basic package Compact
600131	SE-UP-1/F	First license, floating license	Safexpert from version current-1 to the current version	Safexpert basic package Basic Safexpert basic package Compact
600133	SE-UP-2/F	First license, floating license	Safexpert from version current-2 to the current version	Safexpert basic package Basic Safexpert basic package Compact
600134	SE-UP-2/S	Additional license, floating license	Safexpert from version current-2 to the current version	Safexpert basic package Basic Safexpert basic package Compact
600136	SE-UP-3/S	Additional license, floating license	Safexpert from version current-3 to the current version	Safexpert basic package Compact
600135	SE-UP-3/F	First license, floating license	Safexpert from version current-3 to the current version	Safexpert basic package Compact
600138	SE-UP-4/S	Additional license, floating license	Safexpert from version current-4 to the current version	Safexpert basic package Compact
600137	SE-UP-4/F	First license, floating license	Safexpert from version current-4 to the current version	Safexpert basic package Compact

## Safexpert upgrades

You can easily upgrade your current software package to any higher configuration level online. Reinstallation of the system is not necessary and existing data is transferred. The scopes correspond to those of the Compact or Professional packages.

Part no.	Part description	License	Upgrade	Language of standards package	Suitable for
600126	SE-UG-EB	First license, floating license	On Safexpert basic package Basic		Safexpert Basic special version (600146)
600121	SE-UG-BC/F	First license, floating license	On Safexpert basic package Compact		Safexpert basic package Basic
600127	SE-UG-EC	First license, floating license	On Safexpert basic package Compact		Safexpert Basic special version (600146)
600112	SE-UG-BC/S	Additional license, floating license	On Safexpert basic package Compact		Safexpert basic package Basic
600124	SE-UG-CPD/F	First license, floating license	On Safexpert basic package Professional	German	Safexpert basic package Compact
600128	SE-UG-EPD	First license, floating license	On Safexpert basic package Professional	German	Safexpert Basic special version (600146)
600122	SE-UG-BPD/F	First license, floating license	On Safexpert basic package Professional	German	Safexpert basic package Basic
600125	SE-UG-CPE/F	First license, floating license	On Safexpert basic package Professional	English	Safexpert basic package Compact
600123	SE-UG-BPE/F	First license, floating license	On Safexpert basic package Professional	English	Safexpert basic package Basic
600129	SE-UG-EPE	First license, floating license	On Safexpert basic package Professional	English	Safexpert Basic special version (600146)
600113	SE-UG-CPD/S	Additional license, floating license	On Safexpert basic package Professional	German	Safexpert basic package Compact
600115	SE-UG-BPD/S	Additional license, floating license	On Safexpert basic package Professional	German	Safexpert basic package Basic
600116	SE-UG-BPE/S	Additional license, floating license	On Safexpert basic package Professional	English	Safexpert basic package Basic
600114	SE-UG-CPE/S	Additional license, floating license	On Safexpert basic package Professional	English	Safexpert basic package Compact

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# / BAR CODE IDENTIFICATION

## BAR CODE READING MADE EASY

In production and logistics, the identification of goods and materials through universally usable bar codes controls many processes. The area of application of readers is correspondingly broad – from mobile hand-held operation to high-speed scanners for industrial applications.

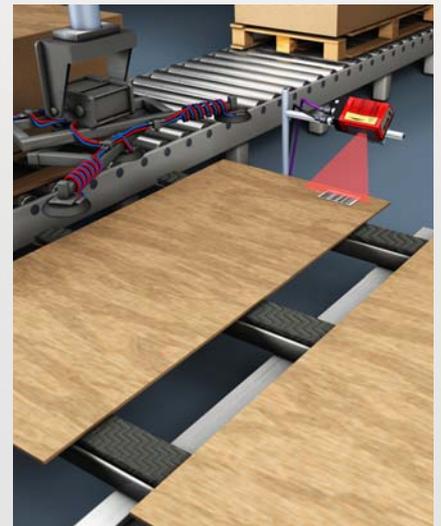


**Stationary Bar Code Readers**

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# //STATIONARY BAR CODE READERS

## FAST AND EXACT SOLUTIONS

Select the right line and raster scanner from various sizes, designs and performance levels. Scanning rates of up to 1000 scans/s, the smallest installation dimensions, robust housings and integrated heating for use in deep-freeze areas meet the individual requirements of your application.

### /// BCL 8



The BCL 8 bar code reader is a bar code reader with integrated decoder for all common bar codes including Pharmacode. Available as a robust industrial version in a metal housing.



#### Benefits:

- Compact construction for confined space conditions, e. g. in printers or packaging systems
- Large reading field with great depth of field for variable modulus sizes
- autoConfig automatically detects the code type that is to be read
- autoReflAct enables automatic triggering without additional photoelectric sensor
- M12 connection technology and ready-made cables
- Numerous connector units from the MA 8/MA 200i series for all well-known bus systems (PROFIBUS, PROFINET, DeviceNet, EtherNet TCP/IP, Ethernet/IP, Ethercat or CANopen).
- RS 232 interface (with option of changing to the integrated daisy chain)

Part no.	Part description	Reading method Light beam exit	Interface	Reading distance	Module size	Scanning rate	Ambient temperature, operation
50038948	BCL 8 SM 552	Line scanner front	RS 232	40 ... 160 mm	0.15 ... 0.5 mm	600 scans/s	0 ... 40 °C
50038949	BCL 8 SM 102	Line scanner front	RS 232	40 ... 160 mm	0.15 ... 0.5 mm	600 scans/s	0 ... 40 °C
50105420	BCL 8 SN 552	Line scanner front	RS 232	50 ... 110 mm	0.12 ... 0.4 mm	500 scans/s	0 ... 40 °C
50105418	BCL 8 SN 102	Line scanner front	RS 232	50 ... 110 mm	0.12 ... 0.4 mm	500 scans/s	0 ... 40 °C
50040229	BCL 8 SM 100	Line scanner lateral with deflecting mirror	RS 232	25 ... 145 mm	0.15 ... 0.5 mm	600 scans/s	0 ... 40 °C
50040230	BCL 8 SM 550	Line scanner lateral with deflecting mirror	RS 232	25 ... 145 mm	0.15 ... 0.5 mm	600 scans/s	0 ... 40 °C
50105417	BCL 8 SN 100	Line scanner lateral with deflecting mirror	RS 232	35 ... 95 mm	0.12 ... 0.4 mm	500 scans/s	0 ... 40 °C
50105419	BCL 8 SN 550	Line scanner lateral with deflecting mirror	RS 232	35 ... 95 mm	0.12 ... 0.4 mm	500 scans/s	0 ... 40 °C

Switches Unlimited  
 Contact: sales@switchesunlimited.com  
 800-221-0487 ☐ Fax: 718-672-6370  
 www.switchesunlimited.com

**/// BCL 21/22**



These stationary high-speed scanners offer a space-saving solution for industrial environments and are equipped with a fail-safe parameter memory.



**Benefits:**

- Various optics models for optimum use of the installation space
- Depending on the code alignment, single-line or raster scanners offer optimized reading capacity
- Large depth of field and wide opening angle
- autoConfig automatically detects the code type that is to be read
- The BCL Config Tool simplifies all configuration tasks

PART NUMBER CODES – stationary bar code readers BCL 21/22

**B C L 2 1 S N 2 1 0**

<b>Model</b>									
BCL	Bar code reader								
<b>Host interface</b>									
21	RS 485								
22	RS 232								
<b>Reading characteristics</b>									
S	Single-line scanner								
R1	Raster scanner								
<b>Resolution/range</b>									
N	High Density up to 95 mm								
B	Medium Density up to 220 mm								
M	Medium Density up to 260 mm								
F	Low Density up to 450 mm								
<b>Connector</b>									
2	PCB (PCB connector to MA 2/MA 4...)								
3	SUB-D 15-pin								
<b>Connection cable length</b>									
0	0.8 m								
1	3.0 m								
<b>Beam exit</b>									
0	Perpendicular								
2	Front								

Part no.	Part description	Reading method Light beam exit	Interface	Reading distance	Module size	Scanning rate	Ambient temperature, operation
<b>RS 485 Interface</b>							
50031072	BCL 21 S N 302	Line scanner front	RS 485	50 ... 95 mm	0.15 ... 0.5 mm	800 scans/s	0 ... 40 °C
50032030	BCL 21 S N 212	Line scanner front	RS 485	50 ... 95 mm	0.15 ... 0.5 mm	800 scans/s	0 ... 40 °C
50030987	BCL 21 S N 202	Line scanner front	RS 485	50 ... 95 mm	0.15 ... 0.5 mm	800 scans/s	0 ... 40 °C
50032034	BCL 21 S N 312	Line scanner front	RS 485	50 ... 95 mm	0.15 ... 0.5 mm	800 scans/s	0 ... 40 °C
50117070	BCL 21 S B 202	Line scanner front	RS 485	50 ... 220 mm	0.165 ... 0.5 mm	800 scans/s	0 ... 40 °C
50114707	BCL 21 S B 302	Line scanner front	RS 485	50 ... 220 mm	0.165 ... 0.5 mm	800 scans/s	0 ... 40 °C
50031720	BCL 21 S M 212	Line scanner front	RS 485	50 ... 260 mm	0.2 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50031078	BCL 21 S M 302	Line scanner front	RS 485	50 ... 260 mm	0.2 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50032049	BCL 21 S M 312	Line scanner front	RS 485	50 ... 260 mm	0.2 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50030989	BCL 21 S M 202	Line scanner front	RS 485	50 ... 260 mm	0.2 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50032065	BCL 21 S F 312	Line scanner front	RS 485	80 ... 450 mm	0.5 ... 1 mm	800 scans/s	0 ... 40 °C
50031086	BCL 21 S F 302	Line scanner front	RS 485	80 ... 450 mm	0.5 ... 1 mm	800 scans/s	0 ... 40 °C
50032061	BCL 21 S F 212	Line scanner front	RS 485	80 ... 450 mm	0.5 ... 1 mm	800 scans/s	0 ... 40 °C

Part no.	Part description	Reading method Light beam exit	Interface	Reading distance	Module size	Scanning rate	Ambient temperature, operation
50031082	BCL 21 S F 202	Line scanner front	RS 485	80 ... 450 mm	0.5 ... 1 mm	800 scans/s	0 ... 40 °C
50030986	BCL 21 S N 200	Line scanner with deflecting mirror lateral with deflecting mirror	RS 485	50 ... 95 mm	0.15 ... 0.5 mm	800 scans/s	0 ... 40 °C
50032028	BCL 21 S N 210	Line scanner with deflecting mirror lateral with deflecting mirror	RS 485	50 ... 95 mm	0.15 ... 0.5 mm	800 scans/s	0 ... 40 °C
50031070	BCL 21 S N 300	Line scanner with deflecting mirror lateral with deflecting mirror	RS 485	50 ... 95 mm	0.15 ... 0.5 mm	800 scans/s	0 ... 40 °C
50032032	BCL 21 S N 310	Line scanner with deflecting mirror lateral with deflecting mirror	RS 485	50 ... 95 mm	0.15 ... 0.5 mm	800 scans/s	0 ... 40 °C
50114706	BCL 21 S B 300	Line scanner with deflecting mirror lateral with deflecting mirror	RS 485	50 ... 220 mm	0.165 ... 0.5 mm	800 scans/s	0 ... 40 °C
50117069	BCL 21 S B 200	Line scanner with deflecting mirror lateral with deflecting mirror	RS 485	50 ... 220 mm	0.165 ... 0.5 mm	800 scans/s	0 ... 40 °C
50032047	BCL 21 S M 310	Line scanner with deflecting mirror lateral with deflecting mirror	RS 485	50 ... 260 mm	0.2 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50031076	BCL 21 S M 300	Line scanner with deflecting mirror lateral with deflecting mirror	RS 485	50 ... 260 mm	0.2 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50032044	BCL 21 S M 210	Line scanner with deflecting mirror lateral with deflecting mirror	RS 485	50 ... 260 mm	0.2 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50030988	BCL 21 S M 200	Line scanner with deflecting mirror lateral with deflecting mirror	RS 485	50 ... 260 mm	0.2 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50032059	BCL 21 S F 210	Line scanner with deflecting mirror lateral with deflecting mirror	RS 485	80 ... 450 mm	0.5 ... 1 mm	800 scans/s	0 ... 40 °C
50031084	BCL 21 S F 300	Line scanner with deflecting mirror lateral with deflecting mirror	RS 485	80 ... 450 mm	0.5 ... 1 mm	800 scans/s	0 ... 40 °C
50032063	BCL 21 S F 310	Line scanner with deflecting mirror lateral with deflecting mirror	RS 485	80 ... 450 mm	0.5 ... 1 mm	800 scans/s	0 ... 40 °C
50031080	BCL 21 S F 200	Line scanner with deflecting mirror lateral with deflecting mirror	RS 485	80 ... 450 mm	0.5 ... 1 mm	800 scans/s	0 ... 40 °C
50061287	BCL 21 R1 N 302	Raster scanner front	RS 485	50 ... 95 mm	0.15 ... 0.5 mm	800 scans/s	0 ... 40 °C
50032042	BCL 21 R1 N 312	Raster scanner front	RS 485	50 ... 95 mm	0.15 ... 0.5 mm	800 scans/s	0 ... 40 °C
50061283	BCL 21 R1 N 202	Raster scanner front	RS 485	50 ... 95 mm	0.15 ... 0.5 mm	800 scans/s	0 ... 40 °C
50032038	BCL 21 R1 N 212	Raster scanner front	RS 485	50 ... 95 mm	0.15 ... 0.5 mm	800 scans/s	0 ... 40 °C
50032057	BCL 21 R1 M 312	Raster scanner front	RS 485	50 ... 260 mm	0.2 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50032053	BCL 21 R1 M 212	Raster scanner front	RS 485	50 ... 260 mm	0.2 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50061295	BCL 21 R1 M 302	Raster scanner front	RS 485	50 ... 260 mm	0.2 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50061291	BCL 21 R1 M 202	Raster scanner front	RS 485	50 ... 260 mm	0.2 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50032069	BCL 21 R1 F 212	Raster scanner front	RS 485	80 ... 450 mm	0.5 ... 1 mm	800 scans/s	0 ... 40 °C
50061299	BCL 21 R1 F 202	Raster scanner front	RS 485	80 ... 450 mm	0.5 ... 1 mm	800 scans/s	0 ... 40 °C
50061303	BCL 21 R1 F 302	Raster scanner front	RS 485	80 ... 450 mm	0.5 ... 1 mm	800 scans/s	0 ... 40 °C
50032073	BCL 21 R1 F 312	Raster scanner front	RS 485	80 ... 450 mm	0.5 ... 1 mm	800 scans/s	0 ... 40 °C
50061285	BCL 21 R1 N 300	Raster scanner with deflecting mirror lateral with deflecting mirror	RS 485	50 ... 95 mm	0.15 ... 0.5 mm	800 scans/s	0 ... 40 °C
50061281	BCL 21 R1 N 200	Raster scanner with deflecting mirror lateral with deflecting mirror	RS 485	50 ... 95 mm	0.15 ... 0.5 mm	800 scans/s	0 ... 40 °C
50032036	BCL 21 R1 N 210	Raster scanner with deflecting mirror lateral with deflecting mirror	RS 485	50 ... 95 mm	0.15 ... 0.5 mm	800 scans/s	0 ... 40 °C
50032040	BCL 21 R1 N 310	Raster scanner with deflecting mirror lateral with deflecting mirror	RS 485	50 ... 95 mm	0.15 ... 0.5 mm	800 scans/s	0 ... 40 °C
50061293	BCL 21 R1 M 300	Raster scanner with deflecting mirror lateral with deflecting mirror	RS 485	50 ... 260 mm	0.2 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50032055	BCL 21 R1 M 310	Raster scanner with deflecting mirror lateral with deflecting mirror	RS 485	50 ... 260 mm	0.2 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50061289	BCL 21 R1 M 200	Raster scanner with deflecting mirror lateral with deflecting mirror	RS 485	50 ... 260 mm	0.2 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50032051	BCL 21 R1 M 210	Raster scanner with deflecting mirror lateral with deflecting mirror	RS 485	50 ... 260 mm	0.2 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50032071	BCL 21 R1 F 310	Raster scanner with deflecting mirror lateral with deflecting mirror	RS 485	80 ... 450 mm	0.5 ... 1 mm	800 scans/s	0 ... 40 °C
50061297	BCL 21 R1 F 200	Raster scanner with deflecting mirror lateral with deflecting mirror	RS 485	80 ... 450 mm	0.5 ... 1 mm	800 scans/s	0 ... 40 °C
50032067	BCL 21 R1 F 210	Raster scanner with deflecting mirror lateral with deflecting mirror	RS 485	80 ... 450 mm	0.5 ... 1 mm	800 scans/s	0 ... 40 °C
50061301	BCL 21 R1 F 300	Raster scanner with deflecting mirror lateral with deflecting mirror	RS 485	80 ... 450 mm	0.5 ... 1 mm	800 scans/s	0 ... 40 °C

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RS 232 Interface

50061451	BCL 22 S N 212	Line scanner front	RS 232	50 ... 95 mm	0.15 ... 0.5 mm	800 scans/s	0 ... 40 °C
50032080	BCL 22 S N 312	Line scanner front	RS 232	50 ... 95 mm	0.15 ... 0.5 mm	800 scans/s	0 ... 40 °C
50031090	BCL 22 S N 202	Line scanner front	RS 232	50 ... 95 mm	0.15 ... 0.5 mm	800 scans/s	0 ... 40 °C

Accessories

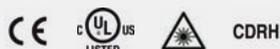
Part no.	Part description	Reading method Light beam exit	Interface	Reading distance	Module size	Scanning rate	Ambient temperature, operation
50030991	BCL 22 S N 302	Line scanner front	RS 232	50 ... 95 mm	0.15 ... 0.5 mm	800 scans/s	0 ... 40 °C
50117072	BCL 22 S B 202	Line scanner front	RS 232	50 ... 220 mm	0.165 ... 0.5 mm	800 scans/s	0 ... 40 °C
50114715	BCL 22 S B 302	Line scanner front	RS 232	50 ... 220 mm	0.165 ... 0.5 mm	800 scans/s	0 ... 40 °C
50032093	BCL 22 S M 212	Line scanner front	RS 232	50 ... 260 mm	0.2 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50030993	BCL 22 S M 302	Line scanner front	RS 232	50 ... 260 mm	0.2 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50032097	BCL 22 S M 312	Line scanner front	RS 232	50 ... 260 mm	0.2 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50031096	BCL 22 S M 202	Line scanner front	RS 232	50 ... 260 mm	0.2 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50032108	BCL 22 S F 212	Line scanner front	RS 232	80 ... 450 mm	0.5 ... 1 mm	800 scans/s	0 ... 40 °C
50031102	BCL 22 S F 202	Line scanner front	RS 232	80 ... 450 mm	0.5 ... 1 mm	800 scans/s	0 ... 40 °C
50031106	BCL 22 S F 302	Line scanner front	RS 232	80 ... 450 mm	0.5 ... 1 mm	800 scans/s	0 ... 40 °C
50032112	BCL 22 S F 312	Line scanner front	RS 232	80 ... 450 mm	0.5 ... 1 mm	800 scans/s	0 ... 40 °C
50030990	BCL 22 S N 300	Line scanner with deflecting mirror lateral with deflecting mirror	RS 232	50 ... 95 mm	0.15 ... 0.5 mm	800 scans/s	0 ... 40 °C
50032075	BCL 22 S N 210	Line scanner with deflecting mirror lateral with deflecting mirror	RS 232	50 ... 95 mm	0.15 ... 0.5 mm	800 scans/s	0 ... 40 °C
50032078	BCL 22 S N 310	Line scanner with deflecting mirror lateral with deflecting mirror	RS 232	50 ... 95 mm	0.15 ... 0.5 mm	800 scans/s	0 ... 40 °C
50031088	BCL 22 S N 200	Line scanner with deflecting mirror lateral with deflecting mirror	RS 232	50 ... 95 mm	0.15 ... 0.5 mm	800 scans/s	0 ... 40 °C
50114714	BCL 22 S B 300	Line scanner with deflecting mirror lateral with deflecting mirror	RS 232	50 ... 220 mm	0.165 ... 0.5 mm	800 scans/s	0 ... 40 °C
50117071	BCL 22 S B 200	Line scanner with deflecting mirror lateral with deflecting mirror	RS 232	50 ... 220 mm	0.165 ... 0.5 mm	800 scans/s	0 ... 40 °C
50032091	BCL 22 S M 210	Line scanner with deflecting mirror lateral with deflecting mirror	RS 232	50 ... 260 mm	0.2 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50032095	BCL 22 S M 310	Line scanner with deflecting mirror lateral with deflecting mirror	RS 232	50 ... 260 mm	0.2 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50030992	BCL 22 S M 300	Line scanner with deflecting mirror lateral with deflecting mirror	RS 232	50 ... 260 mm	0.2 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50031094	BCL 22 S M 200	Line scanner with deflecting mirror lateral with deflecting mirror	RS 232	50 ... 260 mm	0.2 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50031104	BCL 22 S F 300	Line scanner with deflecting mirror lateral with deflecting mirror	RS 232	80 ... 450 mm	0.5 ... 1 mm	800 scans/s	0 ... 40 °C
50032106	BCL 22 S F 210	Line scanner with deflecting mirror lateral with deflecting mirror	RS 232	80 ... 450 mm	0.5 ... 1 mm	800 scans/s	0 ... 40 °C
50031100	BCL 22 S F 200	Line scanner with deflecting mirror lateral with deflecting mirror	RS 232	80 ... 450 mm	0.5 ... 1 mm	800 scans/s	0 ... 40 °C
50032110	BCL 22 S F 310	Line scanner with deflecting mirror lateral with deflecting mirror	RS 232	80 ... 450 mm	0.5 ... 1 mm	800 scans/s	0 ... 40 °C
50061307	BCL 22 R1 N 202	Raster scanner front	RS 232	50 ... 95 mm	0.15 ... 0.5 mm	800 scans/s	0 ... 40 °C
50061311	BCL 22 R1 N 302	Raster scanner front	RS 232	50 ... 95 mm	0.15 ... 0.5 mm	800 scans/s	0 ... 40 °C
50032084	BCL 22 R1 N 212	Raster scanner front	RS 232	50 ... 95 mm	0.15 ... 0.5 mm	800 scans/s	0 ... 40 °C
50032089	BCL 22 R1 N 312	Raster scanner front	RS 232	50 ... 95 mm	0.15 ... 0.5 mm	800 scans/s	0 ... 40 °C
50061315	BCL 22 R1 M 202	Raster scanner front	RS 232	50 ... 260 mm	0.2 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50032101	BCL 22 R1 M 212	Raster scanner front	RS 232	50 ... 260 mm	0.2 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50032104	BCL 22 R1 M 312	Raster scanner front	RS 232	50 ... 260 mm	0.2 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50061319	BCL 22 R1 M 302	Raster scanner front	RS 232	50 ... 260 mm	0.2 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50032120	BCL 22 R1 F 312	Raster scanner front	RS 232	80 ... 450 mm	0.5 ... 1 mm	800 scans/s	0 ... 40 °C
50061323	BCL 22 R1 F 202	Raster scanner front	RS 232	80 ... 450 mm	0.5 ... 1 mm	800 scans/s	0 ... 40 °C
50032116	BCL 22 R1 F 212	Raster scanner front	RS 232	80 ... 450 mm	0.5 ... 1 mm	800 scans/s	0 ... 40 °C
50061327	BCL 22 R1 F 302	Raster scanner front	RS 232	80 ... 450 mm	0.5 ... 1 mm	800 scans/s	0 ... 40 °C
50032082	BCL 22 R1 N 210	Raster scanner with deflecting mirror lateral with deflecting mirror	RS 232	50 ... 95 mm	0.15 ... 0.5 mm	800 scans/s	0 ... 40 °C
50032087	BCL 22 R1 N 310	Raster scanner with deflecting mirror lateral with deflecting mirror	RS 232	50 ... 95 mm	0.15 ... 0.5 mm	800 scans/s	0 ... 40 °C
50061309	BCL 22 R1 N 300	Raster scanner with deflecting mirror lateral with deflecting mirror	RS 232	50 ... 95 mm	0.15 ... 0.5 mm	800 scans/s	0 ... 40 °C
50061305	BCL 22 R1 N 200	Raster scanner with deflecting mirror lateral with deflecting mirror	RS 232	50 ... 95 mm	0.15 ... 0.5 mm	800 scans/s	0 ... 40 °C
50061317	BCL 22 R1 M 300	Raster scanner with deflecting mirror lateral with deflecting mirror	RS 232	50 ... 260 mm	0.2 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50031704	BCL 22 R1 M 310	Raster scanner with deflecting mirror lateral with deflecting mirror	RS 232	50 ... 260 mm	0.2 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50061313	BCL 22 R1 M 200	Raster scanner with deflecting mirror lateral with deflecting mirror	RS 232	50 ... 260 mm	0.2 ... 0.8 mm	1,000 scans/s	0 ... 40 °C

Part no.	Part description	Reading method Light beam exit	Interface	Reading distance	Module size	Scanning rate	Ambient temperature, operation
50032099	BCL 22 R1 M 210	Raster scanner with deflecting mirror lateral with deflecting mirror	RS 232	50 ... 260 mm	0.2 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50061325	BCL 22 R1 F 300	Raster scanner with deflecting mirror lateral with deflecting mirror	RS 232	80 ... 450 mm	0.5 ... 1 mm	800 scans/s	0 ... 40 °C
50061321	BCL 22 R1 F 200	Raster scanner with deflecting mirror lateral with deflecting mirror	RS 232	80 ... 450 mm	0.5 ... 1 mm	800 scans/s	0 ... 40 °C
50032118	BCL 22 R1 F 310	Raster scanner with deflecting mirror lateral with deflecting mirror	RS 232	80 ... 450 mm	0.5 ... 1 mm	800 scans/s	0 ... 40 °C
50032114	BCL 22 R1 F 210	Raster scanner with deflecting mirror lateral with deflecting mirror	RS 232	80 ... 450 mm	0.5 ... 1 mm	800 scans/s	0 ... 40 °C

/// BCL 300i



These modular, stationary bar code readers feature code fragment technology and numerous equipment features. Also unique is the modular connection technology.



