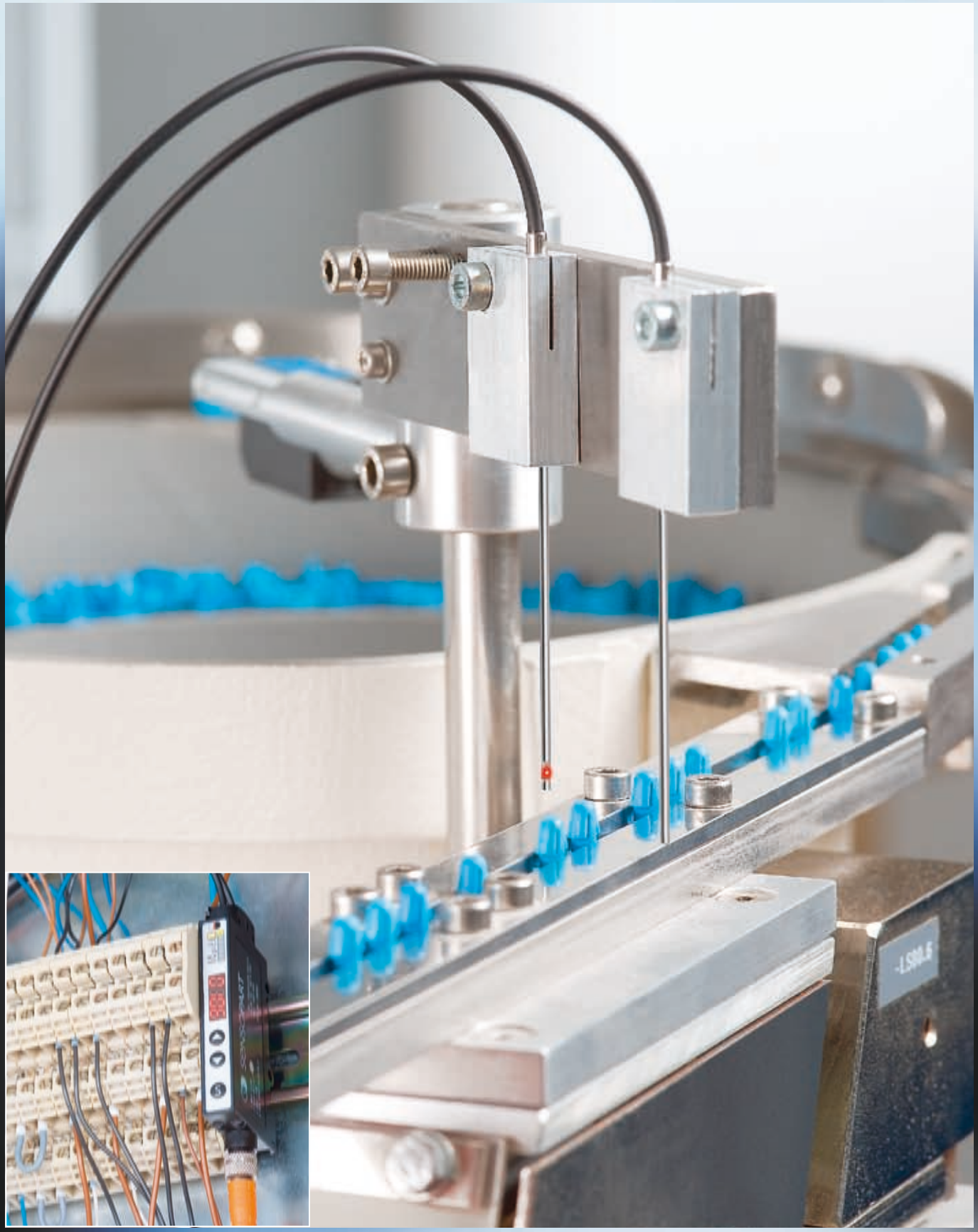
Fibre optics & sensors for fibre optics

Customised application solutions






SENSOPART
SENSORS FOR AUTOMATION



FL 70 in use

Congestion control with fibre optics
Small plastic stoppers are conveyed by a vibro-conveyor and separated on a conveyor belt. Congestion is controlled by a sensor such as FL 70 R-PSD in combination with the Sensport plastic fibre optic K2L-34.

The FL 70 R-PSD sensor is installed in the control cabinet in this particular application. This is not essential as thanks to a robust housing and a high IP 64 protection system, it is possible to fit the sensor directly on to the machine.

FL 70

NEW

FL 70 R-..D

The FL 70 R-..D is the high-end sensor for fibre optics with a 4 digit display. It is characterised by simple settings and many additional functions, e.g. fine adjustment of the switch point, inversion of the switch output, adjustment of accuracy and speed, window programming, time functions and tamper-proof protection. The display is always clearly visible thanks to a 180° rotatable screen.

FL 70 RA-..D

The FL 70 RA-..D has an analogue output, which is of particular advantage for complex applications such as the connection of a so-called cross-section transformer. This enables e.g. checks with regard to object size and automatic edge control.

FL 70 R

The FL 70 R version operates without a display and is a cheap alternative for standard applications. An easy teach-in function is common to all of the sensor versions. Teach-in is carried out at the touch of a key and external teach-in is possible via a teach cable. The keys can also be locked.

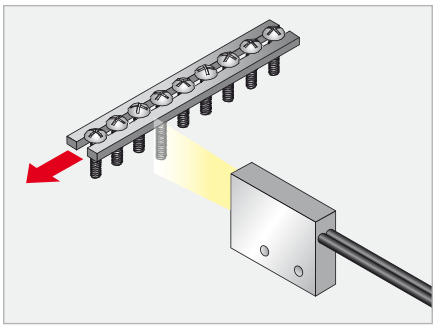
Informative display

LOC – locking function provides reliable protection from intentional or unintentional tampering

ADJ – Adjustment – the sensor is in adjustment mode

SPI – Switching Point I – switch point I has been taught.

Analogue output



The sensor supplies an analogue signal, which is proportional to the reflectivity of the object being detected and which in turn is proportional to the distance, size, surface, etc, when reflectivity from the object is identical.
The FL 70 RA-D sensor enables analogue output of the length of screws.

Product advantages

- **High user comfort – Teach-in**
- **High level of accuracy**
- **High switching frequency**
- **No mutual interference thanks to automatic communication**
- **Mode of operation selectable (types R-..D and RA-..D)**
- **Assembly on DIN rails**
- **Robust IP 64 protection system**
- **Top quality price/performance ratio**

Product	Max. scanning range (depends on fibre optic)	Max. working range (depends on fibre optic)	Switching frequency	Output NPN	Output PNP	Output Analogue	Display	Connection Plug	Connection Cable	Size (mm)	DIN rail assembly
FL 70 R	300 mm	2,000 mm	1,500 Hz	•	•			•	•	10 x 35 x 84	•
FL 70 R-..D	300 mm	2,000 mm	8,000 Hz	•	•		•	•		10 x 35 x 84	•
FL 70 RA-..D	300 mm	2,000 mm	8,000 Hz	•	•	•	•		•	10 x 35 x 84	•

FL 20

The David amongst the Goliaths:
It covers all the requirements of optical sensor technology in small spaces, offering high-precision detection with extreme ease of use.

