

High Power Fiber Collimator Distance to 100m (up to 1kW CW, 500-2600nm)



(Protected by patents: US7920763B1 US7715664B1)

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Features

- High Power Handling
- High Isolation
- High Reliability
- Low IL, PDL & TDL
- Cost Effective

Applications

- Laser Pump Source
- Optical Fiber Amplifier
- Laser Manufacturing
- Laser Marking



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Agiltron's 1kW (CW) Fiber Collimators incorporates advanced technologies of direct fusion to a large beam expanding end cap ensuring safe power density, and a mode stripper that prevents burning the buffer/jacket by removing unwanted back-reflection radiation. These technologies significantly increase the collimator reliability.

Agiltron can provide customized beam size for a wide choice of operating wavelength and fiber types.

Specifications

Parameter	Min	Typical	Max	Unit
Operating Wavelength (λ_c)		500-2000		nm
Power Handling			1000	W
Insertion Loss	0.3	0.4	0.6	dB
Return Loss ^[1]		50		dB
Divergence ^[2]		0.4	5	mrاد
Extinction Ratio ^[3]		25		dB
Beam Roundness	90			%
M ² *			1.2	
Beam Diameter		5	8	mm
Operating Temperature	0		+70	°C
Storage Temperature	-40		+85	°C

Notes:

[1]. For LMA fiber or double cladding fiber, return loss may be higher.

[2]. It typically for beam size of 5 mm . Divergence depends on beam size.

[3]. For PM fiber.

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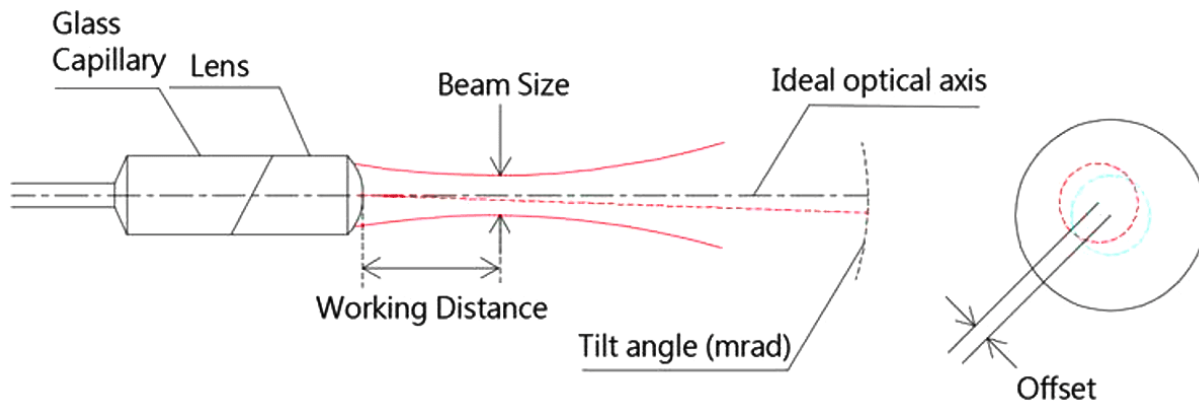
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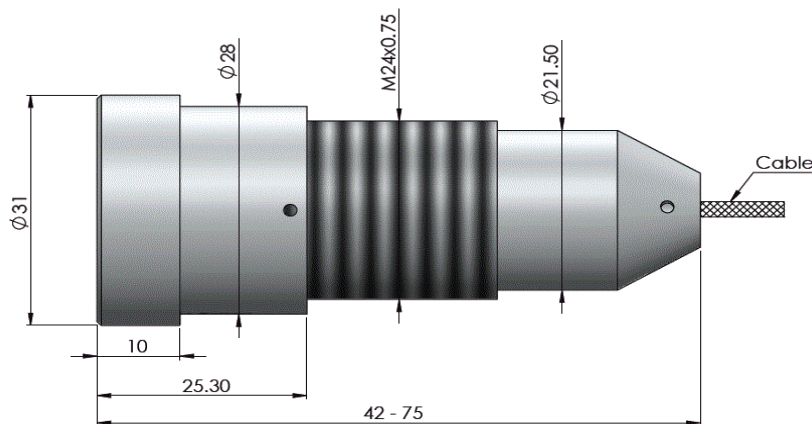
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Optical Collimator Ray Trace Example



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 (λ) 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..

Mechanical Footprint Dimensions (mm)



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

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Ordering Information (Part Number)

Prefix	Wavelength	Power Handling	Beam Size or Divergence ^[1]	Working Distance	Fiber Type	Fiber Cover	Fiber Length	Connector ^{[2][3]}
FCHP-	1060 = 1 2000 = 2 1310 = 3 1480 = 4 1550 = 5 1625 = 6 780 = 7 850 = 8 980 = 9 850/1310 = A 1260~1620 = B 1310/1550 = D 350 = E 530 = F Special = 0	10W = 01 20W = 02 30W = 03 50W = 05 100W = 10 200W = 22 300W = 33 400W = 44 500W = 55 1kW = 00	5.0mm = 05 10mm = 10 20mm = 20 40mm = 40 60mm = 60 80mm = 80 100mm = A1 0.4 mrad = M4 0.6 mrad = M6 0.8 mrad = M8 1.0 mrad = MD 1.2 mrad = ME 1.4 mrad = MF 1.6 mrad = MG 2.0 mrad = MH Special = 00	0.1m = 01 0.3m = 03 0.6m = 06 0.9m = 09 1.3m = 15 1.7m = 17 2.2m = 22 2.7m = 27 3.2m = 32 5m = 50 8m = 80 12m = A2 15m = A5 100m = B1 Special = 00	SMF28 = 01 Special = 00 Select Below	900um tube = 2 3mm PVC cable = 4 3mm Armor cable = 6 5mm Armor cable = 7 Special = 0	0.25m = 1 0.5m = 2 1.0 m = 3 Special = 0	None = 1 FC/PC = 2 FC/APC = 3 SC/PC = 4 SC/APC = 5 ST/PC = 6 LC/PC = 7 SMA905 = 9 LC/UPC = U Special = 0

[1]. Beam size is at the working distance

[2]. Regular fiber connector has PER ~22dB. Connector with PER >27 dB is available using special process

[3]. The default connector configuration uses fiber with 0.9 mm buffer protection. The connector cannot be installed directly onto bare fiber because the bare fiber 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 may remove this protective tube after testing. The optical power handling of a standard connector is less than 0.5 W for SMF-28 fiber and decreases further for 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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