**Benefits:**

- Integrated fieldbus connectivity (PROFIBUS, PROFINET, EtherNet, EtherNet/IP, TCP/IP, multiNet, RS 232/422/485) with Ethernet switch function (for linear topology)
- Full CRT (code reconstruction technology) also detects heavily damaged or soiled codes
- webConfig is a operating-system independent, browser-based configuration tool
- High-quality optics with great depth of field and large opening angle
- Compact housing design for problem-free placement directly at the conveyor line
- Modular connector hood, terminal hood and terminal box and graphical display
- All optics models are also available with optional heating

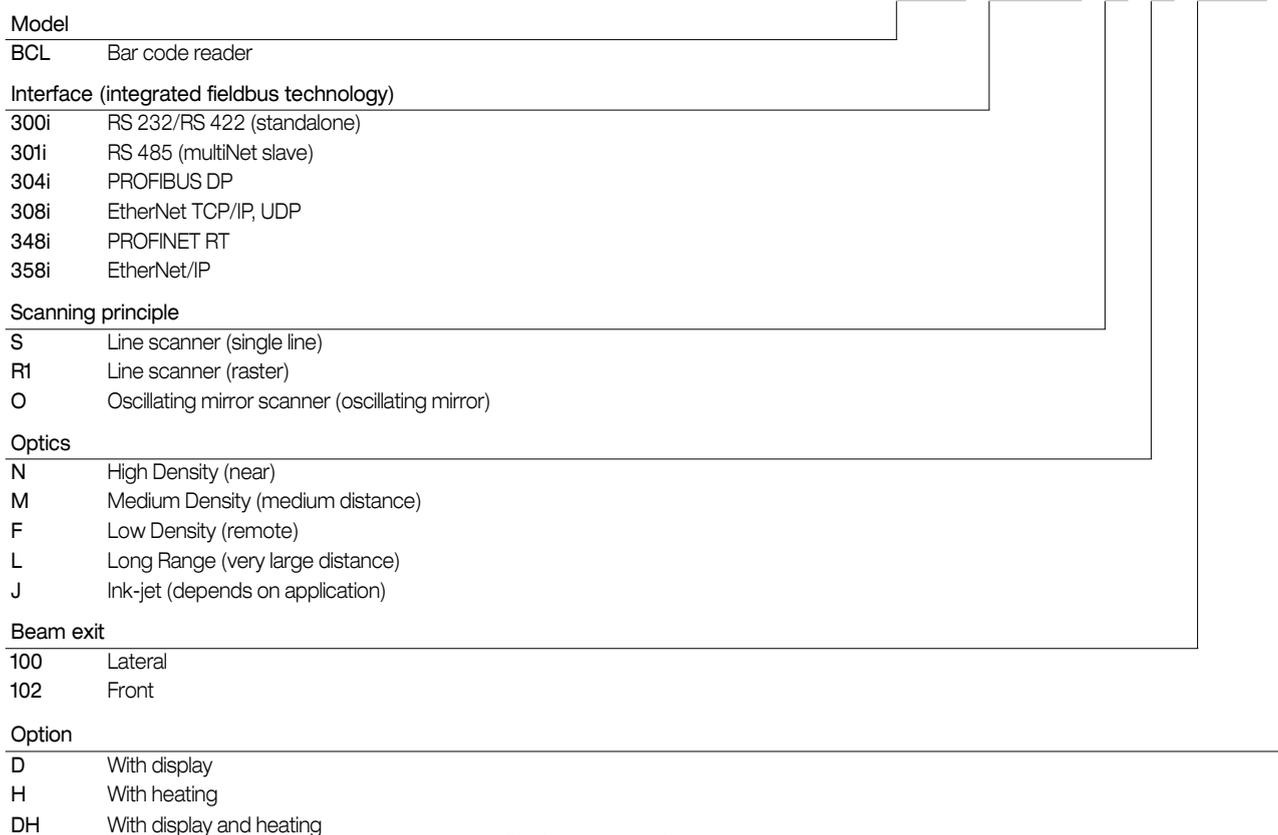
Switching Sensors

Measuring Sensors

Products for Safety at Work

PART NUMBER CODES – stationary bar code readers BCL 300i

B C L 3 0 0 i S N 1 0 0 H



Identification

Data Transmission / Control Components

Industrial Image Processing

Accessories

Switches Unlimited  
 Contact: sales@switchesunlimited.com  
 800-221-0487 □ Fax: 718-672-6370  
 www.switchesunlimited.com

Part no.	Part description	Reading method Light beam exit	Interface	Reading distance	Module size	Scanning rate	Ambient temperature, operation
<b>RS 232, RS 422 interface</b>							
50116224	BCL 300i SN 102 D H	Line scanner front	RS 232, RS 422	50 ... 160 mm	0.127 ... 0.2 mm	1,000 scans/s	-35 ... 40 °C
50116226	BCL 300i SN 102	Line scanner front	RS 232, RS 422	50 ... 160 mm	0.127 ... 0.2 mm	1,000 scans/s	0 ... 40 °C
50116225	BCL 300i SN 102 D	Line scanner front	RS 232, RS 422	50 ... 160 mm	0.127 ... 0.2 mm	1,000 scans/s	0 ... 40 °C
50116219	BCL 300i SM 102 D	Line scanner front	RS 232, RS 422	60 ... 320 mm	0.2 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116218	BCL 300i SM 102 D H	Line scanner front	RS 232, RS 422	60 ... 320 mm	0.2 ... 0.5 mm	1,000 scans/s	-35 ... 40 °C
50116220	BCL 300i SM 102	Line scanner front	RS 232, RS 422	60 ... 320 mm	0.2 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116208	BCL 300i SF 102	Line scanner front	RS 232, RS 422	100 ... 470 mm	0.3 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116207	BCL 300i SF 102 D	Line scanner front	RS 232, RS 422	100 ... 470 mm	0.3 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116206	BCL 300i SF 102 D H	Line scanner front	RS 232, RS 422	100 ... 470 mm	0.3 ... 0.5 mm	1,000 scans/s	-35 ... 40 °C
50116214	BCL 300i SL 102	Line scanner front	RS 232, RS 422	100 ... 700 mm	0.35 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50116212	BCL 300i SL 102 D H	Line scanner front	RS 232, RS 422	100 ... 700 mm	0.35 ... 0.8 mm	1,000 scans/s	-35 ... 40 °C
50116213	BCL 300i SL 102 D	Line scanner front	RS 232, RS 422	100 ... 700 mm	0.35 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50116223	BCL 300i SN 100	Line scanner with deflecting mirror lateral with deflecting mirror	RS 232, RS 422	20 ... 130 mm	0.127 ... 0.2 mm	1,000 scans/s	0 ... 40 °C
50116221	BCL 300i SN 100 D H	Line scanner with deflecting mirror lateral with deflecting mirror	RS 232, RS 422	20 ... 130 mm	0.127 ... 0.2 mm	1,000 scans/s	-35 ... 40 °C
50116222	BCL 300i SN 100 D	Line scanner with deflecting mirror lateral with deflecting mirror	RS 232, RS 422	20 ... 130 mm	0.127 ... 0.2 mm	1,000 scans/s	0 ... 40 °C
50116215	BCL 300i SM 100 D H	Line scanner with deflecting mirror lateral with deflecting mirror	RS 232, RS 422	30 ... 290 mm	0.2 ... 0.5 mm	1,000 scans/s	-35 ... 40 °C
50116217	BCL 300i SM 100	Line scanner with deflecting mirror lateral with deflecting mirror	RS 232, RS 422	30 ... 290 mm	0.2 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116216	BCL 300i SM 100 D	Line scanner with deflecting mirror lateral with deflecting mirror	RS 232, RS 422	30 ... 290 mm	0.2 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116203	BCL 300i SF 100 D H	Line scanner with deflecting mirror lateral with deflecting mirror	RS 232, RS 422	70 ... 440 mm	0.3 ... 0.5 mm	1,000 scans/s	-35 ... 40 °C
50116205	BCL 300i SF 100	Line scanner with deflecting mirror lateral with deflecting mirror	RS 232, RS 422	70 ... 440 mm	0.3 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116204	BCL 300i SF 100 D	Line scanner with deflecting mirror lateral with deflecting mirror	RS 232, RS 422	70 ... 440 mm	0.3 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116209	BCL 300i SL 100 D H	Line scanner with deflecting mirror lateral with deflecting mirror	RS 232, RS 422	70 ... 670 mm	0.35 ... 0.8 mm	1,000 scans/s	-35 ... 40 °C
50116210	BCL 300i SL 100 D	Line scanner with deflecting mirror lateral with deflecting mirror	RS 232, RS 422	70 ... 670 mm	0.35 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50116211	BCL 300i SL 100	Line scanner with deflecting mirror lateral with deflecting mirror	RS 232, RS 422	70 ... 670 mm	0.35 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50116201	BCL 300i R1 N 102 D	Raster scanner front	RS 232, RS 422	50 ... 160 mm	0.127 ... 0.2 mm	1,000 scans/s	0 ... 40 °C
50116202	BCL 300i R1 N 102	Raster scanner front	RS 232, RS 422	50 ... 160 mm	0.127 ... 0.2 mm	1,000 scans/s	0 ... 40 °C
50116197	BCL 300i R1 M 102 D	Raster scanner front	RS 232, RS 422	60 ... 320 mm	0.2 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116198	BCL 300i R1 M 102	Raster scanner front	RS 232, RS 422	60 ... 320 mm	0.2 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116194	BCL 300i R1 F 102	Raster scanner front	RS 232, RS 422	100 ... 470 mm	0.3 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116193	BCL 300i R1 F 102 D	Raster scanner front	RS 232, RS 422	100 ... 470 mm	0.3 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116199	BCL 300i R1 N 100 D	Raster scanner with deflecting mirror lateral with deflecting mirror	RS 232, RS 422	20 ... 130 mm	0.127 ... 0.2 mm	1,000 scans/s	0 ... 40 °C
50116200	BCL 300i R1 N 100	Raster scanner with deflecting mirror lateral with deflecting mirror	RS 232, RS 422	20 ... 130 mm	0.127 ... 0.2 mm	1,000 scans/s	0 ... 40 °C
50116195	BCL 300i R1 M 100 D	Raster scanner with deflecting mirror lateral with deflecting mirror	RS 232, RS 422	30 ... 290 mm	0.2 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116196	BCL 300i R1 M 100	Raster scanner with deflecting mirror lateral with deflecting mirror	RS 232, RS 422	30 ... 290 mm	0.2 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116192	BCL 300i R1 F 100	Raster scanner with deflecting mirror lateral with deflecting mirror	RS 232, RS 422	70 ... 440 mm	0.3 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116191	BCL 300i R1 F 100 D	Raster scanner with deflecting mirror lateral with deflecting mirror	RS 232, RS 422	70 ... 440 mm	0.3 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50123508	BCL 300i R1 J 100	Raster scanner with deflecting mirror lateral with deflecting mirror	RS 232, RS 422	100 ... 600 mm	0.5 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50116186	BCL 300i OM 100 D	Oscillating-mirror scanner zero position at side at angle of 90°	RS 232, RS 422	40 ... 300 mm	0.2 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116187	BCL 300i OM 100 D H	Oscillating-mirror scanner zero position at side at angle of 90°	RS 232, RS 422	40 ... 300 mm	0.2 ... 0.5 mm	1,000 scans/s	-35 ... 40 °C
50116185	BCL 300i OM 100	Oscillating-mirror scanner zero position at side at angle of 90°	RS 232, RS 422	40 ... 300 mm	0.2 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116180	BCL 300i OF 100 D	Oscillating-mirror scanner zero position at side at angle of 90°	RS 232, RS 422	80 ... 455 mm	0.3 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116179	BCL 300i OF 100	Oscillating-mirror scanner zero position at side at angle of 90°	RS 232, RS 422	80 ... 455 mm	0.3 ... 0.5 mm	1,000 scans/s	0 ... 40 °C

Necessary accessories: A modular connector hood and terminal hood are required for operation!

Part no.	Part description	Reading method Light beam exit	Interface	Reading distance	Module size	Scanning rate	Ambient temperature, operation
50116181	BCL 300i OF 100 D H	Oscillating-mirror scanner zero position at side at angle of 90°	RS 232, RS 422	80 ... 455 mm	0.3 ... 0.5 mm	1,000 scans/s	-35 ... 40 °C
50116182	BCL 300i OL 100	Oscillating-mirror scanner zero position at side at angle of 90°	RS 232, RS 422	80 ... 680 mm	0.35 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50116183	BCL 300i OL 100 D	Oscillating-mirror scanner zero position at side at angle of 90°	RS 232, RS 422	80 ... 680 mm	0.35 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50116184	BCL 300i OL 100 D H	Oscillating-mirror scanner zero position at side at angle of 90°	RS 232, RS 422	80 ... 680 mm	0.35 ... 0.8 mm	1,000 scans/s	-35 ... 40 °C

PROFINET interface

50116462	BCL 348i SN 102	Line scanner front	PROFINET	50 ... 160 mm	0.127 ... 0.2 mm	1,000 scans/s	0 ... 40 °C	Switching Sensors
50116461	BCL 348i SN 102 D	Line scanner front	PROFINET	50 ... 160 mm	0.127 ... 0.2 mm	1,000 scans/s	0 ... 40 °C	
50116460	BCL 348i SN 102 D H	Line scanner front	PROFINET	50 ... 160 mm	0.127 ... 0.2 mm	1,000 scans/s	-35 ... 40 °C	
50116454	BCL 348i SM 102 D H	Line scanner front	PROFINET	60 ... 320 mm	0.2 ... 0.5 mm	1,000 scans/s	-35 ... 40 °C	Measuring Sensors
50116455	BCL 348i SM 102 D	Line scanner front	PROFINET	60 ... 320 mm	0.2 ... 0.5 mm	1,000 scans/s	0 ... 40 °C	
50116456	BCL 348i SM 102	Line scanner front	PROFINET	60 ... 320 mm	0.2 ... 0.5 mm	1,000 scans/s	0 ... 40 °C	
50116444	BCL 348i SF 102	Line scanner front	PROFINET	100 ... 475 mm	0.3 ... 0.5 mm	1,000 scans/s	0 ... 40 °C	Products for Safety at Work
50116443	BCL 348i SF 102 D	Line scanner front	PROFINET	100 ... 475 mm	0.3 ... 0.5 mm	1,000 scans/s	0 ... 40 °C	
50116442	BCL 348i SF 102 D H	Line scanner front	PROFINET	100 ... 475 mm	0.3 ... 0.5 mm	1,000 scans/s	-35 ... 40 °C	
50116449	BCL 348i SL 102 D	Line scanner front	PROFINET	100 ... 700 mm	0.35 ... 0.8 mm	1,000 scans/s	0 ... 40 °C	Identification
50116450	BCL 348i SL 102	Line scanner front	PROFINET	100 ... 700 mm	0.35 ... 0.8 mm	1,000 scans/s	0 ... 40 °C	
50116448	BCL 348i SL 102 D H	Line scanner front	PROFINET	100 ... 700 mm	0.35 ... 0.8 mm	1,000 scans/s	-35 ... 40 °C	
50116459	BCL 348i SN 100	Line scanner with deflecting mirror lateral with deflecting mirror	PROFINET	20 ... 130 mm	0.127 ... 0.2 mm	1,000 scans/s	0 ... 40 °C	Data Transmission / Control Components
50116457	BCL 348i SN 100 D H	Line scanner with deflecting mirror lateral with deflecting mirror	PROFINET	20 ... 130 mm	0.127 ... 0.2 mm	1,000 scans/s	-35 ... 40 °C	
50116458	BCL 348i SN 100 D	Line scanner with deflecting mirror lateral with deflecting mirror	PROFINET	20 ... 130 mm	0.127 ... 0.2 mm	1,000 scans/s	0 ... 40 °C	
50116451	BCL 348i SM 100	Line scanner with deflecting mirror lateral with deflecting mirror	PROFINET	30 ... 290 mm	0.2 ... 0.5 mm	1,000 scans/s	0 ... 40 °C	Industrial Image Processing
50116452	BCL 348i SM 100 D H	Line scanner with deflecting mirror lateral with deflecting mirror	PROFINET	30 ... 290 mm	0.2 ... 0.5 mm	1,000 scans/s	-35 ... 40 °C	
50116453	BCL 348i SM 100 D	Line scanner with deflecting mirror lateral with deflecting mirror	PROFINET	30 ... 290 mm	0.2 ... 0.5 mm	1,000 scans/s	0 ... 40 °C	
50116441	BCL 348i SF 100	Line scanner with deflecting mirror lateral with deflecting mirror	PROFINET	70 ... 445 mm	0.3 ... 0.5 mm	1,000 scans/s	0 ... 40 °C	Accessories
50116440	BCL 348i SF 100 D	Line scanner with deflecting mirror lateral with deflecting mirror	PROFINET	70 ... 445 mm	0.3 ... 0.5 mm	1,000 scans/s	0 ... 40 °C	
50116439	BCL 348i SF 100 D H	Line scanner with deflecting mirror lateral with deflecting mirror	PROFINET	70 ... 445 mm	0.3 ... 0.5 mm	1,000 scans/s	-35 ... 40 °C	
50116446	BCL 348i SL 100 D	Line scanner with deflecting mirror lateral with deflecting mirror	PROFINET	70 ... 670 mm	0.35 ... 0.8 mm	1,000 scans/s	0 ... 40 °C	
50116445	BCL 348i SL 100 D H	Line scanner with deflecting mirror lateral with deflecting mirror	PROFINET	70 ... 670 mm	0.35 ... 0.8 mm	1,000 scans/s	-35 ... 40 °C	
50116447	BCL 348i SL 100	Line scanner with deflecting mirror lateral with deflecting mirror	PROFINET	70 ... 670 mm	0.35 ... 0.8 mm	1,000 scans/s	0 ... 40 °C	
50116437	BCL 348i R1 N 102 D	Raster scanner front	PROFINET	50 ... 160 mm	0.127 ... 0.2 mm	1,000 scans/s	0 ... 40 °C	
50116438	BCL 348i R1 N 102	Raster scanner front	PROFINET	50 ... 160 mm	0.127 ... 0.2 mm	1,000 scans/s	0 ... 40 °C	
50116434	BCL 348i R1 M 102	Raster scanner front	PROFINET	60 ... 320 mm	0.2 ... 0.5 mm	1,000 scans/s	0 ... 40 °C	
50116433	BCL 348i R1 M 102 D	Raster scanner front	PROFINET	60 ... 320 mm	0.2 ... 0.5 mm	1,000 scans/s	0 ... 40 °C	
50116430	BCL 348i R1 F 102	Raster scanner front	PROFINET	100 ... 475 mm	0.3 ... 0.5 mm	1,000 scans/s	0 ... 40 °C	
50116429	BCL 348i R1 F 102 D	Raster scanner front	PROFINET	100 ... 475 mm	0.3 ... 0.5 mm	1,000 scans/s	0 ... 40 °C	
50116436	BCL 348i R1 N 100	Raster scanner with deflecting mirror lateral with deflecting mirror	PROFINET	20 ... 130 mm	0.127 ... 0.2 mm	1,000 scans/s	0 ... 40 °C	
50116435	BCL 348i R1 N 100 D	Raster scanner with deflecting mirror lateral with deflecting mirror	PROFINET	20 ... 130 mm	0.127 ... 0.2 mm	1,000 scans/s	0 ... 40 °C	
50116432	BCL 348i R1 M 100	Raster scanner with deflecting mirror lateral with deflecting mirror	PROFINET	30 ... 290 mm	0.2 ... 0.5 mm	1,000 scans/s	0 ... 40 °C	
50116431	BCL 348i R1 M 100 D	Raster scanner with deflecting mirror lateral with deflecting mirror	PROFINET	30 ... 290 mm	0.2 ... 0.5 mm	1,000 scans/s	0 ... 40 °C	
50116427	BCL 348i R1 F 100 D	Raster scanner with deflecting mirror lateral with deflecting mirror	PROFINET	70 ... 445 mm	0.3 ... 0.5 mm	1,000 scans/s	0 ... 40 °C	
50116428	BCL 348i R1 F 100	Raster scanner with deflecting mirror lateral with deflecting mirror	PROFINET	70 ... 445 mm	0.3 ... 0.5 mm	1,000 scans/s	0 ... 40 °C	
50123504	BCL 348i R1 J 100	Raster scanner with deflecting mirror lateral with deflecting mirror	PROFINET	100 ... 600 mm	0.5 ... 0.8 mm	1,000 scans/s	0 ... 40 °C	

Necessary accessories: A modular connector hood and terminal hood are required for operation!

Part no.	Part description	Reading method Light beam exit	Interface	Reading distance	Module size	Scanning rate	Ambient temperature, operation
50116423	BCL 348i OM 100 D H	Oscillating-mirror scanner zero position at side at angle of 90°	PROFINET	40 ... 300 mm	0.2 ... 0.5 mm	1,000 scans/s	-35 ... 40 °C
50116421	BCL 348i OM 100	Oscillating-mirror scanner zero position at side at angle of 90°	PROFINET	40 ... 300 mm	0.2 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116422	BCL 348i OM 100 D	Oscillating-mirror scanner zero position at side at angle of 90°	PROFINET	40 ... 300 mm	0.2 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116416	BCL 348i OF 100 D	Oscillating-mirror scanner zero position at side at angle of 90°	PROFINET	80 ... 455 mm	0.3 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116417	BCL 348i OF 100 D H	Oscillating-mirror scanner zero position at side at angle of 90°	PROFINET	80 ... 455 mm	0.3 ... 0.5 mm	1,000 scans/s	-35 ... 40 °C
50116415	BCL 348i OF 100	Oscillating-mirror scanner zero position at side at angle of 90°	PROFINET	80 ... 455 mm	0.3 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116420	BCL 348i OL 100 D H	Oscillating-mirror scanner zero position at side at angle of 90°	PROFINET	80 ... 680 mm	0.35 ... 0.8 mm	1,000 scans/s	-35 ... 40 °C
50116419	BCL 348i OL 100 D	Oscillating-mirror scanner zero position at side at angle of 90°	PROFINET	80 ... 680 mm	0.35 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50116418	BCL 348i OL 100	Oscillating-mirror scanner zero position at side at angle of 90°	PROFINET	80 ... 680 mm	0.35 ... 0.8 mm	1,000 scans/s	0 ... 40 °C

PROFIBUS DP interface

50116366	BCL 304i SN 102 D	Line scanner front	PROFIBUS DP	50 ... 160 mm	0.127 ... 0.2 mm	1,000 scans/s	0 ... 40 °C
50116365	BCL 304i SN 102 D H	Line scanner front	PROFIBUS DP	50 ... 160 mm	0.127 ... 0.2 mm	1,000 scans/s	-35 ... 40 °C
50116367	BCL 304i SN 102	Line scanner front	PROFIBUS DP	50 ... 160 mm	0.127 ... 0.2 mm	1,000 scans/s	0 ... 40 °C
50116359	BCL 304i SM 102 D H	Line scanner front	PROFIBUS DP	60 ... 320 mm	0.2 ... 0.5 mm	1,000 scans/s	-35 ... 40 °C
50116360	BCL 304i SM 102 D	Line scanner front	PROFIBUS DP	60 ... 320 mm	0.2 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116361	BCL 304i SM 102	Line scanner front	PROFIBUS DP	60 ... 320 mm	0.2 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116348	BCL 304i SF 102 D	Line scanner front	PROFIBUS DP	100 ... 470 mm	0.3 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116349	BCL 304i SF 102	Line scanner front	PROFIBUS DP	100 ... 470 mm	0.3 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116347	BCL 304i SF 102 D H	Line scanner front	PROFIBUS DP	100 ... 470 mm	0.3 ... 0.5 mm	1,000 scans/s	-35 ... 40 °C
50116353	BCL 304i SL 102 D H	Line scanner front	PROFIBUS DP	100 ... 700 mm	0.35 ... 0.8 mm	1,000 scans/s	-35 ... 40 °C
50116355	BCL 304i SL 102	Line scanner front	PROFIBUS DP	100 ... 700 mm	0.35 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50116354	BCL 304i SL 102 D	Line scanner front	PROFIBUS DP	100 ... 700 mm	0.35 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50116363	BCL 304i SN 100 D	Line scanner with deflecting mirror lateral with deflecting mirror	PROFIBUS DP	20 ... 130 mm	0.127 ... 0.2 mm	1,000 scans/s	0 ... 40 °C
50116364	BCL 304i SN 100	Line scanner with deflecting mirror lateral with deflecting mirror	PROFIBUS DP	20 ... 130 mm	0.127 ... 0.2 mm	1,000 scans/s	0 ... 40 °C
50116362	BCL 304i SN 100 D H	Line scanner with deflecting mirror lateral with deflecting mirror	PROFIBUS DP	20 ... 130 mm	0.127 ... 0.2 mm	1,000 scans/s	-35 ... 40 °C
50116357	BCL 304i SM 100 D	Line scanner with deflecting mirror lateral with deflecting mirror	PROFIBUS DP	30 ... 290 mm	0.2 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116356	BCL 304i SM 100 D H	Line scanner with deflecting mirror lateral with deflecting mirror	PROFIBUS DP	30 ... 290 mm	0.2 ... 0.5 mm	1,000 scans/s	-35 ... 40 °C
50116358	BCL 304i SM 100	Line scanner with deflecting mirror lateral with deflecting mirror	PROFIBUS DP	30 ... 290 mm	0.2 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116344	BCL 304i SF 100 D H	Line scanner with deflecting mirror lateral with deflecting mirror	PROFIBUS DP	70 ... 440 mm	0.3 ... 0.5 mm	1,000 scans/s	-35 ... 40 °C
50116346	BCL 304i SF 100	Line scanner with deflecting mirror lateral with deflecting mirror	PROFIBUS DP	70 ... 440 mm	0.3 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116345	BCL 304i SF 100 D	Line scanner with deflecting mirror lateral with deflecting mirror	PROFIBUS DP	70 ... 440 mm	0.3 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116352	BCL 304i SL 100	Line scanner with deflecting mirror lateral with deflecting mirror	PROFIBUS DP	70 ... 670 mm	0.35 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50116351	BCL 304i SL 100 D	Line scanner with deflecting mirror lateral with deflecting mirror	PROFIBUS DP	70 ... 670 mm	0.35 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50116350	BCL 304i SL 100 D H	Line scanner with deflecting mirror lateral with deflecting mirror	PROFIBUS DP	70 ... 670 mm	0.35 ... 0.8 mm	1,000 scans/s	-35 ... 40 °C
50116343	BCL 304i R1 N 102	Raster scanner front	PROFIBUS DP	50 ... 160 mm	0.127 ... 0.2 mm	1,000 scans/s	0 ... 40 °C
50116342	BCL 304i R1 N 102 D	Raster scanner front	PROFIBUS DP	50 ... 160 mm	0.127 ... 0.2 mm	1,000 scans/s	0 ... 40 °C
50116338	BCL 304i R1 M 102 D	Raster scanner front	PROFIBUS DP	60 ... 320 mm	0.2 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116339	BCL 304i R1 M 102	Raster scanner front	PROFIBUS DP	60 ... 320 mm	0.2 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116334	BCL 304i R1 F 102 D	Raster scanner front	PROFIBUS DP	100 ... 470 mm	0.3 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116335	BCL 304i R1 F 102	Raster scanner front	PROFIBUS DP	100 ... 470 mm	0.3 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116340	BCL 304i R1 N 100 D	Raster scanner with deflecting mirror lateral with deflecting mirror	PROFIBUS DP	20 ... 130 mm	0.127 ... 0.2 mm	1,000 scans/s	0 ... 40 °C
50116341	BCL 304i R1 N 100	Raster scanner with deflecting mirror lateral with deflecting mirror	PROFIBUS DP	20 ... 130 mm	0.127 ... 0.2 mm	1,000 scans/s	0 ... 40 °C

Necessary accessories: A modular connector hood and terminal hood are required for operation!