Product advantages

- **Size 32 x 20 x 12 mm**
- **Teach-in with button or control input**
- **Dynamic setting possibility**
- **High switching frequency**
- **Red light 660 nm**
- **Reversible N.O. – N.C.**
- **For Ø 2.2 mm fibre optics**

Connecting fibre optics

- Simple replacement of fibre optics even when sensors are installed.
- No tools necessary
- Secure clamp

1. Open clamping saddle
2. Insert fibre into holder until stop is reached (push past resistance from O-ring)
3. Close clamping saddle

Teach-in

1. Point fibre optic at object
2. Press key for approx. 3 sec.
3. Remove object
4. Press key for approx. 1 sec.

Display/Operating elements

Yellow LED – light reception indicator
Green LED – stability indicator

Product	Max. scanning range (depends on fibre optic)	Max. working range (depends on fibre optic)	Switching frequency	Output NPN	Output PNP	Connection Plug	Connection Cable	Size (mm)
FL 20 R	100 mm	1,000 mm	1,000 Hz	•	•	•	•	32 x 20 x 12

FMS 18/FMS 30
FAV 30

FMS 18

The photoelectric sensor FMS 18-4 U covers small to medium switching distances and ranges. Due to its high switching frequency of 1 kHz, the sensor is particularly suitable for reliable, non-contact measurement of fast processes. It is even possible to invert the output signal on this small device due to a plug-in bridge circuit on the front end. The sensor is also equipped with two separate P and N switching outputs

FMS 30

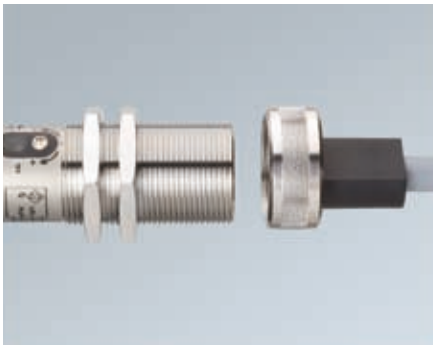
The photoelectric sensor FMS 30-4 U covers the entire range from small to very large switching distances and ranges. A switch on the front of the device makes it possible to reduce the switching distance by half. This facilitates precise adjustment of the switching point in close-up range and improves detection of small parts. A second switch on the front of the sensor inverts the output signal. The sensor thus prepares the logical, correct signal, as N.O. or N.C., according to the type of application. Each device is also equipped with two separate P and N switching outputs.

Product advantages

- **Working range proximity switch max. 800 mm (depending on fibre optic used)**
- **Working range light barrier max. 4800 mm (depending on fibre optic used)**
- **Robust metal housing**
- **Exclusive switch output**
- **Reversible N.O/N.C.**
- **Different sheathings for glass fibres**
- **Fibre optics for temperatures up to 160°C**
- **Analogue output 0...10 V/0...20 mA (FAV 30)**
- **Cross-section converter adaptable (recommended for FAV 30)**

Sn und Sn/2 reversibility

N.O/N.C. function is set via the sliding switch on the front end. Switch position "Sn/2" reduces the scanning distance by 50% and thus enables better detection of small parts.



Uncomplicated connection of sensor/fibre optics

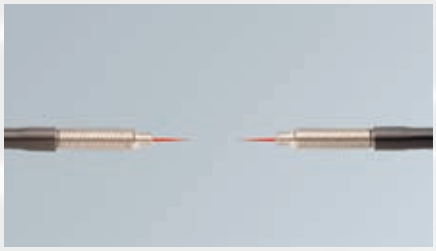
The glass fibre optics can be fitted to FMS sensors (in this case FMS 30) by means of a simple screw connection.

Product	Max. scanning range (depends on fibre optic)	Max. working range (depends on fibre optic)	Switching frequency	Output NPN	Output PNP	Switching N.O.	Switching N.C	Connection Plug	Connection Cable	Size (mm)
FMS 18-U	160 mm	700 mm	up to 5,000 Hz	•	•	•	•	•	•	M18 x 1 x 79
FMS 30-U	800 mm	4,800 mm	up to 5,000 Hz	•	•	•	•	•	•	M30 x 1 x 79
FAV 30		500 mm	up to 200 Hz						•	M30 x 1 x 112

Fibre optics and their applications

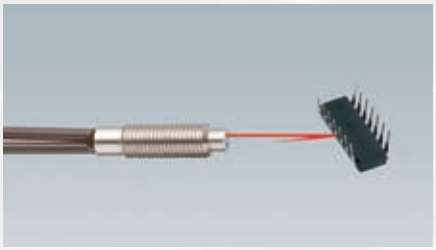
Fibre optics are basically divided into two categories – glass and plastic transmission media. SensoPart offers its products in both versions. Fibre optics with glass are referred to as glass fibres. Use of a very high-quality mineral glass achieves much better performance data compared with plastic fibres. Attenuation is less with glass fibres than with plastic fibres. This makes it possible to cover considerably longer transmission paths. It is also possible to use glass fibres in very high temperatures with the appropriate sheathing.

Light barriers



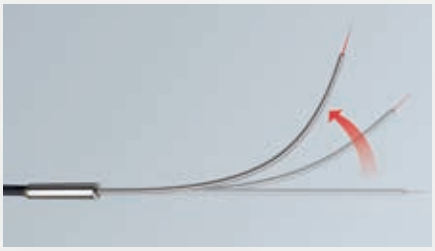
Fibre optic transmitters and receivers run in two separate sheaths, which are connected to the sensor's appropriate optical components by means of the glass fibre coupling.

Proximity switches



In the proximity switch version, fibre optic transmitters and receivers run in one cable and open into a light emission head.

Flexible scanning heads



Here the bundle of glass fibres ends in a thin, flexible stainless steel tube. The tube can be bent into the necessary shape "on site" when assembled in places which are difficult to access.

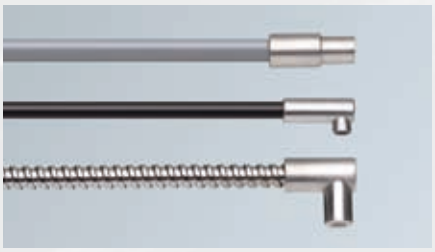
Cross-section converter

Whilst the emitted light is round with standard glass fibre optics, the light takes on the shape of a rectangle or a thin line with the cross-section converter. These lines of light are used for automatic edge control, amongst other applications.

Radial/axial light emission

When installation conditions are cramped, it can be of advantage to use fibre optics with lateral (radial) light emission. These are available with different branch lengths according to the model.

Sheathing material

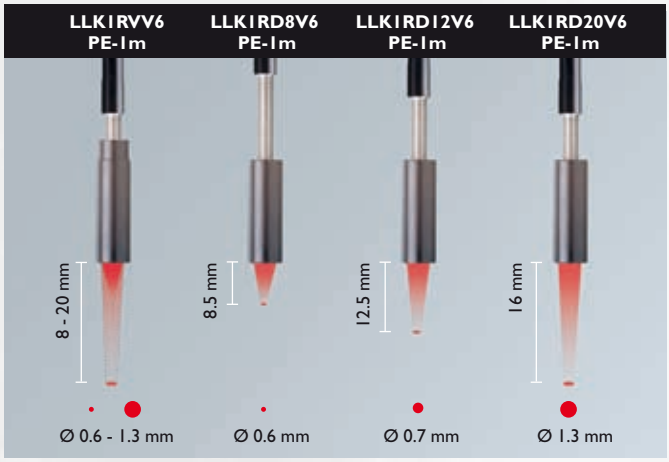


The ambient conditions at the place of application are decisive here. For normal conditions, i.e. with no mechanical movement and strain, no dripping liquid, we recommend the version with metal filament coil, designation MSC. In more difficult operating conditions, in other words continuous mechanical movement and strain, splashes of water, oil, cooling agents as well as temperatures up to 120 degrees and even up to 160 degrees for short periods, a silicon-sheathed steel filament coil must be used, designation Si. This protects the glass fibres from pressure and traction. In such difficult conditions, the area of light emission should also be protected by a screw-on head with glass panel and Teflon seal (SensoPart accessory).

