# Fiber Compact Collimators Distance up to 1.2m

## Diameter 6.1mm, SM, PM, 5W, 10W

DATASHEET

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We offer a comprehensive range of miniature fiber optic collimators designed for low loss, high return loss, and high optical power handling of up to 10W, with no organic materials in the light path. These collimators are integrated into many of our products, and we specialize in delivering custom solutions to meet specific application requirements. Our miniature collimators are optimized for working distances up to 1.2m. For applications requiring longer working distances, we recommend our High-Power Fiber Optic Collimator. For the 1950 nm band, we uniquely provide lower-loss collimating lenses made with NSF11 glass, reducing coupling loss between a pair of collimators by approximately 0.3 dB compared to standard glass lenses.

## Features

- Working Distance up to 80mm
- Diameter 1.2 to 3.2mm
- Low Loss
- High Power
- Long Distance
- Compact

## Applications

- Device
- Test
- Special Solution

## Specifications

| Parameter | | Min | Typical | Max | Unit |
|---|---|---|---|---|---|
| Insertion Loss [1] | 630, 632, 650 ±20nm | | 0.8 | 1 | dB |
| | 780, 850, 980 ±20nm | | 0.3 | 0.4 | |
| | 1060, 1220 ±30nm | | 0.3 | 0.3 | |
| | 1310 - 1600 nm | | 0.2 | 0.25 | |
| | 1900 - 2400nm | | 0.4 | 0.5 | |
| Working Distance | | 1 | 5 | 500 | mm |
| PMD (SMF Switch only) | | | 0.1 | 0.3 | ps |
| Extinction Ratio (PMF only) | | 18 | 25 | | dB |
| Return Loss | | | 55 | 60 | dB |
| Optic power Handling [4] | Normal power version | | 0.3 | 0.5 | W |
| | High power version | | | 5, 10 | W |
| Operating Temperature | Standard | -5 | | 75 | °C |
| | Special version | -40 | | 85 | |
| Storage Temperature | | -45 | | 100 | °C |

**Notes:**

[1]. Measured with a pair and without connectors

RoHS COMPLIANT

**Note:** The specifications provided are for general applications with a cost-effective approach. If you need to narrow or expand the tolerance, coverage, limit, or qualifications, please [click this link]:



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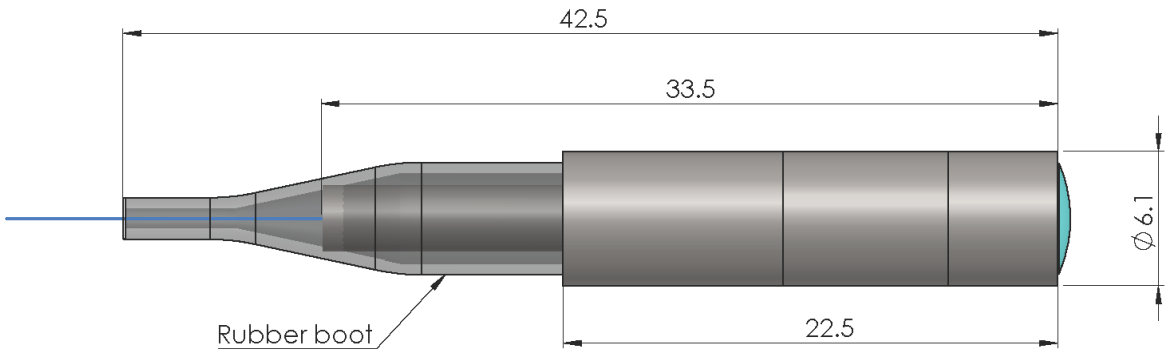
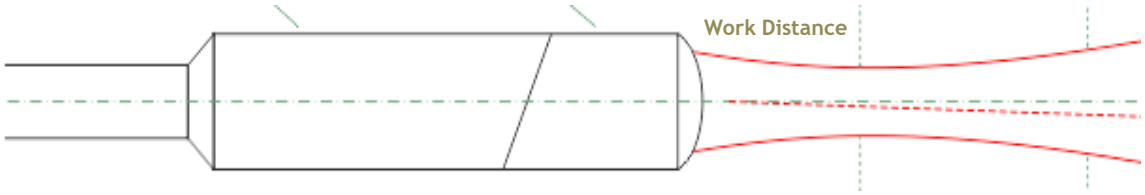
### Mechanical Dimensions Standard for beam size <0.8mm (Unit: mm)




*Product dimensions may change without notice. This is sometimes required for non-standard specifications.

### Typical Collimator Beam Profile




Fiber collimators produce parallel output beams, but perfect collimation is theoretically impossible because of fundamental diffraction limits, where the divergence angle $\theta \approx \lambda / \pi D$ depends on the wavelength ($\lambda$) and the beam diameter ($D$). Larger beam diameters yield lower divergence, enabling longer working distances. Practical fiber collimators are therefore optimized for a specific working distance and diffraction-limited beam size, with a typical beam profile shown below. For multimode collimators, performance also depends on the launch mode distribution, so a similar-profile source is used during fabrication and testing to ensure consistency with customer conditions. With more than 20 years of experience, we employ proprietary fiber-end lensing, precision V-groove assemblies, and custom-built metrology tools to manufacture high-performance custom fiber collimators with superior optical characteristics..