Part no.	Part description	Reading method Light beam exit	Interface	Reading distance	Module size	Scanning rate	Ambient temperature, operation
50116336	BCL 304i R1 M 100 D	Raster scanner with deflecting mirror lateral with deflecting mirror	PROFIBUS DP	30 ... 290 mm	0.2 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116337	BCL 304i R1 M 100	Raster scanner with deflecting mirror lateral with deflecting mirror	PROFIBUS DP	30 ... 290 mm	0.2 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116332	BCL 304i R1 F 100 D	Raster scanner with deflecting mirror lateral with deflecting mirror	PROFIBUS DP	70 ... 440 mm	0.3 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116333	BCL 304i R1 F 100	Raster scanner with deflecting mirror lateral with deflecting mirror	PROFIBUS DP	70 ... 440 mm	0.3 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50123506	BCL 304i R1 J 100	Raster scanner with deflecting mirror lateral with deflecting mirror	PROFIBUS DP	100 ... 600 mm	0.5 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50116326	BCL 304i OM 100	Oscillating-mirror scanner zero position at side at angle of 90°	PROFIBUS DP	40 ... 300 mm	0.2 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116327	BCL 304i OM 100 D	Oscillating-mirror scanner zero position at side at angle of 90°	PROFIBUS DP	40 ... 300 mm	0.2 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116328	BCL 304i OM 100 D H	Oscillating-mirror scanner zero position at side at angle of 90°	PROFIBUS DP	40 ... 300 mm	0.2 ... 0.5 mm	1,000 scans/s	-35 ... 40 °C
50116320	BCL 304i OF 100	Oscillating-mirror scanner zero position at side at angle of 90°	PROFIBUS DP	80 ... 455 mm	0.3 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116321	BCL 304i OF 100 D	Oscillating-mirror scanner zero position at side at angle of 90°	PROFIBUS DP	80 ... 455 mm	0.3 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116322	BCL 304i OF 100 D H	Oscillating-mirror scanner zero position at side at angle of 90°	PROFIBUS DP	80 ... 455 mm	0.3 ... 0.5 mm	1,000 scans/s	-35 ... 40 °C
50116323	BCL 304i OL 100	Oscillating-mirror scanner zero position at side at angle of 90°	PROFIBUS DP	80 ... 680 mm	0.35 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50116325	BCL 304i OL 100 D H	Oscillating-mirror scanner zero position at side at angle of 90°	PROFIBUS DP	80 ... 680 mm	0.35 ... 0.8 mm	1,000 scans/s	-35 ... 40 °C
50116324	BCL 304i OL 100 D	Oscillating-mirror scanner zero position at side at angle of 90°	PROFIBUS DP	80 ... 680 mm	0.35 ... 0.8 mm	1,000 scans/s	0 ... 40 °C

Switching Sensors

Measuring Sensors

MultiNet Plus, RS 485 interface

50116319	BCL 301i SN 102	Line scanner front	MultiNet Plus, RS 485	50 ... 160 mm	0.127 ... 0.2 mm	1,000 scans/s	0 ... 40 °C
50116317	BCL 301i SN 102 D H	Line scanner front	MultiNet Plus, RS 485	50 ... 160 mm	0.127 ... 0.2 mm	1,000 scans/s	-35 ... 40 °C
50116318	BCL 301i SN 102 D	Line scanner front	MultiNet Plus, RS 485	50 ... 160 mm	0.127 ... 0.2 mm	1,000 scans/s	0 ... 40 °C
50116313	BCL 301i SM 102	Line scanner front	MultiNet Plus, RS 485	60 ... 320 mm	0.2 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116311	BCL 301i SM 102 D H	Line scanner front	MultiNet Plus, RS 485	60 ... 320 mm	0.2 ... 0.5 mm	1,000 scans/s	-35 ... 40 °C
50116312	BCL 301i SM 102 D	Line scanner front	MultiNet Plus, RS 485	60 ... 320 mm	0.2 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116301	BCL 301i SF 102	Line scanner front	MultiNet Plus, RS 485	100 ... 470 mm	0.3 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116300	BCL 301i SF 102 D	Line scanner front	MultiNet Plus, RS 485	100 ... 470 mm	0.3 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116299	BCL 301i SF 102 D H	Line scanner front	MultiNet Plus, RS 485	100 ... 470 mm	0.3 ... 0.5 mm	1,000 scans/s	-35 ... 40 °C
50116307	BCL 301i SL 102	Line scanner front	MultiNet Plus, RS 485	100 ... 700 mm	0.35 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50116306	BCL 301i SL 102 D	Line scanner front	MultiNet Plus, RS 485	100 ... 700 mm	0.35 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50116305	BCL 301i SL 102 D H	Line scanner front	MultiNet Plus, RS 485	100 ... 700 mm	0.35 ... 0.8 mm	1,000 scans/s	-35 ... 40 °C
50116314	BCL 301i SN 100 D H	Line scanner with deflecting mirror lateral with deflecting mirror	MultiNet Plus, RS 485	20 ... 130 mm	0.127 ... 0.2 mm	1,000 scans/s	-35 ... 40 °C
50116315	BCL 301i SN 100 D	Line scanner with deflecting mirror lateral with deflecting mirror	MultiNet Plus, RS 485	20 ... 130 mm	0.127 ... 0.2 mm	1,000 scans/s	0 ... 40 °C
50116316	BCL 301i SN 100	Line scanner with deflecting mirror lateral with deflecting mirror	MultiNet Plus, RS 485	20 ... 130 mm	0.127 ... 0.2 mm	1,000 scans/s	0 ... 40 °C
50116308	BCL 301i SM 100	Line scanner with deflecting mirror lateral with deflecting mirror	MultiNet Plus, RS 485	30 ... 290 mm	0.2 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116310	BCL 301i SM 100 D	Line scanner with deflecting mirror lateral with deflecting mirror	MultiNet Plus, RS 485	30 ... 290 mm	0.2 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116309	BCL 301i SM 100 D H	Line scanner with deflecting mirror lateral with deflecting mirror	MultiNet Plus, RS 485	30 ... 290 mm	0.2 ... 0.5 mm	1,000 scans/s	-35 ... 40 °C
50116298	BCL 301i SF 100	Line scanner with deflecting mirror lateral with deflecting mirror	MultiNet Plus, RS 485	70 ... 440 mm	0.3 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116296	BCL 301i SF 100 D H	Line scanner with deflecting mirror lateral with deflecting mirror	MultiNet Plus, RS 485	70 ... 440 mm	0.3 ... 0.5 mm	1,000 scans/s	-35 ... 40 °C
50116297	BCL 301i SF 100 D	Line scanner with deflecting mirror lateral with deflecting mirror	MultiNet Plus, RS 485	70 ... 440 mm	0.3 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116303	BCL 301i SL 100 D	Line scanner with deflecting mirror lateral with deflecting mirror	MultiNet Plus, RS 485	70 ... 670 mm	0.35 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50116304	BCL 301i SL 100	Line scanner with deflecting mirror lateral with deflecting mirror	MultiNet Plus, RS 485	70 ... 670 mm	0.35 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50116302	BCL 301i SL 100 D H	Line scanner with deflecting mirror lateral with deflecting mirror	MultiNet Plus, RS 485	70 ... 670 mm	0.35 ... 0.8 mm	1,000 scans/s	-35 ... 40 °C
50116295	BCL 301i R1 N 102	Raster scanner front	MultiNet Plus, RS 485	50 ... 160 mm	0.127 ... 0.2 mm	1,000 scans/s	0 ... 40 °C
50116294	BCL 301i R1 N 102 D	Raster scanner front	MultiNet Plus, RS 485	50 ... 160 mm	0.127 ... 0.2 mm	1,000 scans/s	0 ... 40 °C
50116290	BCL 301i R1 M 102 D	Raster scanner front	MultiNet Plus, RS 485	60 ... 320 mm	0.2 ... 0.5 mm	1,000 scans/s	0 ... 40 °C

Products for Safety at Work

Identification

Data Transmission / Control Components

Industrial Image Processing

Accessories

Necessary accessories: A modular connector hood and terminal hood are required for operation!

Part no.	Part description	Reading method Light beam exit	Interface	Reading distance	Module size	Scanning rate	Ambient temperature, operation
50116291	BCL 301i R1 M 102	Raster scanner front	MultiNet Plus, RS 485	60 ... 320 mm	0.2 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116287	BCL 301i R1 F 102	Raster scanner front	MultiNet Plus, RS 485	100 ... 470 mm	0.3 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116286	BCL 301i R1 F 102 D	Raster scanner front	MultiNet Plus, RS 485	100 ... 470 mm	0.3 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116293	BCL 301i R1 N 100	Raster scanner with deflecting mirror lateral with deflecting mirror	MultiNet Plus, RS 485	20 ... 130 mm	0.127 ... 0.2 mm	1,000 scans/s	0 ... 40 °C
50116292	BCL 301i R1 N 100 D	Raster scanner with deflecting mirror lateral with deflecting mirror	MultiNet Plus, RS 485	20 ... 130 mm	0.127 ... 0.2 mm	1,000 scans/s	0 ... 40 °C
50116288	BCL 301i R1 M 100 D	Raster scanner with deflecting mirror lateral with deflecting mirror	MultiNet Plus, RS 485	30 ... 290 mm	0.2 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116289	BCL 301i R1 M 100	Raster scanner with deflecting mirror lateral with deflecting mirror	MultiNet Plus, RS 485	30 ... 290 mm	0.2 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116285	BCL 301i R1 F 100	Raster scanner with deflecting mirror lateral with deflecting mirror	MultiNet Plus, RS 485	40 ... 440 mm	0.3 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116284	BCL 301i R1 F 100 D	Raster scanner with deflecting mirror lateral with deflecting mirror	MultiNet Plus, RS 485	70 ... 440 mm	0.3 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50123507	BCL 301i R1 J 100	Raster scanner with deflecting mirror lateral with deflecting mirror	MultiNet Plus, RS 485	100 ... 600 mm	0.5 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50116278	BCL 301i OM 100	Oscillating-mirror scanner zero position at side at angle of 90°	MultiNet Plus, RS 485	40 ... 300 mm	0.2 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116280	BCL 301i OM 100 D H	Oscillating-mirror scanner zero position at side at angle of 90°	MultiNet Plus, RS 485	40 ... 300 mm	0.2 ... 0.5 mm	1,000 scans/s	-35 ... 40 °C
50116279	BCL 301i OM 100 D	Oscillating-mirror scanner zero position at side at angle of 90°	MultiNet Plus, RS 485	40 ... 300 mm	0.2 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116272	BCL 301i OF 100	Oscillating-mirror scanner zero position at side at angle of 90°	MultiNet Plus, RS 485	80 ... 455 mm	0.3 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116274	BCL 301i OF 100 D H	Oscillating-mirror scanner zero position at side at angle of 90°	MultiNet Plus, RS 485	80 ... 455 mm	0.3 ... 0.5 mm	1,000 scans/s	-35 ... 40 °C
50116273	BCL 301i OF 100 D	Oscillating-mirror scanner zero position at side at angle of 90°	MultiNet Plus, RS 485	80 ... 455 mm	0.3 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116277	BCL 301i OL 100 D H	Oscillating-mirror scanner zero position at side at angle of 90°	MultiNet Plus, RS 485	80 ... 680 mm	0.35 ... 0.8 mm	1,000 scans/s	-35 ... 40 °C
50116276	BCL 301i OL 100 D	Oscillating-mirror scanner zero position at side at angle of 90°	MultiNet Plus, RS 485	80 ... 680 mm	0.35 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50116275	BCL 301i OL 100	Oscillating-mirror scanner zero position at side at angle of 90°	MultiNet Plus, RS 485	80 ... 680 mm	0.35 ... 0.8 mm	1,000 scans/s	0 ... 40 °C

**Ethernet interface**

50116412	BCL 308i SN 102 D H	Line scanner front	Ethernet	50 ... 160 mm	0.127 ... 0.2 mm	1,000 scans/s	-35 ... 40 °C
50116414	BCL 308i SN 102	Line scanner front	Ethernet	50 ... 160 mm	0.127 ... 0.2 mm	1,000 scans/s	0 ... 40 °C
50116413	BCL 308i SN 102 D	Line scanner front	Ethernet	50 ... 160 mm	0.127 ... 0.2 mm	1,000 scans/s	0 ... 40 °C
50116408	BCL 308i SM 102	Line scanner front	Ethernet	60 ... 320 mm	0.2 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116407	BCL 308i SM 102 D	Line scanner front	Ethernet	60 ... 320 mm	0.2 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116406	BCL 308i SM 102 D H	Line scanner front	Ethernet	60 ... 320 mm	0.2 ... 0.5 mm	1,000 scans/s	-35 ... 40 °C
50116395	BCL 308i SF 102 D H	Line scanner front	Ethernet	100 ... 470 mm	0.3 ... 0.5 mm	1,000 scans/s	-35 ... 40 °C
50114822	BCL 308i SF 102 D	Line scanner front	Ethernet	100 ... 470 mm	0.3 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116396	BCL 308i SF 102	Line scanner front	Ethernet	100 ... 470 mm	0.3 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116400	BCL 308i SL 102 D H	Line scanner front	Ethernet	100 ... 700 mm	0.35 ... 0.8 mm	1,000 scans/s	-35 ... 40 °C
50116402	BCL 308i SL 102	Line scanner front	Ethernet	100 ... 700 mm	0.35 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50116401	BCL 308i SL 102 D	Line scanner front	Ethernet	100 ... 700 mm	0.35 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50116411	BCL 308i SN 100	Line scanner with deflecting mirror lateral with deflecting mirror	Ethernet	20 ... 130 mm	0.127 ... 0.2 mm	1,000 scans/s	0 ... 40 °C
50116409	BCL 308i SN 100 D H	Line scanner with deflecting mirror lateral with deflecting mirror	Ethernet	20 ... 130 mm	0.127 ... 0.2 mm	1,000 scans/s	-35 ... 40 °C
50116410	BCL 308i SN 100 D	Line scanner with deflecting mirror lateral with deflecting mirror	Ethernet	20 ... 130 mm	0.127 ... 0.2 mm	1,000 scans/s	0 ... 40 °C
50116403	BCL 308i SM 100 D H	Line scanner with deflecting mirror lateral with deflecting mirror	Ethernet	30 ... 290 mm	0.2 ... 0.5 mm	1,000 scans/s	-35 ... 40 °C
50116405	BCL 308i SM 100	Line scanner with deflecting mirror lateral with deflecting mirror	Ethernet	30 ... 290 mm	0.2 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116404	BCL 308i SM 100 D	Line scanner with deflecting mirror lateral with deflecting mirror	Ethernet	30 ... 290 mm	0.2 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116393	BCL 308i SF 100 D	Line scanner with deflecting mirror lateral with deflecting mirror	Ethernet	70 ... 440 mm	0.3 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116392	BCL 308i SF 100 D H	Line scanner with deflecting mirror lateral with deflecting mirror	Ethernet	70 ... 440 mm	0.3 ... 0.5 mm	1,000 scans/s	-35 ... 40 °C
50116394	BCL 308i SF 100	Line scanner with deflecting mirror lateral with deflecting mirror	Ethernet	70 ... 440 mm	0.3 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116398	BCL 308i SL 100 D	Line scanner with deflecting mirror lateral with deflecting mirror	Ethernet	70 ... 670 mm	0.35 ... 0.8 mm	1,000 scans/s	0 ... 40 °C

Necessary accessories: A modular connector hood and terminal hood are required for operation!

Part no.	Part description	Reading method Light beam exit	Interface	Reading distance	Module size	Scanning rate	Ambient temperature, operation
50116399	BCL 308i SL 100	Line scanner with deflecting mirror lateral with deflecting mirror	Ethernet	70 ... 670 mm	0.35 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50116397	BCL 308i SL 100 D H	Line scanner with deflecting mirror lateral with deflecting mirror	Ethernet	70 ... 670 mm	0.35 ... 0.8 mm	1,000 scans/s	-35 ... 40 °C
50116390	BCL 308i R1 N 102 D	Raster scanner front	Ethernet	50 ... 160 mm	0.127 ... 0.2 mm	1,000 scans/s	0 ... 40 °C
50116391	BCL 308i R1 N 102	Raster scanner front	Ethernet	50 ... 160 mm	0.127 ... 0.2 mm	1,000 scans/s	0 ... 40 °C
50116386	BCL 308i R1 M 102 D	Raster scanner front	Ethernet	60 ... 320 mm	0.2 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116387	BCL 308i R1 M 102	Raster scanner front	Ethernet	60 ... 320 mm	0.2 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116383	BCL 308i R1 F 102	Raster scanner front	Ethernet	100 ... 470 mm	0.3 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116382	BCL 308i R1 F 102 D	Raster scanner front	Ethernet	100 ... 470 mm	0.3 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116389	BCL 308i R1 N 100	Raster scanner with deflecting mirror lateral with deflecting mirror	Ethernet	20 ... 130 mm	0.127 ... 0.2 mm	1,000 scans/s	0 ... 40 °C
50116388	BCL 308i R1 N 100 D	Raster scanner with deflecting mirror lateral with deflecting mirror	Ethernet	20 ... 130 mm	0.127 ... 0.2 mm	1,000 scans/s	0 ... 40 °C
50116384	BCL 308i R1 M 100 D	Raster scanner with deflecting mirror lateral with deflecting mirror	Ethernet	30 ... 290 mm	0.2 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116385	BCL 308i R1 M 100	Raster scanner with deflecting mirror lateral with deflecting mirror	Ethernet	30 ... 290 mm	0.2 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116381	BCL 308i R1 F 100	Raster scanner with deflecting mirror lateral with deflecting mirror	Ethernet	70 ... 440 mm	0.3 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116380	BCL 308i R1 F 100 D	Raster scanner with deflecting mirror lateral with deflecting mirror	Ethernet	70 ... 440 mm	0.3 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50123505	BCL 308i R1 J 100	Raster scanner with deflecting mirror lateral with deflecting mirror	Ethernet	100 ... 600 mm	0.5 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50116376	BCL 308i OM 100 D H	Oscillating-mirror scanner zero position at side at angle of 90°	Ethernet	40 ... 300 mm	0.2 ... 0.5 mm	1,000 scans/s	-35 ... 40 °C
50116375	BCL 308i OM 100 D	Oscillating-mirror scanner zero position at side at angle of 90°	Ethernet	40 ... 300 mm	0.2 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116374	BCL 308i OM 100	Oscillating-mirror scanner zero position at side at angle of 90°	Ethernet	40 ... 300 mm	0.2 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116369	BCL 308i OF 100 D	Oscillating-mirror scanner zero position at side at angle of 90°	Ethernet	80 ... 455 mm	0.3 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116368	BCL 308i OF 100	Oscillating-mirror scanner zero position at side at angle of 90°	Ethernet	80 ... 455 mm	0.3 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50116370	BCL 308i OF 100 D H	Oscillating-mirror scanner zero position at side at angle of 90°	Ethernet	80 ... 455 mm	0.3 ... 0.5 mm	1,000 scans/s	-35 ... 40 °C
50116373	BCL 308i OL 100 D H	Oscillating-mirror scanner zero position at side at angle of 90°	Ethernet	80 ... 680 mm	0.35 ... 0.8 mm	1,000 scans/s	-35 ... 40 °C
50116372	BCL 308i OL 100 D	Oscillating-mirror scanner zero position at side at angle of 90°	Ethernet	80 ... 680 mm	0.35 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50116371	BCL 308i OL 100	Oscillating-mirror scanner zero position at side at angle of 90°	Ethernet	80 ... 680 mm	0.35 ... 0.8 mm	1,000 scans/s	0 ... 40 °C

EtherNet IP interface

50120793	BCL 358i SN 102	Line scanner front	EtherNet IP	50 ... 160 mm	0.127 ... 0.2 mm	1,000 scans/s	0 ... 40 °C
50120795	BCL 358i SN 102 D H	Line scanner front	EtherNet IP	50 ... 160 mm	0.127 ... 0.2 mm	1,000 scans/s	0 ... 40 °C
50120794	BCL 358i SN 102 D	Line scanner front	EtherNet IP	50 ... 160 mm	0.127 ... 0.2 mm	1,000 scans/s	0 ... 40 °C
50120789	BCL 358i SM 102 D H	Line scanner front	EtherNet IP	60 ... 320 mm	0.2 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50120788	BCL 358i SM 102 D	Line scanner front	EtherNet IP	60 ... 320 mm	0.2 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50120787	BCL 358i SM 102	Line scanner front	EtherNet IP	60 ... 320 mm	0.2 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50120775	BCL 358i SF 102	Line scanner front	EtherNet IP	100 ... 475 mm	0.3 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50120777	BCL 358i SF 102 D H	Line scanner front	EtherNet IP	100 ... 475 mm	0.3 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50120776	BCL 358i SF 102 D	Line scanner front	EtherNet IP	100 ... 475 mm	0.3 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50120783	BCL 358i SL 102 D H	Line scanner front	EtherNet IP	100 ... 700 mm	0.35 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50120781	BCL 358i SL 102	Line scanner front	EtherNet IP	100 ... 700 mm	0.35 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50120782	BCL 358i SL 102 D	Line scanner front	EtherNet IP	100 ... 700 mm	0.35 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50120792	BCL 358i SN 100 D H	Line scanner with deflecting mirror lateral with deflecting mirror	EtherNet IP	20 ... 130 mm	0.127 ... 0.2 mm	1,000 scans/s	0 ... 40 °C
50120790	BCL 358i SN 100	Line scanner with deflecting mirror lateral with deflecting mirror	EtherNet IP	20 ... 130 mm	0.127 ... 0.2 mm	1,000 scans/s	0 ... 40 °C
50120791	BCL 358i SN 100 D	Line scanner with deflecting mirror lateral with deflecting mirror	EtherNet IP	20 ... 130 mm	0.127 ... 0.2 mm	1,000 scans/s	0 ... 40 °C
50120784	BCL 358i SM 100	Line scanner with deflecting mirror lateral with deflecting mirror	EtherNet IP	30 ... 290 mm	0.2 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50120786	BCL 358i SM 100 D H	Line scanner with deflecting mirror lateral with deflecting mirror	EtherNet IP	30 ... 290 mm	0.2 ... 0.5 mm	1,000 scans/s	0 ... 40 °C

Necessary accessories: A modular connector hood and terminal hood are required for operation!

Switching Sensors

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Accessories

Part no.	Part description	Reading method Light beam exit	Interface	Reading distance	Module size	Scanning rate	Ambient temperature, operation
50120785	BCL 358i SM 100 D	Line scanner with deflecting mirror lateral with deflecting mirror	EtherNet IP	30 ... 290 mm	0.2 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50120774	BCL 358i SF 100 D H	Line scanner with deflecting mirror lateral with deflecting mirror	EtherNet IP	70 ... 445 mm	0.3 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50120772	BCL 358i SF 100	Line scanner with deflecting mirror lateral with deflecting mirror	EtherNet IP	70 ... 445 mm	0.3 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50120773	BCL 358i SF 100 D	Line scanner with deflecting mirror lateral with deflecting mirror	EtherNet IP	70 ... 445 mm	0.3 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50120780	BCL 358i SL 100 D H	Line scanner with deflecting mirror lateral with deflecting mirror	EtherNet IP	70 ... 670 mm	0.35 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50120779	BCL 358i SL 100 D	Line scanner with deflecting mirror lateral with deflecting mirror	EtherNet IP	70 ... 670 mm	0.35 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50120778	BCL 358i SL 100	Line scanner with deflecting mirror lateral with deflecting mirror	EtherNet IP	70 ... 670 mm	0.35 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50120771	BCL 358i R1 N 102 D	Raster scanner front	EtherNet IP	50 ... 160 mm	0.127 ... 0.2 mm	1,000 scans/s	0 ... 40 °C
50120770	BCL 358i R1 N 102	Raster scanner front	EtherNet IP	50 ... 160 mm	0.127 ... 0.2 mm	1,000 scans/s	0 ... 40 °C
50120766	BCL 358i R1 M 102	Raster scanner front	EtherNet IP	60 ... 320 mm	0.2 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50120767	BCL 358i R1 M 102 D	Raster scanner front	EtherNet IP	60 ... 320 mm	0.2 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50120763	BCL 358i R1 F 102 D	Raster scanner front	EtherNet IP	100 ... 475 mm	0.3 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50120762	BCL 358i R1 F 102	Raster scanner front	EtherNet IP	100 ... 475 mm	0.3 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50120768	BCL 358i R1 N 100	Raster scanner with deflecting mirror lateral with deflecting mirror	EtherNet IP	20 ... 130 mm	0.127 ... 0.2 mm	1,000 scans/s	0 ... 40 °C
50120769	BCL 358i R1 N 100 D	Raster scanner with deflecting mirror lateral with deflecting mirror	EtherNet IP	20 ... 130 mm	0.127 ... 0.2 mm	1,000 scans/s	0 ... 40 °C
50120764	BCL 358i R1 M 100	Raster scanner with deflecting mirror lateral with deflecting mirror	EtherNet IP	30 ... 290 mm	0.2 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50120765	BCL 358i R1 M 100 D	Raster scanner with deflecting mirror lateral with deflecting mirror	EtherNet IP	30 ... 290 mm	0.2 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50120761	BCL 358i R1 F 100 D	Raster scanner with deflecting mirror lateral with deflecting mirror	EtherNet IP	70 ... 445 mm	0.3 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50120760	BCL 358i R1 F 100	Raster scanner with deflecting mirror lateral with deflecting mirror	EtherNet IP	70 ... 445 mm	0.3 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50123503	BCL 358i R1 J 100	Raster scanner with deflecting mirror lateral with deflecting mirror	EtherNet IP	100 ... 600 mm	0.5 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50120755	BCL 358i OM 100 D	Oscillating-mirror scanner zero position at side at angle of 90°	EtherNet IP	40 ... 300 mm	0.2 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50120756	BCL 358i OM 100 D H	Oscillating-mirror scanner zero position at side at angle of 90°	EtherNet IP	40 ... 300 mm	0.2 ... 0.5 mm	1,000 scans/s	-35 ... 40 °C
50120754	BCL 358i OM 100	Oscillating-mirror scanner zero position at side at angle of 90°	EtherNet IP	40 ... 300 mm	0.2 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50120748	BCL 358i OF 100	Oscillating-mirror scanner zero position at side at angle of 90°	EtherNet IP	80 ... 455 mm	0.3 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50120750	BCL 358i OF 100 D H	Oscillating-mirror scanner zero position at side at angle of 90°	EtherNet IP	80 ... 455 mm	0.3 ... 0.5 mm	1,000 scans/s	-35 ... 40 °C
50120749	BCL 358i OF 100 D	Oscillating-mirror scanner zero position at side at angle of 90°	EtherNet IP	80 ... 455 mm	0.3 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50120752	BCL 358i OL 100 D	Oscillating-mirror scanner zero position at side at angle of 90°	EtherNet IP	80 ... 680 mm	0.35 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50120753	BCL 358i OL 100 D H	Oscillating-mirror scanner zero position at side at angle of 90°	EtherNet IP	80 ... 680 mm	0.35 ... 0.8 mm	1,000 scans/s	-35 ... 40 °C
50120751	BCL 358i OL 100	Oscillating-mirror scanner zero position at side at angle of 90°	EtherNet IP	80 ... 680 mm	0.35 ... 0.8 mm	1,000 scans/s	0 ... 40 °C

Necessary accessories: A modular connector hood and terminal hood are required for operation!

**/// BCL 500i**



Integrated fieldbus networking is one of the key features of this series of trendsetting bar code readers. Configuration is performed via a web technology-based graphic user interface.