Fork sensor

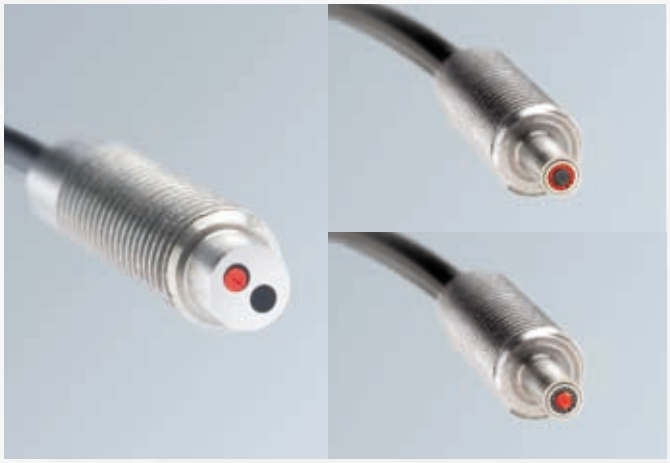
Emitter and receiver are exactly aligned regarding their location and focal position. Easy mounting, reliable detection of markings on web fabrics as well as of small parts > 0.2 mm.

Ideal for the detection of very small parts



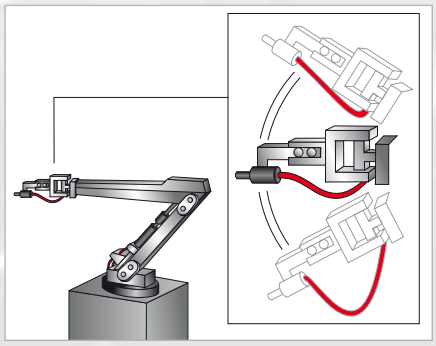
The three fixed focus versions LLKIRDxV6 enable utmost precision in fixed focus distances (8/12/20 mm).
The variable focus LLKIRVV6 enables manual adjustment of the focus within the range 8 – 20 mm.

Conventional fibres Co-axial fibres



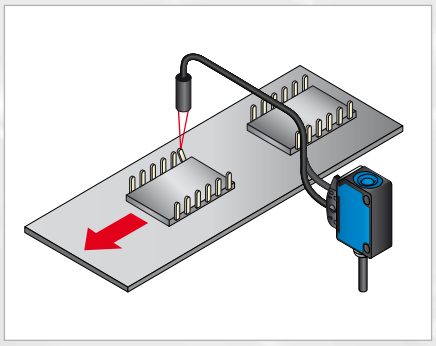
Fibre optic transmitters and receivers run in two separate sheaths, which are connected to the sensor's appropriate optical components by means of the glass fibre coupling. With conventional fibre optics (left-hand picture), both fibres run parallel to one another whilst with coaxial fibre optics the fibre-optic receivers run co-axially around the transmitter fibres. This is of advantage when using an additional optic, e.g. a smaller light spot and a better small part detection.

Overview of applications



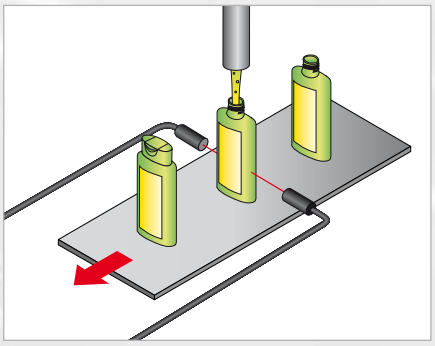
Flexibility

A proximity switch is fitted to a robot arm and accompanies the arm in every movement. The mechanical strain applied requires a high level of flexibility and as small a bending radius as possible of the connected plastic fibre-optic.



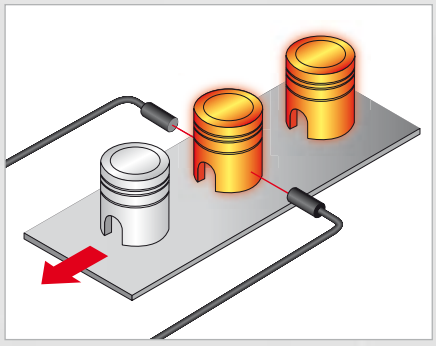
Detecting small objects

Thanks to light spots of e.g. 0.65 mm in size, even very small objects can be reliably detected.



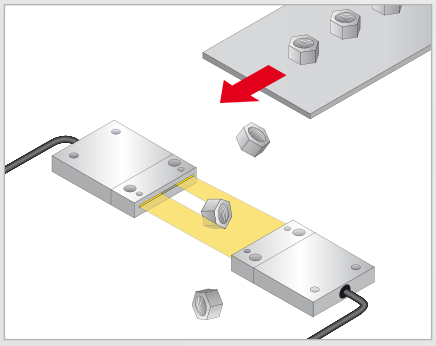
Robust

When working with aggressive cleaning agents such as those used in the food industry, resistant sheathing is required.



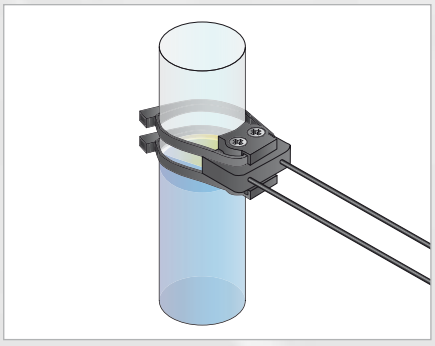
Heat resistance

Cast iron cylinders are separated immediately after production. This results in high ambient temperatures.



Area detection with the cross-section converter (Analogue output)

Objects (nuts) fall through the area monitored by a cross-section converter and can thus be counted.



Level measuring

Can be mounted on transparent tubes with Ø from 6 to 26 mm. Used for level measuring in tubes inside water tanks or other containers. Reliable detection is guaranteed, even for non-transparent liquids.