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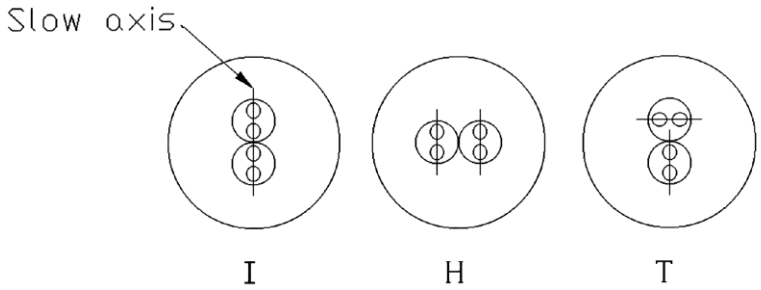
### PM Stress Field Orientation




### Ordering Information (Part Number)

| | ☐ | ☐ | ☐ | ☐☐☐ | ☐☐ | ☐ | ☐☐ | ☐ | ☐ | ☐ |
|---|---|---|---|---|---|---|---|---|---|---|
| **Prefix** | **# Fiber** | **PM Fiber Orientation [1]** | **Wavelength** | **Working Distance (cm) [2]** | **Beam Diameter (mm)** | **Power/ Temperature** | **Fiber Type** | **Fiber Cover** | **Fiber Length** | **Connector [3]** |
| **FCCM-** | Single = 1<br>Dual = 2<br>Special = 0 | N/A = 4<br>I = 1<br>H = 2<br>T = 3<br>Special = 0 | 1550 = 5<br>1060 = 1<br>2000 = 2<br>1310 = 3<br>1480 = 4<br>1625 = 6<br>980 = 9<br>850 = 8<br>780 = 7<br>650 = E<br>550 = F<br>400 = G<br>1265~1620 = L<br>Special = 0 | 30 = 030<br>40 = 040<br>50 = 050<br>60 = 060<br>80 = 080<br>100 = 100<br>120 = 120<br>Special = 000 | 3 = 03<br>5 = 05<br>8 = 08<br>10 = 10<br>Special = 00 | 0.5W = 1<br>2W = 2<br>5W = 5<br>10W = 6<br>0.5W/85°C = A<br>2W/85°C = B<br>5W/85°C = C<br>10W/85°C = D | SMF-28 = 01<br>Special = 00<br><br>***Select Below*** | Bare fiber = 1<br>0.9mm tube = 3<br>3mm tube = 5<br>Special = 0 | 0.25m = 1<br>0.5m = 2<br>1.0 m = 3<br>Special= 0 | None = 1<br>FC/PC = 2<br>FC/APC = 3<br>SC/PC = 4<br>SC/APC = 5<br>ST/PC = 6<br>LC/PC = 7<br>LC/APC = A<br>LC/UPC = U<br>Special = 0 |

[1]. For single fiber I and H is aligned to slow axis, T to fast axis

[2]. Customer is a critical parameter in which all the performance can be measured and optimized quantitively.

[3. The connector cannot be installed directly onto bare fiber, as it is prone to damage during shipping. However, the connector can be assembled on bare fiber if a 3 cm protective loose tube is added for reinforcement. The customer can remove this protective tube after testing. The optical power handling of a standard connector is less than 0.5 W for SM28 fiber and decreases further with smaller core fibers.

***Fiber Type Selection Table:***

| | | | | | |
|---|---|---|---|---|---|
| 01 | **SMF-28** | 34 | **PM1550** | 71 | **MM 50/125µm** |
| 02 | **SMF-28e** | 35 | **PM1950** | 72 | **MM 62.5µm** |
| 03 | **Corning XB** | 36 | **PM1310** | 73 | **105/125µm** |
| 04 | **SM450** | 37 | **PM400** | 74 | **200 µm NA 0.22** |
| 05 | **SM1950** | 38 | **PM480** | 75 | **400 µm NA 0.22** |
| 06 | **SM600** | 39 | **PM630** | 76 | **STP 50/125** |
| 07 | **Hi780** | 40 | **PM850** | 77 | **IRZS23** |
| 08 | **SM800** | 41 | **PM980** | 78 | **IRFS32** |
| 09 | **SM980** | 42 | **PM780** | 79 | |
| 10 | **Hi1060** | 43 | **PM350** | 80 | **PCF** |
| 11 | **SM400** | 44 | **PM405** | 81 | **UV180nm** |
| 12 | | 45 | **PM460** | 82 | **LMA-PM-10** |
| 13 | | 46 | | | |

Warning: An Optical Collimator need to have a working distance stated by the customer at the time of order. The optical parameters only tested at the working distance.

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