Plastic fiber-optic sensors

Our plastic fiber optic sensors are used wherever small objects must be detected and mounting space is limited. Through a range of modular fiber optics and accessories, they can be adapted to the respective application. For tophat rail mounting, the fiber-optic amplifiers can be arranged in series as desired.

OLV-K AMPLIFIER

di-soric fiber optic amplifiers can be easily operated and simultaneously offer maximum control. The very high-performance and efficient amplifiers stand out for their very long ranges, time functions and simple operation. Alternatively, amplifiers with two digital LED displays or potentiometers are available.

Technical data (typ.)	+20 °C, 24 V DC	
	OLVK 61 …	**OLK 71 …**
Emitted light	Red light, clocked	Red light, clocked
Switching output	Transistor, 200 mA, NO/NC, switchable	100 mA, NO/NC, programmable
Ambient temperature	-25 to +55 °C	-10 to +55 °C
Protection type	IP 64	IP 54
Housing material	PBTP (Crastin)	ABS / PC

CE

	Housing design Size (mm)	Sensitivity adjustment by means of	Service voltage (V)	Activation time (ms)	Polarity	Digital LED display	Switching hysteresis (%)	Temperature drift (%/K)	No-load current (mA)	Plug connector	Connection cable (optionally available)	Product description
OLV-K amplifiers for glass fiber optic cables												
	60 x 31 x 10	Potenti-ometer	10 to 30	0.33	pnp		10	0.2	15	M8	TK …	OLVK 61 P3K-TSSL/3
					pnp		10	0.2			TK … /4	OLVK 61 P3FK-TSSL
	69 x 33 x 10.5	Teach	12 to 24	0.25 to 1.25	pnp	■			40	M8	TK … /4	OLK 71 P3-T4
					npn	■						OLK 71 N3-T4
	69 x 33 x 10.5	Teach	12 to 24	0.25 to 1.25	pnp	■			40		Cable 2.0 m	OLK 71 P3-3
					npn	■						OLK 71 N3-3

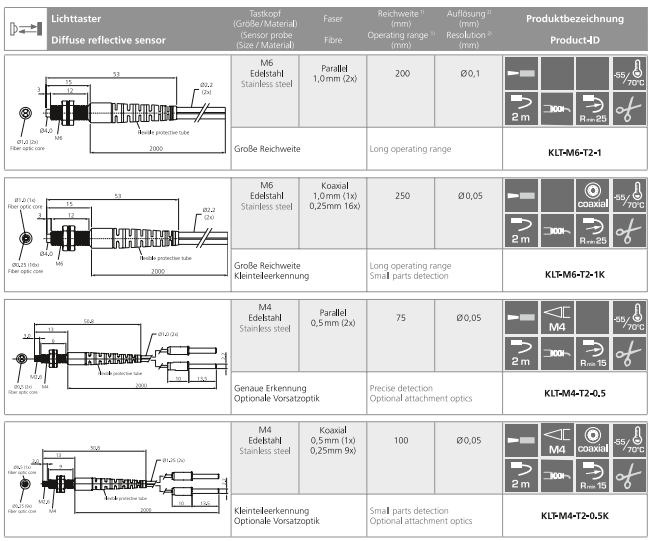
Operating distance specifications for plastic fiber-optic cables

The maximum operating distance specification for fiber-optic cables refers to measurements using the reference amplifier OLK 71 … with a light intensity of 200% and a standard target of 100 x 100 mm, white. When using another amplifier or a different amplifier setting, determine the expected range based on the calculation factor.

Fiber-optic amplifier	Calculation factor compared to the reference amplifier OLK 71 … [1] (typ.)
OLK 71 … [1]	**100 %**
OLVK 61 P3K-TSSL/3	100 %
OLVK 61 P3FK-TSSL	100 %

Light intensity	Range factor [1]	Activation time
200 %	100 %	1.25 ms
100 %	75 %	0.63 ms
50 %	70 %	0.42 ms
25 %	40 %	0.31 ms
12 %	25 %	0.25 ms

[1] OLK71 … with light intensity 12 to 200%



KL PLASTIC FIBER-OPTICS

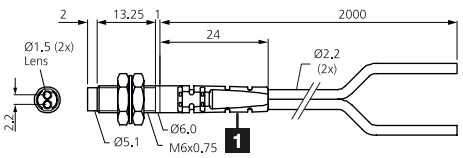
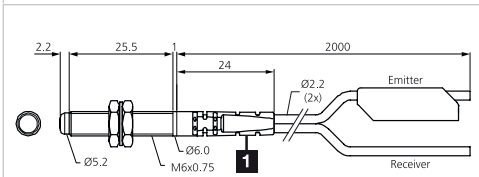
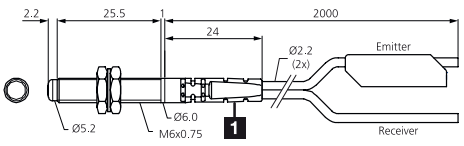
di-soric offers a wide range of fiber optic products with accessories. The portfolio includes, among others, sensor probes made of stainless steel with bend protection, sensor probes with light bands for range monitoring and fiber optics for detection of the smallest parts.

Technical data (typ.)	+20 °C, 24 V DC
For more information, visit	www.di-soric.com

CE

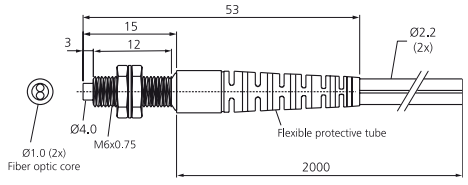
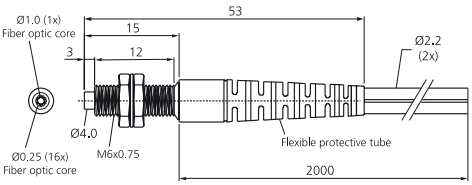
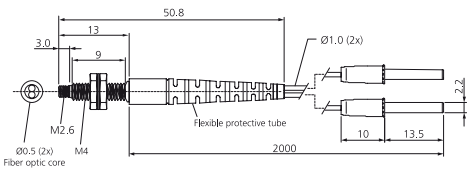
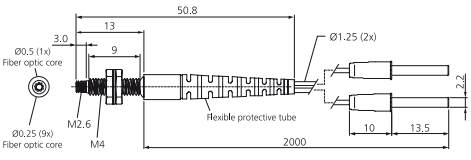
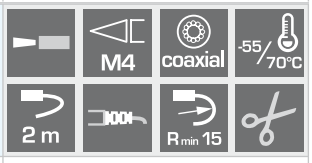
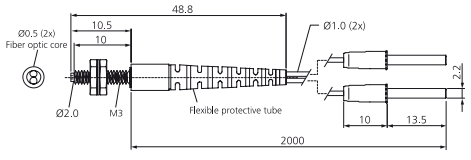
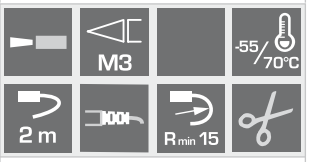
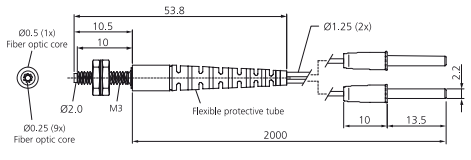
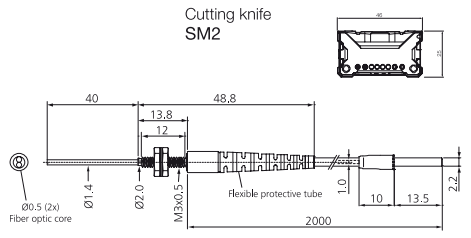
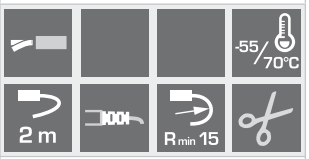
Order information