Fibre optics for FL 70/FL 20

Proximity switch version

Fibre optic	Fibre arrangement light exit	FL 70 Typ. scanning/ working range (mm) Standard / Fine / High	FL 20 Typ. working range (mm) factory setting	Fibre Arrangement	Adapted for ancillary lens	Core Ø (mm) Material (S=Emitter E=Receiver)	Sheath Ø (mm) Material (PE=Polyethylene, (PA=Polyamide)	Ambient temperature (fixed mounting)	Fibre bending radius (mm)	Fibre length	Collar bushing
STANDARD											
K1R-101	mono/axial	60 / 25 / 95	--		LVLF6-M3	2x0.5 PMMA	1.0 / PE	-40 to +70°C	25	2 m free cut	M3 nickel-plated brass
K2R-102	mono/axial	150 / 85 / 295	80		--	2x1.0 PMMA	2.2 / PE	-40 to +70°C	25	2 m free cut	M6x0.75 nickel-plated brass
K1R-103	mono/axial bendable top	60 / 20 / 105	--		--	2x0.5 PMMA	1.0 / PE	-40 to +70°C	25	2 m free cut	M3 nickel-plated brass
K2R-100	mono/axial	140 / 70 / 290	70		--	2x1.0 PMMA	2.2 / PE	-40 to +70°C	25	2 m free cut	M6x0.75 nickel-plated brass
K2R-6	mono/axial	100 / 55 / 265	50		--	2x1.0 PMMA	2.2 / PE	-40 to +70°C	25	2 m free cut	M6x0.75 nickel-plated brass
K2R-67	mono/axial	120 / 70 / 295	60		--	2x1.0 PC	2.2 / PE	-40 to +85°C	25	2 m free cut	M6x0.75 nickel-plated brass
LLK1RM3-PE-1m	mono/axial	50 / 20 / 55	--		LVLF6-M3	2x0.5 PMMA	1.3 / PE	-20 to +60°C	15	1 m free cut	M3 A1
LLK2RM6-PE-1m	mono/axial	150 / 90 / 280	80		--	2x1.0 PMMA	2.2 / PE	-20 to +60°C	25	1 m free cut	M3 A1
MULTIFIBRE											
K1R-68	axial	100 / 40 / 200	50		LVLF6-M4	8x0.25 (S) 8x0.25 (E) PMMA	1.3 / PE	-40 to +70°C	3	2 m free cut	M4 nickel-plated brass
33R1/500-MSC	axial	100 / 55 / 210	50		--	(S)/(E) glass	4.6 chromed brass	-20 to +160°C	15	0.5 / 1+2 m on request	M6x0.75 plastic/ nickel-plated brass
CO-AXIAL											
K1R-35	co-axial	50 / 20 / 80	--		LVLF6-M4	1x0.5 (S) 4x0.25 (E) PMMA	1.0 / PE	-40 to +70°C	15	2 m free cut	M4 nickel-plated brass
K2R-25	co-axial	130 / 60 / 240	70		--	1x1.0 (S) 16x0.25 (E) PMMA	2.2 / PE	-40 to +70°C	25	2 m free cut	M6x0.75 nickel-plated brass
LLK1RKM3-PE-1m	co-axial	70 / 35 / 150	--		LVLF6-M3	1x0.5 (S) 9x0.25 (E) PMMA	1.3 / PE	-20 to +60°C	15	2 m free cut	M3 A1
LLK2RKM6-PE-1m	co-axial	150 / 80 / 310	80		--	1x1.0 (S) 16x0.25 (E) PMMA	2.2 / PE	-20 to +60°C	25	1 m free cut	M6x0.75 A1
CO-AXIAL OPTICS / FOCUSED											
LLK1RD8V6-PE-1m	co-axial focused 8mm Ø spot 0,6mm	8 / 8 / 8	--		--	1x0.5 (S) 9x0.25 (E) PMMA	1.3 / PE	-20 to +60°C	15	1 m free cut	Ø 6.0mm ALU
LLK1RD12V6-PE-1m	co-axial focused 12mm Ø spot 0,7mm	12 / 12 / 12	--		--	1x0.5 (S) 9x0.25 (E) PMMA	1.3 / PE	-20 to +60°C	15	1 m free cut	Ø 6.0mm ALU
LLK1RD20V6-PE-1m	co-axial focused 16mm Ø spot 1,3mm	16/ 16 / 16	--		--	1x0.5 (S) 9x0.25 (E) PMMA	1.3 / PE	-20 to +60°C	15	1 m free cut	Ø 6.0mm ALU
LLK1RVV6-PE-1m	co-axial variable focus 8-20mm Ø spot 0,6-1,3mm	8-20	--		--	1x0.5 (S) 9x0.25 (E) PMMA	1.3 / PE	-20 to +60°C	15	1 m free cut	Ø 6.0mm ALU
K1R-104	spherical optics	80 / 45 / 205	--		--	2x0.5 PMMA	1.0 / PE	-40 to +70°C	15	2 m free cut	Ø 4.0mm V2A
RADIAL											
K1RZ-31	mono/radial	20 / 10 / 30	--		--	2x0.5 PMMA	1.0 / PE	-40 to +70°C	15	2 m free cut	Ø 1.5mm ALU
LLK2RZ (LS=10)	radial	200 / 50 / 300	100		--	16x0.25 (S) 16x0.25 (E) PMMA	2.2 0 / PE	-40 to +70°C	15	2 m free cut	Ø 8.0mm ALU

Fibre optic	Fibre arrangement light exit	FL 70 Typ. scanning/ working range (mm) (mm) Standard / Fine / High	FL 20 Typ. working range (mm) factory setting	Fibre Arrangement	Adapted for ancillary lens	Core Ø (mm) Material (S=Emitter E=Receiver)	Sheath Ø (mm) Material (PE=Polyethylene, (PA=Polyamide)	Ambient temperature (fixed mounting)	Fibre bending radius (mm)	Fibre length	Collar bushing
SPECIAL DESIGN											
LLK1QRR10x10-PE-2m	cross-section converter 6mm line	1-15	1-15		--	9x0.25 (S) 9x0.25 (E) PMMA	1.3 / PE	-40 to +70°C	25	2 m free cut	10x10x5mm M3 nickel-plated brass
LLK2QRR19x25-PE-2m	cross-section converter 11mm line	1-15	1-15		--	16x0.25 (S) 16x0.25 (E) PMMA	2.2 / PE	-40 to +70°C	25	2 m free cut	19x25x6mm M3 nickel-plated brass
LLK1VRF5-PE-2m	V-switch transp. media radial	4 / 4 / 4	4		--	2x1.0(S;E) PMMA	1.3 / PE	-40 to +70°C	25	2 m free cut	19.6x13x5mm M3 ABS
LLK1VRR22x15-PE-2m	V-switch level detection glass tubes Ø 6-26mm	Ø 4-20	Ø 4-20		--	2x0.5 (S;E) PMMA	1.3 / PE	-40 to +70°C	15	2 m free cut	15.5x22x11mm polycarbonate
LLK1VRF17x18-PE-2m	V-switch high sensitivity	7 / 7 / 7	--		--	2x0.5 (S;E) PMMA	1.3 / PE	-40 to +70°C	1	2 m free cut	17x18x5mm M3 polycarbonate
LLK2PR2-PE-2m	prism switch level detection	--	--		--	1.0 PMMA	2.2 / PE	-40 to +70°C	25	2 m free cut	Ø 8.0mm V2A

Fibre optics for FL 70/FL 20 ⇢ Light barrier version

STANDARD											
K2L-201	mono/axial	120/ 60 / 200	--		LVLF6-M3	0.5 PMMA	2.2 / PE	-40 to +70°C	25	2 m free cut	M3 nickel-plated brass
K2L-202	mono/axial	350 / 200 / 800	180		LVLF6-M4	1.0 PMMA	2.2 / PE	-40 to +70°C	25	2 m free cut	M4 nickel-plated brass
K2L-204	mono/axial bendable top	350 / 195 / 720	180		--	1.0 PMMA	2.2 / PE	-40 to +70°C	25	2 m free cut	M4 nickel-plated brass
K2L-7	mono/axial	350 / 220 / 810	180		LVLF6-M3	1.0 PMMA	2.2 / PE	-40 to +70°C	25	2 m free cut	M3 nickel-plated brass
K2L-77	axial	270 / 145 / 550	140		LVLF6-M3	1.0 PMMA	2.2 / PE	-40 to +85°C	25	2 m free cut	M3 nickel-plated brass
K2L-203	mono/axial bendable top	120 / 60 / 190	--		--	0.5 PMMA	2.2 / PE	-40 to +70°C	15	2 m free cut	M3 nickel-plated brass
LLK2LM3-PE-1m	mono/axial	150 / 60 / 240	80		LVLF6-M3	1.0 PMMA	2.2 / PE	-20 to +60°C	25	1 m free cut	M3 Al
LLK2LM4-PE-1m	mono/axial	400 / 240 / 780	200		LVLF6-M4	1.0 PMMA	2.2 / PE	-20 to +60°C	25	1 m free cut	M4 Al
MULTIFIBRE											
K1L78	axial	200 / 120 / 405	100		LVLF6-M3	8x0.25 PMMA	1.0 / PE	-40 to +70°C	3	2 m free cut	M3 nickel-plated brass
33L1/500-MSC	axial	270 / 165 / 550	140		LVLF6-M4	glass	2.2 chromed brass	-20 to +160°C	15	0.5 / 1+2 m on request	M4 plastic/ nickel-plated brass
OPTICS / FOCUSED											
LLK2LV6-PE-1m	optic	>2000	1000		--	1.0 PMMA	2.2 / PE	-20 to +60°C	25	1 m free cut	Ø 6mm ALU
RADIAL											
LLK2LZ (LS=10)	radial	300 / 150 /600	150		--	16x0.25 PMMA	2.2 / PE	-40 to +70°C	15	2 m free cut	Ø 8mm ALU
K2L-34	mono/radial bendable top	100 / 35 / 150	50		--	1.0 PMMA	2.2 / PE	-40 to +70°C	15	2 m free cut	Ø 1.5mm V2A
SPECIAL DESIGN											
K2Q-12	cross-section converter	250 / 155 / 550	130		--	16x0.25 PMMA	2.2 / PE	-40 to +70°C	15	2 m free cut	20x10mm nickel-plated brass
LLK1GL10-PE-2m	fork sensor 10 mm	10	10		--	0.25 PMMA	1.3 / PE	-40 to +70°C	10	2 m free cut	40.7x15x7mm M3 ABS
LLK1GL5-PE-2m	fork sensor 5 mm	5	5		--	0.25 PMMA	1.3 / PE	-40 to +70°C	10	2 m free cut	31.7x20x7mm M3 ABS
LLK1L10x10-PE-2m	flat sensing head	120 / 50 / 220	--		--	0.5 PMMA	1.0 / PE	-40 to +70°C	1	2 m free cut	10x10mm M2 nickel-plated brass