**Benefits:**

- Integrated fieldbus and Industrial Ethernet connectivity (PROFIBUS, PROFINET, EtherNet, EtherNet/IP and MULTINET)
- Full CRT (code reconstruction technology) also detects heavily damaged or soiled codes
- High-quality optics with great depth of field and large opening angle, also with heating for use at temperatures down to -35 °C
- Simple commissioning and connection using M12-Ultra-Lock™ connection technology and intelligent fastening concept
- Intuitive, multi-language display with menu navigation
- webConfig is a operating-system independent, browser-based configuration tool

Switching Sensors  
Measuring Sensors

PART NUMBER CODES – stationary bar code readers BCL 500i

**B C L 5 0 0 i S N 1 0 0 H**

<b>Model</b>	BCL	Bar code reader
<b>Interface (integrated fieldbus technology)</b>	500i	RS 232 / RS 422 / RS 485 (multiNet master)
	501i	RS 485 (multiNet slave)
	504i	PROFIBUS DP
	508i	Ethernet TCP/IP, UDP
	548i	PROFINET RT
	558i	EtherNet IP
<b>Scanning principle</b>	S	Line scanner (single line)
	O	Oscillating mirror scanner (oscillating mirror)
<b>Optics</b>	N	High Density (near)
	M	Medium Density (medium distance)
	F	Low Density (remote)
	L	Long Range (very large distance)
<b>Beam exit</b>	100	Lateral
	102	Front
<b>Heating</b>	H	With heating

Products for Safety at Work

Identification

Data Transmission / Control Components

Part no.	Part description	Reading method Light beam exit	Interface	Reading distance	Module size	Scanning rate	Ambient temperature, operation
<b>RS 485 Interface</b>							
50105472	BCL 501i SN 102	Line scanner front	RS 485	200 ... 650 mm	0.25 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50105475	BCL 501i SN 102 H	Line scanner front	RS 485	200 ... 650 mm	0.25 ... 0.5 mm	1,000 scans/s	-35 ... 40 °C
50105481	BCL 501i SM 102 H	Line scanner front	RS 485	300 ... 1,000 mm	0.35 ... 1 mm	1,000 scans/s	-35 ... 40 °C
50105478	BCL 501i SM 102	Line scanner front	RS 485	300 ... 1,000 mm	0.35 ... 1 mm	1,000 scans/s	0 ... 40 °C
50105484	BCL 501i SF 102	Line scanner front	RS 485	400 ... 1,600 mm	0.5 ... 1 mm	1,000 scans/s	0 ... 40 °C

Industrial Image Processing

Accessories

Part no.	Part description	Reading method Light beam exit	Interface	Reading distance	Module size	Scanning rate	Ambient temperature, operation
50105487	BCL 501i SF 102 H	Line scanner front	RS 485	400 ... 1,600 mm	0.5 ... 1 mm	1,000 scans/s	-35 ... 40 °C
50109890	BCL 501i SL 102	Line scanner front	RS 485	1,000 ... 2,400 mm	0.7 ... 1 mm	1,000 scans/s	0 ... 40 °C
50109893	BCL 501i SL 102 H	Line scanner front	RS 485	1,000 ... 2,400 mm	0.7 ... 1 mm	1,000 scans/s	-35 ... 40 °C
50105474	BCL 501i SN 100 H	Line scanner with deflecting mirror zero position at side at angle of 90°	RS 485	200 ... 650 mm	0.25 ... 0.5 mm	1,000 scans/s	-35 ... 40 °C
50105471	BCL 501i SN 100	Line scanner with deflecting mirror zero position at side at angle of 90°	RS 485	200 ... 650 mm	0.25 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50105480	BCL 501i SM 100 H	Line scanner with deflecting mirror lateral with deflecting mirror	RS 485	300 ... 1,000 mm	0.35 ... 1 mm	1,000 scans/s	-35 ... 40 °C
50105477	BCL 501i SM 100	Line scanner with deflecting mirror zero position at side at angle of 90°	RS 485	300 ... 1,000 mm	0.35 ... 1 mm	1,000 scans/s	0 ... 40 °C
50105486	BCL 501i SF 100 H	Line scanner with deflecting mirror zero position at side at angle of 90°	RS 485	400 ... 1,600 mm	0.5 ... 1 mm	1,000 scans/s	-35 ... 40 °C
50105483	BCL 501i SF 100	Line scanner with deflecting mirror zero position at side at angle of 90°	RS 485	400 ... 1,600 mm	0.5 ... 1 mm	1,000 scans/s	0 ... 40 °C
50105473	BCL 501i ON 100	Oscillating-mirror scanner zero position at side at angle of 90°	RS 485	200 ... 650 mm	0.25 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50105476	BCL 501i ON 100 H	Oscillating-mirror scanner zero position at side at angle of 90°	RS 485	200 ... 650 mm	0.25 ... 0.5 mm	1,000 scans/s	-35 ... 40 °C
50105479	BCL 501i OM 100	Oscillating-mirror scanner zero position at side at angle of 90°	RS 485	300 ... 1,000 mm	0.35 ... 1 mm	1,000 scans/s	0 ... 40 °C
50105482	BCL 501i OM 100 H	Oscillating-mirror scanner zero position at side at angle of 90°	RS 485	300 ... 1,000 mm	0.35 ... 1 mm	1,000 scans/s	-35 ... 40 °C
50105488	BCL 501i OF 100 H	Oscillating-mirror scanner zero position at side at angle of 90°	RS 485	400 ... 1,600 mm	0.5 ... 1 mm	1,000 scans/s	-35 ... 40 °C
50105485	BCL 501i OF 100	Oscillating-mirror scanner zero position at side at angle of 90°	RS 485	400 ... 1,600 mm	0.5 ... 1 mm	1,000 scans/s	0 ... 40 °C
50109894	BCL 501i OL 100 H	Oscillating-mirror scanner zero position at side at angle of 90°	RS 485	1,000 ... 2,400 mm	0.7 ... 1 mm	1,000 scans/s	-35 ... 40 °C
50109891	BCL 501i OL 100	Oscillating-mirror scanner zero position at side at angle of 90°	RS 485	1,000 ... 2,400 mm	0.7 ... 1 mm	1,000 scans/s	0 ... 40 °C

RS 232, RS 422, RS 485 interface

50105454	BCL 500i SN 102	Line scanner front	RS 232, RS 422, RS 485	200 ... 650 mm	0.25 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50105457	BCL 500i SN 102 H	Line scanner front	RS 232, RS 422, RS 485	200 ... 650 mm	0.25 ... 0.5 mm	1,000 scans/s	-35 ... 40 °C
50105460	BCL 500i SM 102	Line scanner front	RS 232, RS 422, RS 485	300 ... 1,000 mm	0.35 ... 1 mm	1,000 scans/s	0 ... 40 °C
50105463	BCL 500i SM 102 H	Line scanner front	RS 232, RS 422, RS 485	300 ... 1,000 mm	0.35 ... 1 mm	1,000 scans/s	-35 ... 40 °C
50105466	BCL 500i SF 102	Line scanner front	RS 232, RS 422, RS 485	500 ... 1,600 mm	0.5 ... 1 mm	1,000 scans/s	0 ... 40 °C
50105469	BCL 500i SF 102 H	Line scanner front	RS 232, RS 422, RS 485	500 ... 1,600 mm	0.5 ... 1 mm	1,000 scans/s	-35 ... 40 °C
50109914	BCL 500i SL 102 H	Line scanner front	RS 232, RS 422, RS 485	1,000 ... 2,400 mm	0.7 ... 1 mm	1,000 scans/s	-35 ... 40 °C
50109911	BCL 500i SL 102	Line scanner front	RS 232, RS 422, RS 485	1,000 ... 2,400 mm	0.7 ... 1 mm	1,000 scans/s	0 ... 40 °C
50105453	BCL 500i SN 100	Line scanner with deflecting mirror zero position at side at angle of 90°	RS 232, RS 422, RS 485	200 ... 650 mm	0.25 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50105456	BCL 500i SN 100 H	Line scanner with deflecting mirror zero position at side at angle of 90°	RS 232, RS 422, RS 485	200 ... 650 mm	0.25 ... 0.5 mm	1,000 scans/s	-35 ... 40 °C
50105459	BCL 500i SM 100	Line scanner with deflecting mirror zero position at side at angle of 90°	RS 232, RS 422, RS 485	300 ... 1,000 mm	0.35 ... 1 mm	1,000 scans/s	0 ... 40 °C
50105462	BCL 500i SM 100 H	Line scanner with deflecting mirror zero position at side at angle of 90°	RS 232, RS 422, RS 485	300 ... 1,000 mm	0.35 ... 1 mm	1,000 scans/s	-35 ... 40 °C
50105465	BCL 500i SF 100	Line scanner with deflecting mirror zero position at side at angle of 90°	RS 232, RS 422, RS 485	500 ... 1,600 mm	0.5 ... 1 mm	1,000 scans/s	0 ... 40 °C
50105468	BCL 500i SF 100 H	Line scanner with deflecting mirror zero position at side at angle of 90°	RS 232, RS 422, RS 485	500 ... 1,600 mm	0.5 ... 1 mm	1,000 scans/s	-35 ... 40 °C
50105455	BCL 500i ON 100	Oscillating-mirror scanner zero position at side at angle of 90°	RS 232, RS 422, RS 485	200 ... 650 mm	0.25 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50105458	BCL 500i ON 100 H	Oscillating-mirror scanner zero position at side at angle of 90°	RS 232, RS 422, RS 485	200 ... 650 mm	0.25 ... 0.5 mm	1,000 scans/s	-35 ... 40 °C
50105464	BCL 500i OM 100 H	Oscillating-mirror scanner zero position at side at angle of 90°	RS 232, RS 422, RS 485	300 ... 1,000 mm	0.35 ... 1 mm	1,000 scans/s	-35 ... 40 °C
50105461	BCL 500i OM 100	Oscillating-mirror scanner zero position at side at angle of 90°	RS 232, RS 422, RS 485	300 ... 1,000 mm	0.35 ... 1 mm	1,000 scans/s	0 ... 40 °C
50105470	BCL 500i OF 100 H	Oscillating-mirror scanner zero position at side at angle of 90°	RS 232, RS 422, RS 485	500 ... 1,600 mm	0.5 ... 1 mm	1,000 scans/s	-35 ... 40 °C
50105467	BCL 500i OF 100	Oscillating-mirror scanner zero position at side at angle of 90°	RS 232, RS 422, RS 485	500 ... 1,600 mm	0.5 ... 1 mm	1,000 scans/s	0 ... 40 °C
50109912	BCL 500i OL 100	Oscillating-mirror scanner zero position at side at angle of 90°	RS 232, RS 422, RS 485	1,000 ... 2,400 mm	0.7 ... 1 mm	1,000 scans/s	0 ... 40 °C
50109915	BCL 500i OL 100 H	Oscillating-mirror scanner zero position at side at angle of 90°	RS 232, RS 422, RS 485	1,000 ... 2,400 mm	0.7 ... 1 mm	1,000 scans/s	-35 ... 40 °C

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Part no.	Part description	Reading method Light beam exit	Interface	Reading distance	Module size	Scanning rate	Ambient temperature, operation
<b>PROFINET interface</b>							
50113183	BCL 548i SN 102	Line scanner front	PROFINET	200 ... 650 mm	0.25 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50113184	BCL 548i SN 102 H	Line scanner front	PROFINET	200 ... 650 mm	0.25 ... 0.5 mm	1,000 scans/s	-35 ... 40 °C
50113187	BCL 548i SM 102	Line scanner front	PROFINET	300 ... 1,000 mm	0.35 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50113188	BCL 548i SM 102 H	Line scanner front	PROFINET	300 ... 1,000 mm	0.35 ... 0.8 mm	1,000 scans/s	-35 ... 40 °C
50113196	BCL 548i SF 102 H	Line scanner front	PROFINET	400 ... 1,600 mm	0.5 ... 1 mm	1,000 scans/s	-35 ... 40 °C
50113195	BCL 548i SF 102	Line scanner front	PROFINET	400 ... 1,600 mm	0.5 ... 1 mm	1,000 scans/s	0 ... 40 °C
50113192	BCL 548i SL 102 H	Line scanner front	PROFINET	1,000 ... 2,400 mm	0.7 ... 1 mm	1,000 scans/s	-35 ... 40 °C
50113191	BCL 548i SL 102	Line scanner front	PROFINET	1,000 ... 2,400 mm	0.7 ... 1 mm	1,000 scans/s	0 ... 40 °C
50113186	BCL 548i SN 100 H	Line scanner with deflecting mirror zero position at side at angle of 90°	PROFINET	200 ... 650 mm	0.25 ... 0.5 mm	1,000 scans/s	-35 ... 40 °C
50113185	BCL 548i SN 100	Line scanner with deflecting mirror zero position at side at angle of 90°	PROFINET	200 ... 650 mm	0.25 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50113190	BCL 548i SM 100 H	Line scanner with deflecting mirror zero position at side at angle of 90°	PROFINET	300 ... 1,000 mm	0.35 ... 0.8 mm	1,000 scans/s	-35 ... 40 °C
50113189	BCL 548i SM 100	Line scanner with deflecting mirror zero position at side at angle of 90°	PROFINET	300 ... 1,000 mm	0.35 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50113198	BCL 548i SF 100 H	Line scanner with deflecting mirror zero position at side at angle of 90°	PROFINET	400 ... 1,600 mm	0.5 ... 1 mm	1,000 scans/s	-35 ... 40 °C
50113197	BCL 548i SF 100	Line scanner with deflecting mirror zero position at side at angle of 90°	PROFINET	400 ... 1,600 mm	0.5 ... 1 mm	1,000 scans/s	0 ... 40 °C
50113200	BCL 548i ON 100 H	Oscillating-mirror scanner zero position at side at angle of 90°	PROFINET	200 ... 650 mm	0.25 ... 0.5 mm	1,000 scans/s	-35 ... 40 °C
50113199	BCL 548i ON 100	Oscillating-mirror scanner zero position at side at angle of 90°	PROFINET	200 ... 650 mm	0.25 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50113201	BCL 548i OM 100	Oscillating-mirror scanner zero position at side at angle of 90°	PROFINET	300 ... 1,000 mm	0.35 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50113202	BCL 548i OM 100 H	Oscillating-mirror scanner zero position at side at angle of 90°	PROFINET	300 ... 1,000 mm	0.35 ... 0.8 mm	1,000 scans/s	-35 ... 40 °C
50113206	BCL 548i OF 100 H	Oscillating-mirror scanner zero position at side at angle of 90°	PROFINET	400 ... 1,600 mm	0.5 ... 1 mm	1,000 scans/s	-35 ... 40 °C
50113205	BCL 548i OF 100	Oscillating-mirror scanner zero position at side at angle of 90°	PROFINET	400 ... 1,600 mm	0.5 ... 1 mm	1,000 scans/s	0 ... 40 °C
50113204	BCL 548i OL 100 H	Oscillating-mirror scanner zero position at side at angle of 90°	PROFINET	1,000 ... 2,400 mm	0.7 ... 1 mm	1,000 scans/s	-35 ... 40 °C
50113203	BCL 548i OL 100	Oscillating-mirror scanner zero position at side at angle of 90°	PROFINET	1,000 ... 2,400 mm	0.7 ... 1 mm	1,000 scans/s	0 ... 40 °C
<b>PROFIBUS DP interface</b>							
50105493	BCL 504i SN 102 H	Line scanner front	PROFIBUS DP	200 ... 650 mm	0.25 ... 0.5 mm	1,000 scans/s	-35 ... 40 °C
50105490	BCL 504i SN 102	Line scanner front	PROFIBUS DP	200 ... 650 mm	0.25 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50105496	BCL 504i SM 102	Line scanner front	PROFIBUS DP	300 ... 1,000 mm	0.35 ... 1 mm	1,000 scans/s	0 ... 40 °C
50105499	BCL 504i SM 102 H	Line scanner front	PROFIBUS DP	300 ... 1,000 mm	0.35 ... 1 mm	1,000 scans/s	-35 ... 40 °C
50105502	BCL 504i SF 102	Line scanner front	PROFIBUS DP	400 ... 1,600 mm	0.5 ... 1 mm	1,000 scans/s	0 ... 40 °C
50105505	BCL 504i SF 102 H	Line scanner front	PROFIBUS DP	400 ... 1,600 mm	0.5 ... 1 mm	1,000 scans/s	-35 ... 40 °C
50109899	BCL 504i SL 102 H	Line scanner front	PROFIBUS DP	1,000 ... 2,400 mm	0.7 ... 1 mm	1,000 scans/s	-35 ... 40 °C
50109896	BCL 504i SL 102	Line scanner front	PROFIBUS DP	1,000 ... 2,400 mm	0.7 ... 1 mm	1,000 scans/s	0 ... 40 °C
50105489	BCL 504i SN 100	Line scanner with deflecting mirror zero position at side at angle of 90°	PROFIBUS DP	200 ... 650 mm	0.25 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50105492	BCL 504i SN 100 H	Line scanner with deflecting mirror zero position at side at angle of 90°	PROFIBUS DP	200 ... 650 mm	0.25 ... 0.5 mm	1,000 scans/s	-35 ... 40 °C
50105495	BCL 504i SM 100	Line scanner with deflecting mirror zero position at side at angle of 90°	PROFIBUS DP	300 ... 1,000 mm	0.35 ... 1 mm	1,000 scans/s	0 ... 40 °C
50105498	BCL 504i SM 100 H	Line scanner with deflecting mirror zero position at side at angle of 90°	PROFIBUS DP	300 ... 1,000 mm	0.35 ... 1 mm	1,000 scans/s	-35 ... 40 °C
50105501	BCL 504i SF 100	Line scanner with deflecting mirror zero position at side at angle of 90°	PROFIBUS DP	400 ... 1,600 mm	0.5 ... 1 mm	1,000 scans/s	0 ... 40 °C
50105504	BCL 504i SF 100 H	Line scanner with deflecting mirror zero position at side at angle of 90°	PROFIBUS DP	400 ... 1,600 mm	0.5 ... 1 mm	1,000 scans/s	-35 ... 40 °C
50105494	BCL 504i ON 100 H	Oscillating-mirror scanner zero position at side at angle of 90°	PROFIBUS DP	200 ... 650 mm	0.25 ... 0.5 mm	1,000 scans/s	-35 ... 40 °C
50105491	BCL 504i ON 100	Oscillating-mirror scanner zero position at side at angle of 90°	PROFIBUS DP	200 ... 650 mm	0.25 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50105500	BCL 504i OM 100 H	Oscillating-mirror scanner zero position at side at angle of 90°	PROFIBUS DP	300 ... 1,000 mm	0.35 ... 1 mm	1,000 scans/s	-35 ... 40 °C
50105497	BCL 504i OM 100	Oscillating-mirror scanner zero position at side at angle of 90°	PROFIBUS DP	300 ... 1,000 mm	0.35 ... 1 mm	1,000 scans/s	0 ... 40 °C
50105506	BCL 504i OF 100 H	Oscillating-mirror scanner zero position at side at angle of 90°	PROFIBUS DP	400 ... 1,600 mm	0.5 ... 1 mm	1,000 scans/s	-35 ... 40 °C

Switching Sensors

Measuring Sensors

Products for Safety at Work

Identification

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Industrial Image Processing

Accessories

Part no.	Part description	Reading method Light beam exit	Interface	Reading distance	Module size	Scanning rate	Ambient temperature, operation
50105503	BCL 504i OF 100	Oscillating-mirror scanner zero position at side at angle of 90°	PROFIBUS DP	400 ... 1,600 mm	0.5 ... 1 mm	1,000 scans/s	0 ... 40 °C
50109900	BCL 504i OL 100 H	Oscillating-mirror scanner zero position at side at angle of 90°	PROFIBUS DP	1,000 ... 2,400 mm	0.7 ... 1 mm	1,000 scans/s	-35 ... 40 °C
50109897	BCL 504i OL 100	Oscillating-mirror scanner zero position at side at angle of 90°	PROFIBUS DP	1,000 ... 2,400 mm	0.7 ... 1 mm	1,000 scans/s	0 ... 40 °C

**Ethernet interface**

50105511	BCL 508i SN 102 H	Line scanner front	Ethernet	200 ... 650 mm	0.25 ... 0.5 mm	1,000 scans/s	-35 ... 40 °C
50105508	BCL 508i SN 102	Line scanner front	Ethernet	200 ... 650 mm	0.25 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50105514	BCL 508i SM 102	Line scanner front	Ethernet	300 ... 1,000 mm	0.35 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50105517	BCL 508i SM 102 H	Line scanner front	Ethernet	300 ... 1,000 mm	0.35 ... 0.8 mm	1,000 scans/s	-35 ... 40 °C
50105520	BCL 508i SF 102	Line scanner front	Ethernet	400 ... 1,600 mm	0.5 ... 1 mm	1,000 scans/s	0 ... 40 °C
50105523	BCL 508i SF 102 H	Line scanner front	Ethernet	400 ... 1,600 mm	0.5 ... 1 mm	1,000 scans/s	-35 ... 40 °C
50109905	BCL 508i SL 102	Line scanner front	Ethernet	1,000 ... 2,400 mm	0.7 ... 1 mm	1,000 scans/s	0 ... 40 °C
50109908	BCL 508i SL 102 H	Line scanner front	Ethernet	1,000 ... 2,400 mm	0.7 ... 1 mm	1,000 scans/s	-35 ... 40 °C
50105510	BCL 508i SN 100 H	Line scanner with deflecting mirror zero position at side at angle of 90°	Ethernet	200 ... 650 mm	0.25 ... 0.5 mm	1,000 scans/s	-35 ... 40 °C
50105507	BCL 508i SN 100	Line scanner with deflecting mirror zero position at side at angle of 90°	Ethernet	200 ... 650 mm	0.25 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50105513	BCL 508i SM 100	Line scanner with deflecting mirror zero position at side at angle of 90°	Ethernet	300 ... 1,000 mm	0.35 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50105516	BCL 508i SM 100 H	Line scanner with deflecting mirror zero position at side at angle of 90°	Ethernet	300 ... 1,000 mm	0.35 ... 0.8 mm	1,000 scans/s	-35 ... 40 °C
50105519	BCL 508i SF 100	Line scanner with deflecting mirror zero position at side at angle of 90°	Ethernet	400 ... 1,600 mm	0.5 ... 1 mm	1,000 scans/s	0 ... 40 °C
50105522	BCL 508i SF 100 H	Line scanner with deflecting mirror zero position at side at angle of 90°	Ethernet	400 ... 1,600 mm	0.5 ... 1 mm	1,000 scans/s	-35 ... 40 °C
50105509	BCL 508i ON 100	Oscillating-mirror scanner zero position at side at angle of 90°	Ethernet	200 ... 650 mm	0.25 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50105512	BCL 508i ON 100 H	Oscillating-mirror scanner zero position at side at angle of 90°	Ethernet	200 ... 650 mm	0.25 ... 0.5 mm	1,000 scans/s	-35 ... 40 °C
50105515	BCL 508i OM 100	Oscillating-mirror scanner zero position at side at angle of 90°	Ethernet	300 ... 1,000 mm	0.35 ... 0.8 mm	1,000 scans/s	0 ... 40 °C
50105518	BCL 508i OM 100 H	Oscillating-mirror scanner zero position at side at angle of 90°	Ethernet	300 ... 1,000 mm	0.35 ... 0.8 mm	1,000 scans/s	-35 ... 40 °C
50105521	BCL 508i OF 100	Oscillating-mirror scanner zero position at side at angle of 90°	Ethernet	400 ... 1,600 mm	0.5 ... 1 mm	1,000 scans/s	0 ... 40 °C
50105524	BCL 508i OF 100 H	Oscillating-mirror scanner zero position at side at angle of 90°	Ethernet	400 ... 1,600 mm	0.5 ... 1 mm	1,000 scans/s	-35 ... 40 °C
50109906	BCL 508i OL 100	Oscillating-mirror scanner zero position at side at angle of 90°	Ethernet	1,000 ... 2,400 mm	0.7 ... 1 mm	1,000 scans/s	0 ... 40 °C
50109909	BCL 508i OL 100 H	Oscillating-mirror scanner zero position at side at angle of 90°	Ethernet	1,000 ... 2,400 mm	0.7 ... 1 mm	1,000 scans/s	-35 ... 40 °C

**EtherNet IP interface**

50122787	BCL 558i SN 102	Line scanner front	EtherNet IP	200 ... 650 mm	0.25 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50122788	BCL 558i SN 102 H	Line scanner front	EtherNet IP	200 ... 650 mm	0.25 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50122785	BCL 558i SM 102	Line scanner front	EtherNet IP	300 ... 1,000 mm	0.35 ... 1 mm	1,000 scans/s	0 ... 40 °C
50122786	BCL 558i SM 102 H	Line scanner front	EtherNet IP	300 ... 1,000 mm	0.35 ... 1 mm	1,000 scans/s	0 ... 40 °C
50122781	BCL 558i SF 102	Line scanner front	EtherNet IP	400 ... 1,600 mm	0.5 ... 1 mm	1,000 scans/s	0 ... 40 °C
50122782	BCL 558i SF 102 H	Line scanner front	EtherNet IP	400 ... 1,600 mm	0.5 ... 1 mm	1,000 scans/s	0 ... 40 °C
50122783	BCL 558i SL 102	Line scanner front	EtherNet IP	1,000 ... 2,400 mm	0.7 ... 1 mm	1,000 scans/s	0 ... 40 °C
50122784	BCL 558i SL 102 H	Line scanner front	EtherNet IP	1,000 ... 2,400 mm	0.7 ... 1 mm	1,000 scans/s	0 ... 40 °C
50122776	BCL 558i ON 100	Line scanner with deflecting mirror zero position at side at angle of 90°	EtherNet IP	200 ... 650 mm	0.25 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50122780	BCL 558i ON 100 H	Line scanner with deflecting mirror zero position at side at angle of 90°	EtherNet IP	200 ... 650 mm	0.25 ... 0.5 mm	1,000 scans/s	0 ... 40 °C
50122773	BCL 558i OM 100	Line scanner with deflecting mirror zero position at side at angle of 90°	EtherNet IP	300 ... 1,000 mm	0.35 ... 1 mm	1,000 scans/s	0 ... 40 °C
50122775	BCL 558i OM 100 H	Line scanner with deflecting mirror zero position at side at angle of 90°	EtherNet IP	300 ... 1,000 mm	0.35 ... 1 mm	1,000 scans/s	0 ... 40 °C
50122769	BCL 558i OF 100	Line scanner with deflecting mirror zero position at side at angle of 90°	EtherNet IP	400 ... 1,600 mm	0.5 ... 1 mm	1,000 scans/s	0 ... 40 °C
50122770	BCL 558i OF 100 H	Line scanner with deflecting mirror zero position at side at angle of 90°	EtherNet IP	400 ... 1,600 mm	0.5 ... 1 mm	1,000 scans/s	0 ... 40 °C
50122771	BCL 558i OL 100	Line scanner with deflecting mirror zero position at side at angle of 90°	EtherNet IP	1,000 ... 2,400 mm	0.7 ... 1 mm	1,000 scans/s	0 ... 40 °C
50122772	BCL 558i OL 100 H	Line scanner with deflecting mirror zero position at side at angle of 90°	EtherNet IP	1,000 ... 2,400 mm	0.7 ... 1 mm	1,000 scans/s	0 ... 40 °C

**/// BCL 90**



This series stands for large depth of field and scanning width for small bar codes. They are available as frontal line scanners or as oscillating mirrors.



**Benefits:**

- Integrated autofocus for reliable detection
- Large depth of field for high performance reserve
- Full CRT (code reconstruction technology) also detects heavily damaged or soiled codes
- All device variants also available as oscillating mirror variants
- Devices with integrated heating available

Part no.	Part description	Reading method Light beam exit	Interface	Reading distance	Module size	Scanning rate	Ambient temperature, operation
50035507	BCL 90 CAT N 100	Line scanner on face	RS 232, RS 422, RS 485	400 ... 1,600 mm	0.2 ... 0.3 mm	800 scans/s	0 ... 40 °C
50035509	BCL 90 CAT N 100 H	Line scanner on face	RS 232, RS 422, RS 485	400 ... 1,600 mm	0.2 ... 0.3 mm	800 scans/s	-35 ... 35 °C
50035314	BCL 90 CAT M 100	Line scanner on face	RS 232, RS 422, RS 485	500 ... 2,100 mm	0.3 ... 0.5 mm	800 scans/s	0 ... 40 °C
50035316	BCL 90 CAT M 100 H	Line scanner on face	RS 232, RS 422, RS 485	500 ... 2,100 mm	0.3 ... 0.5 mm	800 scans/s	-35 ... 35 °C
50035512	BCL 90 CAT F 100 H	Line scanner on face	RS 232, RS 422, RS 485	500 ... 2,200 mm	0.5 mm	800 scans/s	-35 ... 35 °C
50035318	BCL 90 CAT F 100	Line scanner on face	RS 232, RS 422, RS 485	500 ... 2,200 mm	0.5 mm	800 scans/s	0 ... 40 °C
50036661	BCL 90 CAX M 100 H	Line scanner with deflecting mirror lateral with deflecting mirror	RS 232, RS 422, RS 485	500 ... 1,750 mm	0.3 ... 0.5 mm	800 scans/s	-30 ... 35 °C
50036660	BCL 90 CAX M 100	Line scanner with deflecting mirror lateral with deflecting mirror	RS 232, RS 422, RS 485	500 ... 1,750 mm	0.3 ... 0.5 mm	800 scans/s	0 ... 40 °C
50035510	BCL 90 CAT ON 100 H	Oscillating-mirror scanner front	RS 232, RS 422, RS 485	400 ... 1,500 mm	0.2 ... 0.3 mm	800 scans/s	-35 ... 35 °C
50035508	BCL 90 CAT ON 100	Oscillating-mirror scanner front	RS 232, RS 422, RS 485	400 ... 1,500 mm	0.2 ... 0.3 mm	800 scans/s	0 ... 40 °C
50035317	BCL 90 CAT OM 100 H	Oscillating-mirror scanner front	RS 232, RS 422, RS 485	500 ... 2,000 mm	0.3 ... 0.5 mm	800 scans/s	-35 ... 35 °C
50035315	BCL 90 CAT OM 100	Oscillating-mirror scanner front	RS 232, RS 422, RS 485	500 ... 2,000 mm	0.3 ... 0.5 mm	800 scans/s	0 ... 40 °C
50035513	BCL 90 CAT OF 100 H	Oscillating-mirror scanner front	RS 232, RS 422, RS 485	500 ... 2,100 mm	0.5 mm	800 scans/s	-35 ... 35 °C
50035511	BCL 90 CAT OF 100	Oscillating-mirror scanner front	RS 232, RS 422, RS 485	500 ... 2,100 mm	0.5 mm	800 scans/s	0 ... 40 °C

**SMARTER PRODUCT USABILITY**

**BCL 500*i* / BCL 300*i***  
Powerful bar code reader with integrated fieldbus networking capability and code reconstruction technology

**BPS 34**  
Bar code positioning system with PROFIBUS interface for complex requirements

**AMS 300*i***  
High-precision optical laser distance sensor AMS 300i with unique selection of integrated fieldbus interfaces

**CML 700*i***  
Measuring light curtain with integrated fieldbus interfaces and evaluation unit

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**/// MSP / MSPi systems**



Reading unaligned bar code labels generally requires two or more bar code scanners that are aligned with respect to one another. The new MSP systems from Leuze electronic are modularly structured and mechanically premounted scanner portals that can read codes omnidirectionally.