Axial light aperture	Optional attachment optics	Minimum permitted bending radius of the fiber-optic cable
Radial light aperture	Coaxial fiber arrangement	Fiber-optic cable can be cut to size, cutting knife included
Flexible sensor probe	Ambient temperature	Fiber-optic cable cannot be cut to size
Area detection	Length of the fiber-optic cable	Integrated optics
Fixed-focus detection	Cable grommet	

	Sensor probe (size / material)	Fiber	Operating distance (mm)	Resolution (mm)	Product description
KL plastic fiber-optic cable light sensor					
	M6 Stainless steel	Parallel 0.5 mm (2x)	400 [1]	Ø0,3 [2]	
Integrated optics for a narrow light beam Long range					**KLT-M6-T2-1.5NB**
	M6 Stainless steel	Parallel 0.5 mm (2x)	20 [1]	Ø0,05 [2]	
Integrated optics for focusing Small parts detection					**KLT-M6-T2-0.5-L20**
	M6 Stainless steel	Parallel 0.5 mm (2x)	35 [1]	Ø0,1 [2]	
Integrated optics for focusing Small parts detection					**KLT-M6-T2-0.5-L35**

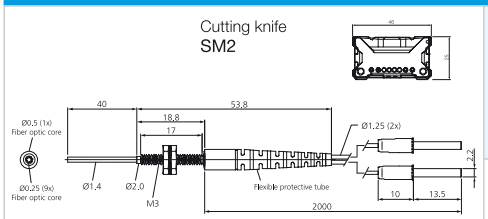
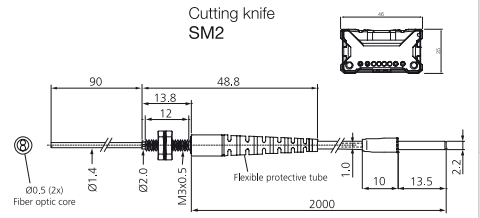
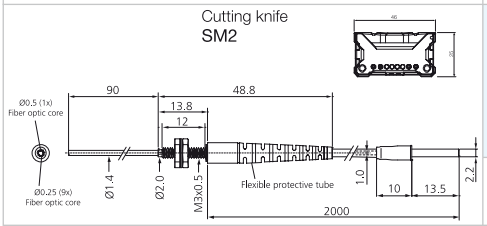
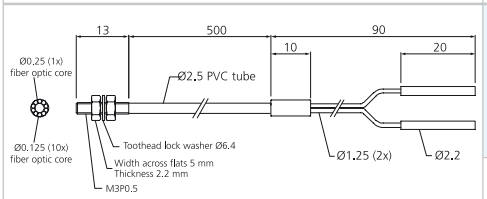
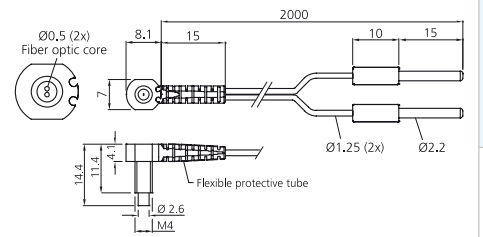
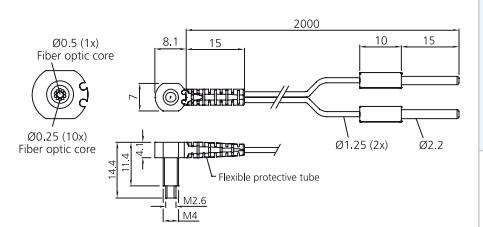
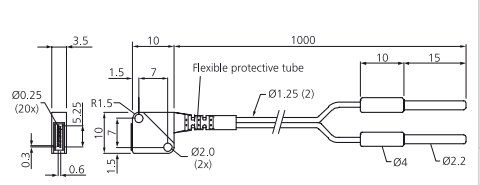
1 Cable protective casing

[1] Maximum values (typ.) for a standard target 100 x 100 mm, white.
[2] Resolution (typ.) for optimal settings and measuring distances (sensor approx. 5 mm, one-way: approx. 100 mm).

	Sensor probe (size / material)	Fiber	Operating distance (mm)	Resolution (mm)	Product description
KL plastic fiber-optic cable light sensor					
	M6 Stainless steel	Parallel 1.0 mm (2x)	200 [1]	Ø0,1 [2]	
Large operating distance					**KLT-M6-T2-1**
	M6 Stainless steel	Coaxial 1.0 mm (1x) 0.25 mm (16x)	250 [1]	Ø0,05 [2]	
Large operating distance Small parts detection					**KLT-M6-T2-1K**
	M4 Stainless steel	Parallel 0.5 mm (2x)	75 [1]	Ø0,05 [2]	
Accurate detection Optional attachment optics					**KLT-M4-T2-0.5**
	M4 Stainless steel	Coaxial 0.5 mm (1x) 0.25 mm (9x)	100 [1]	Ø0,05 [2]	
Small parts detection Optional attachment optics					**KLT-M4-T2-0.5K**
	M3 Stainless steel	Parallel 0.5 mm (2x)	75 [1]	Ø0,05 [2]	
Accurate detection Optional attachment optics					**KLT-M3-T2-0.5**
	M3 Stainless steel	Coaxial 0.5 mm (1x) 0.25 mm (9x)	100 [1]	Ø0,05 [2]	
Small parts detection Optional attachment optics					**KLT-M3-T2-0.5K**
	M3 / Ø1.4 Stainless steel	Parallel 0.5 mm (2x)	75 [1]	Ø0,1 [2]	
Flexible sensor probe / R min. > 10 mm Accurate detection					**KLT-M3-B40-T2-0.5**

