

Fiber Optical Isolator 850/980/1060nm

(up to 5W CW, SM, MM, PM)



DATASHEET

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Features

- Low Insertion Loss
- High Isolation
- Low PDL
- High Stability
- High Reliability
- Cost Effective

Applications

- Laser
- Fiber Optic Sensor
- Test and Measurement
- Instrumentation



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Rev 07/09/26

The OIST Series fiber optical isolator is a passive device that guides lights at 850/980/1060 nm in the forward direction while blocking light propagating in the reverse direction. Our proprietary magnetic-optics technology and proven advanced micro-optics design perfected over 25 years features low insertion loss, high isolation, compact structure, high power handling, and high stability. The platform can accommodate various fibers of polarization independence, polarization maintenance, multimode, and double cladding. The available configurations include 5W CW optical power handling, dual-stage high isolation, and integrated output power monitoring tap. The tap monitor is placed before coupling into the output fiber.

The excellent characteristics of this product make it an ideal choice for applications where a high-performance isolator is needed. We also provide customized designs to meet special applications.

Specifications

Parameter		Min	Typical	Max	Unit
Operation Wavelength	850	840		860	nm
	980	970		990	
	1060	1050		1070	
Insertion Loss ^[1]			0.8	1.2	dB
Wavelength Dependent Loss				0.2	dB
Isolation	Singe Stage	22	27	30	dB
	Dual Stage	45	50	60	
Polarization Dependent Loss (SM)			0.1	0.2	dB
Polarization Extinction Ratio (PM) ^[2]		18		32	dB
Polarization Mode Dispersion				0.2	ps
Return Loss		50			dB
Optical Power Handling			300		mW
Operating Temperature ^[3]		-20	30	55	°C
Storage Temperature		-10		60	°C
Fiber Type		See order information			

Notes:

[1]. Excluding connectors

[2]. High extinction ratio require special order

[3]. The device need to be mounted on a good heat conducting metal surface

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.