**Benefits:**

- Modular scanner portal for the integration of up to 32 bar code readers of models BCL 500i and BCL 501i for omnidirectional reading
- Object tracking capability based on the BCL 90
- Full CRT (code reconstruction technology) also detects heavily damaged or soiled codes
- webConfig is a operating-system independent, browser-based configuration tool
- Fast and simple RS232, RS422 and Ethernet interface connection to the primary host system
- High-quality optics with great depth of field and opening angle, also with heating for use at temperatures down to -35 °C
- Set parameters are stored fail-safe
- Simple commissioning and connection through M12-Ultra-Lock™ connection technology

Part no.	Part description	Interface	Type of bar code reader
50035517	MSP 290	RS 232 RS 422	BCL 90 CAT M 100
50111412	MSP 290i - 511 F 00	RS 232 RS 422	BCL 500i S F 102 BCL 500i O F 100
50112415	MSP 290i - 511 L 00	RS 232 RS 422	BCL 500i S L 102 BCL 500i O L 100
50112416	MSP 290i - 511 M 00	RS 232 RS 422	BCL 500i S M 102 BCL 500i O M 100
50112417	MSP 290i - 511 N 00	RS 232 RS 422	BCL 500i S N 102 BCL 500i O N 100
50111413	MSP 290i - 520 F 00	RS 232 RS 422	BCL 500i S F 102
50112418	MSP 290i - 520 L 00	RS 232 RS 422	BCL 500i S L 102
50112419	MSP 290i - 520 M 00	RS 232 RS 422	BCL 500i S M 102
50112420	MSP 290i - 520 N 00	RS 232 RS 422	BCL 500i S N 102
50035518	MSP 360	RS 232 RS 422	BCL 90 CAT M 100
50121388	MSP 360i - 530 F 01	RS 232 RS 422	BCL 500i S F 102 BCL 501i S F 102
50035519	MSP 490	RS 232 RS 422	BCL 90 CAT M 100
50121387	MSP 490i - 540 M 01	RS 232 RS 422	BCL 500i S M 102 BCL 501i S M 102
50035520	MSP 560	RS 232 RS 422	BCL 90 CAT M 100

Including all mechanical components and connection cables, integrated decoder

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# //MOBILE BAR CODE READERS

## YOU HAVE IT IN YOUR HANDS

Mobile bar code readers can read all common bar codes at various positions in warehousing and logistics omnidirectionally. Depending on the area of application, models with wireless transmission or even combi devices, which can handle 2D-codes as well as RFID, can be chosen.

### /// Z series



For bar code reading on contact, e. g., of delivery notes, labels and work orders.



**Benefits:**

- Touch reader (bar code reading on contact), e. g. to read bar codes on documents such as delivery notes, work orders etc.
- Extensive selection of accessories (RS 232 cable, PS2 cable, USB cable, power supply unit, table support)
- Reads all common bar codes (Code 2/5 Int., Code 39, Code 128, EAN 8/13)

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Part no.	Part description	Reading distance	Interface	Degree of protection	Connection	Ambient temperature, operation
50118358	Z-3110 incl. USB cable	0 ... 20 mm	PS/2, USB, RS 232	IP 20	USB	0 ... 50 °C

Products for Safety at Work

### /// IT1300



Many common applications are possible with this bar code reader. Various interfaces simplify configuration and commissioning.



**Benefits:**

- Hand-held scanner for bar codes
- Large reading field for the detection of codes
- Robust trigger button
- Built-in decoder
- Display for completed read operations
- RS 232, USB and PS/2 interface
- Operating temp. from 0–50 °C
- Degree of protection IP 41

Identification

Direct access to the online product selector at [www.leuze.com/en/it1300](http://www.leuze.com/en/it1300)

Part no.	Part description	Reading distance	Interface	Drop height	Degree of protection	Connection	Ambient temperature, operation
50116864	IT 1300g-2	10 ... 460 mm	USB, RS 232	1.5 m	IP 41	RJ41	0 ... 50 °C

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Accessories

**/// IT38xx**



With this series of hand-held scanners, select the necessary equipment, e. g., wireless transmission and battery operation, depending on the desired application.



**Benefits:**

- Industrial hand-held scanner for numerous areas of application
- Variants available with and without Bluetooth
- Robust housing for use under rough conditions.
- Device with large rotational and tilt angles for the quick detection of bar codes.
- Extensive selection of accessories (RS 232 cable, PS2 cable, USB cable, power supply unit, sometimes table support and wall mount)
- Reads all common bar codes (Code 2/5 Int., Code 39, Code 128, EAN 8/13)

Part no.	Part description	Reading distance	Bluetooth	Interface	Drop height	Degree of protection	Connection	Ambient temperature, operation
50106238	IT 3800 i SR030E	17 ... 2,080 mm		RS 232	2 m	IP 54	RJ41	-30 ... 50 °C
50106240	IT 3800 i SR050E	17 ... 2,080 mm		PS/2, USB, RS 232	2 m	IP 54	RJ41	-30 ... 50 °C
50106242	IT 3820 SR0C0BE	25 ... 914 mm	Class 2	PS/2, USB, RS 232	1.8 m	IP 41	Bluetooth	0 ... 50 °C
50110471	IT 3820i SRE	25 ... 914 mm	Class 2	PS/2, USB, RS 232	2 m	IP 54	Bluetooth	-10 ... 50 °C

# / 2D-CODE IDENTIFICATION

## RELIABLE SOLUTIONS FOR READING CODES

Two-dimensional codes mostly consist of square-shaped groups of data cells (matrix) with a typical orientation symbol from which the code type can be recognized. Thus, 2D-identification is ideally suited for additional applications, such as parts tracking, in which codes are directly affixed to the work piece.



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**Mobile 2D-Code Readers**

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# //STATIONARY 2D-CODE READERS

## FOR STATIONARY USE – BUT STILL HIGHLY DYNAMIC READERS

Our code readers capture 1D- and 2D-codes without fail; depending on the type, printed to directly marked, omnidirectional, static or in fast motion, inverse or mirrored codes. Benefit from reference code comparison or the output of the code quality of printed codes. With us, you'll find the optimum solution: whether small and robust, extremely fast or fully equipped.

### /// LSIS 220



The LSIS 220, with its optimized optics and resolution, offers large performance reserves for reliable code reading, even while in motion. It quickly and reliably detects bar codes, stacked codes and 2D-codes.



#### Benefits:

- Improved optics for larger read field and in-focus detection all the way to the border areas, optimized resolution of 844 x 640 pixels for fast code reading
- Detection of 2D-codes, stacked codes and bar codes
- RS 232 or USB interface
- Switching input (trigger)
- Trigger button for manual activation and configuration
- Construction without mechanically moved parts, robust metal housing with glass window and degree of protection IP 65 make the devices very well suited for industrial use
- Extremely small construction size, also for installation under difficult conditions

Part no.	Part description	Reading distance	Optics cover	Interface	Degree of protection
50117536	LSIS 222 M5M-R1	50 ... 330 mm	Glass	RS 232	IP 65
50117534	LSIS 223 M5M-R1	50 ... 330 mm	Glass	USB	IP 65

## SMARTER CUSTOMER SERVICE

The quickest way to find matching accessories and technical downloads:



## /// LSIS 422i



This device combines innovative camera technology and decades of know-how from 1D-code reading. It functions omnidirectionally, with fast motion and even with low contrast.

**Benefits:**

- Optimized camera resolution of 752 × 480 pixels for fast identification, even of low-contrast codes
- CMOS code reader for 1D- and 2D-codes with high resolution
- External triggering
- Multiple code reading
- Omnidirectional reading
- Motor-driven focus adjustment
- Construction with integrated illumination for industrial use
- Display for completed read operations

Direct access to the online product selector at [www.leuze.com/en/lisis422i](http://www.leuze.com/en/lisis422i)

Part no.	Part description	Focal length	Optics cover	Light source	Interface	Degree of protection
50116978	LSIS 422i M43-I1	8 mm	Glass	LED, infrared	Ethernet, RS 232	IP 65 IP 67
50116977	LSIS 422i M43-I1-01	8 mm	Plastic	LED, infrared	Ethernet, RS 232	IP 65 IP 67
50116980	LSIS 422i M43-M1	8 mm	Glass	LED, RGB, white	Ethernet, RS 232	IP 65 IP 67
50116979	LSIS 422i M43-M1-01	8 mm	Plastic	LED, RGB, white	Ethernet, RS 232	IP 65 IP 67
50108178	LSIS 422i M43-W1	8 mm	Glass	LED, white	Ethernet, RS 232	IP 65 IP 67
50113055	LSIS 422i M43-W1-01	8 mm	Plastic	LED, white	Ethernet, RS 232	IP 65 IP 67
50116982	LSIS 422i M45-I1	16 mm	Glass	LED, infrared	Ethernet, RS 232	IP 65 IP 67
50116981	LSIS 422i M45-I1-01	16 mm	Plastic	LED, infrared	Ethernet, RS 232	IP 65 IP 67
50116984	LSIS 422i M45-M1	16 mm	Glass	LED, RGB, white	Ethernet, RS 232	IP 65 IP 67
50116983	LSIS 422i M45-M1-01	16 mm	Plastic	LED, RGB, white	Ethernet, RS 232	IP 65 IP 67
50109829	LSIS 422i M45-W1	16 mm	Glass	LED, white	Ethernet, RS 232	IP 65 IP 67
50113054	LSIS 422i M45-W1-01	16 mm	Plastic	LED, white	Ethernet, RS 232	IP 65 IP 67
50117093	LSIS 422i M49-X9		Glass		Ethernet, RS 232	IP 65 IP 67

With the LSIS 4xxi...X9, the focal length depends on the used lens

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# //MOBILE 2D-CODE READERS

## FLEXIBLE AND PRECISE WITH ONE HAND

In addition to 2D-codes, all mobile code readers from Leuze electronic also read bar codes and can, thus, be used very flexibly. Even with low contrast and on surfaces such as metal or plastic, the high-quality reading technology functions absolutely reliably. Available as interfaces are RS 232, PS2, USB and Bluetooth.

### /// IT 19xx



Weighing between 147 and 380 g, the hand-held scanners of this series are also ideally suited for continuous use.



#### Benefits:

- Compact reader for 1D, 2D and stacked codes
- Large reading field for high-contrast codes
- Transmission to base station via Bluetooth standard V2.1
- Several optics models available
- Stable housing with trigger button
- Built-in decoder
- RS232, USB and PS/2 interface

Part no.	Part description	Reading distance	Bluetooth	Interface	Drop height	Degree of protection	Connection	Ambient temperature, operation
50114504	IT 1900g ER-2	25 ... 596 mm		PS/2, USB, RS 232	1.8 m	IP 41	RJ41	0 ... 50 °C
50114507	IT 1900g HD-2	0 ... 233 mm		PS/2, USB, RS 232	1.8 m	IP 41	RJ41	0 ... 50 °C
50114509	IT 1900g SR-2	10 ... 584 mm		PS/2, USB, RS 232	1.8 m	IP 41	RJ41	0 ... 50 °C
50114511	IT 1902g ER-2	25 ... 596 mm	Class 2	PS/2, USB, RS 232	1.8 m	IP 41	Bluetooth	0 ... 50 °C
50114513	IT 1902g HD-2	0 ... 233 mm	Class 2	PS/2, USB, RS 232	1.8 m	IP 41	Bluetooth	0 ... 50 °C
50114515	IT 1902g SR-2	10 ... 584 mm	Class 2	PS/2, USB, RS 232	1.8 m	IP 41	Bluetooth	0 ... 50 °C
50122436	IT 1910i ER-3	25 ... 596 mm		PS/2, USB, RS 232	2 m	IP 65	RJ41	-30 ... 50 °C
50122434	IT 1911i ER-3	25 ... 596 mm	Class 1	PS/2, USB, RS 232	2 m	IP 65	Bluetooth	-20 ... 50 °C

### /// FIS 6170



Industrial hand-held scanner for reading directly-marked codes (dot-peened or laser-etched) with low contrast, even in the event of glossy and rounded surfaces, with omnidirectional code recognition.



#### Benefits:

- Hand-held scanners for directly marked codes
- Ergonomic housing
- Robust trigger button
- Built-in decoder
- Display for completed read operations with LED, signal tone and vibration
- RS 232 or USB interface
- Incl. USB cable
- Operating temperature from 0 through 50 °C

Part no.	Part description	Reading distance	Interface	Drop height	Degree of protection	Connection	Ambient temperature, operation
50115068	FIS 6170	0 ... 51 mm	USB, RS 232	1.8 m	IP 41	Connector	0 ... 50 °C

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/// HS 65x8



Industrial hand-held scanner for reading directly-marked codes (dot-peened or laser-etched) with low contrast as well as large bar codes with omnidirectional code recognition.



**Benefits:**

- Hand-held scanners for directly marked codes
- Ergonomic housing
- Robust trigger button
- Built-in decoder
- Display for completed read operations with LED, signal tone and vibration
- RS 232, PS2 or USB interface
- With the HS 6578, data transmission via Bluetooth Standard V2.1
- Operating temperature from -20 through 50 °C

Part no.	Part description	Reading distance	Bluetooth	Interface	Drop height	Degree of protection	Connection	Ambient temperature, operation
50120442	HS 6508 DPM	0 ... 233 mm		PS/2, USB, RS 232	2 m	IP 65	RJ41	-20 ... 50 °C
50120440	HS 6578 DPM	0 ... 233 mm	Class 2	PS/2, USB, RS 232	2 m	IP 65	Bluetooth	-20 ... 50 °C

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# / RF IDENTIFICATION

## EVERYTHING CLEAR EVEN WITH POOR VISIBILITY

With RFID, no direct “visual contact” between the read-write unit and transponder is necessary. Information from the transponder is received by means of electromagnetic waves. As a result, these systems can be used practically and reliably under even the most adverse conditions.



**Stationary RFID read/write systems**

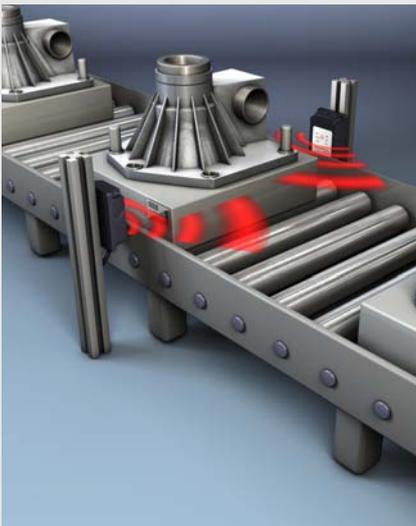
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**Mobile RFID read/write systems**

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# //STATIONARY RFID READ/WRITE SYSTEMS

## NEARLY INVISIBLE INTEGRATION

With stationary systems, proximity to the reader suffices for the detection of objects. As a result, readers can be integrated at nearly any location in the system. Our RFID solutions offer various operating ranges and simplify integration in existing systems through maximum connectivity.

### /// RFI 32



This stationary reader for fixcode transponders can be used for universal reading tasks, even at high ambient temperatures.



#### Benefits:

- Max. reading speed up to 0.6 m/s
- Reliable detection in adverse environments to 200 °C
- Max. reading distance up to 80 mm
- Highly visible status LEDs, PCB connectors
- Industrial transponder selection
- RS 232 with trigger input and switching output

Part no.	Part description	Design	Reading distance	Working frequency	Interface	Connection	Degree of protection
50040500	RFI 32 L 120	Cubic	80 mm	0.125 MHz	RS 232	Cable with socket connector, 1,000 mm	IP 65
50108915	RFI 32 L 120-L10	Cubic	80 mm	0.125 MHz	RS 232	Cable with socket connector, 10,000 mm	IP 65

### /// RFM 12 / 32 / 62



For ISO15693 transponders, Leuze electronic offers three read/write devices that offer the right range for typical applications. One of the devices is also available in Ex-design.



#### Benefits:

- Max. reading speed of 2.0–6.0 m/s
- Max. reading distance 50–500 mm
- Reliable detection with database updating in adverse environments to 220 °C
- Highly visible status LEDs, PCB connectors
- Large selection of industrial transponders with up to 1024 bytes
- RS 232 with trigger input and switching output

Part no.	Part description	Design	Reading/writing distance	Working frequency	Interface	Ex device group	Connection	Degree of protection
50040497	RFM 12 SL 200	Cylindrical, M30	45 mm	13.56 MHz	RS 232		Cable with socket connector, 1,000 mm	IP 67
50040498	RFM 32 SL 200	Cubic	110 mm	13.56 MHz	RS 232		Cable with socket connector, 1,000 mm	IP 67
50103087	RFM 32 SL 200 Ex-n	Cubic	110 mm	13.56 MHz	RS 232	II	Cable with socket connector, 10,000 mm	IP 67
50040499	RFM 62 SL 200	Cubic	400 mm	13.56 MHz	RS 232		Cable with socket connector, 1,000 mm	IP 65

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# //MOBILE RFID READ/WRITE SYSTEMS

## FUNCTIONS IN MANY AREAS

RFID is also ideally suited for mobile use. One favorite area of application is, for example, in freight traffic at logistics hubs. But mobile devices are often advantageous in warehousing as well and guarantee smooth and fast identification. Moreover, our RFID solutions also read bar codes and 2D-codes.

### /// HFM 35xxD



Mobile combi device for RFID transponders (RF 13.56 MHz) and bar codes, specially designed for reading bar code information and then writing this information on a transponder.



#### Benefits:

- Mobile read/write device with pistol handle for short operating ranges combined with bar codes
- With a stable trigger button, it is suitable for industrial use
- RS 232 interface or USB COM port emulation, Bluetooth optional
- Selectable display and data output (hex/ASCII)
- Function selection by means of keyboard or PLC and simple feedback on the display

Direct access to the online product selector at [www.leuze.com/en/hfm35xxd](http://www.leuze.com/en/hfm35xxd)

Part no.	Part description	RFID reading/writing distance	Bar code reading distance	Working frequency	Interface	Connection	Degree of protection
50110552	HFM 3500 D	25 mm	450 mm	13.56 MHz	RS 232	Sub-D	IP 54
50110551	HFM 3520 D	25 mm	450 mm	13.56 MHz	USB, RS 232	Bluetooth	IP 54

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# //TRANSPONDERS

## FROM FLAT TO ROBUST, EVERYTHING IS POSSIBLE

The areas of application for RFID are as broad as the requirements placed on transponders. Leuze electronic offers an extensive and high-quality product segment for all conceivable applications. It includes transponders for fault-free use on metal, high-temperature transponders, self-adhesive SmartLabels or chip cards.

### /// TFI



This transponder with EM4002 chip is suitable for readers of the RFI series.



#### Benefits:

- Fixcode transponder with EM4002 chip (8 bytes), suitable for write/read units of the RFI series.
- Industry transponder for temperatures up to 200 °C available as disk

Part no.	Part description	Design	Dimensions	Working frequency	Memory size	Degree of protection	Ambient temperature, operation
50032396	TFI 03 1101.120	Write	30 mm × 2.1 mm	0.125 MHz	8 B	IP 65	-20 ... 70 °C
50039070	TFI 03 1601.120	Write	30 mm × 2.5 mm	0.125 MHz	8 B	IP 67	-20 ... 85 °C
50032395	TFI 05 1101.120	Write	50 mm × 2.1 mm	0.125 MHz	8 B	IP 65	-20 ... 70 °C
50039069	TFI 05 1601.120	Write	50 mm × 2.5 mm	0.125 MHz	8 B	IP 67	-20 ... 85 °C

Dimensional tolerances for all specified dimensions: ± 0.5 mm

### /// TFM



The HF transponder with various memory sizes is suitable for the RFM / HFM readers as a self-adhesive/disc/card or high-temperature transponder, with Ex certification if necessary.



#### Benefits:

- ISO15693 transponder with 112 to 1024 bytes (I-CodeSLI/HFI or MyD) suitable for write/read units of the RFM.../HFM... series
- Industry transponder for temperatures up to 220 °C, available as disk, stickers and cards
- Special transponders on request

Part no.	Part description	Design	Dimensions	Working frequency	Memory size	Degree of protection	Ex device group	Ambient temperature, operation
50102915	TFM 02 1125.220	Write	22 mm × 3 mm	13.56 MHz	256 B	IP 68		-25 ... 85 °C
50107790	TFM 02 2210.210	Label	18 mm × 0.3 mm × 36 mm	13.56 MHz	112 B	IP 54		-20 ... 50 °C
50102917	TFM 03 1110.210	Write	30 mm × 2.5 mm	13.56 MHz	112 B	IP 66		-20 ... 70 °C
50106412	TFM 03 1510.210	Write	30 mm × 2.5 mm	13.56 MHz	112 B	IP 68		-25 ... 85 °C
50102956	TFM 03 5125.220	Card	28 mm × 1 mm × 50 mm	13.56 MHz	256 B	IP 54		-20 ... 70 °C
50108290	TFM 04 1190.230	Write	40 mm × 2.5 mm	13.56 MHz	1,024 B	IP 66		-20 ... 70 °C
50102916	TFM 05 1110.210	Write	50 mm × 2.5 mm	13.56 MHz	112 B	IP 66		-20 ... 85 °C
50108070	TFM 05 1110.Ex	Write	54 mm × 15 mm	13.56 MHz	112 B	IP 67	II	-25 ... 60 °C
50106413	TFM 05 1510.210	Write	50 mm × 2.5 mm	13.56 MHz	112 B	IP 68		-25 ... 85 °C
50109232	TFM 05 2210.210	Label	50 mm × 0.3 mm × 50 mm	13.56 MHz	112 B	IP 54		-20 ... 50 °C
50117412	TFM 08 1110.210	Write	85 mm × 3 mm	13.56 MHz	112 B	IP 67 IP 65		-20 ... 70 °C
50114962	TFM 08 1610.210	Write	85 mm × 13.5 mm	13.56 MHz	112 B	IP 68		-25 ... 100 °C
50109233	TFM 08 2125.220	Card	54 mm × 1 mm × 86 mm	13.56 MHz	256 B	IP 68		-20 ... 70 °C

Dimensional tolerances for all specified dimensions: ± 0.5 mm

**/ Modular Interfacing Units**

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# / MODULAR INTERFACING UNITS

## PUTTING IT ALL TOGETHER

All peripheral devices – such as sensors, protective switches and cameras – are not worth much without networking to the fieldbus or a control unit. Depending on device type and area of application, our modular interfacing units offer variable interfaces that enable simple connection of the identification devices directly to the fieldbus and thus ensure simple integration of new devices in the system.



/// MA 100



Terminal box for BCL 300i/301i with KB301.



**Benefits:**

- External terminal box for BCL 300/301i with cable hood and address switch

Direct access to the online product selector at [www.leuze.com/en/ma100](http://www.leuze.com/en/ma100)

Part no.	Part description	Suitable for	Interface
50114369	MA 100	BCL 300i	RS 232, RS 485

/// MA 2



Connector unit with separate RS 232 service interface for BCL 21/22, BCL 31/32, RFID systems RFI and RFM.



**Benefits:**

- Robust terminal box for connection of the devices with JST (RS 232 or RS 485)
- Rotary switch for addressing
- Double terminals enable wiring through (PWR, RS 485)
- With PG screw fittings on mounting plate
- Degree of protection IP 65

Part no.	Part description	Suitable for	Interface
50031256	MA 2	BCL 2x series bar code readers BCL 3x series bar code readers	RS 232, RS 485

/// MA 21



The MA 21 modular connector unit is used to connect Leuze electronic identification systems (IDS) to an RS 232 interface.



**Benefits:**

- Universal interface and protocol converter for RS 232/RS 485 devices with clamp connection
- With separate service interface, 9 pin SubD
- PG screw fittings on mounting plate
- Degree of protection IP 65

Part no.	Part description	Suitable for	Interface	Supply voltage
50030481	MA 21 100	BCL 8 series bar code readers BCL 2x series bar code readers HFxx series mobile RFID read/write systems IT 1900 series mobile 2D-code readers	RS 232, RS 485	18 ... 36V, DC

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Part no.	Part description	Suitable for	Interface	Supply voltage
50103125	MA 21 100.2	BCL 2x series bar code readers BCL 8 series bar code readers RFM 12 / 32 / 62 HFxx series mobile RFID read/write systems RFI 32 LSIS 2xx series stationary 2D-code readers	RS 232, RS 485	18 ... 36 V, DC
50030482	MA 21 110	BCL 2x series bar code readers BCL 8 series bar code readers IT 1900 series mobile 2D-code readers HFxx series mobile RFID read/write systems	RS 232	18 ... 36 V, DC
50030483	MA 21 120	BCL 2x series bar code readers BCL 8 series bar code readers IT 1900 series mobile 2D-code readers HFxx series mobile RFID read/write systems	TTY, RS 232	18 ... 36 V, DC
50030484	MA 21 130	BCL 2x series bar code readers BCL 8 series bar code readers IT 1900 series mobile 2D-code readers HFxx series mobile RFID read/write systems	RS 232, RS 422	18 ... 36 V, DC

**/// MA 22**

Connector unit for daisy chain connections.

**Benefits:**

- Connector unit for up to 4 BCL 22 devices in Daisy Chain
- Separate service interface for installation in cabinet
- Suitable for DIN rail mounting

Part no.	Part description	Suitable for	Interface	Supply voltage
50031496	MA 22 DC	BCL 2x series bar code readers	RS 232	18 ... 30 V, DC

**/// MA 31**

Network master for Leuze electronic multiNet plus.

**Benefits:**

- Connection with M12 technology
- Integrated, fail-safe parameter memory facilitates device exchange without reconfiguration
- Networking of multiple BCL 31 and BCL 301i devices via RS 485 in multiNet plus
- Address setting using rotary and slide switches
- Separate connection for switching inputs and switching outputs
- Degree of protection IP 65

Part no.	Part description	Interface	Supply voltage
50030835	MA 31 100	RS 485	18 ... 36 V, DC
50030836	MA 31 110	RS 232, RS 485	18 ... 36 V, DC
50030837	MA 31 120	TTY, RS 485	18 ... 36 V, DC
50030838	MA 31 130	RS 422, RS 485	18 ... 36 V, DC

/// MA 200i



Fieldbus gateways for field use for connecting bar code readers and identification systems.



**Benefits:**

- Fieldbus gateway for RS 232 devices with pre-configuration for Leuze electronic Ident devices and sensors
- With service interface, 9 pin SubD
- M12 screw fittings on mounting plate
- Degree of protection IP 65

Part no.	Part description	Suitable for	Interface	Supply voltage
50112893	MA 204i Profibus gateway	BCL 2x series bar code readers BCL 8 series bar code readers BPS 8 series bar code positioning system HFxx series mobile RFID read/write systems LSIS 1xx series stationary 2D-code readers RFM 12 / 32 / 62 RFI 32	PROFIBUS DP, RS 232	18 ... 30 V, DC
50112892	MA 208i Ethernet gateway	BCL 2x series bar code readers BCL 8 series bar code readers BPS 8 series bar code positioning system HFxx series mobile RFID read/write systems LSIS 1xx series stationary 2D-code readers RFM 12 / 32 / 62 RFI 32	Ethernet, RS 232	18 ... 30 V, DC
50114154	MA 235i CANopen gateway	BCL 2x series bar code readers BCL 8 series bar code readers BPS 8 series bar code positioning system HFxx series mobile RFID read/write systems RFI 32 RFM 12 / 32 / 62 LSIS 1xx series stationary 2D-code readers	CANopen, RS 232	18 ... 30 V, DC
50114155	MA 238i EtherCAT gateway	BCL 2x series bar code readers BCL 8 series bar code readers BPS 8 series bar code positioning system HFxx series mobile RFID read/write systems LSIS 1xx series stationary 2D-code readers RFI 32 RFM 12 / 32 / 62	EtherCAT, RS 232	18 ... 30 V, DC
50112891	MA 248i PROFINET gateway	BCL 2x series bar code readers BCL 8 series bar code readers HFxx series mobile RFID read/write systems LSIS 1xx series stationary 2D-code readers BPS 8 series bar code positioning system RFM 12 / 32 / 62 RFI 32	PROFINET, RS 232	18 ... 30 V, DC
50114156	MA 255i DeviceNet gateway	BCL 2x series bar code readers BCL 8 series bar code readers BPS 8 series bar code positioning system IT 4800 series mobile 2D-code readers HFxx series mobile RFID read/write systems RFM 12 / 32 / 62 RFI 32 LSIS 1xx series stationary 2D-code readers Optical distance sensors (ODS/L with RS232)	RS 232, DeviceNet	18 ... 30 V, DC
50114157	MA 258i EtherNet/IP gateway	BCL 2x series bar code readers BCL 8 series bar code readers BPS 8 series bar code positioning system HFxx series mobile RFID read/write systems LSIS 1xx series stationary 2D-code readers RFM 12 / 32 / 62 RFI 32	EtherNet IP, RS 232	18 ... 30 V, DC

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**/// MA 8**

Connector unit for simple connection of the BCL 8 or BPS 8.