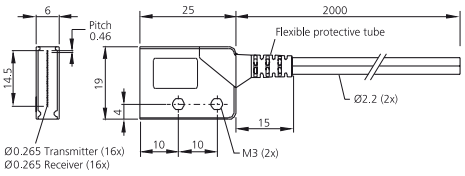
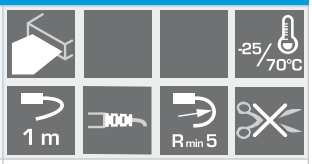
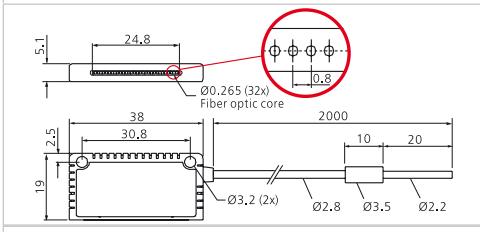
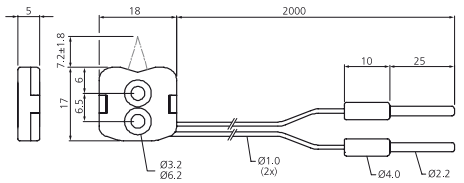
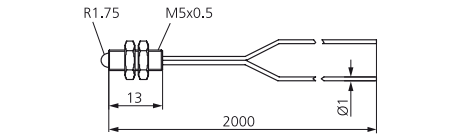
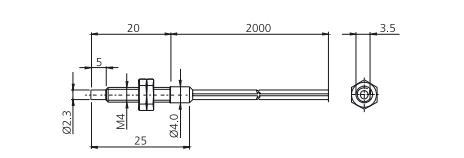
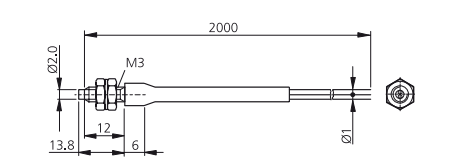
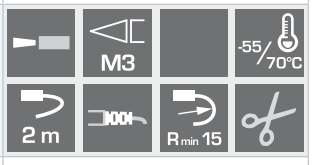
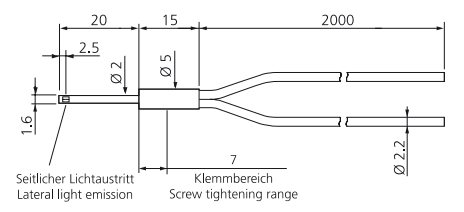
[1] Maximum values (typ.) for a standard target 100 x 100 mm, white.

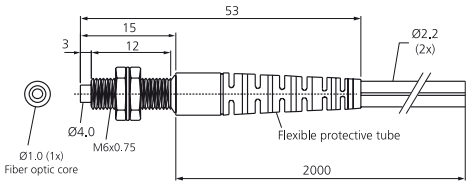
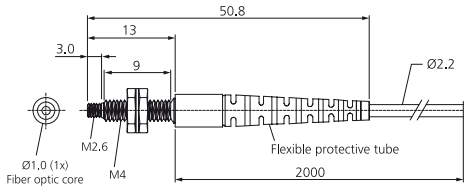
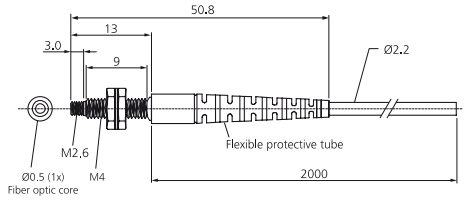
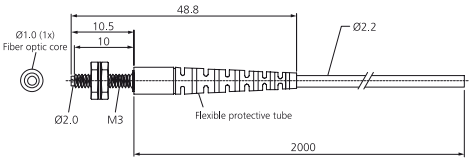
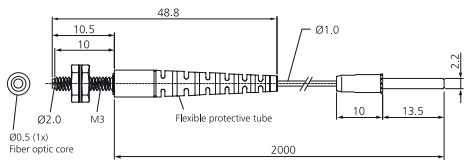
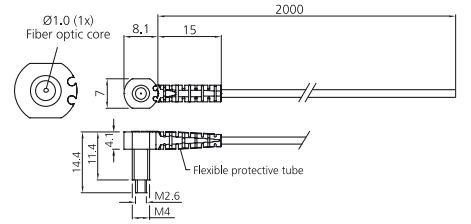
[2] Resolution (typ.) for optimal settings and measuring distances (sensor approx. 5 mm, one-way: approx. 100 mm).

	Sensor probe (size / material)	Fiber	Operating distance (mm)	Resolution (mm)	Product description
KL plastic fiber-optic cable light sensor					
	M3 / Ø1.4 Stainless steel	Coaxial 0.5 mm (1x) 0.25 mm (9x)	100 [1]	Ø0,05 [2]	
Flexible sensor probe / R min. > 10 mm Small parts detection					**KLT-M3-B40-T2-0.5K**
	M3 / Ø1.4 Stainless steel	Parallel 0.5 mm (1x)	75 [1]	Ø0,1 [2]	
Flexible sensor probe / R min. > 10 mm Accurate detection					**KLT-M3-B90-T2-0.5**
	M3 / Ø1.4 Stainless steel	Coaxial 0.5 mm (1x) 0.25 mm (9x)	100 [1]	Ø0,05 [2]	
Flexible sensor probe / R min. > 10 mm Small parts detection					**KLT-M3-B90-T2-0.5K**
	M3 Stainless steel	Coaxial Ø0.25 (1x) Ø0.125 (10x)	40 [1]	Ø0.02 [2]	
Highly accurate detection Optional attachment optics					**KLT-M3-S0.5-0.25K**
	M4 Stainless steel	Parallel 0.5 mm (2x)	60 [1]	Ø0,1 [2]	
Low installation depth 90° deflection Accurate detection Optional attachment optics					**KLTR-M4-T2-0.5**
	M4 Stainless steel	Coaxial 0.5 mm (1x) 0.25 mm (10x)	90 [1]	Ø0,05 [2]	
Low installation depth 90° deflection Small parts detection Optional attachment optics					**KLTR-M4-T2-0.5K**
	10 x 10 x 3.5 mm Stainless steel	5.25 mm Transmitter 0.265 mm (16x) Receiver	100 [1]	Ø0,1 [2]	
Area detection without gaps Accurate detection					**KLTM-Q10-T1-5**

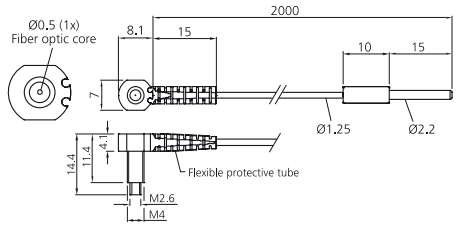
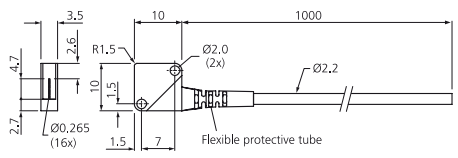
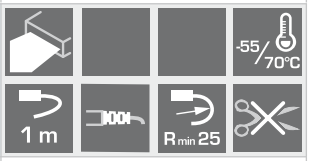
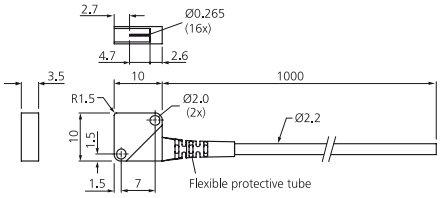
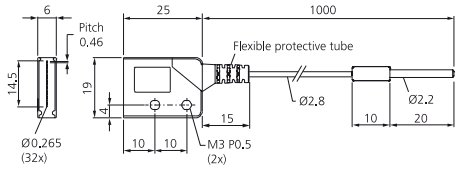
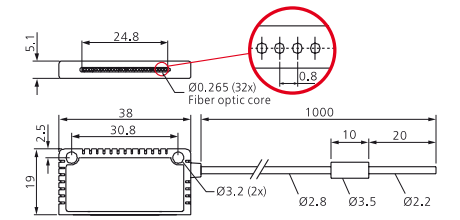
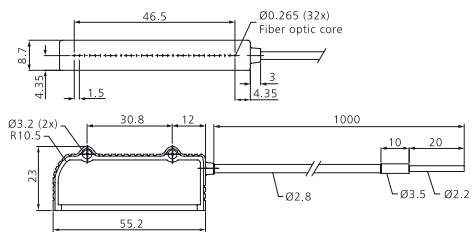
[1] Maximum values (typ.) for a standard target 100 x 100 mm, white.