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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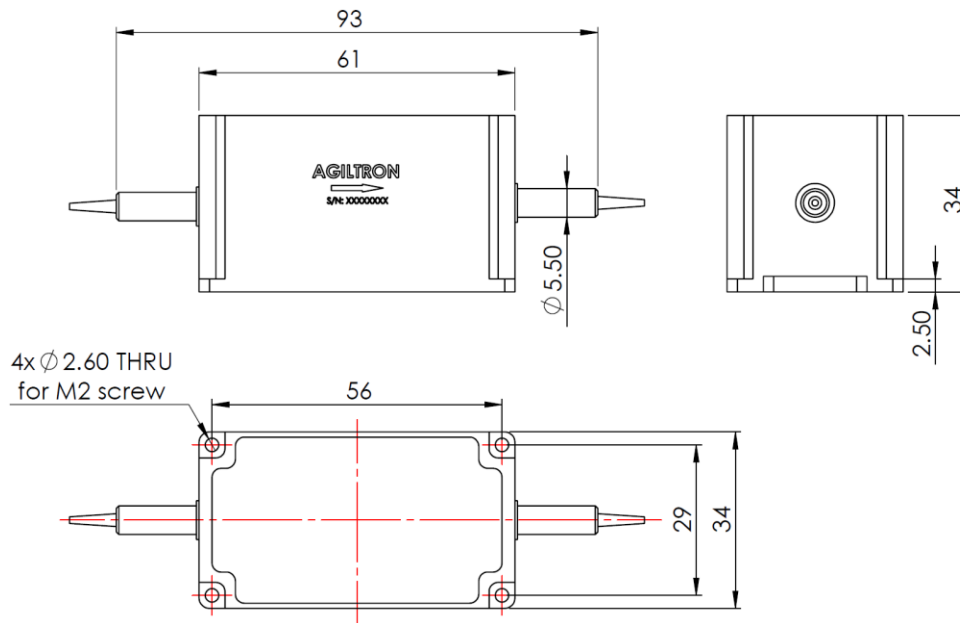
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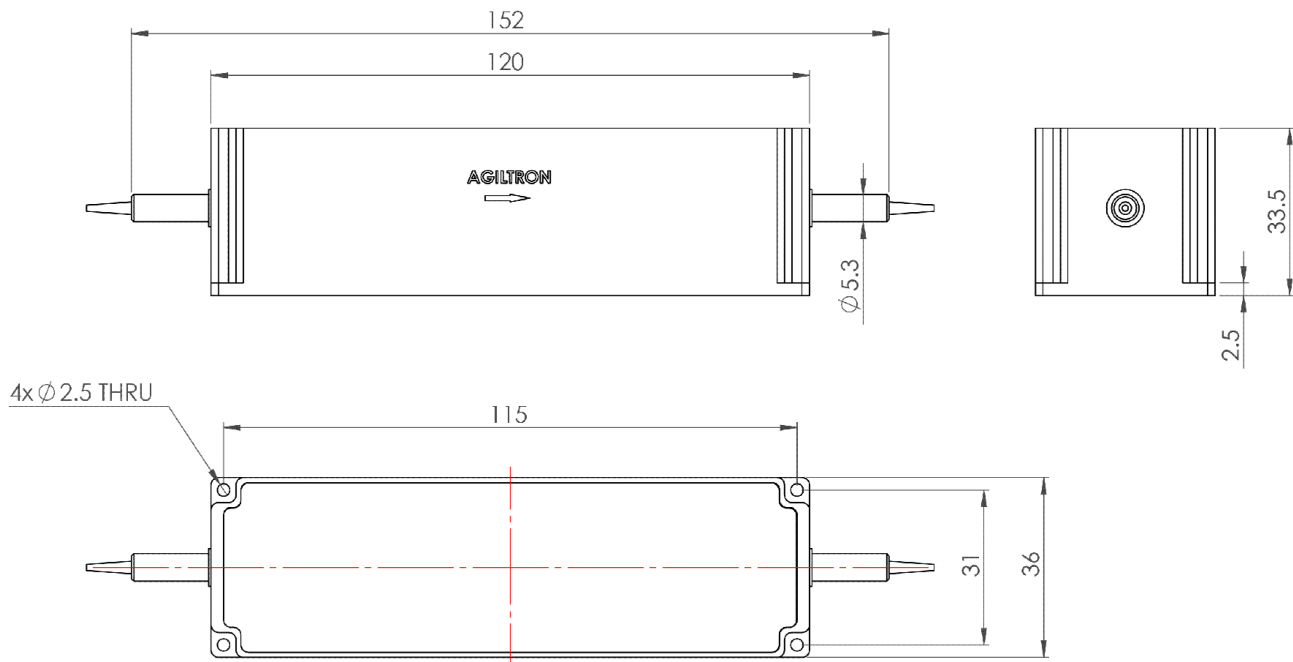
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Mechanical Dimensions: Standard (Mini/850) (mm)



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

Mechanical Dimensions: Dual Stage 980/1060 (mm)