**Benefits:**

- Connector unit for BCL 8/BPS 8 with RS 232 or RS 485
- M12 connection
- Degree of protection IP 65

Part no.	Part description	Suitable for	Interface	Supply voltage
50104790	MA 8-01	BCL 8 series bar code readers BPS 8 series bar code positioning system	RS 485	10 ... 30V, DC
50101699	MA 8.1	BCL 8 series bar code readers	RS 232	10 ... 30V, DC

**/// MA 90**

Point-to-point multiNet slave for the BCL 90 product family for easy wiring and configuration.

**Benefits:**

- Easy wiring and configuration
- RS 232 service interface
- Voltage supply terminals dual-installed for wiring through
- Interface RS 485 for the Leuze multiNet plus dual-installed for wiring through
- Hardware addressing in Leuze multiNet plus, 6 switching inputs and 4 switching outputs
- 4 LEDs for visualization at the device
- Hardware reset
- Large wiring terminal compartment

Part no.	Part description	Suitable for	Supply voltage
50035348	MA 90	BCL 90 series bar code readers	18 ... 30V, DC

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/// MA 4



Connector unit with clamp connections for BCL 21/22 and BCL 32 with parameter memory.



**Benefits:**

- Parameters of the BCL 21/22 are saved in a fail-safe manner on an EEPROM
- Rotary switch for setting the address for networking via Leuze multiNet plus
- Additional RS 232 service interface (9-pin Sub-D plug)
- Integrated two-line display with 16 characters each (MA 4D only)
- PG screw fittings on mounting plate
- Terminals for connecting the switching inputs/outputs, the voltage supply and the communication interface

Switching Sensors

Part no.	Part description	Suitable for	Interface	Supply voltage
50031537	MA 4	BCL 2x series bar code readers BCL 3x series bar code readers	RS 232, RS 485	10 ... 30 V, DC
50102024	MA 4 100	BCL 2x series bar code readers BCL 3x series bar code readers	RS 232, RS 485	10 ... 30 V, DC
50039659	MA 4 110	BCL 2x series bar code readers BCL 3x series bar code readers	RS 232	10 ... 30 V, DC
50039660	MA 4 120	BCL 2x series bar code readers BCL 3x series bar code readers	TTY, RS 232	10 ... 30 V, DC
50039661	MA 4 130	BCL 2x series bar code readers BCL 3x series bar code readers	RS 232, RS 422	10 ... 30 V, DC
50031536	MA 4 D	BCL 2x series bar code readers BCL 3x series bar code readers	RS 232, RS 485	10 ... 30 V, DC
50102023	MA 4 D 100	BCL 2x series bar code readers BCL 3x series bar code readers	RS 232, RS 485	10 ... 30 V, DC
50039662	MA 4 D 110	BCL 2x series bar code readers BCL 3x series bar code readers	RS 232	10 ... 30 V, DC
50039663	MA 4 D 120	BCL 2x series bar code readers BCL 3x series bar code readers	TTY, RS 232	10 ... 30 V, DC
50039664	MA 4 D 130	BCL 2x series bar code readers BCL 3x series bar code readers	RS 232, RS 422	10 ... 30 V, DC

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/// MA 4.7



Connector unit with clamp connections for BPS 37.



**Benefits:**

- Parameters of the BPS 37 are saved in a fail-safe manner on an EEPROM
- Rotary switch for adjusting the resolution / speed and jumper for Gray/binary selection
- Additional RS 232 service interface (9-pin sub-D connector)
- PG screw fittings on mounting plate
- Integrated two-line display with 16 characters each (MA 4D.7 only)
- Terminals for connecting the switching input/output, the voltage supply and the communication interface

Data Transmission/Control Components

Part no.	Part description	Suitable for	Supply voltage
50037325	MA 4 D.7	BPS 3x series bar code positioning system	10 ... 30 V, DC
50037324	MA 4.7	BPS 3x series bar code positioning system	10 ... 30 V, DC

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## /// DDLS 200



Infrared data transmission protects this series from interference. Systems are available for all common industrial interfaces including, among others, Ethernet TCP/IP and Interbus. The ranges are stepped and reach a maximum transmission distance of 500 m.

**Benefits:**

- Ranges up to 500 m possible
- Transmission rates up to 2 Mbit/s
- Network interfaces with integrated repeater function
- Low ambient light sensitivity through special FSK method
- Interfaces: PROFIBUS, PROFINET, Ethernet TCP/IP and Interbus

Part no.	Part description	Operating range	Interface	Opening angle	Functions	Transmission speed	Connection 1 Connection 2	Degree of protection	Temperature
<b>Ethernet interface</b>									
50117396	▶ DDLS 200/30.1-60-W	200 ... 30,000 mm	Ethernet	3°	Wide angle version	100 Mbit/s Tx; 2 Mbit/s Fx	Terminal, M16 RJ45, M25	IP 65	-5 ... 50 °C
50117397	◀ DDLS 200/30.2-60-W	200 ... 30,000 mm	Ethernet	3°	Wide angle version	100 Mbit/s Tx; 2 Mbit/s Fx	Terminal, M16 RJ45, M25	IP 65	-5 ... 50 °C
50112207	▶ DDLS 200/80.1-60-W	200 ... 80,000 mm	Ethernet	2°	Wide angle version	100 Mbit/s Tx; 2 Mbit/s Fx	Terminal, M16 RJ45, M25	IP 65	-5 ... 50 °C
50112208	◀ DDLS 200/80.2-60-W	200 ... 80,000 mm	Ethernet	2°	Wide angle version	100 Mbit/s Tx; 2 Mbit/s Fx	Terminal, M16 RJ45, M25	IP 65	-5 ... 50 °C
50106035	▶ DDLS 200/120.1-60-M12	200 ... 120,000 mm	Ethernet	1°		100 Mbit/s Tx; 2 Mbit/s Fx	Connector, M12 Connector, M12	IP 65	-5 ... 50 °C
50106036	◀ DDLS 200/120.2-60-M12	200 ... 120,000 mm	Ethernet	1°		100 Mbit/s Tx; 2 Mbit/s Fx	Connector, M12 Connector, M12	IP 65	-5 ... 50 °C
50106041	▶ DDLS 200/120.1-60-H-M12	200 ... 120,000 mm	Ethernet	1°	Heating	100 Mbit/s Tx; 2 Mbit/s Fx	Connector, M12 Connector, M12	IP 65	-30 ... 50 °C
50106042	◀ DDLS 200/120.2-60-H-M12	200 ... 120,000 mm	Ethernet	1°	Heating	100 Mbit/s Tx; 2 Mbit/s Fx	Connector, M12 Connector, M12	IP 65	-30 ... 50 °C
50040929	▶ DDLS 200/120.1-60	200 ... 120,000 mm	Ethernet	1°		100 Mbit/s Tx; 2 Mbit/s Fx	Terminal, M16 RJ45, M25	IP 65	-5 ... 50 °C
50040930	◀ DDLS 200/120.2-60	200 ... 120,000 mm	Ethernet	1°		100 Mbit/s Tx; 2 Mbit/s Fx	Terminal, M16 RJ45, M25	IP 65	-5 ... 50 °C
50040931	▶ DDLS 200/120.1-60-H	200 ... 120,000 mm	Ethernet	1°	Heating	100 Mbit/s Tx; 2 Mbit/s Fx	Terminal, M16 RJ45, M25	IP 65	-30 ... 50 °C
50040932	◀ DDLS 200/120.2-60-H	200 ... 120,000 mm	Ethernet	1°	Heating	100 Mbit/s Tx; 2 Mbit/s Fx	Terminal, M16 RJ45, M25	IP 65	-30 ... 50 °C
50040933	▶ DDLS 200/200.1-60	200 ... 200,000 mm	Ethernet	1°		100 Mbit/s Tx; 2 Mbit/s Fx	Terminal, M16 RJ45, M25	IP 65	-5 ... 50 °C
50040934	◀ DDLS 200/200.2-60	200 ... 200,000 mm	Ethernet	1°		100 Mbit/s Tx; 2 Mbit/s Fx	Terminal, M16 RJ45, M25	IP 65	-5 ... 50 °C
50040935	▶ DDLS 200/200.1-60-H	200 ... 200,000 mm	Ethernet	1°	Heating	100 Mbit/s Tx; 2 Mbit/s Fx	Terminal, M16 RJ45, M25	IP 65	-30 ... 50 °C
50040936	◀ DDLS 200/200.2-60-H	200 ... 200,000 mm	Ethernet	1°	Heating	100 Mbit/s Tx; 2 Mbit/s Fx	Terminal, M16 RJ45, M25	IP 65	-30 ... 50 °C
50106037	▶ DDLS 200/200.1-60-M12	200 ... 200,000 mm	Ethernet	1°		100 Mbit/s Tx; 2 Mbit/s Fx	Connector, M12 Connector, M12	IP 65	-5 ... 50 °C
50106038	◀ DDLS 200/200.2-60-M12	200 ... 200,000 mm	Ethernet	1°		100 Mbit/s Tx; 2 Mbit/s Fx	Connector, M12 Connector, M12	IP 65	-5 ... 50 °C
50106043	▶ DDLS 200/200.1-60-H-M12	200 ... 200,000 mm	Ethernet	1°	Heating	100 Mbit/s Tx; 2 Mbit/s Fx	Connector, M12 Connector, M12	IP 65	-30 ... 50 °C
50106044	◀ DDLS 200/200.2-60-H-M12	200 ... 200,000 mm	Ethernet	1°	Heating	100 Mbit/s Tx; 2 Mbit/s Fx	Connector, M12 Connector, M12	IP 65	-30 ... 50 °C
50040937	▶ DDLS 200/300.1-60	200 ... 300,000 mm	Ethernet	1°		100 Mbit/s Tx; 2 Mbit/s Fx	Terminal, M16 RJ45, M25	IP 65	-5 ... 50 °C
50040938	◀ DDLS 200/300.2-60	200 ... 300,000 mm	Ethernet	1°		100 Mbit/s Tx; 2 Mbit/s Fx	Terminal, M16 RJ45, M25	IP 65	-5 ... 50 °C
50106045	▶ DDLS 200/300.1-60-H-M12	200 ... 300,000 mm	Ethernet	1°	Heating	100 Mbit/s Tx; 2 Mbit/s Fx	Connector, M12 Connector, M12	IP 65	-30 ... 50 °C
50106046	◀ DDLS 200/300.2-60-H-M12	200 ... 300,000 mm	Ethernet	1°	Heating	100 Mbit/s Tx; 2 Mbit/s Fx	Connector, M12 Connector, M12	IP 65	-30 ... 50 °C
50106039	▶ DDLS 200/300.1-60-M12	200 ... 300,000 mm	Ethernet	1°		100 Mbit/s Tx; 2 Mbit/s Fx	Connector, M12 Connector, M12	IP 65	-5 ... 50 °C
50106040	◀ DDLS 200/300.2-60-M12	200 ... 300,000 mm	Ethernet	1°		100 Mbit/s Tx; 2 Mbit/s Fx	Connector, M12 Connector, M12	IP 65	-5 ... 50 °C
50040939	▶ DDLS 200/300.1-60-H	200 ... 300,000 mm	Ethernet	1°	Heating	100 Mbit/s Tx; 2 Mbit/s Fx	Terminal, M16 RJ45, M25	IP 65	-30 ... 50 °C
50040940	◀ DDLS 200/300.2-60-H	200 ... 300,000 mm	Ethernet	1°	Heating	100 Mbit/s Tx; 2 Mbit/s Fx	Terminal, M16 RJ45, M25	IP 65	-30 ... 50 °C
<b>CANopen, DeviceNet interface</b>									
50122268	▶ DDLS 200/80.2-50-W-M12	200 ... 80,000 mm	CANopen, DeviceNet	2°	Wide angle version	10 ... 1,000 / 125 ... 500 kbit/s	Connector, M12 Connector, M12	IP 65	-5 ... 50 °C
50122267	◀ DDLS 200/80.1-50-W-M12	200 ... 80,000 mm	CANopen, DeviceNet	2°	Wide angle version	10 ... 1,000 / 125 ... 500 kbit/s	Connector, M12 Connector, M12	IP 65	-5 ... 50 °C

▶ transmitter / ◀ receiver

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50039937	► DDLS 200/120.1-50	200 ... 120,000 mm	CANopen, DeviceNet	1°		10 ... 1,000 / 125 ... 500 kbit/s	Terminal, M16 Terminal, M16	IP 65	-5 ... 50 °C
50039938	◄ DDLS 200/120.2-50	200 ... 120,000 mm	CANopen, DeviceNet	1°		10 ... 1,000 / 125 ... 500 kbit/s	Terminal, M16 Terminal, M16	IP 65	-5 ... 50 °C
50113046	► DDLS 200/120.1-50-M12	200 ... 120,000 mm	CANopen, DeviceNet	1°		10 ... 1,000 / 125 ... 500 kbit/s	Connector, M12 Connector, M12	IP 65	-5 ... 50 °C
50113045	◄ DDLS 200/120.2-50-M12	200 ... 120,000 mm	CANopen, DeviceNet	1°		10 ... 1,000 / 125 ... 500 kbit/s	Connector, M12 Connector, M12	IP 65	-5 ... 50 °C
50039943	► DDLS 200/120.1-50-H	200 ... 120,000 mm	CANopen, DeviceNet	1°	Heating	10 ... 1,000 / 125 ... 500 kbit/s	Terminal, M16 Terminal, M16	IP 65	-30 ... 50 °C
50039944	◄ DDLS 200/120.2-50-H	200 ... 120,000 mm	CANopen, DeviceNet	1°	Heating	10 ... 1,000 / 125 ... 500 kbit/s	Terminal, M16 Terminal, M16	IP 65	-30 ... 50 °C
50125767	► DDLS 200/200.1-50-M12	200 ... 200,000 mm	CANopen, DeviceNet	1°		10 ... 1,000 / 125 ... 500 kbit/s	Connector, M12 Connector, M12	IP 65	-5 ... 50 °C
50125768	◄ DDLS 200/200.2-50-M12	200 ... 200,000 mm	CANopen, DeviceNet	1°		10 ... 1,000 / 125 ... 500 kbit/s	Connector, M12 Connector, M12	IP 65	-5 ... 50 °C
50039939	► DDLS 200/200.1-50	200 ... 200,000 mm	CANopen, DeviceNet	1°		10 ... 1,000 / 125 ... 500 kbit/s	Terminal, M16 Terminal, M16	IP 65	-5 ... 50 °C
50039940	◄ DDLS 200/200.2-50	200 ... 200,000 mm	CANopen, DeviceNet	1°		10 ... 1,000 / 125 ... 500 kbit/s	Terminal, M16 Terminal, M16	IP 65	-5 ... 50 °C
50039945	► DDLS 200/200.1-50-H	200 ... 200,000 mm	CANopen, DeviceNet	1°	Heating	10 ... 1,000 / 125 ... 500 kbit/s	Terminal, M16 Terminal, M16	IP 65	-30 ... 50 °C
50039946	◄ DDLS 200/200.2-50-H	200 ... 200,000 mm	CANopen, DeviceNet	1°	Heating	10 ... 1,000 / 125 ... 500 kbit/s	Terminal, M16 Terminal, M16	IP 65	-30 ... 50 °C
50039941	► DDLS 200/300.1-50	200 ... 300,000 mm	CANopen, DeviceNet	1°		10 ... 1,000 / 125 ... 500 kbit/s	Terminal, M16 Terminal, M16	IP 65	-5 ... 50 °C
50039942	◄ DDLS 200/300.2-50	200 ... 300,000 mm	CANopen, DeviceNet	1°		10 ... 1,000 / 125 ... 500 kbit/s	Terminal, M16 Terminal, M16	IP 65	-5 ... 50 °C
50039947	► DDLS 200/300.1-50-H	200 ... 300,000 mm	CANopen, DeviceNet	1°	Heating	10 ... 1,000 / 125 ... 500 kbit/s	Terminal, M16 Terminal, M16	IP 65	-30 ... 50 °C
50039948	◄ DDLS 200/300.2-50-H	200 ... 300,000 mm	CANopen, DeviceNet	1°	Heating	10 ... 1,000 / 125 ... 500 kbit/s	Terminal, M16 Terminal, M16	IP 65	-30 ... 50 °C

## PROFIBUS DP, RS 485 interface

50039704	► DDLS 200/30.1-10-W	200 ... 30,000 mm	PROFIBUS DP, RS 485	3°	Wide angle version	0.0096 ... 1.5 Mbit/s	Terminal, M16 Terminal, M16	IP 65	-5 ... 50 °C
50039705	◄ DDLS 200/30.2-10-W	200 ... 30,000 mm	PROFIBUS DP, RS 485	3°	Wide angle version	0.0096 ... 1.5 Mbit/s	Terminal, M16 Terminal, M16	IP 65	-5 ... 50 °C
50102312	► DDLS 200/80.1-10-W	200 ... 80,000 mm	PROFIBUS DP, RS 485	2°	Wide angle version	0.0096 ... 1.5 Mbit/s	Terminal, M16 Terminal, M16	IP 65	-5 ... 50 °C
50102313	◄ DDLS 200/80.2-10-W	200 ... 80,000 mm	PROFIBUS DP, RS 485	2°	Wide angle version	0.0096 ... 1.5 Mbit/s	Terminal, M16 Terminal, M16	IP 65	-5 ... 50 °C
50102494	► DDLS 200/80.1-10-W-H	200 ... 80,000 mm	PROFIBUS DP, RS 485	2°	Heating Wide angle version	0.0096 ... 1.5 Mbit/s	Terminal, M16 Terminal, M16	IP 65	-30 ... 50 °C
50102495	◄ DDLS 200/80.2-10-W-H	200 ... 80,000 mm	PROFIBUS DP, RS 485	2°	Heating Wide angle version	0.0096 ... 1.5 Mbit/s	Terminal, M16 Terminal, M16	IP 65	-30 ... 50 °C
50036282	► DDLS 200/120.1-10	200 ... 120,000 mm	PROFIBUS DP, RS 485	1°		0.0096 ... 1.5 Mbit/s	Terminal, M16 Terminal, M16	IP 65	-5 ... 50 °C
50036283	◄ DDLS 200/120.2-10	200 ... 120,000 mm	PROFIBUS DP, RS 485	1°		0.0096 ... 1.5 Mbit/s	Terminal, M16 Terminal, M16	IP 65	-5 ... 50 °C
50106023	► DDLS 200/120.1-10-M12	200 ... 120,000 mm	PROFIBUS DP, RS 485	1°		0.0096 ... 1.5 Mbit/s	Connector, M12 Connector, M12	IP 65	-5 ... 50 °C
50106024	◄ DDLS 200/120.2-10-M12	200 ... 120,000 mm	PROFIBUS DP, RS 485	1°		0.0096 ... 1.5 Mbit/s	Connector, M12 Connector, M12	IP 65	-5 ... 50 °C
50036286	► DDLS 200/120.1-10-H	200 ... 120,000 mm	PROFIBUS DP, RS 485	1°	Heating	0.0096 ... 1.5 Mbit/s	Terminal, M16 Terminal, M16	IP 65	-30 ... 50 °C
50036287	◄ DDLS 200/120.2-10-H	200 ... 120,000 mm	PROFIBUS DP, RS 485	1°	Heating	0.0096 ... 1.5 Mbit/s	Terminal, M16 Terminal, M16	IP 65	-30 ... 50 °C
50106029	► DDLS 200/120.1-10-H-M12	200 ... 120,000 mm	PROFIBUS DP, RS 485	1°	Heating	0.0096 ... 1.5 Mbit/s	Connector, M12 Connector, M12	IP 65	-30 ... 50 °C
50106030	◄ DDLS 200/120.2-10-H-M12	200 ... 120,000 mm	PROFIBUS DP, RS 485	1°	Heating	0.0096 ... 1.5 Mbit/s	Connector, M12 Connector, M12	IP 65	-30 ... 50 °C
50036280	► DDLS 200/200.1-10	200 ... 200,000 mm	PROFIBUS DP, RS 485	1°		0.0096 ... 1.5 Mbit/s	Terminal, M16 Terminal, M16	IP 65	-5 ... 50 °C
50036281	◄ DDLS 200/200.2-10	200 ... 200,000 mm	PROFIBUS DP, RS 485	1°		0.0096 ... 1.5 Mbit/s	Terminal, M16 Terminal, M16	IP 65	-5 ... 50 °C
50106025	► DDLS 200/200.1-10-M12	200 ... 200,000 mm	PROFIBUS DP, RS 485	1°		0.0096 ... 1.5 Mbit/s	Connector, M12 Connector, M12	IP 65	-5 ... 50 °C
50106026	◄ DDLS 200/200.2-10-M12	200 ... 200,000 mm	PROFIBUS DP, RS 485	1°		0.0096 ... 1.5 Mbit/s	Connector, M12 Connector, M12	IP 65	-5 ... 50 °C
50106031	► DDLS 200/200.1-10-H-M12	200 ... 200,000 mm	PROFIBUS DP, RS 485	1°	Heating	0.0096 ... 1.5 Mbit/s	Connector, M12 Connector, M12	IP 65	-30 ... 50 °C
50106032	◄ DDLS 200/200.2-10-H-M12	200 ... 200,000 mm	PROFIBUS DP, RS 485	1°	Heating	0.0096 ... 1.5 Mbit/s	Connector, M12 Connector, M12	IP 65	-30 ... 50 °C
50036284	► DDLS 200/200.1-10-H	200 ... 200,000 mm	PROFIBUS DP, RS 485	1°	Heating	0.0096 ... 1.5 Mbit/s	Terminal, M16 Terminal, M16	IP 65	-30 ... 50 °C
50036285	◄ DDLS 200/200.2-10-H	200 ... 200,000 mm	PROFIBUS DP, RS 485	1°	Heating	0.0096 ... 1.5 Mbit/s	Terminal, M16 Terminal, M16	IP 65	-30 ... 50 °C
50038284	► DDLS 200/300.1-10	200 ... 300,000 mm	PROFIBUS DP, RS 485	1°		0.0096 ... 1.5 Mbit/s	Terminal, M16 Terminal, M16	IP 65	-5 ... 50 °C
50038285	◄ DDLS 200/300.2-10	200 ... 300,000 mm	PROFIBUS DP, RS 485	1°		0.0096 ... 1.5 Mbit/s	Terminal, M16 Terminal, M16	IP 65	-5 ... 50 °C
50106027	► DDLS 200/300.1-10-M12	200 ... 300,000 mm	PROFIBUS DP, RS 485	1°		0.0096 ... 1.5 Mbit/s	Connector, M12 Connector, M12	IP 65	-5 ... 50 °C
50106028	◄ DDLS 200/300.2-10-M12	200 ... 300,000 mm	PROFIBUS DP, RS 485	1°		0.0096 ... 1.5 Mbit/s	Connector, M12 Connector, M12	IP 65	-5 ... 50 °C

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Part no.	Part description	Operating range	Interface	Opening angle	Functions	Transmission speed	Connection 1 Connection 2	Degree of protection	Temperature
50106033	► DDLS 200/300.1-10-H-M12	200 ... 300,000 mm	PROFIBUS DP, RS 485	1 °	Heating	0.0096 ... 1.5 Mbit/s	Connector, M12 Connector, M12	IP 65	-30 ... 50 °C
50106034	◄ DDLS 200/300.2-10-H-M12	200 ... 300,000 mm	PROFIBUS DP, RS 485	1 °	Heating	0.0096 ... 1.5 Mbit/s	Connector, M12 Connector, M12	IP 65	-30 ... 50 °C
50038286	► DDLS 200/300.1-10-H	200 ... 300,000 mm	PROFIBUS DP, RS 485	1 °	Heating	0.0096 ... 1.5 Mbit/s	Terminal, M16 Terminal, M16	IP 65	-30 ... 50 °C
50038287	◄ DDLS 200/300.2-10-H	200 ... 300,000 mm	PROFIBUS DP, RS 485	1 °	Heating	0.0096 ... 1.5 Mbit/s	Terminal, M16 Terminal, M16	IP 65	-30 ... 50 °C
50040131	► DDLS 200/500.1-10	200 ... 500,000 mm	PROFIBUS DP, RS 485	1 °		0.0096 ... 0.09375 Mbit/s	Terminal, M16 Terminal, M16	IP 65	-5 ... 50 °C
50040132	◄ DDLS 200/500.2-10	200 ... 500,000 mm	PROFIBUS DP, RS 485	1 °		0.0096 ... 0.09375 Mbit/s	Terminal, M16 Terminal, M16	IP 65	-5 ... 50 °C
50040133	► DDLS 200/500.1-10-H	200 ... 500,000 mm	PROFIBUS DP, RS 485	1 °	Heating	0.0096 ... 0.09375 Mbit/s	Terminal, M16 Terminal, M16	IP 65	-30 ... 50 °C
50040134	◄ DDLS 200/500.2-10-H	200 ... 500,000 mm	PROFIBUS DP, RS 485	1 °	Heating	0.0096 ... 0.09375 Mbit/s	Terminal, M16 Terminal, M16	IP 65	-30 ... 50 °C

RS 422, Interbus-S interface

50041339	► DDLS 200/30.1-20-W	200 ... 30,000 mm	RS 422, Interbus-S	3 °	Wide angle version	2 Mbit/s	Terminal, M16 Terminal, M16	IP 65	-5 ... 50 °C
50041338	◄ DDLS 200/30.2-20-W	200 ... 30,000 mm	RS 422, Interbus-S	3 °	Wide angle version	2 Mbit/s	Terminal, M16 Terminal, M16	IP 65	-5 ... 50 °C
50106252	► DDLS 200/80.1-20-W	200 ... 80,000 mm	RS 422, Interbus-S	2 °	Wide angle version	2 Mbit/s	Terminal, M16 Terminal, M16	IP 65	-5 ... 50 °C
50106253	◄ DDLS 200/80.2-20-W	200 ... 80,000 mm	RS 422, Interbus-S	2 °	Wide angle version	2 Mbit/s	Terminal, M16 Terminal, M16	IP 65	-5 ... 50 °C
50036290	► DDLS 200/120.1-20	200 ... 120,000 mm	RS 422, Interbus-S	1 °		2 Mbit/s	Terminal, M16 Terminal, M16	IP 65	-5 ... 50 °C
50036291	◄ DDLS 200/120.2-20	200 ... 120,000 mm	RS 422, Interbus-S	1 °		2 Mbit/s	Terminal, M16 Terminal, M16	IP 65	-5 ... 50 °C
50036294	► DDLS 200/120.1-20-H	200 ... 120,000 mm	RS 422, Interbus-S	1 °	Heating	2 Mbit/s	Terminal, M16 Terminal, M16	IP 65	-30 ... 50 °C
50036295	◄ DDLS 200/120.2-20-H	200 ... 120,000 mm	RS 422, Interbus-S	1 °	Heating	2 Mbit/s	Terminal, M16 Terminal, M16	IP 65	-30 ... 50 °C
50036288	► DDLS 200/200.1-20	200 ... 200,000 mm	RS 422, Interbus-S	1 °		2 Mbit/s	Terminal, M16 Terminal, M16	IP 65	-5 ... 50 °C
50036289	◄ DDLS 200/200.2-20	200 ... 200,000 mm	RS 422, Interbus-S	1 °		2 Mbit/s	Terminal, M16 Terminal, M16	IP 65	-5 ... 50 °C
50036292	► DDLS 200/200.1-20-H	200 ... 200,000 mm	RS 422, Interbus-S	1 °	Heating	2 Mbit/s	Terminal, M16 Terminal, M16	IP 65	-30 ... 50 °C
50036293	◄ DDLS 200/200.2-20-H	200 ... 200,000 mm	RS 422, Interbus-S	1 °	Heating	2 Mbit/s	Terminal, M16 Terminal, M16	IP 65	-30 ... 50 °C
50038288	► DDLS 200/300.1-20	200 ... 300,000 mm	RS 422, Interbus-S	1 °		2 Mbit/s	Terminal, M16 Terminal, M16	IP 65	-5 ... 50 °C
50038289	◄ DDLS 200/300.2-20	200 ... 300,000 mm	RS 422, Interbus-S	1 °		2 Mbit/s	Terminal, M16 Terminal, M16	IP 65	-5 ... 50 °C
50038290	► DDLS 200/300.1-20-H	200 ... 300,000 mm	RS 422, Interbus-S	1 °	Heating	2 Mbit/s	Terminal, M16 Terminal, M16	IP 65	-30 ... 50 °C
50038291	◄ DDLS 200/300.2-20-H	200 ... 300,000 mm	RS 422, Interbus-S	1 °	Heating	2 Mbit/s	Terminal, M16 Terminal, M16	IP 65	-30 ... 50 °C
50040135	► DDLS 200/500.1-20	200 ... 500,000 mm	RS 422, Interbus-S	1 °		2 Mbit/s	Terminal, M16 Terminal, M16	IP 65	-5 ... 50 °C
50040136	◄ DDLS 200/500.2-20	200 ... 500,000 mm	RS 422, Interbus-S	1 °		2 Mbit/s	Terminal, M16 Terminal, M16	IP 65	-5 ... 50 °C
50040137	► DDLS 200/500.1-20-H	200 ... 500,000 mm	RS 422, Interbus-S	1 °	Heating	2 Mbit/s	Terminal, M16 Terminal, M16	IP 65	-30 ... 50 °C
50040138	◄ DDLS 200/500.2-20-H	200 ... 500,000 mm	RS 422, Interbus-S	1 °	Heating	2 Mbit/s	Terminal, M16 Terminal, M16	IP 65	-30 ... 50 °C