[2] Resolution (typ.) for optimal settings and measuring distances (sensor approx. 5 mm, one-way: approx. 100 mm).

	Sensor probe (size / material)	Fiber	Operating distance (mm)	Resolution (mm)	Product description
KL plastic fiber-optic cable light sensor					
	19 x 25 x 6 mm Plastic	14.5 mm Transmitter 0.265 mm (16x) Receiver 0.265 mm (16x)	240 [1]	Ø0,5 [2]	
Area detection Large operating distance					**KLTM-Q25K-T1-14**
	38 x 19 x 5 mm Plastic	24,8 mm Transmitter 0.265 mm (32x) Receiver	200 [1]	Ø1,0 [2]	
Area detection 90° deflection Large operating distance					**KLTMR-Q38K-1-24**
	18 x 17 x 5 mm Plastic	A: 7.2 mm parallel Ø0.5 (2x)	5 to 10 [1]	Ø0,1 [2]	
Fixed-focus detection 90° deflection Low installation depth					**KLTVR-Q18-2-10**
	M5 Edelstahl	0.5 mm	200 [1]	Ø0,1 [2]	
Ball-shaped optics for cylindrical beam Ø 8 mm					**WRBT 2000 K-M5-Z8**
	M4 Stainless steel	Parallel 0.5 mm (2x)	75 [1]	Ø0,05 [2]	
Accurate detection Optional attachment optics					**WRBT 2000 K-M4-1.0**
	M3 Stainless steel	Parallel 0.5 mm (2x)	75 [1]	Ø0,05 [2]	
Accurate detection Optional attachment optics					**WRBT 2000 K-M3-0.5**
	Ø5 Stainless steel	Ø 0.8 mm	100 [1]	Ø0,2 [2]	
Low installation depth Small sensor probe					**WRBT 2000 KR-5.0-2.0**

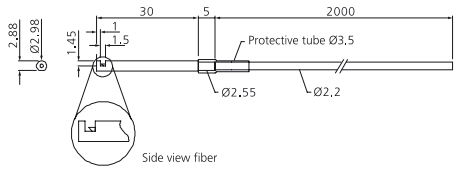
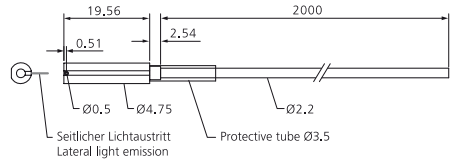
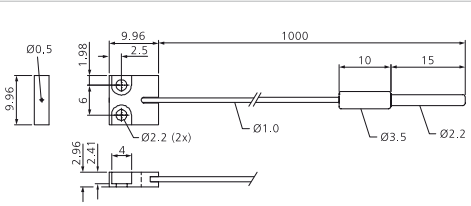
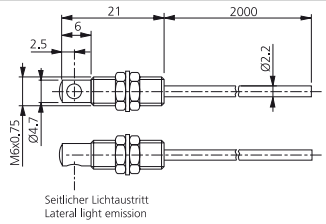
	Sensor probe (size / material)	Fiber	Operating distance (mm)	Resolution (mm)	Product description
KL plastic fiber-optic cable through-beam sensor					
	M6 Stainless steel	1.0 mm	1,000 [1]	Ø0,2 [2]	-55/70°C 2 m R min 25
	Large operating distance				**KLE-M6-T2-1**
	M6 Stainless steel	1.0 mm	1,000 [1]	Ø0,2 [2]	-55/70°C 2 m R min 25
	Large operating distance				**KLE-M4-T2-1**
	M4 Stainless steel	0.5 mm	250 [1]	Ø0,1 [2]	M2.6 -55/70°C 2 m R min 15
	Accurate detection Optional attachment optics				**KLE-M4-T2-0.5**
	M3 Stainless steel	1.0 mm	1,000 [1]	Ø0,2 [2]	-55/70°C 2 m R min 25
	Large operating distance				**KLE-M3-T2-1**
	M3 Stainless steel	0.5 mm	250 [1]	Ø0,1 [2]	-55/70°C 2 m R min 15
	Accurate detection				**KLE-M3-T2-0.5**
	M4 Stainless steel	1.0 mm	400 [1]	Ø0,2 [2]	M2.6 -55/70°C 2 m R min 25
	Low installation depth 90° deflection Large operating distance Optional attachment optics				**KLER-M4-T2-1**

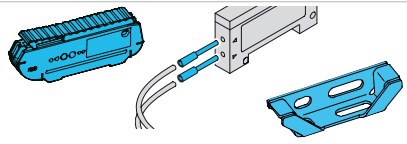
[1] Maximum values (typ.) for a standard target 100 x 100 mm, white.
[2] Resolution (typ.) for optimal settings and measuring distances (sensor approx. 5 mm, one-way: approx. 100 mm).

	Sensor probe (size / material)	Fiber	Operating distance (mm)	Resolution (mm)	Product description
KL plastic fiber-optic cable through-beam sensor					
	M4 Stainless steel	0.5 mm	200 [1]	Ø0,1 [2]	
Low installation depth 90° deflection Accurate detection Optional attachment optics					**KLER-M4-T2-0.5**
	10 x 10 x 3.5 mm Stainless steel	4.24 mm 0.265 mm (16x)	200 [1]	Ø0,1 [2]	
Area detection without gaps Large operating distance Accurate detection					**KLEM-Q10-T1-4**
	10 x 10 x 3.5 mm Stainless steel	4.24 mm 0.265 mm (16x)	200 [1]	Ø0,1 [2]	
Area detection without gaps 90° deflection Large operating distance Accurate detection					**KLEMR-Q10-T1-4**
	19 x 25 x 6 mm Plastic	14.5 mm 0.265 (32x)	1,000 [1]	Ø0,5 [2]	
Area detection Large operating distance					**KLEM-Q25K-T1-14**
	38 x 19 x 5 mm Plastic	24.8 mm 0.265 (32x)	800 [1]	Ø1,0 [2]	
Area detection 90° deflection Large operating distance					**KLEMR-Q38K-1-24**
	55 x 23 x 9 mm Plastic	46.5 mm 0.265 (32x)	800 [1]	Ø2,0 [2]	
Area detection 90° deflection Large operating distance					**KLEMR-Q55K-1-46**

[1] Maximum values (typ.) for a standard target 100 x 100 mm, white.

[2] Resolution (typ.) for optimal settings and measuring distances (sensor approx. 5 mm, one-way: approx. 100 mm).

