

# Fiber Optic Probes

## and Components

### Compact Design, Flexible Solutions

- ✓ **Bare fiber** - pure fiber probe without jacket.  
Standard diameter: 80 or 125  $\mu\text{m}$ .  
50  $\mu\text{m}$  probe can be custom-manufactured on request.
- ✓ **Protected bare fiber** - reinforced fiber probe with protective sleeve made of metal.  
Standard diameter: 0.8 mm.
- ✓ **Enhanced Working Distance** - fiber probe with custom-fabricated beam profile for greater working distance.  
Standard diameter: 1.3 mm.
- ✓ **Custom solutions** - Custom probe designs can be developed on request to meet your specific application requirements.



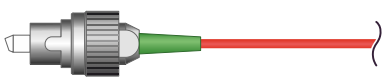


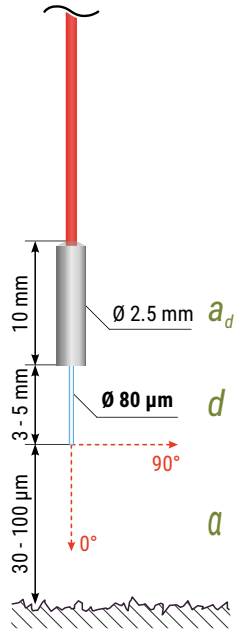
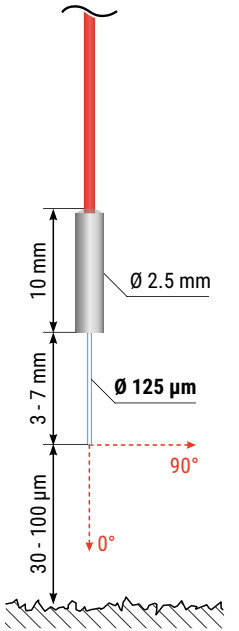
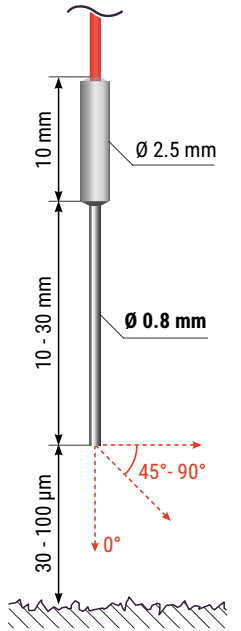
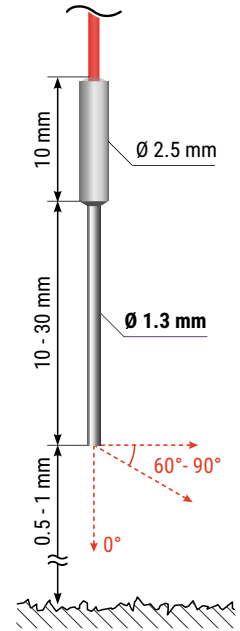
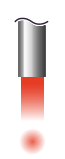
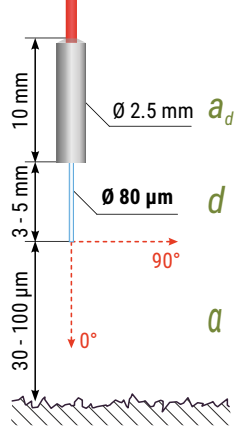
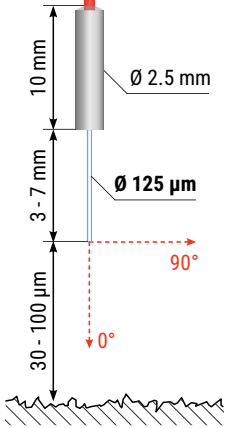
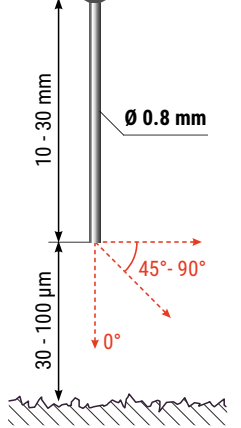
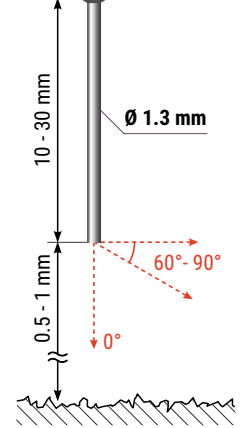