Rockwell DH+/RIO interface

50038300	► DDLS 200/120.1-40	200 ... 120,000 mm	Rockwell DH+/RIO	1 °		57.6 ... 230.4 kbit/s	Terminal, M16 Terminal, M16	IP 65	-5 ... 50 °C
50038301	◄ DDLS 200/120.2-40	200 ... 120,000 mm	Rockwell DH+/RIO	1 °		57.6 ... 230.4 kbit/s	Terminal, M16 Terminal, M16	IP 65	-5 ... 50 °C
50038302	► DDLS 200/120.1-40-H	200 ... 120,000 mm	Rockwell DH+/RIO	1 °	Heating	57.6 ... 230.4 kbit/s	Terminal, M16 Terminal, M16	IP 65	-30 ... 50 °C
50038303	◄ DDLS 200/120.2-40-H	200 ... 120,000 mm	Rockwell DH+/RIO	1 °	Heating	57.6 ... 230.4 kbit/s	Terminal, M16 Terminal, M16	IP 65	-30 ... 50 °C
50036300	► DDLS 200/200.1-40	200 ... 200,000 mm	Rockwell DH+/RIO	1 °		57.6 ... 230.4 kbit/s	Terminal, M16 Terminal, M16	IP 65	-5 ... 50 °C
50036301	◄ DDLS 200/200.2-40	200 ... 200,000 mm	Rockwell DH+/RIO	1 °		57.6 ... 230.4 kbit/s	Terminal, M16 Terminal, M16	IP 65	-5 ... 50 °C
50036302	► DDLS 200/200.1-40-H	200 ... 200,000 mm	Rockwell DH+/RIO	1 °	Heating	57.6 ... 230.4 kbit/s	Terminal, M16 Terminal, M16	IP 65	-30 ... 50 °C
50036303	◄ DDLS 200/200.2-40-H	200 ... 200,000 mm	Rockwell DH+/RIO	1 °	Heating	57.6 ... 230.4 kbit/s	Terminal, M16 Terminal, M16	IP 65	-30 ... 50 °C
50038296	► DDLS 200/300.1-40	200 ... 300,000 mm	Rockwell DH+/RIO	1 °		57.6 ... 230.4 kbit/s	Terminal, M16 Terminal, M16	IP 65	-5 ... 50 °C
50038297	◄ DDLS 200/300.2-40	200 ... 300,000 mm	Rockwell DH+/RIO	1 °		57.6 ... 230.4 kbit/s	Terminal, M16 Terminal, M16	IP 65	-5 ... 50 °C
50038298	► DDLS 200/300.1-40-H	200 ... 300,000 mm	Rockwell DH+/RIO	1 °	Heating	57.6 ... 230.4 kbit/s	Terminal, M16 Terminal, M16	IP 65	-30 ... 50 °C
50038299	◄ DDLS 200/300.2-40-H	200 ... 300,000 mm	Rockwell DH+/RIO	1 °	Heating	57.6 ... 230.4 kbit/s	Terminal, M16 Terminal, M16	IP 65	-30 ... 50 °C

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# / SMART CAMERA

## THE INTELLIGENT EYE FOR AUTOMATION

LSIS 400i smart cameras for industrial image processing can be integrated quickly and at low cost. They are used in quality assurance, object detection and position determination, for identification and for production process monitoring. With their sophisticated range of features, LSIS 400i cameras can also reliably handle complex tasks.



**LSIS 412i / 462i**



High-performance smart camera for reliable and convenient quality control, code reading and measurement tasks. For checking for presence, completeness, type, position and orientation. The device offers omnidirectional reading of the most important 1D-/2D-codes with reference code comparison.



**Benefits:**

- Degree of protection IP 65/67
- Operation via WebConfig with any standard browser
- Integrated, very homogeneous illumination over the whole field of view
- Adjustment of the illumination and focus position via software and online commands
- All interfaces (Ethernet, RS 232, 8x digital I/O) are integrated, no interfacing unit is necessary
- Simple mounting with dovetail or threaded holes

Part no.	Part description	Focal length	Optics cover	Light source	Interface	Software functions	Degree of protection	Supply voltage
50116970	LSIS 412i M43-I1	8 mm	Glass	LED, infrared	Ethernet, RS 232	Completeness monitoring Dimension monitoring Presence monitoring Position determination	IP 65 IP 67	18 ... 30 V, DC
50116969	LSIS 412i M43-I1-01	8 mm	Plastic	LED, infrared	Ethernet, RS 232	Completeness monitoring Dimension monitoring Presence monitoring Position determination	IP 65 IP 67	18 ... 30 V, DC
50116972	LSIS 412i M43-M1	8 mm	Glass	LED, RGB, white	Ethernet, RS 232	Completeness monitoring Dimension monitoring Presence monitoring Position determination	IP 65 IP 67	18 ... 30 V, DC
50116971	LSIS 412i M43-M1-01	8 mm	Plastic	LED, RGB, white	Ethernet, RS 232	Completeness monitoring Dimension monitoring Presence monitoring Position determination	IP 65 IP 67	18 ... 30 V, DC
50108177	LSIS 412i M43-W1	8 mm	Glass	LED, white	Ethernet, RS 232	Presence monitoring Dimension monitoring Position determination Completeness monitoring	IP 65 IP 67	18 ... 30 V, DC
50112928	LSIS 412i M43-W1-01	8 mm	Plastic	LED, white	Ethernet, RS 232	Presence monitoring Dimension monitoring Position determination Completeness monitoring	IP 65 IP 67	18 ... 30 V, DC
50116974	LSIS 412i M45-I1	16 mm	Glass	LED, infrared	Ethernet, RS 232	Completeness monitoring Dimension monitoring Presence monitoring Position determination	IP 65 IP 67	18 ... 30 V, DC
50116973	LSIS 412i M45-I1-01	16 mm	Plastic	LED, infrared	Ethernet, RS 232	Completeness monitoring Dimension monitoring Presence monitoring Position determination	IP 65 IP 67	18 ... 30 V, DC
50116976	LSIS 412i M45-M1	16 mm	Glass	LED, RGB, white	Ethernet, RS 232	Completeness monitoring Dimension monitoring Presence monitoring Position determination	IP 65 IP 67	18 ... 30 V, DC
50116975	LSIS 412i M45-M1-01	16 mm	Plastic	LED, RGB, white	Ethernet, RS 232	Completeness monitoring Dimension monitoring Presence monitoring Position determination	IP 65 IP 67	18 ... 30 V, DC
50108990	LSIS 412i M45-W1	16 mm	Glass	LED, white	Ethernet, RS 232	Presence monitoring Dimension monitoring Position determination Completeness monitoring	IP 65 IP 67	18 ... 30 V, DC
50112929	LSIS 412i M45-W1-01	16 mm	Plastic	LED, white	Ethernet, RS 232	Presence monitoring Dimension monitoring Position determination Completeness monitoring	IP 65 IP 67	18 ... 30 V, DC
50117094	LSIS 412i M49-X9		Glass		Ethernet, RS 232	Completeness monitoring Dimension monitoring Presence monitoring Position determination	IP 65 IP 67	18 ... 30 V, DC
50121148	LSIS 412i M49-X9-01		Plastic		Ethernet, RS 232	Dimension monitoring Completeness monitoring Presence monitoring Position determination	IP 65 IP 67	18 ... 30 V, DC

With the LSIS 4xxi...X9, the focal length depends on the used lens

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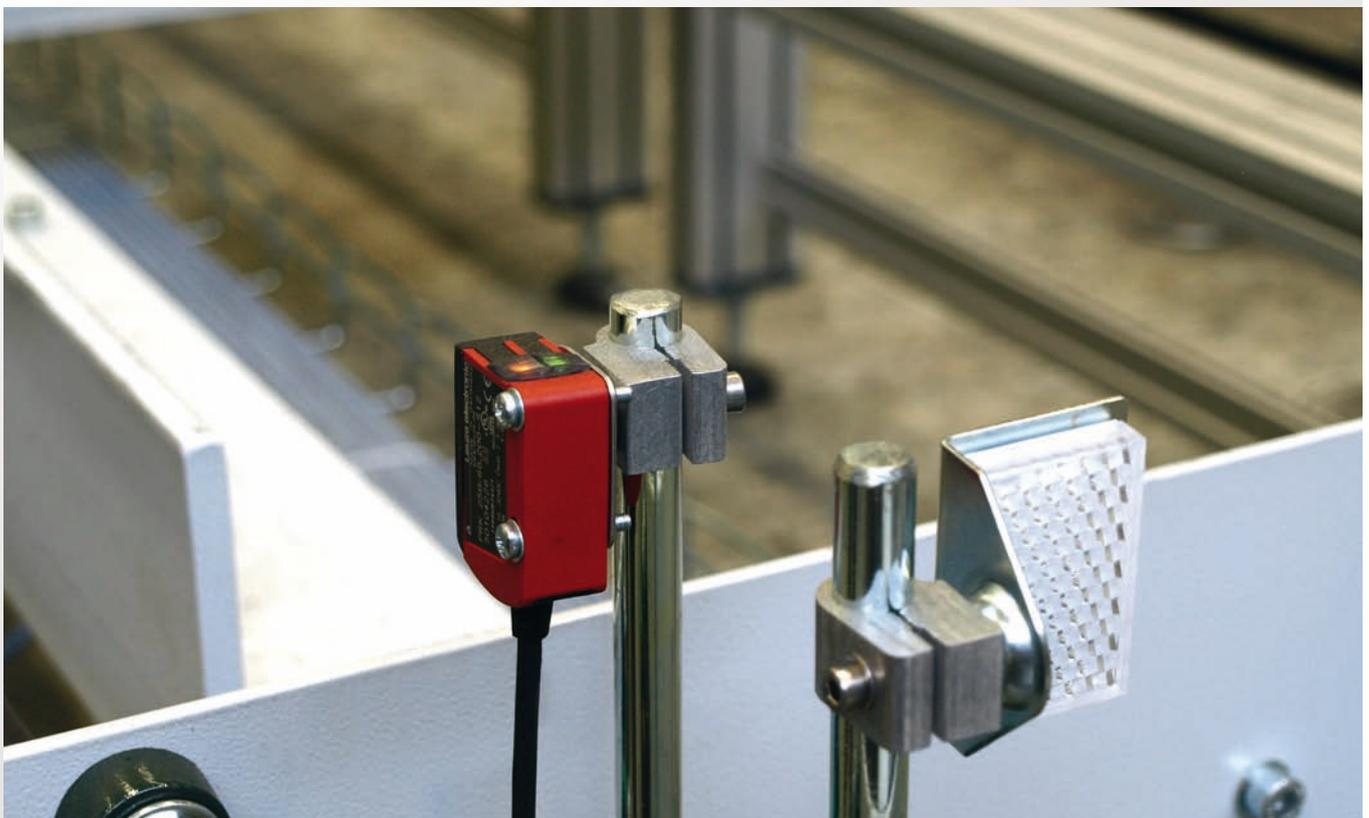
Accessories

Part no.	Part description	Focal length	Optics cover	Light source	Interface	Software functions	Degree of protection	Supply voltage
50116986	LSIS 462i M43-I1	8 mm	Glass	LED, infrared	Ethernet, RS 232	Position determination Presence monitoring Completeness monitoring Reading of 1D codes Dimension monitoring Reading of 2D codes Measuring tool	IP 65 IP 67	18 ... 30 V, DC
50116985	LSIS 462i M43-I1-01	8 mm	Plastic	LED, infrared	Ethernet, RS 232	Position determination Presence monitoring Completeness monitoring Reading of 1D codes Dimension monitoring Reading of 2D codes Measuring tool	IP 65 IP 67	18 ... 30 V, DC
50116988	LSIS 462i M43-M1	8 mm	Glass	LED, RGB, white	Ethernet, RS 232	Position determination Presence monitoring Completeness monitoring Reading of 1D codes Dimension monitoring Reading of 2D codes Measuring tool	IP 65 IP 67	18 ... 30 V, DC
50116987	LSIS 462i M43-M1-01	8 mm	Plastic	LED, RGB, white	Ethernet, RS 232	Position determination Presence monitoring Completeness monitoring Reading of 1D codes Dimension monitoring Reading of 2D codes Measuring tool	IP 65 IP 67	18 ... 30 V, DC
50113053	LSIS 462i M43-W1	8 mm	Glass	LED, white	Ethernet, RS 232	Presence monitoring Dimension monitoring Reading of 1D codes Reading of 2D codes Position determination Completeness monitoring Measuring tool	IP 65 IP 67	18 ... 30 V, DC
50113052	LSIS 462i M43-W1-01	8 mm	Plastic	LED, white	Ethernet, RS 232	Presence monitoring Dimension monitoring Reading of 1D codes Reading of 2D codes Position determination Completeness monitoring Measuring tool	IP 65 IP 67	18 ... 30 V, DC
50116990	LSIS 462i M45-I1	16 mm	Glass	LED, infrared	Ethernet, RS 232	Position determination Presence monitoring Completeness monitoring Reading of 1D codes Dimension monitoring Reading of 2D codes Measuring tool	IP 65 IP 67	18 ... 30 V, DC
50116989	LSIS 462i M45-I1-01	16 mm	Plastic	LED, infrared	Ethernet, RS 232	Position determination Presence monitoring Completeness monitoring Reading of 1D codes Dimension monitoring Reading of 2D codes Measuring tool	IP 65 IP 67	18 ... 30 V, DC
50116992	LSIS 462i M45-M1	16 mm	Glass	LED, RGB, white	Ethernet, RS 232	Position determination Presence monitoring Completeness monitoring Reading of 1D codes Dimension monitoring Reading of 2D codes Measuring tool	IP 65 IP 67	18 ... 30 V, DC
50116991	LSIS 462i M45-M1-01	16 mm	Plastic	LED, RGB, white	Ethernet, RS 232	Position determination Presence monitoring Completeness monitoring Reading of 1D codes Dimension monitoring Reading of 2D codes Measuring tool	IP 65 IP 67	18 ... 30 V, DC
50113051	LSIS 462i M45-W1	16 mm	Glass	LED, white	Ethernet, RS 232	Presence monitoring Dimension monitoring Reading of 1D codes Reading of 2D codes Position determination Completeness monitoring Measuring tool	IP 65 IP 67	18 ... 30 V, DC
50113037	LSIS 462i M45-W1-01	16 mm	Plastic	LED, white	Ethernet, RS 232	Presence monitoring Dimension monitoring Reading of 1D codes Reading of 2D codes Position determination Completeness monitoring Measuring tool	IP 65 IP 67	18 ... 30 V, DC
50117091	LSIS 462i M49-X9		Glass		Ethernet, RS 232	Position determination Presence monitoring Completeness monitoring Reading of 1D codes Dimension monitoring Reading of 2D codes Measuring tool	IP 65 IP 67	18 ... 30 V, DC

With the LSIS 4xxi...X9, the focal length depends on the used lens

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# / CONNECTION TECHNOLOGY

## YOUR CONNECTION TO THE WORLD

Sensors are only as good as the options for integrating them in your controls. For this reason, we offer you an extensive selection of accessories, including everything from the cables, to the plugs to the optional connection box. You can easily find the right parts for your application.



### /// Connection Cables



Part no.	Part description	Connection 1	Connection 2	No. of pins	Cable length	Interface	Sheathing material
50110557	K-D M8W-3P-2M-PUR	Connector, M8, angled, female	Open end	3	2,000 mm		PUR
50110555	K-D M8A-3P-2m-PUR	Connector, M8, axial, female	Open end	3	2,000 mm		PUR
50104539	K-D M12W-3P-2m-PVC	Connector, M12, angled, female	Open end	3	2,000 mm		PVC
50104538	K-D M12A-3P-2m-PVC	Connector, M12, axial, female	Open end	3	2,000 mm		PVC
50104561	K-D M12A-4P-2m-PUR	Connector, M12, axial, female	Open end	4	2,000 mm		PUR
50104530	K-D M8A-4P-2m-PUR	Connector, M8, axial, female	Open end	4	2,000 mm		PUR
50104548	K-D M12A-4P-2m-DP-PUR	Connector, M12, axial, female	Open end	4	2,000 mm		PUR
50104532	K-D M8A-4P-5m-PUR	Connector, M8, axial, female	Open end	4	5,000 mm		PUR
50104555	K-D M12A-5P-2m-PVC	Connector, M12, axial, female	Open end	5	2,000 mm		PVC
150717	CB-M12-2000-5GM	Connector, M12, axial, male	Open end	5	2,000 mm		PUR
50040757	KB 008-3000 A	Connector, M12, axial, female	Open end	5	3,000 mm		PUR
678055	CB-M12-5000E-5GF	Connector, M12, axial, female	Open end	5	5,000 mm		PUR
678050	CB-M12-5000E-5GM	Connector, M12, axial, male	Open end	5	5,000 mm		PUR
50110170	KB M12/8-1000-BA	Connector, M12, axial, female	Open end	8	1,000 mm		PUR
50110178	KB M12/8-1000-SA	Connector, M12, axial, male	Open end	8	1,000 mm		PUR
50104591	K-D M12A-8P-2m-PUR	Connector, M12, axial, female	Open end	8	2,000 mm		PUR
150704	CB-M12-3000-8WM	Connector, M12, angled, male	Open end	8	3,000 mm		PUR
678060	CB-M12-5000E-8GF	Connector, M12, axial, female	Open end	8	5,000 mm		PUR
429081	CB-M12-5000S-8GF	Connector, M12, axial, female	Open end	8	5,000 mm		PUR
429082	CB-M12-5000S-8WF	Connector, M12, angled, female	Open end	8	5,000 mm		PUR
50114693	KB DN/CAN-2000 SA	Connector, M12, axial, male	Open end	5	2,000 mm	DeviceNet CANopen	PUR
50114692	KB DN/CAN-2000 BA	Connector, M12, axial, female	Open end	5	2,000 mm	DeviceNet CANopen	PUR
50106739	KB ET-2000-SA	Connector, M12, axial, male	Open end	4	2,000 mm	Ethernet	PUR
50108595	KB IBS-2000-SA	Connector, M12, axial, male	Open end	5	2,000 mm	Interbus-S	PUR
50104181	KB PB-2000-BA	Connector, M12, axial, female	Open end	5	2,000 mm	PROFIBUS DP	PUR
50104188	KB PB-2000-SA	Connector, M12, axial, male	Open end	5	2,000 mm	PROFIBUS DP	PUR

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/// Interconnection Cables



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Part no.	Part description	Connection 1	Connection 1, no. of pins	Connection 2	Connection 2, no. of pins	Cable length	Interface	Sheathing material
150680	CB-M12-1500-3GF/GM	Connector, M12, axial, female	3	Connector, M12, axial, male	3	1,500 mm		PUR
50116738	K-DS M12A-M8A-4P-0.3m-PVC	Connector, M12, axial, female	4	Connector, M8, axial, male	4	300 mm		PVC
50107276	K-DS M8A-M12A-4P-0.3m-PVC	Connector, M8, axial, female	4	Connector, M12, axial, male	4	300 mm		PVC
50110126	K-DS M12A-M12A-4P-2m-PVC	Connector, M12, axial, female	4	Connector, M12, axial, male	4	2,000 mm		PVC
50118182	K-Y1 M12A-2m-M12A-S-PUR	Connector, M12, axial, female	5	Connector, M12, axial, male	5			PUR
548361	CB-M12-1000-5GF/GM	Connector, M12, axial, female	5	Connector, M12, axial, male	5	1,000 mm		PUR
678031	CB-M12-1000S-5GF/GM	Connector, M12, axial, female	5	Connector, M12, axial, male	5	1,000 mm		PUR
50040763	KB-008-1000 AA	Connector, M12, axial, female	5	Connector, M12, axial, male	5	1,000 mm		PUR
50115049	K-DS M12A-MA-5P-3m-S-PUR	Connector, M12, axial, female	5	JST ZHR, female		3,000 mm		PUR
50118185	K-YCN M12A-M12A-S-PUR	Connector, M12, axial, male	5	Connector, M12, axial, female	5		CANopen	PUR
50114694	KB DN/CAN-2000 SBA	Connector, M12, axial, male	5	Connector, M12, axial, female	5	2,000 mm	DeviceNet CANopen	PUR
50106899	KB ET-2000-SSA	Connector, M12, axial, male	4	Connector, M12, axial, male	4	2,000 mm	Ethernet	PUR
50109880	KB ET-2000-SA-RJ45	Connector, M12, axial, male	4	RJ45		2,000 mm	Ethernet	PUR
50104172	KB SSI/IBS-2000-BA	Connector, M12, axial, male	5	Connector		2,000 mm	SSI Interbus-S	PUR
50123265	K-YPB M12A-5m-M12A-S-PUR	Connector, M12, axial, male	5	Connector, M12, axial, female	5		PROFIBUS DP	PUR
50104097	KB PB-2000-SBA	Connector, M12, axial, male	5	Connector, M12, axial, female	5	2,000 mm	PROFIBUS DP	PUR
50114519	KB PS2-1 IT190x	PS/2, female		RJ41		3,000 mm	PS/2	PVC
50113397	KB JST-HS-300	Socket connector		Sub-D, axial, male	9	300 mm	RS 232	PUR
50120463	KB 301-3000-MA200	Socket connector		Socket connector		3,000 mm	RS 232	PVC
50113468	KB JST-M12A-8P-Y-3000	Socket connector		Connector, M12, axial, male	8	3,000 mm	RS 232	PUR
50113467	KB JST-M12A-5P-3000	Socket connector		Connector, M12, axial, female	5	3,000 mm	RS 232	PUR
50111225	KB JST-M12A-8P-3000	Socket connector		Connector, M12, axial, female	8	3,000 mm	RS 232	PUR
50114517	KB 232-1 IT190x	Sub-D, axial, female	9	RJ41		3,000 mm	RS 232	PVC
50035355	KB 031-3000	Sub-D, axial, female	15	JST ZHR		3,000 mm	RS 232 RS 485	
50114521	KB USB-1 IT190x	USB		RJ41		3,000 mm	USB	PVC
50111227	KB M12A-8P-USB-3000	Connector, M12, axial, female	8	USB		3,000 mm	USB	PUR

Switching Sensors

Measuring Sensors

Products for Safety at Work

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/// User-Configurable Connectors



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Data Transmission / Control Components

Part no.	Part description	Connection	No. of pins	Interface
50108991	D-ET1	RJ45		Ethernet
50104582	D M8A-3P-SK	Connector, M8, axial, female	3	
50112155	S-M12A-ET	Connector, M12, axial, male	4	Ethernet
50040155	KS 095-4A	Connector, M12, axial, male	4	
50031323	KD 095-4A	Connector, M12, axial, female	4	
50104583	D M8A-4P-SK	Connector, M8, axial, female	4	
50031324	KD 095-4	Connector, M12, angled, female	4	
50040097	KD 01-5-BA	Connector, M12, axial, female	5	
50020501	KD 095-5A	Connector, M12, axial, female	5	
50101943	KD 01-5-SR	Connector, M12, angled, male	5	
429175	CB-M12-5GF	Connector, M12, axial, female	5	

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Part no.	Part description	Connection	No. of pins	Interface
50038538	KD 02-5-BA	Connector, M12, axial, female	5	PROFIBUS DP MultiNet Plus
50020502	KD 095-5	Connector, M12, angled, female	5	
50038537	KD 02-5-SA	Connector, M12, axial, male	5	PROFIBUS DP MultiNet Plus
50114223	KS 095-5A	Connector, M12, axial, male	5	
50112156	KD 01-8-SA	Connector, M12, axial, male	8	
50112157	KD 01-8-BA	Connector, M12, axial, female	8	
429178	CB-M12-8GF	Connector, M12, axial, female	8	

Further connectors can be found on our website

### /// Terminal Boxes



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Part no.	Part description	Suitable for	Connection	Connections	Fastening	Supply voltage
520063	AC-SCM5-BT	MLD 500, MLD 300 multiple light beam safety devices	Cable with connector, M12, 500 mm	5	Mounting plate Slot mounting	24 V, DC, -20 ... 20%
520058	AC-SCM6	MLD 335, MLD 535 multiple light beam safety devices	Cable with connector, M12, 500 mm	7	Slot mounting Through-hole mounting	24 V, DC, -20 ... 20%
520038	AC-SCM8	MLC 500, MLC 300 safety light curtains	Cable with connector, M12, 500 mm	6	Through-hole mounting Slot mounting	24 V, DC, -20 ... 20%
50116463	MK 300	BCL 300i	Terminal	3		
50116465	MK 304	BCL 304i	Terminal	4		
50116466	MK 308	BCL 308i	Terminal	4		
50116467	MK 348	BCL 348i	Terminal	4		
50116468	MS 300	BCL 300i	Connector, M12	3		
50116470	MS 304	BCL 304i	Connector, M12	4		
50114823	MS 308	BCL 308i	Connector, M12	4		
50116471	MS 348	BCL 348i	Connector, M12	4		

### /// Base Stations



Part no.	Part description	Suitable for	Interface	Connection 1	Connection 2	Connection 3	Drop height
50115738	Access point f. IT	IT 1902 series mobile 2D-code readers IT 4820 series mobile 2D-code readers IT 3820 series mobile bar code readers	PS/2 USB RS 232	Bluetooth	RJ41		
50110672	Base Hx520	Hfxx series mobile RFID read/write systems		RJ41	Jack socket	Sub-D	
50120446	Base for HS 6578	HS 6578	PS/2	RJ41	Jack socket	Bluetooth	
50114492	Base for IT 1902	IT 1902 series mobile 2D-code readers	PS/2 RS 232 USB	RJ41	Jack socket	Bluetooth	
50122431	Base for IT 1911	IT 1911 series mobile 2D-code readers	PS/2 USB RS 232	RJ41	Jack socket	Bluetooth	1.2 m
50110663	ST 2020-5BE	IT 3820 series mobile bar code readers IT 4820 series mobile 2D-code readers	RS 232 USB PS/2	Jack socket	RJ41	Bluetooth	1 m

# / MOUNTING SYSTEMS

## OPTIMUM SUPPORT AT ALL TIMES

For sensor mounting, we offer a large selection of standard mounting materials to help you reliably mount and – if necessary – easily align the devices.