	Sensor probe (size / material)	Fiber	Operating distance (mm)	Resolution (mm)	Product description
KL plastic fiber-optic cable through-beam sensor					
	Ø 2.98 mm Stainless steel	1.0 mm	600 [1]	Ø0,2 [2]	-55/70°C 2 m Rmin 25
	Low installation depth 90° deflection Large operating distance				**KLER-D3-30-S2-1**
	Ø 4.75 mm Stainless steel	Ø0.5 mm	200 [1]	Ø0,05 [2]	-55/70°C 2 m Rmin 1
	Low installation depth 90° deflection Highly accurate object detection				**KLER-D4.75-19-S2-0.5**
	10 x 10 x 3 mm Metal	Ø0.5 mm	200 [1]	Ø0,05 [2]	-40/70°C 1 m Rmin 1
	Accurate detection Flat design				**KLE-Q10M-1-0.5**
	M6 Brass	Ø 1.0 mm	1,200 [1]	Ø0,2 [2]	-25/70°C 2 m Rmin 25
	Low installation depth Large operating distance				**WRBE 2000 KR-M6-1.0**



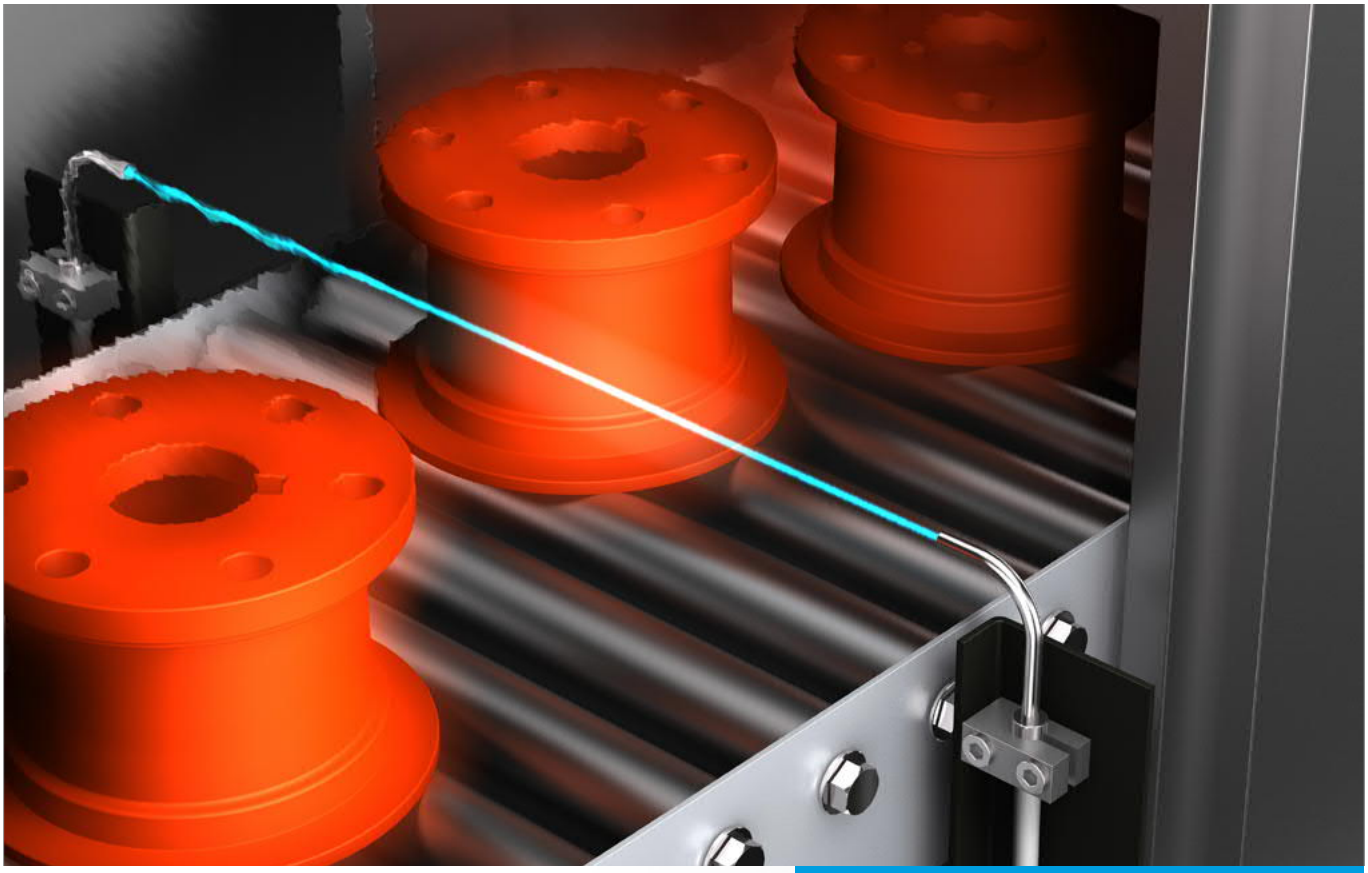
Accessories for plastic fiber-optic cables

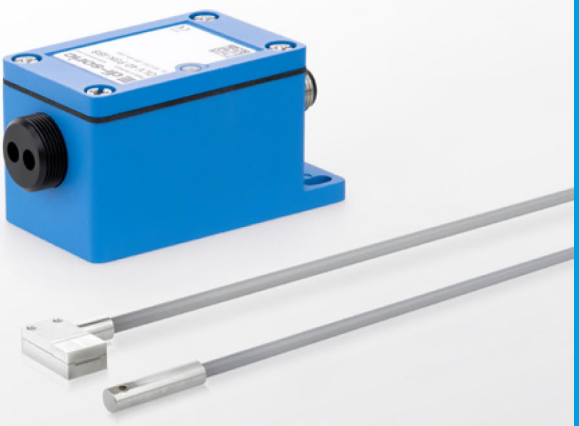
"KLS-Z Plastic fiber-optic sensor accessories" on page 230

[1] Maximum values (typ.) for a standard target 100 x 100 mm, white.

[2] Resolution (typ.) for optimal settings and measuring distances (sensor approx. 5 mm, one-way: approx. 100 mm).

Glass fiber-optic sensors





Challenging applications with little installation space are the area of application of the fiber optic sensors from di-soric. The robust devices stand the test with oil just as reliably as with high mechanical loads and at high temperatures. Their large range is another important advantage.

OLV-G AMPLIFIER

Thanks to their stable metallic housing and the high protection class, the amplifiers in the OLV-G series are - ideal for handling challenging individual applications. The devices are operated through simple auto-teach.

CE

Technical data (typ.)	+20 °C, 24 VDC
Switching output	Transistor, pnp, 200 mA, NO/NC, switchable
Ambient temperature	-10 to +60 °C
Housing material	Die-cast zinc
Protection type	IP 65

	Housing design Size (mm)	Sensitivity adjustment by means of	Service voltage (V)	Switching frequency (kHz)	Infrared light, clocked	Red light, clocked	Green light, clocked	Switching hysteresis (%)	Temperature drift (%/K)	Ambient light immunity (kLx)	No-load current (mA)	Plug connector	Connection cable (optionally available)	Product description
OLV-G amplifiers for glass fiber optic cables														
	40 x 41 x 75	Potenti-ometer	12 to 35	1.5	■			10	0.3	20	55	M12	VK… /4	OLV 40 P3K-IBS
				1.5		■								OLV 41 P3K-IBS
				0.5			■							OLV 42 P3K-IBS
	40 x 41 x 75	Potenti-ometer	12 to 35	1.5	■			10	0.3	20	55	Clamps		OLV 40 P4K
						■								OLV 41 P4K
	40 x 41 x 75	Teach	10 to 35	1.5	■			12	0.1	50	45	M12	VK… /4	OLVTI 40 P3K-IBS
						■			0.25					OLVTI 41 P3K-IBS

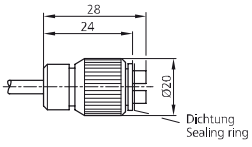
WRB GLASS FIBER OPTICS

Our product portfolio of fiber optics includes high-quality fibers for large ranges, a high mechanical load and high temperatures.

