

FIO Series

▶ R-S-A3.0-(3.0)-...-22°-UV

UV reflected-light fiber optics

- UV light-conducting glass fibers for reflected light operation
- **Sensor head type A3.0 (fiber bundle Ø 3 mm)**
- High quality
- Silicone metal sheath
- Thermally stable up to 180°
- Beam opening angle 22°
- Total length 600 mm or 1200 mm
- Standard adapter for use with SPECTRO-1-FIO-UV-... and SPECTRO-3-FIO-...-UV sensor types

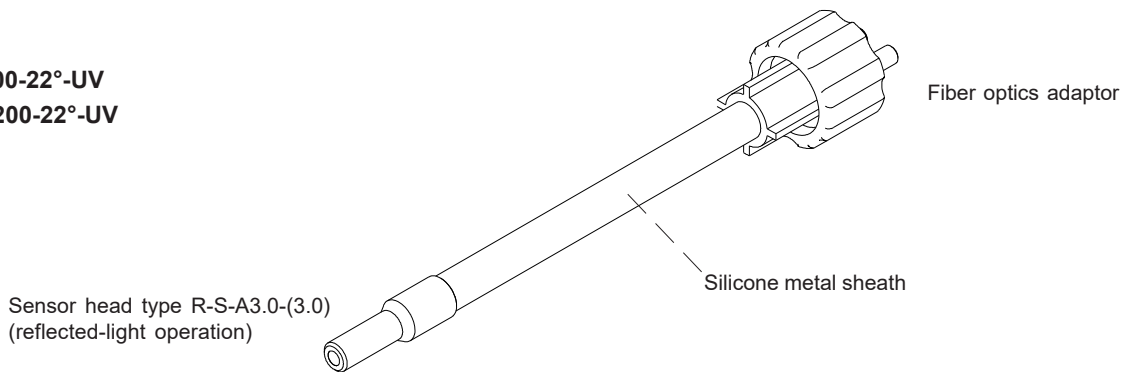


Design

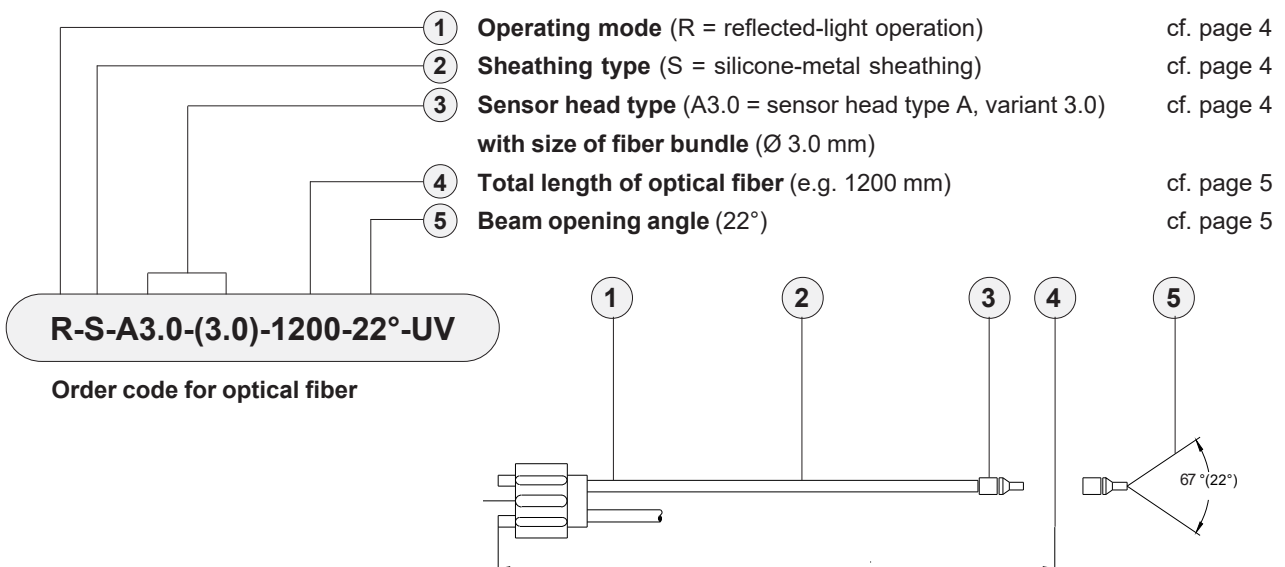
Product name:

R-S-A3.0-(3.0)-600-22°-UV

R-S-A3.0-(3.0)-1200-22°-UV



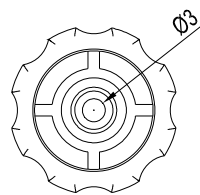
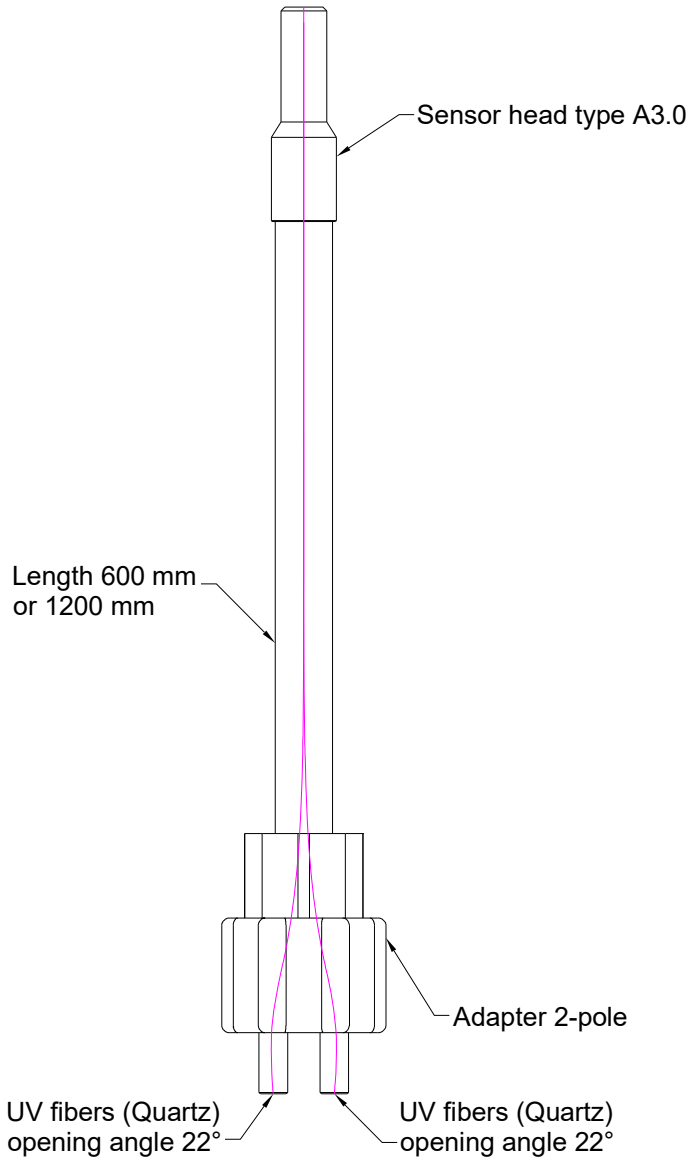
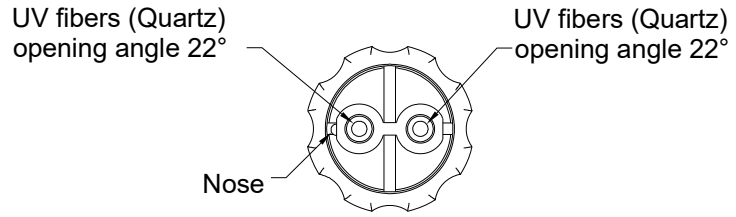
Order Code





Design

R-S-A3.0-(3.0)-600-22°-UV
R-S-A3.0-(3.0)-1200-22°-UV





Characteristics

General characteristics of fiber optics

Light-conducting glass fibers are optical components that allow the transmission of light through any curved path based on the principle of total reflection. The individual fiber is composed of high-break core glass and low-break cladding glass. The light beams entering the core glass within the critical angle are guided through the fiber by way of reflection at the core/cladding contact surfaces (step index fiber).

The highly flexible fiber optics are made of bundled individual glass fibers. The ends are each glued into a sensor head and a connector. The faces are optically polished. For protection against mechanical, chemical, or thermal destruction the optical fibers are provided with a corresponding protective sheath.

Fiber optics (optical fibers) offer solutions for difficult tasks in optoelectronics and are primarily used wherever compact devices are too big, too heavy, or technically unviable.



Technical Data

Fiber optics of FIO Series	
Diameter of a single fiber	70 µm (standard fiber, optimum ratio between transmission and flexibility)
Opening angle	standard fiber 67° (NA 0,56) special fiber 22° (NA 0,21) special UV fiber 22° (80/100 µm)
Material	optical glass (e.g. quartz glass)
Dielectric strength	50 kV/mm with PVC sheathing
Special versions	-VS: version with vibration protection -T400: version with increased temperature stability up to +400°C (due to special bonding of the fibers)
Permissible temperature range for various sheathings with a corresponding fiber bonding	PVC (P): -20°C ... +80°C Metal (M): +40°C ... +180°C Metal with special bonding (E): -40°C ... +400°C Silicone-metal (S): -40°C ... +180°C



Mounting Hints

Please note the following information on the usage and mounting of optical fibers:

Fiber optics consist of a large number of single glass fibers with a diameter from 10 up to 70 µm. In spite of their high flexibility and resistance they have to be protected against tension, twist off, and bend.