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### /// Mounting Brackets



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Identification

Part no.	Part description	Suitable for	Design	Fastening at device	Fastening at system	Material
429056	BT-2L	COMPACTplus safety light curtain SOLID-4, -2 safety light curtain MLD 500, MLD 300 multiple light beam safety devices Light curtains CML700 MLC 500, MLC 300 safety light curtains		Screw type	Through-hole mounting	Metal
50060511	BT 3	3B series sensors	Angle, L-shape	Screw type	Through-hole mounting	Metal
50040269	BT 25	25 series sensors 55 series sensors	Angle, L-shape	Screw type	Through-hole mounting	Metal
50105315	BT 46	46B series sensors	Angle, L-shape	Screw type	Through-hole mounting	Metal
50118542	BT 200M.5	3B series sensors 25B series sensors 5 series sensors 18 series sensors Sensors of the 28 series	Angle, L-shape	Screw type	Through-hole mounting	Stainless steel
50121433	BT 300 W	BCL 3xxi series bar code readers BCL 3xxi series bar code readers, deflection mirror	Angle, L-shape	Screw type	Through-hole mounting	Metal
50118543	BT 300M.5	8 series sensors 46B series sensors	Angle, L-shape	Screw type	Through-hole mounting	Stainless steel
50113549	BT D12M.5	212 series sensors	Angle, L-shape	Screw type	Through-hole mounting	Stainless steel

Data Transmission / Control Components

Industrial Image Processing

Accessories

### /// Rod Mounts



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Part no.	Part description	Suitable for	Design	Fastening at device	Fastening at system	Material
50121435	BT 56 - 1	BCL 3xxi series bar code readers BCL 5xxi series bar code readers LSIS 4xxi series stationary 2D-code readers BPS 3x series bar code positioning system		Clampable	For 12 mm rod For 14 mm rod For 16 mm rod	Metal
50121434	BT 300 - 1	BCL 3xxi series bar code readers BCL 3xxi series bar code readers, deflection mirror	Rod 12 mm	Screw type	For 12 mm rod For 14 mm rod For 16 mm rod	Metal
50117829	BTP 200M-D12	3B series sensors 25B series sensors 18 series sensors 5 series sensors	Protection hood	Screw type	For 12 mm rod	Metal
50117826	BTP 300M-D12	8 series sensors 46B series sensors	Protection hood	Screw type	For 12 mm rod	Metal
50117255	BTU 200M-D12	3B series sensors 25B series sensors 18 series sensors 5 series sensors 55 series sensors Sensors of the 28 series	Mounting system	Screw type	For 12 mm rod Sheet-metal mounting	Metal
50117252	BTU 300M-D12	8 series sensors 46B series sensors ODSL 9	Mounting system	Screw type	For 12 mm rod Sheet-metal mounting	Metal
50120425	BTU 300M.5-D12	46B series sensors 8 series sensors ODSL 9	Mounting system	Screw type	For 12 mm rod Sheet-metal mounting	Stainless steel
50122797	BTU 346M-D12	46B series sensors Reflector (M)TKS 30x50 Reflector TKS 50x50 3B series sensors 25B series sensors Reflector TKS 20x40	Rod 12 mm	Screw type	For 12 mm rod Sheet-metal mounting	Metal
50122798	BTU 346M.5-D12	46B series sensors Reflector (M)TKS 30x50 Reflector TKS 50x50 Reflector TKS 20x40	Rod 12 mm	Screw type	For 12 mm rod Sheet-metal mounting	Stainless steel
50119331	BTU 900M-D12	Reflector (M)TKS 30x50 Reflector TKS 50x50 Reflector (M)TKS 60x40	Mounting system	Screw type	For 12 mm rod Sheet-metal mounting	Metal
50117490	BTU D18M-D12	318 series sensors Sensors of the 28 series	Mounting system	Screw type	Through-hole mounting	Metal
430305	MMS-A-2N55	PRK retro-reflective photoelectric sensors HRT diffuse reflection light scanners	Mounting system	Slot mounting	Through-hole mounting	Metal

### /// Other Mounting Systems



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Part no.	Part description	Suitable for	Design	Fastening at device	Fastening at system	Material
429046	BT-2R1	MLC 500, MLC 300 safety light curtains		Clampable	Through-hole mounting	Metal
50111224	BT 59	BCL 3x series bar code readers BCL 5xxi series bar code readers BPS 3x series bar code positioning system LSIS 4xxi series stationary 2D-code readers		Clampable	Slot mounting	Metal
50117258	BT 318P-LS	318 series sensors	Mounting clamp	Clampable	Through-hole mounting	Plastic
50120444	BT Wallholder HS 65x8	HS 65x8 IT 1910 series mobile 2D-code readers IT 1911 series mobile 2D-code readers	Wall mounting	Insertable	Through-hole mounting	Plastic

# / DEVICE COLUMNS

## ROCK SOLID MOUNTING

With a range of designs and heights, our rugged device columns are also a very flexible option for mounting our safety light curtains and multiple light beam safety devices independent of your system. On the outside, the muting mounting systems can be easily extended to provide complete access guarding.



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Part no.	Part description	Height	Column height without foot	Mechanical reset function
549620	DC-900-S2	900 mm		No
549855	UDC-900-S2	960 mm	900 mm	Yes
549621	DC-1000-S2	1,000 mm		No
549856	UDC-1000-S2	1,060 mm	1,000 mm	Yes
549879	UDC-1140-S2	1,200 mm	1,140 mm	Yes
549622	DC-1300-S2	1,300 mm		No
549852	UDC-1300-S2	1,360 mm	1,300 mm	Yes
549623	DC-1600-S2	1,600 mm		No
549853	UDC-1600-S2	1,660 mm	1,600 mm	Yes
549624	DC-1900-S2	1,900 mm		No
549854	UDC-1900-S2	1,960 mm	1,900 mm	Yes
549625	DC-2500-S2	2,500 mm		No
549857	UDC-2500-S2	2,560 mm	2,500 mm	Yes

Included in delivery: mounting kit for floor assembly (UDC device columns only)

## SMARTER PRODUCT USABILITY

**BCL 500*i* / BCL 300*i***  
 Powerful bar code reader with integrated fieldbus networking capability and code reconstruction technology

**BPS 34**  
 Bar code positioning system with PROFIBUS interface for complex requirements

**CML 700*i***  
 Measuring light curtain with integrated fieldbus interfaces and evaluation unit

**AMS 300*i***  
 High-precision optical laser distance sensor AMS 300i with unique selection of integrated fieldbus interfaces

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# / DEFLECTING MIRRORS/ DEFLECTING MIRROR COLUMNS

## LETTING LIGHT SHINE – EVEN AROUND CORNERS

It is sometimes necessary, particularly for safety at work, to deflect sensor beams on account of structural circumstances. With our deflecting mirrors and columns, this can be performed conveniently and problem-free.



### /// Deflecting Mirror Columns / Continuous



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Part no.	Part description	Mirror length	Height	Mechanical reset function
549780	UMC-1000-S2	970 mm	1,060 mm	Yes
549781	UMC-1300-S2	1,270 mm	1,360 mm	Yes
549782	UMC-1600-S2	1,570 mm	1,660 mm	Yes
549783	UMC-1900-S2	1,870 mm	1,960 mm	Yes

Included in delivery: mounting kit for floor assembly

### /// Deflecting Mirror Columns / Individual Mirrors

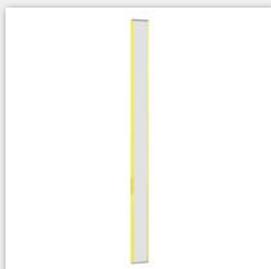


Direct access to the online product selector at  
[www.leuze.com/en/deflecting-mirror](http://www.leuze.com/en/deflecting-mirror)

Part no.	Part description	Column height without foot	Height	Number of individual mirrors	Center-to-center spacing of individual mirrors
549790	UMC-902-S2	900 mm	960 mm	2	500 mm
549791	UMC-1002-S2	1,000 mm	1,060 mm	2	500 mm
549797	UMC-1143-S2	1,140 mm	1,200 mm	3	400 mm
549792	UMC-1303-S2	1,300 mm	1,360 mm	3	400 mm
549793	UMC-1304-S2	1,300 mm	1,360 mm	4	300 mm
549796	UMC-1603-S2	1,600 mm	1,660 mm	3	400 mm

Included in delivery: mounting kit for floor assembly

**/// Deflecting Mirrors / Continuous**



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Part no.	Part description	Mirror length	Protected field height up to
529601	UM60-150	210 mm	150 mm
529602	UM60-225	285 mm	225 mm
529603	UM60-300	360 mm	300 mm
529604	UM60-450	510 mm	450 mm
529606	UM60-600	660 mm	600 mm
529607	UM60-750	810 mm	750 mm
529609	UM60-900	960 mm	900 mm
529610	UM60-1050	1,110 mm	1,050 mm
529612	UM60-1200	1,260 mm	1,200 mm
529613	UM60-1350	1,410 mm	1,350 mm
529615	UM60-1500	1,560 mm	1,500 mm
529616	UM60-1650	1,710 mm	1,650 mm
529618	UM60-1800	1,860 mm	1,800 mm

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**/// Deflecting Mirrors / Individual Mirrors**



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Part no.	Part description	Type of fastening
50023174	US 2.2	Through-hole mounting
50104479	US AMS 01	Through-hole mounting
50017434	US 2	Through-hole mounting
50019628	US 2.1	Through-hole mounting
50000670	US 1	Through-hole mounting
50080987	US 18	Screw type
50080130	US 418.1	Screw type
50080131	US 418.2	Screw type
50080863	US 29	Screw type
50035630	US 1 OMS	Screw type
50124510	US18B	Screw type

Identification

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# / PROTECTIVE SCREENS

## PROTECTION FOR YOUR SENSORS

Protective screens used together with appropriate housings or device columns guarantee the reliable protection of light curtains, e. g., against scratching and welding sparks.



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Part no.	Part description	Height	Protective field height	Protective screen material	Suitable for
426185	PSC-900-S2	820 mm		PMMA, gray	UDC-S2, DC-S2 device columns
426186	PSC-1000-S2	980 mm		PMMA, gray	UDC-S2, DC-S2 device columns
426187	PSC-1300-S2	1,280 mm		PMMA, gray	UDC-S2, DC-S2 device columns
426188	PSC-1600-S2	1,580 mm		PMMA, gray	UDC-S2, DC-S2 device columns
426189	PSC-1900-S2	1,880 mm		PMMA, gray	UDC-S2, DC-S2 device columns
426190	PSC-2500-S2	2,480 mm		PMMA, gray	UDC-S2, DC-S2 device columns
347070	MLC-PS150	148 mm	150 mm	PMMA, clear	MLC 500, MLC 300 safety light curtains
347071	MLC-PS225	223 mm	225 mm	PMMA, clear	MLC 500, MLC 300 safety light curtains
347072	MLC-PS300	298 mm	300 mm	PMMA, clear	MLC 500, MLC 300 safety light curtains
347073	MLC-PS450	448 mm	450 mm	PMMA, clear	MLC 500, MLC 300 safety light curtains
347074	MLC-PS600	598 mm	600 mm	PMMA, clear	MLC 500, MLC 300 safety light curtains
347075	MLC-PS750	748 mm	750 mm	PMMA, clear	MLC 500, MLC 300 safety light curtains
347076	MLC-PS900	898 mm	900 mm	PMMA, clear	MLC 500, MLC 300 safety light curtains
347077	MLC-PS1050	1,048 mm	1,050 mm	PMMA, clear	MLC 500, MLC 300 safety light curtains
347078	MLC-PS1200	1,198 mm	1,200 mm	PMMA, clear	MLC 500, MLC 300 safety light curtains
347079	MLC-PS1350	1,348 mm	1,350 mm	PMMA, clear	MLC 500, MLC 300 safety light curtains
347080	MLC-PS1500	1,498 mm	1,500 mm	PMMA, clear	MLC 500, MLC 300 safety light curtains
347081	MLC-PS1650	1648 mm	1,650 mm	PMMA, clear	MLC 500, MLC 300 safety light curtains
347082	MLC-PS1800	1,798 mm	1,800 mm	PMMA, clear	MLC 500, MLC 300 safety light curtains

Note: If protective screens are used, the range of the safety sensor is reduced by approx. 10 % per screen!

# / REFLECTORS AND REFLECTIVE TAPES

## REFLECTORS TO RETURN THE LIGHT

Sensors that operate according to the reflection principle need high-quality reflectors in order to function. The reflector quality directly influences the reliability of the sensor solution. We offer reflectors for all conceivable applications and environmental conditions to ensure an optimum detection result at all times.



Switching Sensors

Measuring Sensors

### /// Standard Reflectors



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Products for Safety at Work

Identification

Part no.	Part description	Design	Reflective surface	Fastening	Material
50041471	TK 20.1	Round	17 mm	Adhesive	Plastic
50024127	TK 82.2	Round	79 mm	Through-hole mounting Adhesive	Plastic
50003192	TK 100x100	Rectangular	96 mm × 96 mm	Supplied mounting bracket Adhesive	Plastic
50117584	TKS 20x20	Rectangular	18 mm × 20 mm	Through-hole mounting Adhesive	Plastic
50040820	TKS 40X60	Rectangular	56 mm × 37 mm	Through-hole mounting Adhesive	Plastic
50022814	TKS 50X50	Rectangular	48 mm × 47 mm	Through-hole mounting Adhesive	Plastic

Dimensional tolerances for all specified dimensions: ± 0.2 mm

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Industrial Image Processing

Accessories

### /// Micro-Triad-Type Reflectors

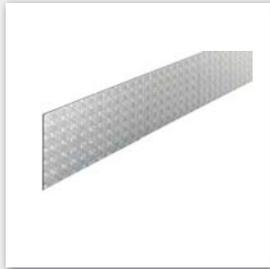


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Part no.	Part description	Design	Reflective surface	Fastening	Material
50040894	MTKS 20x30	Rectangular	29 mm × 19 mm	Through-hole mounting Adhesive	Plastic
50104132	MTKS 30x50.1	Rectangular	44 mm × 27 mm	Through-hole mounting Adhesive	Plastic
50117583	MTKS 50x50.1	Rectangular	50 mm × 50 mm	Through-hole mounting Adhesive	Plastic
50114185	REF 6-S-20x40	Rectangular	38 mm × 16 mm	Screw type	Plastic

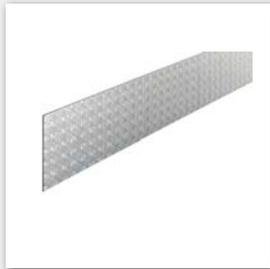
Dimensional tolerances for all specified dimensions: ± 0.2 mm

### /// Reflective Tapes for Standard Applications



Part no.	Part description	Design	Reflective surface	Fastening	Material
50106119	Reflective tape no.4 100x100	Rectangular	100 mm × 100 mm	Adhesive	Plastic
50108300	Reflective tape no.4 50x50	Rectangular	50 mm × 50 mm	Adhesive	Plastic

### /// Reflective Tapes for Laser and Clear-Glass Applications



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Part no.	Part description	Design	Reflective surface	Fastening	Material
50123899	REF 6-A-9x9	Rectangular	9 mm × 9 mm	Adhesive	Plastic
50123861	REF 6-A-14x45	Rectangular	45 mm × 14 mm	Adhesive	Plastic
50111829	REF 6-A-77x77	Rectangular	77 mm × 77 mm	Adhesive	Plastic
50110192	Reflective tape no.6 50x50	Rectangular	50 mm × 50 mm	Adhesive	Plastic

Further reflective tapes can be found on our website

# / ALIGNMENT AIDS

## KEEPING SIGHT OF THE TARGET

Sensor alignment is generally very unproblematic and can even easily be performed without additional tools. For some devices and application cases, it can still sometimes be helpful to make use of one of our alignment aids.



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Part no.	Part description	Light source	Housing material
50109545	SAT 5		Metal
520024	LA-78M-UDC	Laser, red	Metal
50023547	ARH 2	Laser, red	Metal
520023	LA-78M	Laser, red	Metal
50080502	ARH 96	Laser, red	Metal
560020	LA-78U	Laser, red	Metal
549000	LA-78	Laser, red	Metal
50080537	ARH 10	Laser, red	Metal
520004	LA-78UDC	Laser, red	Metal
50040739	ARH 46	Laser, red	Metal

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# / BAR CODE TAPES

## BAR FOR BAR, FOR MORE PRECISION

Bar code positioning systems use bar code tapes to determine positions with millimeter accuracy. For our systems, we offer tapes in standard lengths from 30 mm to 200 m. In addition, special lengths of up to 10 km are possible. The self-adhesive plastic tape is UV resistant, extremely resilient and mechanically durable.



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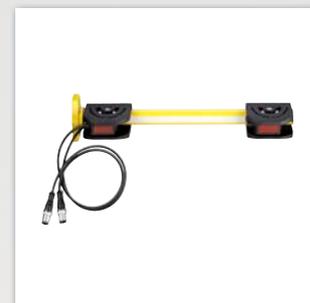
Part no.	Part description	Suitable for	Dimensions	Grid dimension
50040041	BCB 010	BPS 3x series bar code positioning system Bar code positioning system, BPS 300i series	47 mm × 10,000 mm	40 mm
50038894	BCB 050	BPS 3x series bar code positioning system Bar code positioning system, BPS 300i series	47 mm × 50,000 mm	40 mm
50104792	BCB 8 010	BPS 8 series bar code positioning system Bar code positioning system, BPS 300i series	47 mm × 10,000 mm	30 mm
50104803	BCB 8 120	BPS 8 series bar code positioning system Bar code positioning system, BPS 300i series	47 mm × 120,000 mm	30 mm

Further bar code tapes can be found on our website

# / MUTING MOUNTING SYSTEMS

## SAFETY RIGHT OFF THE SHELF

These ready-made muting systems simplify the setup of professional workplace safeguarding systems. Various packages and extensive accessories allow these packages to be used in a variety of applications.



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Part no.	Part description	Operating range	Number of muting sensors	Type of muting sensors	Cable length of muting sensors	Number of reflectors	Muting type
426506	Set-AC-MTX.2-1S	0 ... 8 m	1	PRK 25B retro-reflective photoelectric sensors	2,000 mm	1	
426491	Set-AC-ML-2SB	0 ... 4 m	2	Retro-reflective photoelectric sensors PRK 3B	300 mm	2	Sequence controlled 2-sensor muting
426494	Set-AC-MT-2S	0 ... 4 m	2	Retro-reflective photoelectric sensors PRK 3B	300 mm	2	Timing controlled 2-sensor muting
426490	Set-AC-ML-2SA	0 ... 4 m	2	Retro-reflective photoelectric sensors PRK 3B	300 mm	2	Sequence controlled 2-sensor muting
426521	Set-AC-MLX-2SB	0 ... 8 m	2	PRK 25B retro-reflective photoelectric sensors	300 mm	2	Sequence controlled 2-sensor muting
426524	Set-AC-MTX-2S	0 ... 8 m	2	PRK 25B retro-reflective photoelectric sensors	300 mm	2	Timing controlled 2-sensor muting
426520	Set-AC-MLX-2SA	0 ... 8 m	2	PRK 25B retro-reflective photoelectric sensors	2,000 mm	2	Sequence controlled 2-sensor muting
426527	Set-AC-MLX-2SB	0 ... 8 m	2	PRK 25B retro-reflective photoelectric sensors	2,000 mm	2	Sequence controlled 2-sensor muting
426529	Set-AC-MTX-2-2S	0 ... 8 m	2	PRK 25B retro-reflective photoelectric sensors	2,000 mm	2	Timing controlled 2-sensor muting
426492	Set-AC-MT-4S	0 ... 4 m	4	Retro-reflective photoelectric sensors PRK 3B	300 mm	4	Timing controlled 4-sensor muting
426522	Set-AC-MTX-4S	0 ... 8 m	4	PRK 25B retro-reflective photoelectric sensors	300 mm	4	Timing controlled 4-sensor muting
426528	Set-AC-MTX.2-4S	0 ... 8 m	4	PRK 25B retro-reflective photoelectric sensors	2,000 mm	4	Timing controlled 4-sensor muting

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# / MUTING INDICATORS

## SEEING SAFETY

A wide range of indicators for displaying possible dangers is what makes a safety-at-work system complete.

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Part no.	Part description	Illuminant	Type of fastening	Degree of protection	Certifications
660600	MS70/2	Incandescent lamp BA15d/24 V, clear	Through-hole mounting at side	IP 65	CE UL CSA
660610	MS70/LED	LED/24 V, yellow	Through-hole mounting	IP 65	CE UL CSA
660611	MS70/LED-M12-2000-4GM	LED/24 V, yellow	Through-hole mounting at side	IP 65	CSA CE UL
548000	MS851	Incandescent lamp E14, 4 W/24 V, clear	Through-hole mounting at side	IP 54	CE UL CSA

# GLOSSARY

<b>abeam</b>	Calibrated optics system (precise beam alignment max. $\pm 0.25^\circ$ spread) eliminates complicated alignment of the sensor after mounting.
<b>ALC</b>	Automatic switching-threshold correction for maximum performance reserve
<b>Alignment mode</b>	A command can be used to activate the bar code reader to read and output the decoding capability on the interface
<b>AOPD</b>	<b>Active Optoelectronic Protective Device</b>
<b>AOPDDR</b>	<b>Active Optoelectronic Protective Device responsive to Diffuse Reflection</b>
<b>AS-Interface Safety at Work</b>	For economical, complete solutions including sensor and safety monitor
<b>AutoReflAct (reflector polling)</b>	A stationary bar code reader with this function facilitates control of the reading gate without an external, triggering photoelectric sensor
<b>availabilitycontrol</b>	Function which outputs a warning message even before contamination-related failure of a sensor occurs
<b>A<sup>2</sup>LS</b>	<b>Active Ambient Light Suppression</b> for reliable detection
<b>Blanking</b>	A function with which one or more areas of the protective field of an ESPE is/ are made ineffective so that work pieces in the ESPE's protective field do not cause the protective device to switch off. Blanking can be stationary or floating
<b>brightvision®</b>	Simplifies the handling and commissioning of sensors by means of a bright, highly visible light spot
<b>CDRH</b>	Laser products which are imported into the USA are to be specified by the manufacturer to the CDRH (Center for Devices and Radiological Health), a branch of the FDA
<b>Contactor monitoring (EDM)</b>	The contactor monitoring monitors the NC contacts of downstream positive-guided contactors and relays.
<b>Cycle time</b>	Sum of the response times of all beams of a light curtain plus the internal evaluation
<b>CE</b>	The CE certification certifies conformity with the applicable guideline(s)
<b>CRT</b>	Code reconstruction technology (CRT) – enables reliable detection, even with soiled or damaged codes
	Products with this certification have been tested by Underwriters Laboratory Inc. (UL) in compliance with the relevant regulations for USA and Canada
	Products with this certification have been tested by the Canadian Standards Association (CSA) in compliance with the relevant regulations for Canada
	Products with this certification are components tested by Underwriters Laboratory Inc. (UL) and comply with the relevant regulations for USA and Canada.
<b>Dark switching</b>	With dark switching optical sensors, the transistor is disabled if the light path is free and switched through if the light path is interrupted

<b>easyhandling</b>	Sophisticated fastening concepts enable simple and robust mounting of the devices. Should replacement be necessary, the devices can be exchanged position-neutral, i. e., without realigning.
<b>ECOLAB+</b>	Under the ECOLAB+ designation, the products are subjected to an entire series of additional aggressive cleaning agents at temperatures of 50 °C before being forced to demonstrate their leak-proofness under the mechanical load of a steam-jet cleaner
<b>EDM</b>	<b>External Device Monitoring</b>
<b>ESPE</b>	<b>E</b> lectro- <b>S</b> ensitive <b>P</b> rotective <b>E</b> quipment (ESPE) offers protection by telling the machine to move into a safe operating state before a person can get into a dangerous situation
<b>ESPE</b>	Electro Sensitive Protective Equipment (German: BWS)
<b>Fieldbus gateways</b>	For field use for connection of bar code readers and identification systems
<b>Light switching</b>	With light switching optical sensors, the transistor is switched through if the light path is free and disabled if the light path is interrupted
<b>HI</b>	LPS HI – High resolution versions (HI) with laser line 60 ... 170 mm
<b>HYGIENE design</b>	For the pharmaceutical test, the 53 series sensors are tested against H <sup>2</sup> O <sup>2</sup> and 70 % alcohol to ensure that they satisfy these special requirements as well
<b>integratedconnectivity</b>	The devices can be integrated problem-free in all common fieldbus systems and configured directly via the control
<b>integratedlaseralignment</b>	Convenient alignment function for large distances
<b>Interfaces</b>	Variety of interfaces for the common industrial interface systems – among others, PROFIBUS, PROFINET, EtherNet TCP/IP and INTERBUS
<b>IO-Link</b>	Standardized interface for the lowest field level for quick and convenient configuration and inspection of sensors directly via the control
	In order to make the protection of housings against foreign objects and water comparable, the degrees of protection have been defined in DIN 40050
<b>Machine Safety Services</b>	Our “machine safety” service package
<b>Muting</b>	Temporary safety-related automatic suspension of the ESPE's protective function during the material transport through the ESPE (see also IEC TS 62046)
<b>Muting override</b>	Manual activation of the muting function by actuating a command device. Moving material out of the muting area (at least one muting sensor must be activated for this, see also IEC TS 62046)
<b>NPN transistor output</b>	The NPN transistor output is a high-impedance switching output. It switches GND to the connected load
<b>omnimount</b>	Integrated mounting and alignment concept without additional components
<b>Operating range</b>	Distance between transmitter and receiver, and with reflex systems between sensor and reflector (with Light Curtains also called protective field width)
<b>Operating range</b>	The range recommended for typical installation situations for a sensor with corresponding performance reserve
<b>Operating range limit</b>	Describes the maximum possible range of the sensor
<b>Operating range Sa (inductive switches)</b>	Also assured operating distance. Value that is guaranteed under all specified operating conditions.
<b>OSSD</b>	<b>O</b> utput <b>S</b> ignal <b>S</b> witching <b>D</b> evice

<b>PNP transistor outputs</b>	The PNP transistor output is a high-impedance switching output. It switches positive potential to the connected load
<b>Point to Point multiNet Slave</b>	For easy wiring and configuration
<b>Readiness delay</b>	The delay before start-up suppresses sensor operation until all device-internal preparations have been concluded
<b>Reproducibility</b>	The deviation in measurement distance in the case of repeated measurement using an identical object under identical environmental conditions
<b>Response time</b>	Time between penetration/entry into the active protective field and the actual switching off of the OSSDs. Time from entry of an object into the light path to switching of the output.
<b>RES</b>	Start/restart interlock, prevents the automatic restarting of the machine after addressing a safety sensor, after switching on the supply voltage or changing the machine's operating or actuation mode
<b>Performance reserve</b>	Receivers of optical sensors require a minimum amount of light to be able to switch (switching threshold). All light over and above this minimum amount is designated as "performance reserve"
<b>potentially explosive area</b>	Potentially explosive environments
<b>Protective field</b>	The area in which the defined test object is detected by the ESPE
<b>Protective field height</b>	Height of the active protective field with safety light curtains
<b>Sensitivity adjustment</b>	The electrical gain is adjusted using an operational control, e. g. potentiometer or teach button. This adapts the performance reserve to the application
<b>slimline-design</b>	Slimline-design of an optical forked sensor for installation directly on the dispensing edge
<b>System integration</b>	Clever and simple with protective sensor sets
<b>Teach-in</b>	For optimum sensitivity adjustment
<b>thinkmodular</b>	Freely selectable range of functions
<b>Tracking</b>	Automatic contamination compensation (tracking function). It compensates the gradual fouling of the sensor, determines the current reception level and compares this with the initial reference value
<b>Typ. operating range limit</b>	Maximum possible operating range of a sensor. If the sensor is used at this operating range limit, the sensor functions without performance reserve
<b>Typ. operating range limit Sn (inductive switches)</b>	Also: "rated switching distance". The switching distance for which a sensor is configured
<b>User guidance</b>	User guidance is used to configure detection of highly transparent objects reliably without an object
<b>WASH-DOWN design</b>	For the pharmaceutical test, the Series 53 sensors are tested against H <sub>2</sub> O <sub>2</sub> and 70 % alcohol to ensure that they satisfy these special requirements as well
<b>webConfig</b>	Browser-based software solution for convenient, computer-independent sensor configuration via Ethernet