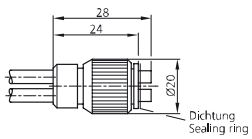
CE

Technical data (typ.)	+20 °C, 24 VDC
Housing material	V2A
	Aluminum (…SQ… / … MQ… / WRB 220 SW)
Single fiber	50 µm
Opening angle	67°
Temperature resistance	-40 to +180 °C, for short periods up to +250 °C (silicone-metal sleeve)
	-40 to +180 °C, for short periods up to +300 °C (metal sleeve)

Diffuse sensors



Through-beam sensors

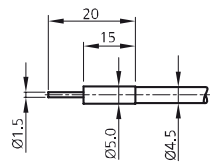
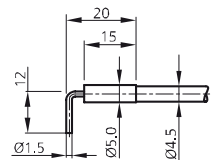
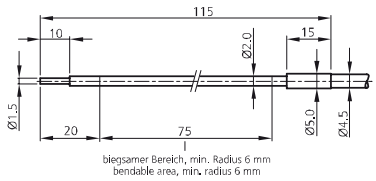
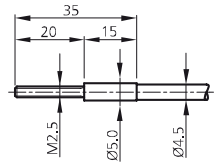
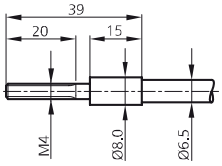
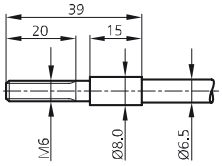
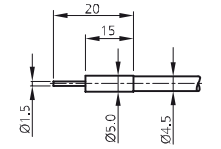
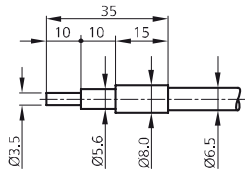


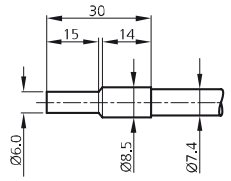
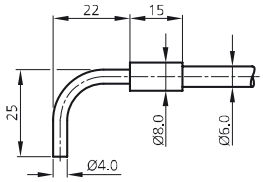
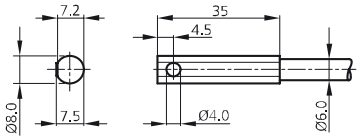
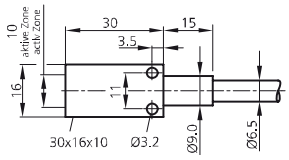
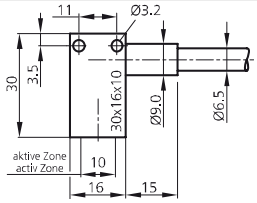
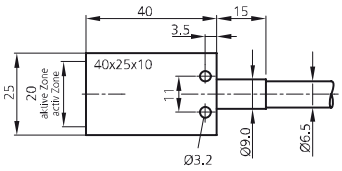
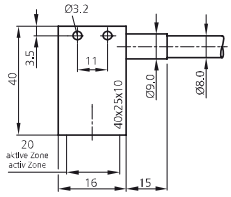
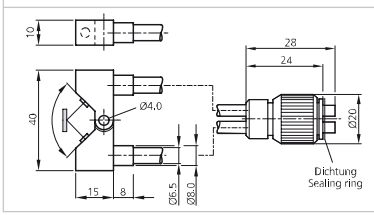
Installation instructions for glass fiber-optic cables

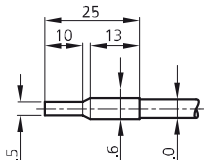
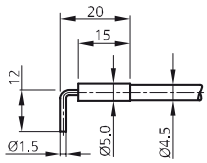
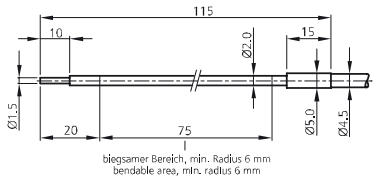
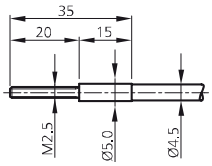
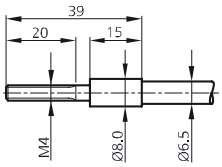
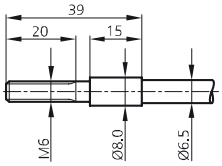
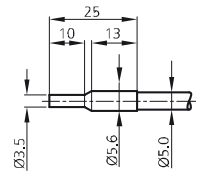
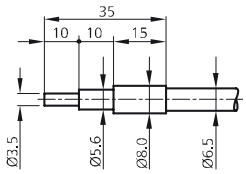
[1] For permanently installed fiber optic cables.

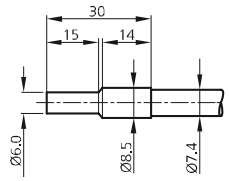
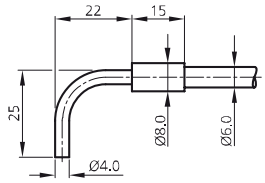
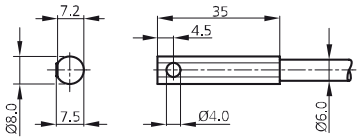
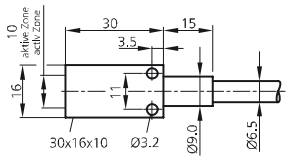
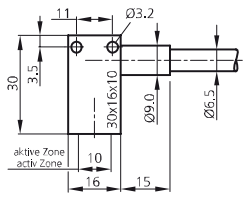
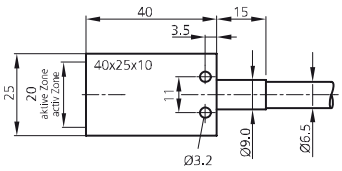
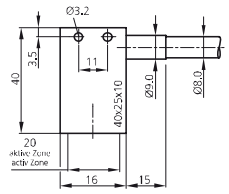
[2] All specified scan widths and ranges are average values associated with the fiber-optic amplifier in infrared light. If necessary, adjust the sensitivity range using the basic sensitivity potentiometer P2. The specified scan widths and ranges are reduced to about 80% in red light and to about 30% in green light. The values also depend on the fiber-optic cable and on the object being scanned (size, shape, surface, color, etc.).

[3] With attachment optics and axial light aperture.
Only possible for fiber-optic cables of corresponding length.