Fibre optics for FMS 18/FMS 30

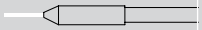
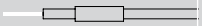
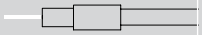
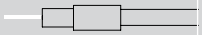
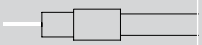
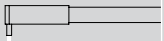
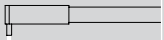
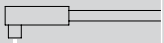
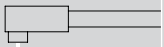
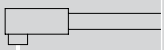
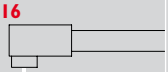
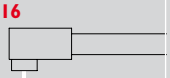
Proximity switch version

Fibre optic	Light exit	Light exit Ø in mm	FMS 18 Typ. scanning range/ working range in mm	FMS 30 Typ. scanning range/ working range in mm	Fibre bundle Ø in mm	Core material	Sheathing material	Ambient temperature (fixed mounting)	Bending radius in mm	Collar bushing[1] Ø in mm
STANDARD										
18/30 R 1/1000 PVC	axial	1	5	15	1	glass	PVC	-20 to +80°C	5	4.5
18/30 R 1/1000 MSC	axial	0.7	5	15	1	glass	chromed brass	-20 to +160°C	15	6
18/30 R 1/1000 Si	axial	0.7	5	15	1	glass	silicone	-20 to +160°C	15	6
18/30 R 3/1000 PVC	axial	2.8	160	200	2 x 2.0	glass	PVC	-20 to +80°C	35	6
18/30 R 3/1000 MSC	axial	2.8	160	200	2 x 2.0	glass	chromed brass	-20 to +160°C	25	8
18/30 R 3/1000 Si	axial	2.8	160	200	2 x 2.0	glass	silicone	-20 to +160°C	25	8
30 R 12/1000 Si	axial	5	-	800	2 x 3.5	glass	silicone	-20 to +160°C	25	12
30 R 12/1000 MSC	axial	5	-	800	2 x 3.5	glass	chromed brass	-20 to +160°C	25	12
RADIAL										
18/30 RZ 1/1000 MSC LS=10	radial	0.8	5	15	1	glass	chromed brass	-20 to +160°C	15	6
18/30 RZ 1/1000 Si LS=10	radial	0.8	5	15	1	glass	silicone	-20 to +160°C	15	6
18/30 RZ 3/1000 PVC LS=10	radial	2.8	160	200	2 x 2.0	glass	PVC	-20 to +80°C	35	7
18/30 RZ 3/1000 MSC LS=10	radial	2.8	160	200	2 x 2.0	glass	chromed brass	-20 to +160°C	25	8
18/30 RZ 3/1000 Si LS=10	radial	2.8	160	200	2 x 2.0	glass	silicone	-20 to +160°C	25	8
30 RZ 12/1000 Si LS=16	radial	5	--	800	2 x 3.5	glass	silicone	-20 to +160°C	25	12
30 RZ 12/1000 MSC LS=16	radial	5	--	800	2 x 3.5	glass	chromed brass	-20 to +160°C	25	12
SPECIAL DESIGN										
18/30 RP2/-Si	prism switch level detection	--	--	--	3	glass	V2A	-30 to +160°C	25	8

[1] *Material collar bushing:*
standard = aluminium; special models possible, e.g. made of 1.4305

Fibre optics for FMS 18/FMS 30

Light barrier version

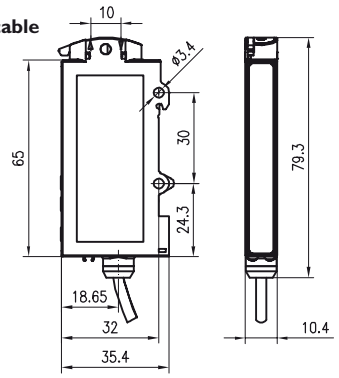
Fibre optic	Light exit	Light exit Ø in mm	FMS 18 Typ. scanning range/ working range in mm	FMS 30 Typ. scanning range/ working range in mm	Fibre bundle Ø in mm	Core material	Sheathing material	Ambient temperature (fixed mounting)	Bending radius in mm	Collar bushing[1] Ø in mm
STANDARD										
18/30 L 1/1000 PVC 	axial	1	80	100	1	glass	PVC	-20 to +80°C	5	4.5
18/30 L 1/1000 MSC 	axial	0.7	80	100	1	glass	chromed brass	-20 to +160°C	15	6
18/30 L 1/1000 Si 	axial	0.7	80	100	1	glass	silicone	-20 to +160°C	15	6
18/30 L 3/1000 PVC 	axial	2	700	1000	2.0	glass	PVC	-20 to +80°C	35	4.5
18/30 L 3/1000 MSC 	axial	2	700	1000	2.0	glass	chromed brass	-20 to +160°C	25	8
18/30 L 3/1000 Si 	axial	2	700	1000	2.0	glass	silicone	-20 to +160°C	25	8
30 L 12/1000 MSC 	axial	3.5	--	4800	3.5	glass	chromed brass	-20 to +160°C	25	10
30 L 12/1000 Si 	axial	3.5	--	4800	3.5	glass	silicone	-20 to +160°C	25	10
RADIAL										
18/30 LZ 1/1000 MSC LS=10 	radial	0.8	80	100	1	glass	chromed brass	-20 to +160°C	15	6
18/30 LZ 1/1000 Si LS=10 	radial	0.8	80	100	1	glass	silicone	-20 to +160°C	15	6
18/30 LZ 3/1000 PVC LS=10 	radial	2	700	1000	2.0	glass	PVC	-20 to +80°C	35	6
18/30 LZ 3/1000 MSC LS=10 	radial	2	700	1000	2.0	glass	chromed brass	-20 to +160°C	25	8
18/30 LZ 3/1000 Si LS=10 	radial	2	700	1000	2.0	glass	silicone	-20 to +160°C	25	8
30 LZ 12/1000 MSC LS=16 	radial	3.5	--	4800	3.5	glass	chromed brass	-20 to +160°C	25	10
30 LZ 12/1000 Si LS=16 	radial	3.5	--	4800	3.5	glass	silicone	-20 to +160°C	25	10

[1] *Material collar bushing:*
standard = aluminium; special models possible, e.g. made of 1.4305