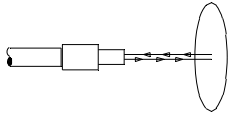


- Bending radius: At least 4 times the sheath's outside diameter
- Mounting: Without heavy pressure to the fiber
- Installment: Tension-free!

For applications with heavy mechanical strain we recommend to use fiber optics with silicone-metal sheath.

Operating Mode

R = Reflected light operation



Transmitter and receiver fibers are contained in one fiber optics cable.
 The light comes from the transmitter fibers, is reflected at the object to be measured, and reaches the evaluation amplifier through the receiver fibers.

Sheathing

S = Silicone-metal sheath



Metal wire-spiral-reinforced hose with glass-fiber braiding and silicone rubber sheathing

Characteristics:

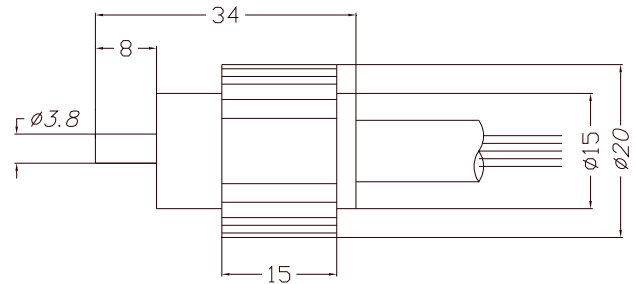
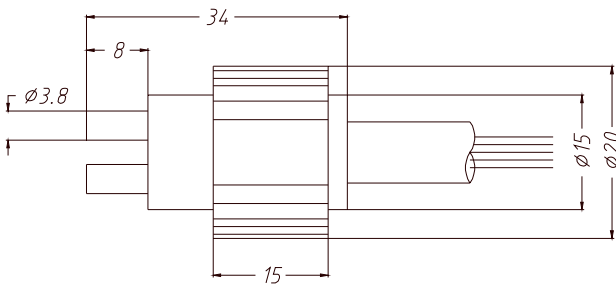
- Very flexible, ideal for frequent bending
- Highly resistant to bending, tension and torsion
- Temperature-stable from -60 °C to +180 °C
- Liquid-tight

Bending radius corresponds to three times the external diameter of the sheath.

Advantages:

- Highly flexible
- High resistance to kinking
- High tensile and torsional strength
- Thermally stable from -40°C to +180°C
- Liquid-tight

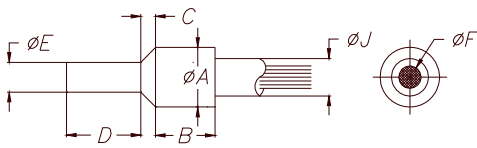
Dimensions of Adaptor



All dimensions in mm

Sensor Head Type

Sensor head Type A (end sleeve: special steel)



Type	A	B	C	D	E	F	ØJ		
	Ø				Ø	Ø	P	M	S
A1.0	4.6	8	2	11	2.5	1.5	4	-	-
A1.1	6.6	8	2	11	2.5	1.5	-	5	4.4
A2.0	6.6	10	2	12	4.5	2.5	6	6	5.8
A3.0	8.5	11	2	15	6.0	3.0	7	7	7.5

A1.0 end sleeve suitable for PVC sheath (P)

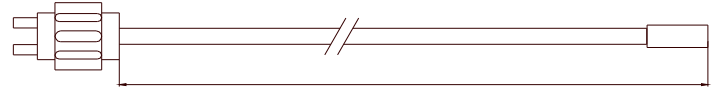
P = PVC sheath
 M = Metal sheath
 S = Silicone metal sheath

Standard Lengths

Available standard lengths are 600 mm or 1200 mm ((special cable lengths are also available), length tolerance +2%)



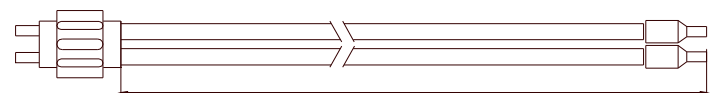
Total length l = 600 mm or 1200 mm



Total length l = 600 mm or 1200 mm



Total length l = 600 mm or 1200 mm



Total length l = 600 mm or 1200 mm

Beam Opening Angle

Schematic drawing:
 Opening angle 22°