	Fiber bundle	Scan width* (mm)	Cable jacket	Cable length (mm)	Bending radius	Protection type	Product description
WRB glass fiber-optic cable light sensor							
	Ø1.0	up to 20	Silicone metal sleeve	300	>3x tube Ø	IP 67	WRB 110 S-1.5-1.0
				600			WRB 120 S-1.5-1.0
				1,000			WRB 130 S-1.5-1.0
	Ø1.0	up to 20	metal sleeve	300	>10x tube Ø	IP 60	WRB 110 M-1.5-1.0
				600			WRB 120 M-1.5-1.0
				1,000			WRB 130 M-1.5-1.0
	Ø1.0	up to 15	Silicone metal sleeve	300	>3x tube Ø	IP 67	WRB 110 S-90-1.5-1.0
				600			WRB 120 S-90-1.5-1.0
				1,000			WRB 130 S-90-1.5-1.0
	Ø1.0	up to 15	metal sleeve	300	>10x tube Ø	IP 60	WRB 110 M-90-1.5-1.0
				600			WRB 120 M-90-1.5-1.0
				1,000			WRB 130 M-90-1.5-1.0
	Ø1.0	up to 20	Silicone metal sleeve	300	>3x tube Ø	IP 67	WRB 110 SB-2.0-1.0
				600			WRB 120 SB-2.0-1.0
				1,000			WRB 130 SB-2.0-1.0
	Ø1.0	up to 20	metal sleeve	300	>10x tube Ø	IP 60	WRB 110 MB-2.0-1.0
				600			WRB 120 MB-2.0-1.0
				1,000			WRB 130 MB-2.0-1.0
	Ø1.5	up to 30	Silicone metal sleeve	300	>3x tube Ø	IP 67	WRB 110 S-M2.5-1.5
				600			WRB 120 S-M2.5-1.5
				1,000			WRB 130 S-M2.5-1.5
	Ø1.5	up to 30	metal sleeve	300	>10x tube Ø	IP 60	WRB 110 M-M2.5-1.5
				600			WRB 120 M-M2.5-1.5
				1,000			WRB 130 M-M2.5-1.5
	Ø2.5	up to 85	Silicone metal sleeve	300	>3x tube Ø	IP 67	WRB 110 S-M4-2.5
				600			WRB 120 S-M4-2.5
				1,000			WRB 130 S-M4-2.5
	Ø2.5	up to 85	metal sleeve	300	>10x tube Ø	IP 60	WRB 110 M-M4-2.5
				600			WRB 120 M-M4-2.5
				1,000			WRB 130 M-M4-2.5
	Ø2.5	up to 85	Silicone metal sleeve	300	>3x tube Ø	IP 67	WRB 110 S-M6-2.5
				600			WRB 120 S-M6-2.5
				1,000			WRB 130 S-M6-2.5
	Ø2.5	up to 85	metal sleeve	300	>10x tube Ø	IP 60	WRB 110 M-M6-2.5
				600			WRB 120 M-M6-2.5
				1,000			WRB 130 M-M6-2.5
	Ø2.5	up to 85	Polyurethane metal sleeve	300	>5x tube Ø	IP 67	WRB 110 P-5.6-2.5
				600			WRB 120 P-5.6-2.5
				1,000			WRB 130 P-5.6-2.5
	Ø2.5	up to 85	Silicone metal sleeve	300	>3x tube Ø	IP 67	WRB 110 S-8.0-2.5
				600			WRB 120 S-8.0-2.5
				1,000			WRB 130 S-8.0-2.5
	Ø2.5	up to 85	metal sleeve	300	>10x tube Ø	IP 60	WRB 110 M-8.0-2.5
				600			WRB 120 M-8.0-2.5
				1,000			WRB 130 M-8.0-2.5

	Fiber bundle	Scan width* (mm)	Cable jacket	Cable length (mm)	Bending radius	Protection type	Product description
WRB glass fiber-optic cable light sensor							
	Ø4.0	up to 150	Silicone metal sleeve	300	>3x tube Ø	IP 67	WRB 110 S-8.5-4.0
				600			WRB 120 S-8.5-4.0
				1,000			WRB 130 S-8.5-4.0
	Ø4.0	up to 150	metal sleeve	300	>10x tube Ø	IP 60	WRB 110 M-8.5-4.0
				600			WRB 120 M-8.5-4.0
				1,000			WRB 130 M-8.5-4.0
	Ø2.5	up to 80	Silicone metal sleeve	300	>3x tube Ø	IP 67	WRB 110 S-90-4.0-2.5
				600			WRB 120 S-90-4.0-2.5
				1,000			WRB 130 S-90-4.0-2.5
	Ø2.5	up to 80	metal sleeve	300	>10x tube Ø	IP 60	WRB 110 M-90-4.0-2.5
				600			WRB 120 M-90-4.0-2.5
				1,000			WRB 130 M-90-4.0-2.5
	Ø2.5	up to 70	Silicone metal sleeve	300	>3x tube Ø	IP 67	WRB 110 SR-8.0-2.5
				600			WRB 120 SR-8.0-2.5
				1,000			WRB 130 SR-8.0-2.5
	Ø2.5	up to 70	metal sleeve	300	>10x tube Ø	IP 60	WRB 110 MR-8.0-2.5
				600			WRB 120 MR-8.0-2.5
				1,000			WRB 130 MR-8.0-2.5
	Ø0.6 (10x) Ø0.3 (10x)	up to 90	Silicone metal sleeve	300	>3x tube Ø	IP 67	WRB 110 SQ-10-0.6
				600			WRB 120 SQ-10-0.6
				1,000			WRB 130 SQ-10-0.6
	Ø0.6 (10x) Ø0.3 (10x)	up to 90	metal sleeve	300	>10x tube Ø	IP 60	WRB 110 MQ-10-0.6
				600			WRB 120 MQ-10-0.6
				1,000			WRB 130 MQ-10-0.6
	Ø0.6 (10x) Ø0.3 (10x)	up to 85	Silicone metal sleeve	300	>3x tube Ø	IP 67	WRB 110 SQ-90-10-0.6
				600			WRB 120 SQ-90-10-0.6
				1,000			WRB 130 SQ-90-10-0.6
	Ø0.6 (10x) Ø0.3 (10x)	up to 85	metal sleeve	300	>10x tube Ø	IP 60	WRB 110 MQ-90-10-0.6
				600			WRB 120 MQ-90-10-0.6
				1,000			WRB 130 MQ-90-10-0.6
	Ø0.6 (20x) Ø0.3 (20x)	up to 210	Silicone metal sleeve	300	>3x tube Ø	IP 67	WRB 110 SQ-20-0.6
				600			WRB 120 SQ-20-0.6
				1,000			WRB 130 SQ-20-0.6
	Ø0.6 (20x) Ø0.3 (20x)	up to 210	metal sleeve	300	>10x tube Ø	IP 60	WRB 110 MQ-20-0.6
				600			WRB 120 MQ-20-0.6
				1,000			WRB 130 MQ-20-0.6
	Ø0.6 (20x) Ø0.3 (20x)	up to 200	Silicone metal sleeve	300	>3x tube Ø	IP 67	WRB 110 SQ-90-20-0.6
				600			WRB 120 SQ-90-20-0.6
				1,000			WRB 130 SQ-90-20-0.6
	Ø0.6 (20x) Ø0.3 (20x)	up to 200	metal sleeve	300	>10x tube Ø	IP 60	WRB 110 MQ-90-20-0.6
				600			WRB 120 MQ-90-20-0.6
				1,000			WRB 130 MQ-90-20-0.6
	Ø2.5	10 - 100	Silicone metal sleeve	600	>3x tube Ø	IP 67	WRB 220 SW