Sensors for fibre optics

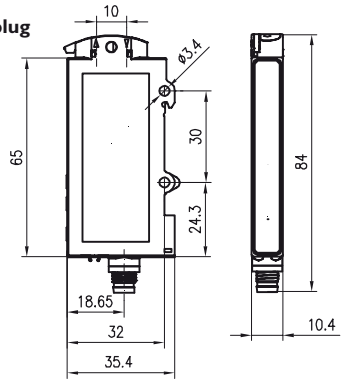
Sensors for plastic fibre optics

FL 70 with cable



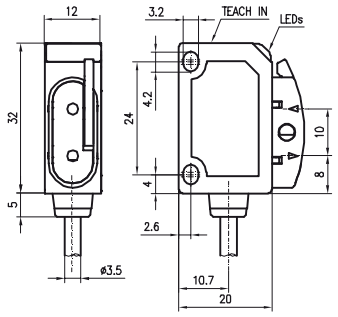
153-00372

FL 70 with plug



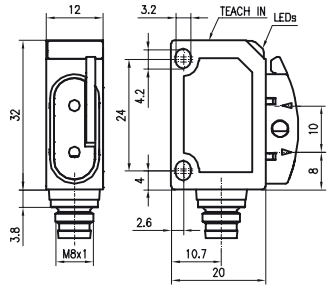
153-00373

FL 20 R with cable



153-00416

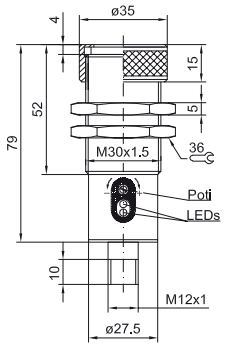
FL 20 R with plug



153-00415

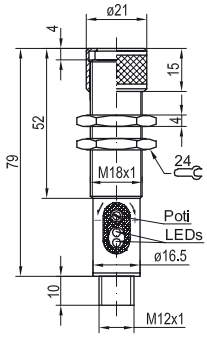
Sensors for glass fibre optics

FMS 30



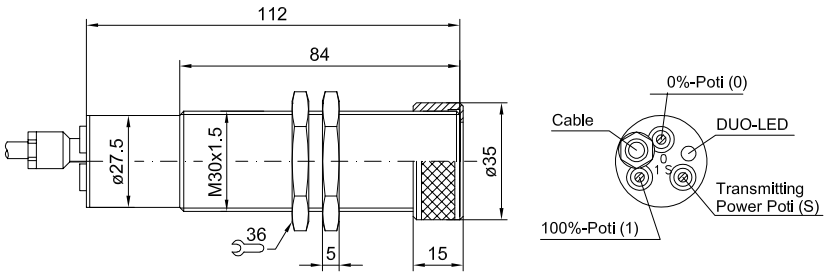
153-00005

FMS 18



153-00002

FAV 30



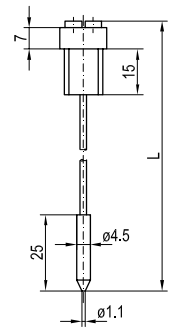
153-00238

Dimensional drawings

Fibre optics for FMS 18/FMS 30

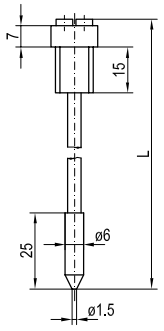
Proximity switches

18/30 R 1/1000 PVC



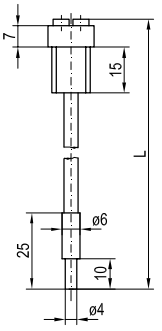
153-00129

18/30 R 1/1000 MSC
18/30 R 1/1000 Si



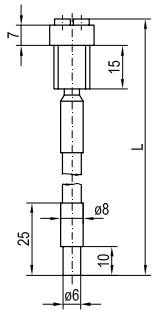
153-00145

18/30 R 3/1000 PVC



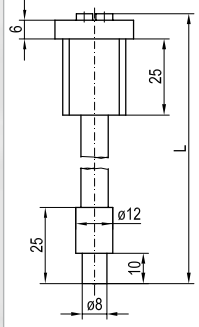
153-00137

18/30 R 3/1000 MSC
LS=10
18/30 R 3/1000 Si
LS=10



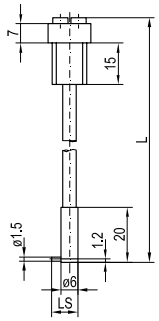
153-00153

30 R 12/1000 MSC
30 R 12/1000 Si



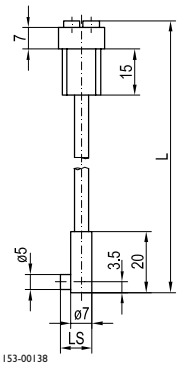
153-00161

18/30 RZ 1/1000 MSC
LS=10
18/30 RZ 1/1000 Si
LS=10



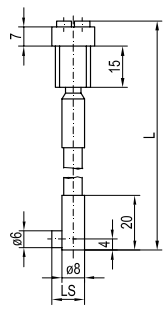
153-00146

18/30 RZ 3/1000 PVC
LS=10



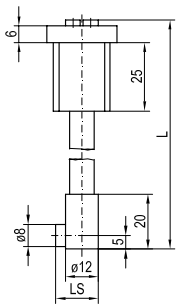
153-00138

18/30 RZ 3/1000 MSC
LS=10
18/30 RZ 3/1000 Si
LS=10



153-00154

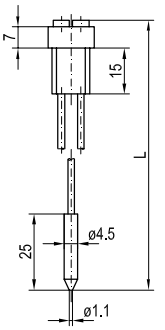
30 RZ 12/1000 MSC
LS=16
30 RZ 12/1000 Si
LS=16