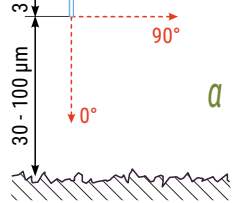
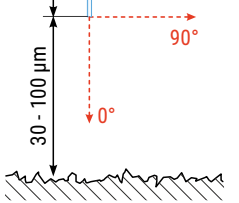
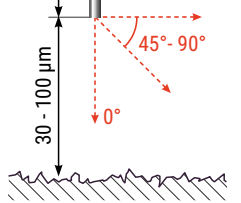
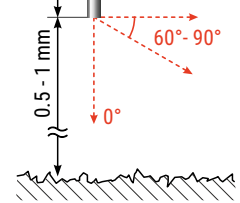
### Fiber Optic Solutions for Demanding Requirements

Flexibility and high transmission rates - fionec offers custom-made fiber optic solutions for fast signal and data transmission. The main fields of application of our specially fabricated fiber optics are in the areas of metrology and testing, telecommunications and life sciences. We develop fiber-optic probes with customized probe designs and beam profiles tailored to your application.

# Custom Fiber Optics

## Portfolio

	Bare fiber (BF)	Protected bare fiber (PBF)	Enhanced WD (EWD)
Design	pure fiber probe	fiber probe with protective metal sleeve	fiber probe with enhanced working distance
Standard diameter $[d]$	80 or 125 $\mu\text{m}$ ; 50 $\mu\text{m}$ on request	0.8 mm	1.3 mm
Free length (max. measurable depth) $[l]$	3 - 5 mm (80 $\mu\text{m}$ ); 3 - 7 mm (125 $\mu\text{m}$ )	10 - 30 mm	
Working distance $[w_d]$	30 - 100 $\mu\text{m}$ (depending on measuring system used)		0.5 - 1 mm
Reflected beam angle $[a]$	0° (axial) or 90° to the probe axis	0° (axial), 45°- 90° to the probe axis	0° (axial), 60°- 90° to the probe axis
Beam shape	focusing / collimating / divergent		
Probe adapter $[a_i, a_d]$	10 mm length, $\varnothing$ 2.5 mm (tolerance h7)		
Connector types	FC/APC (standard), LC/APC		

		FC/APC		LC/APC	
					
Beam shape		Bare fiber (BF) 80 $\mu\text{m}$	Bare fiber (BF) 125 $\mu\text{m}$	Protected bare fiber (PBF)	Enhanced WD (EWD)
focusing					
collimating					
divergent					

# Applications

## Test and Measurement Technology

### Miniaturized Precision

fionec's miniaturized measuring probes are especially suitable for demanding applications in the micro and precision manufacturing sector. With diameters starting from just 50  $\mu\text{m}$ , they allow for fast, contactless scanning of fine surface microstructures and the smallest of cavities. The fiber optic measuring probes are used in our FDM series distance measuring systems, amongst others.

### Applications

- ✓ Detecting surface roughness and waviness in micro-drilled holes, precision optics, and small gear dedenda
- ✓ Inspection of geometric and position tolerances
- ✓ Highly accurate distance and position detection
- ✓ Measurement of expansion, drift and vibrations
- ✓ Measurement of freeform surfaces in scanning mode for 3D modelling

## Data and Signal Transmission

### Innovative Fiber-Optic Solutions

Industry 4.0, the gigabit society and modern research need one thing above all else: high-performance glass-fiber infrastructure for fast and reliable data communication. fionec develops innovative custom fiber optic solutions and prototypes for state-of-the-art applications in the telecommunications and life sciences sectors.

### Services

- ✓ Prototype development
- ✓ Custom solutions for input and output coupling of light beams
- ✓ Fabrication of optical fibers, e.g. for special endoscopic applications
- ✓ Custom splicing and patching solutions

## Over 15 Years of Sophisticated Fiber Optic Technology

fionec has been developing, manufacturing and marketing innovative fiber optic measuring systems and components since 2007. We provide a complete and integrated range of services, from the development of customized measuring concepts and algorithms, simulations and contract measurement projects to the construction, adaptation and distribution of fiber optic measuring probes and optical fibers.

Our sophisticated miniature measuring probes are unrivaled in the high-tech industry, allowing us to maintain the technological leadership in high-precision measurements of tight or hard-to-access spaces and of delicate surface structures. Flexible and modular systems architecture, freely adaptable configurations and integrated interfaces enable us to provide customized measuring systems. For sophisticated measuring tasks and reliable quality assurance in the precision and ultra-precision manufacturing sector.