	Fiber bundle	Scan width[2] (mm)	Cable jacket	Cable length (mm)	Bending radius	Protection type	Product description
WRB glass fiber-optic cable through-beam sensor							
	Ø1.0	up to 150	Silicone metal sleeve	300	>3x[1] tube Ø	IP 67	WRB 210 S-1.5-1.0
				600			WRB 220 S-1.5-1.0
				1,000			WRB 230 S-1.5-1.0
	Ø1.0	up to 150	metal sleeve	300	>10x[1] tube Ø	IP 60	WRB 210 M-1.5-1.0
				600			WRB 220 M-1.5-1.0
				1,000			WRB 230 M-1.5-1.0
	Ø1.0	up to 120	Silicone metal sleeve	300	>3x[1] tube Ø	IP 67	WRB 210 S-90-1.5-1.0
				600			WRB 220 S-90-1.5-1.0
				1,000			WRB 230 S-90-1.5-1.0
	Ø1.0	up to 120	metal sleeve	300	>10x[1] tube Ø	IP 60	WRB 210 M-90-1.5-1.0
				600			WRB 220 M-90-1.5-1.0
				1,000			WRB 230 M-90-1.5-1.0
	Ø1.0	up to 150	Silicone metal sleeve	300	>3x[1] tube Ø	IP 67	WRB 210 SB-2.0-1.0
				600			WRB 220 SB-2.0-1.0
				1,000			WRB 230 SB-2.0-1.0
	Ø1.0	up to 150	metal sleeve	300	>10x[1] tube Ø	IP 60	WRB 210 MB-2.0-1.0
				600			WRB 220 MB-2.0-1.0
				1,000			WRB 230 MB-2.0-1.0
	Ø1.5	up to 250 (500)[3]	Silicone metal sleeve	300	>3x[1] tube Ø	IP 67	WRB 210 S-M2.5-1.5
				600			WRB 220 S-M2.5-1.5
				1,000			WRB 230 S-M2.5-1.5
	Ø1.5	up to 250 (500)[3]	metal sleeve	300	>10x[1] tube Ø	IP 60	WRB 210 M-M2.5-1.5
				600			WRB 220 M-M2.5-1.5
				1,000			WRB 230 M-M2.5-1.5
	Ø2.5	up to 900 (1,800)[3]	Silicone metal sleeve	300	>3x[1] tube Ø	IP 67	WRB 210 S-M4-2.5
				600			WRB 220 S-M4-2.5
				1,000			WRB 230 S-M4-2.5
	Ø2.5	up to 900 (1,800)[3]	metal sleeve	300	>10x[1] tube Ø	IP 60	WRB 210 M-M4-2.5
				600			WRB 220 M-M4-2.5
				1,000			WRB 230 M-M4-2.5
	Ø2.5	up to 900	Silicone metal sleeve	300	>3x[1] tube Ø	IP 67	WRB 210 S-M6-2.5
				600			WRB 220 S-M6-2.5
				1,000			WRB 230 S-M6-2.5
	Ø2.5	up to 900	metal sleeve	300	>10x[1] tube Ø	IP 60	WRB 210 M-M6-2.5
				600			WRB 220 M-M6-2.5
				1,000			WRB 230 M-M6-2.5
	Ø2.5	up to 85	Polyurethane metal sleeve	300	>5x[1] tube Ø	IP 67	WRB 210 P-5.6-2.5
				600			WRB 220 P-5.6-2.5
				1,000			WRB 230 P-5.6-2.5
	Ø2.5	up to 85	Silicone metal sleeve	300	>3x[1] tube Ø	IP 67	WRB 210 S-8.0-2.5
				600			WRB 220 S-8.0-2.5
				1,000			WRB 230 S-8.0-2.5
	Ø2.5	up to 85	metal sleeve	300	>10x[1] tube Ø	IP 60	WRB 210 M-8.0-2.5
				600			WRB 220 M-8.0-2.5
				1,000			WRB 230 M-8.0-2.5

	Fiber bundle	Scan width* (mm)	Cable jacket	Cable length (mm)	Bending radius	Protection type	Product description
WRB glass fiber-optic cable through-beam sensor							
	Ø4.0	up to 150	Silicone metal sleeve	300	>3x tube Ø	IP 67	WRB 210 S-8.5-4.0
				600			WRB 220 S-8.5-4.0
				1,000			WRB 230 S-8.5-4.0
	Ø4.0	up to 150	metal sleeve	300	>10x tube Ø	IP 60	WRB 210 M-8.5-4.0
				600			WRB 220 M-8.5-4.0
				1,000			WRB 230 M-8.5-4.0
	Ø2.5	up to 900	Silicone metal sleeve	300	>3x tube Ø	IP 67	WRB 210 S-90-4.0-2.5
				600			WRB 220 S-90-4.0-2.5
				1,000			WRB 230 S-90-4.0-2.5
	Ø2.5	up to 900	metal sleeve	300	>10x tube Ø	IP 60	WRB 210 M-90-4.0-2.5
				600			WRB 220 M-90-4.0-2.5
				1,000			WRB 230 M-90-4.0-2.5
	Ø2.5	up to 800	Silicone metal sleeve	300	>3x tube Ø	IP 67	WRB 210 SR-8.0-2.5
				600			WRB 220 SR-8.0-2.5
				1,000			WRB 230 SR-8.0-2.5
	Ø2.5	up to 800	metal sleeve	300	>10x tube Ø	IP 60	WRB 210 MR-8.0-2.5
				600			WRB 220 MR-8.0-2.5
				1,000			WRB 230 MR-8.0-2.5
	Ø0.6 (10x) Ø0.3 (10x)	up to 700	Silicone metal sleeve	300	>3x tube Ø	IP 67	WRB 210 SQ-10-0.3
				600			WRB 220 SQ-10-0.3
				1,000			WRB 230 SQ-10-0.3
	Ø0.6 (10x) Ø0.3 (10x)	up to 700	metal sleeve	300	>10x tube Ø	IP 60	WRB 210 MQ-10-0.3
				600			WRB 220 MQ-10-0.3
				1,000			WRB 230 MQ-10-0.3
	Ø0.6 (10x) Ø0.3 (10x)	up to 650	Silicone metal sleeve	300	>3x tube Ø	IP 67	WRB 210 SQ-90-10-0.3
				600			WRB 220 SQ-90-10-0.3
				1,000			WRB 230 SQ-90-10-0.3
	Ø0.6 (10x) Ø0.3 (10x)	up to 650	metal sleeve	300	>10x tube Ø	IP 60	WRB 210 MQ-90-10-0.3
				600			WRB 220 MQ-90-10-0.3
				1,000			WRB 230 MQ-90-10-0.3
	Ø0.6 (20x) Ø0.3 (20x)	up to 1,200	Silicone metal sleeve	300	>3x tube Ø	IP 67	WRB 210 SQ-20-0.3
				600			WRB 220 SQ-20-0.3
				1,000			WRB 230 SQ-20-0.3
	Ø0.6 (20x) Ø0.3 (20x)	up to 1,200	metal sleeve		>10x tube Ø	IP 60	
				600			WRB 220 MQ-20-0.3
				1,000			WRB 230 MQ-20-0.3
	Ø0.6 (20x) Ø0.3 (20x)	up to 1,100	Silicone metal sleeve	300	>3x tube Ø	IP 67	WRB 210 SQ-90-20-0.3
				600			WRB 220 SQ-90-20-0.3
				1,000			WRB 230 SQ-90-20-0.3
	Ø0.6 (20x) Ø0.3 (20x)	up to 1,100	metal sleeve	300	>10x tube Ø	IP 60	WRB 210 MQ-90-20-0.3
				600			WRB 220 MQ-90-20-0.3
				1,000			WRB 230 MQ-90-20-0.3