153-00162

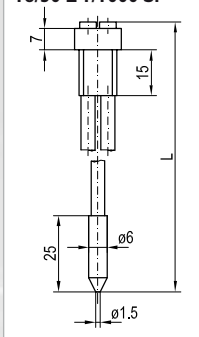
Light barriers

18/30 L 1/1000 PVC



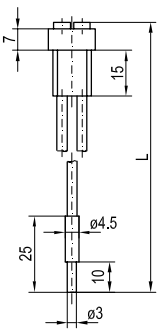
153-00133

18/30 L 1/1000 MSC
18/30 L 1/1000 Si



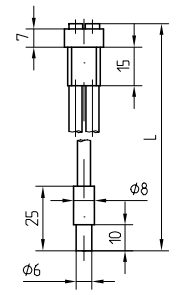
153-00148

18/30 L 3/1000 PVC



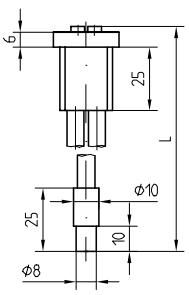
153-00139

18/30 L 3/1000 MSC
18/30 L 3/1000 Si



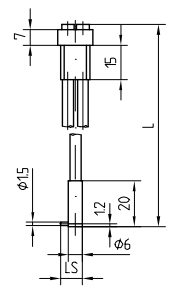
153-00157

30 L 12/1000 MSC
30 L 12/1000 Si



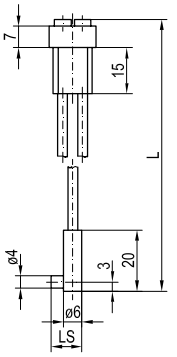
153-00165

18/30 LZ 1/1000 MSC
LS=10
18/30 LZ 1/1000 Si
LS=10



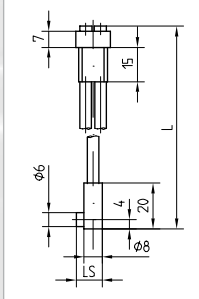
153-00149

18/30 LZ 3/1000 PVC
LS=10



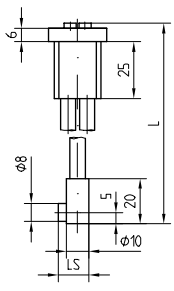
153-00140

18/30 LZ 3/1000 MSC
LS=10
18/30 LZ 3/1000 Si
LS=10



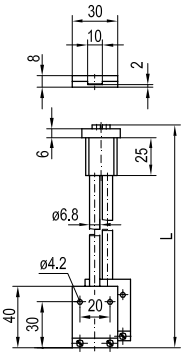
153-00158

30 LZ 12/1000 MSC
LS=16
30 LZ 12/1000 Si
LS=16



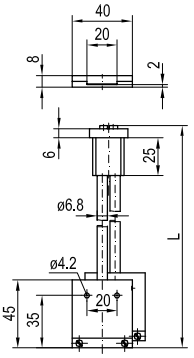
153-00166

30 QL 0,2 x 10



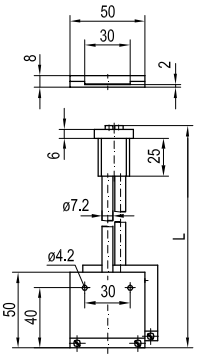
153-00176

30 QL 0,2 x 20



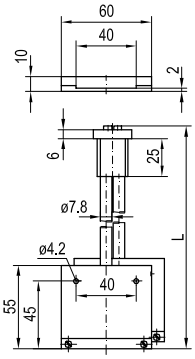
153-00177

30 QL 0,2 x 30



153-00178

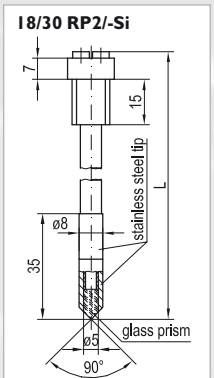
30 QL 0,2 x 40



153-00179

Special design

18/30 RP2/-Si



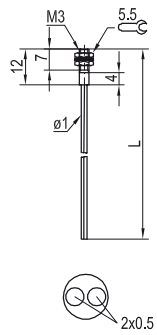
153-00184

Dimensional drawings

Fibre optics for FL 70/FL 20

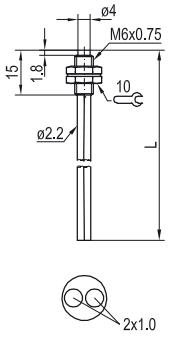
Proximity switches

KIR-101



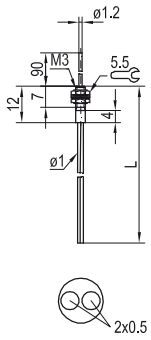
153-00079

K2R-102



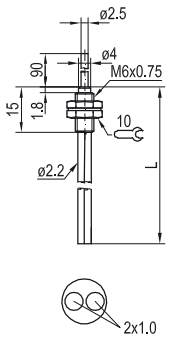
153-00083

KIR-103



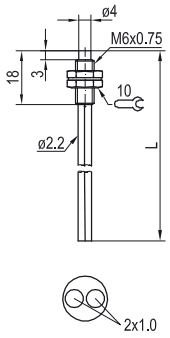
153-00080

K2R-100



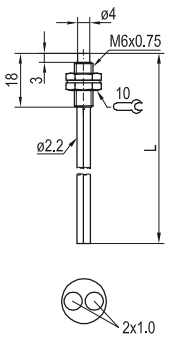
153-00081

K2R-6



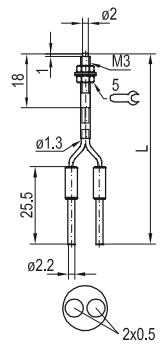
153-00269

K2R-67



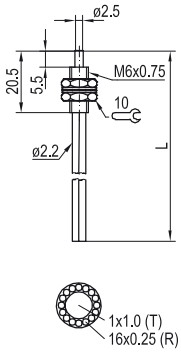
153-00270

LLKIRM3-PE-1m



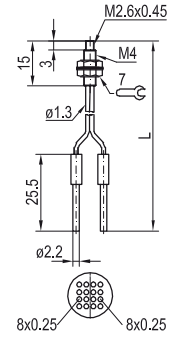
153-00450

LLK2RM6-PE-1m



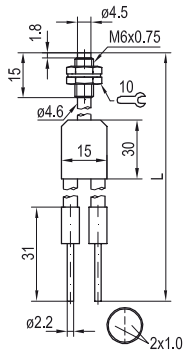
153-00453

KIR-68



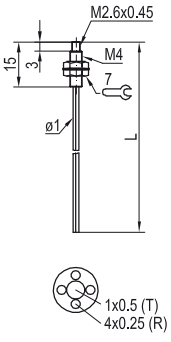
153-00271

33RI/500-MSC



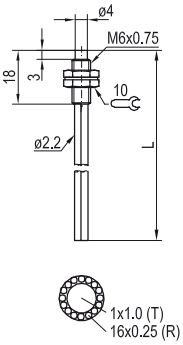
153-00088

KIR-35



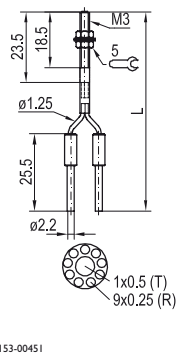
153-00274

K2R-25



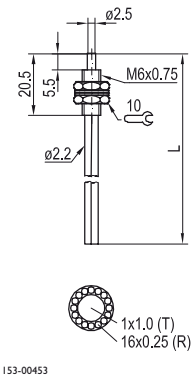
153-00273

LLKIRKM3-PE-1m



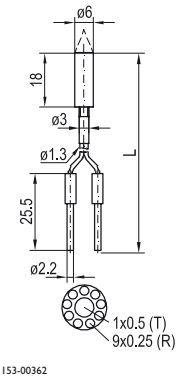
153-00451

LLK2RKM6-PE-1m



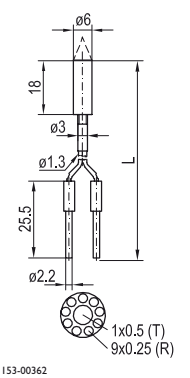
153-00453

LLKIRD8V6-PE-1m



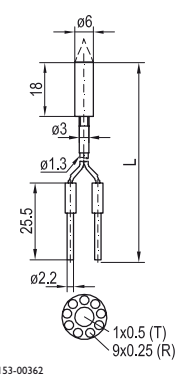
153-00362

LLKIRD12V6-PE-1m



153-00362

LLKIRD20V6-PE-1m



153-00362

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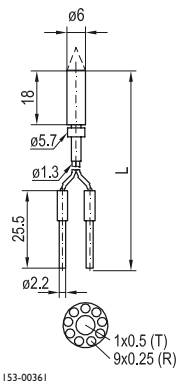
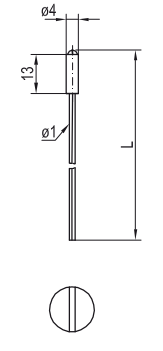


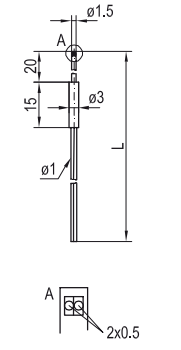
153-00361

KIR-104



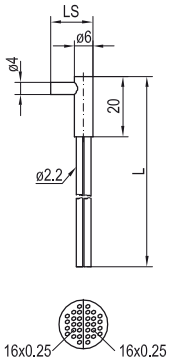
153-00305

KIRZ-31



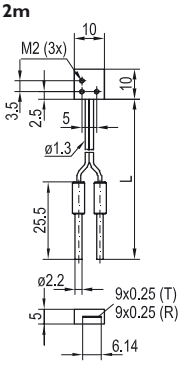
153-00272

LLK2RZ (Ls=10)



