

High Power Fiber Collimator with Isolator 1310nm-2400nm

(100W CW, SM, LMA, DCD, PM Fibers)

(protected by patents: US7920763B1 US7715664B1)



DATASHEET

BUY NOW



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

This passive device transmits high power light from input fiber into a free space collimated output beam while blocking the unwanted light from back reflection and scattering. Agiltron's proprietary magnetic-optics technology and advanced end-cap technique enable industrial leading performance in power handling, low loss, reliability, and cost effective. Agiltron currently provides a full range of polarization-independent, polarization maintaining, and custom design versions with a broad wavelength coverage and various output beam diameters. We have experience to incorporate special fibers.

Specifications

Parameter	Min	Typical	Max	Unit
Operation Wavelength	1310		2400	nm
Insertion Loss ^[1]		0.6	1.2	dB
Isolation	20	25		dB
Extinction Ratio ^[6]		25	30	dB
Polarization Dependent Loss		0.1	0.2	dB
Polarization Mode Dispersion		0.1	0.2	ps
Return Loss	40	50		dB
Optical Power Handling ^{[2][4]}			100	W
Beam Size ^[3]	0.4	1	5.5	mm
Fiber Type	See Order Information			
Storage temperature	-10 to 60			°C
Storage Humidity	5% to 95% (No Condensation)			

Notes:

- [1]. Measured without connectors, 2400nm may have larger loss depend on fiber choice
- [2]. Continuous operation. For pulse operation, please call us.
- [3]. For beam size larger than 1 mm, please call us.
- [4]. Back Reflect < 10%. For >10% application, please call us.
- [5]. For beam larger 5 mm, the package is only estimated. The real size may be different.
- [6]. For PM fiber only.

Note: For a polarized input light version, the isolation is optimized to block the light reflection of the same polarization. Although lights of other polarizations may also be blocked, the extinction may be poor. PM isolators can be specially made to block backward propagating lights of all polarizations. PM isolators can also be made with a light polarizing function.

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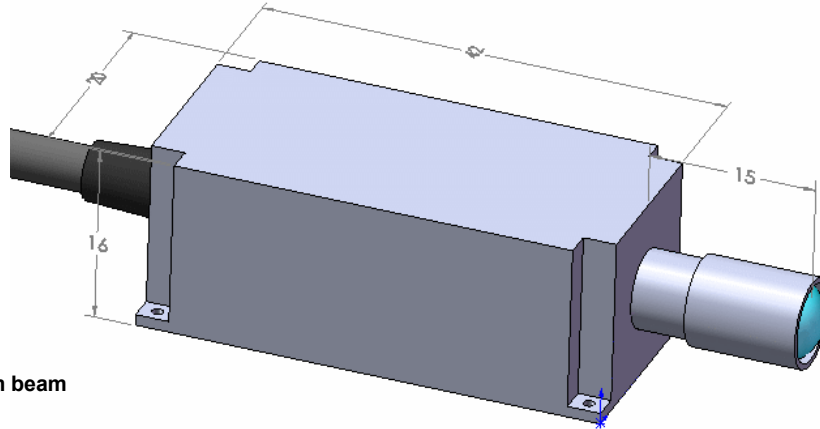
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Mechanical Footprint Dimensions (mm)



Typical isolator package
dimension (only for 1 mm beam
size)

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

Ordering Information (Part Number)

Prefix	Type	Wavelength	Power Handling	Working Distance ^[1]	Beam size ^[2]	Fiber Type	Fiber Cover	Fiber Length	Connector ^[3]
FSOI-	SM = 1 PM = 2 Special = 0	1310nm = 3 1550nm = 5 1630nm = 6 2000nm = 2 Special = 0	10W = 1 20W = 2 30W = 3 50W = 5 100W = 9	0.1m = 1 0.2m = 2 0.3m = 3 0.4m = 4 0.5m = 5 0.6m = 6 0.7m = 7 0.8m = 8 0.9m = 9 Special = 0	1.0mm = 1 2.0mm = 2 3.0mm = 3 4.0mm = 4 5.0mm = 5 Special = 0	SMF28 = 2 PM 1550 = 3 SM1950 = 4 SM2000 = 5 PM1950 = 6 Hi1060 = 1 PM980 = 9 Special = 0	Bare fiber = 1 900um loose tube = 3 3 mm loose cable = 4 Armor cable (3 mm) = 6 Armor cable (5 mm) = 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/APC = A LC/UPC = U Special = 0

[1]. Customer must provide a working distance. We will optimize and test at the working distance point. The collimator may not meet spec off the working distance.

[2]. A beam size definition @1/e²

[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.

Warning: An Optical Collimator need to have a working distance stated by the customer at the time of order

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Application Notes

Fiber Core Alignment

Note that the minimum attenuation for these devices depends on excellent core-to-core alignment when the connectors are mated. This is crucial for shorter wavelengths with smaller fiber core diameters that can increase the loss of many decibels above the specification if they are not perfectly aligned. Different vendors' connectors may not mate well with each other, especially for angled APC.

Fiber Cleanliness

Fibers with smaller core diameters ($<5\text{ }\mu\text{m}$) must be kept extremely clean, contamination at fiber-fiber interfaces, combined with the high optical power density, can lead to significant optical damage. This type of damage usually requires re-polishing or replacement of the connector.

Maximum Optical Input Power

Due to their small fiber core diameters for short wavelength and high photon energies, the damage thresholds for device is substantially reduced than the common 1550nm fiber. To avoid damage to the exposed fiber end faces and internal components, the optical input power should never exceed 20 mW for wavelengths shorter 650nm. We produce a special version to increase the handling by expanding the core side at the fiber ends.