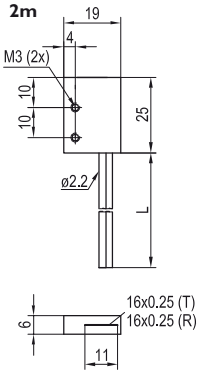
153-00605

LLKIQRR10x10-PE-2m



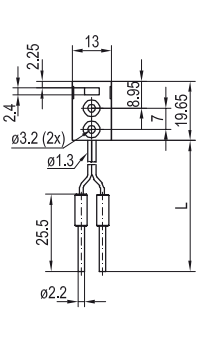
153-00609

LLK2QRR19x25-PE-2m



153-00610

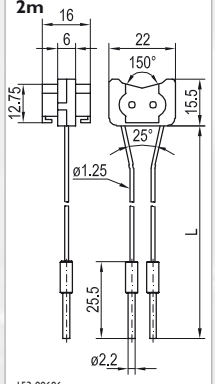
LLKIVRF5-PE-2m



153-00611

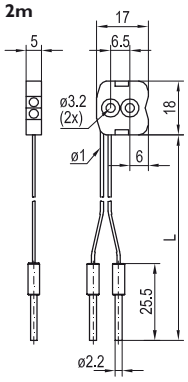
Light barriers

LLK1VRR22x15-PE-2m



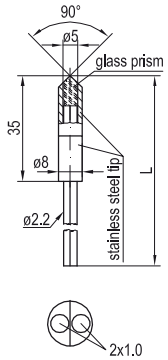
153-00606

LLK1VRF17x18-PE-2m



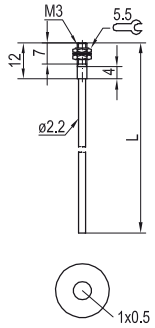
153-00619

LLK2PR2-PE-2m



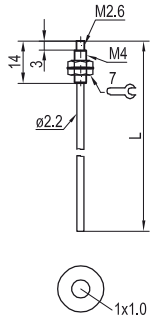
153-00625

K2L-201



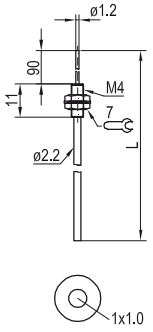
153-00084

K2L-202



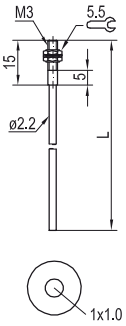
153-00087

K2L-204



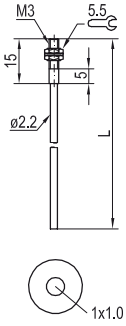
153-00086

K2L-7



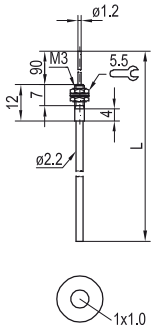
153-00276

K2L-77



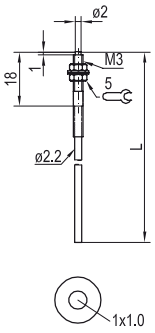
153-00277

K2L-203



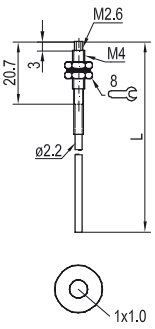
153-00085

LLK2LM3-PE-1m



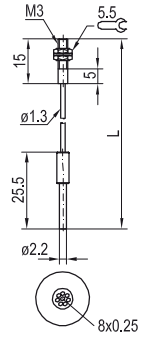
153-00454

LLK2LM4-PE-1m



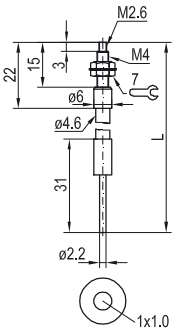
153-00455

K1L78



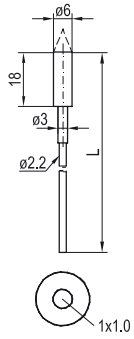
153-00278

33L1/500-MSC



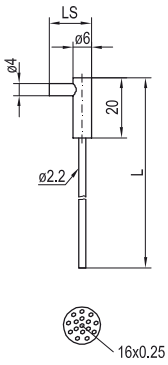
153-00089

LLK2LV6-PE-1m



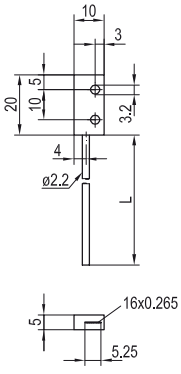
153-00456

LLK2LZ (Ls=10)



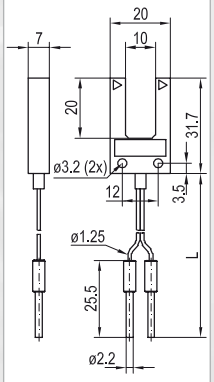
153-00604

K2Q-12



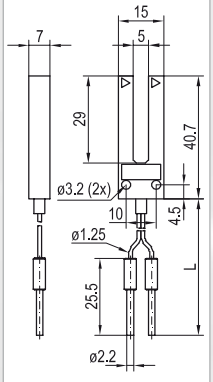
153-00275

LLK1GL10-PE-2m



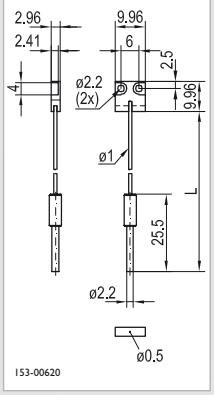
153-00608

LLK1GL5-PE-2m



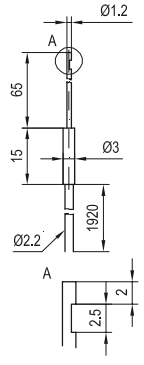
153-00607

LLK1L10x10-PE-2m



153-00620

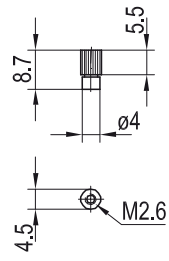
K2L-34



153-00279

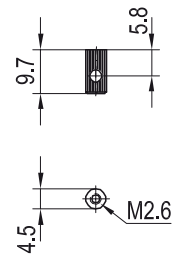
Ancillary lenses

33 LVL 2.2



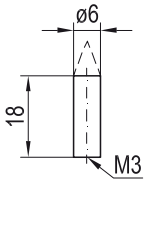
153-00077

33 LVL 2.2W



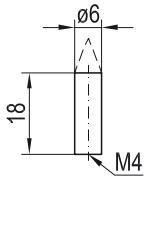
153-00078

LVLF-M3



153-00617

LVLF-M4



153-00618

From our product range

- Anti-collision sensors
- Capacitive sensors
- Colour sensors
- Contrast sensors
- Distance sensors
- Fibre optics
- Inductive sensors
- Laser sensors
- Line cameras
- Miniature sensors
- Optical windows
- Proximity switches
- Retroreflective sensors
- SmartPlug
- Slot sensors
- Through-beam sensors
- Ultrasonic sensors
- Vision sensors

Our concept: Speed combined with innovation, quality and customer awareness

Since the day we were founded, our investments in research and development have been way above average for this branch, and have laid the foundation for customer satisfaction and continuous growth. Today SensoPart is one of the leading suppliers of industrial sensors – including **distance sensors, vision sensors, laser sensors and colour sensors.** Recognition by independent experts is prominent evidence of our work. Indeed SensoPart has received numerous distinctions and prizes over the past years. We have been rewarded for the clear goal behind of our innovations – achieving customer satisfaction with convincing performance data and clever ideas.

- Dr Rudolph-Eberle Prize for Innovation 2001
- Baden Wurttemberg Sponsorship award for Young Companies 2002
- German Sensor Application Prize 2003
- German Sensor Application Prize 2004
- Dr Rudolph-Eberle Prize for Innovation 2006

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