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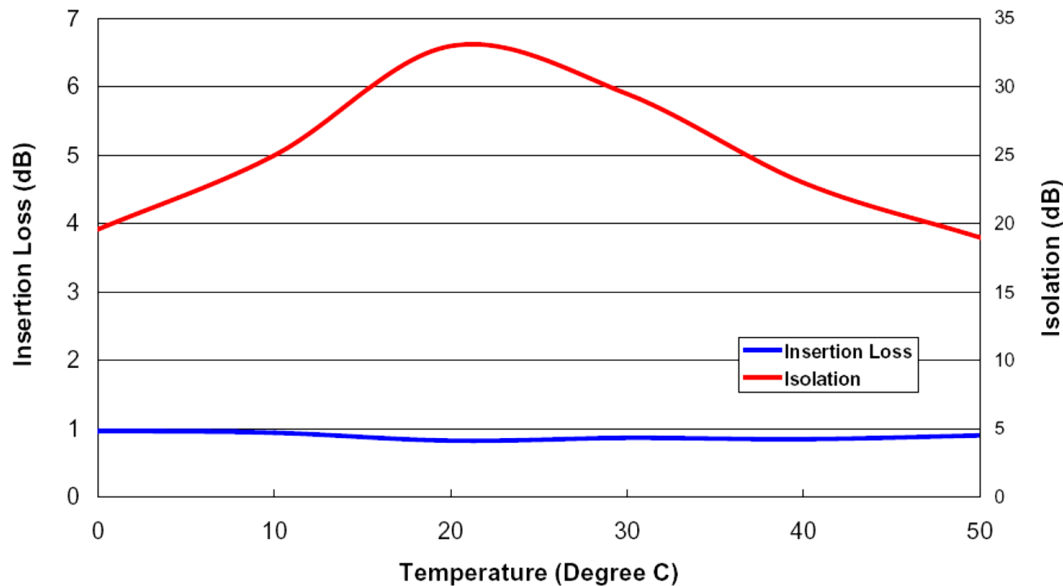
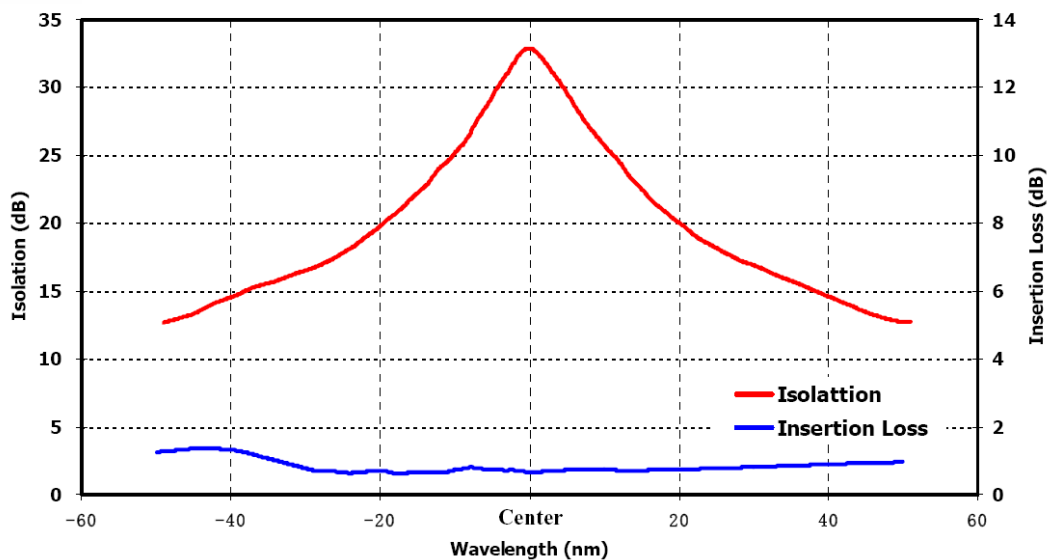
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Typical Single Stage Isolator Wavelength Dependence



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Ordering Information (Part Number)

Prefix	Configuration	Tap	Wavelength	Power	Stage	Fiber Type	Fiber Cover	Fiber Length	Connector ^{[1][2]}
OIST-	Polarization Independent = 1 Polarization Maintaining = 2	Non = 1 Yes = 2 Special = 0	1060 = 1 850 = 8 980 = 9 940 = A 780 = 7 Special = 0	0.3W = 1 5W = 2	Single = 1 Dual = 2	HI1060 = 1 HI780 = 7 SM800 = 8 HI980 = 9 PM780 = A PM850 = B PM980 = C Special = 0	0.9mm tube = 3 Bare fiber = 1 Special = 0	0.25m = 1 0.5m = 2 1.0m = 3 Special = 0	None = 1 FC/PC = 2 FC/APC = 3 SC/PC = 4 SC/APC = 5 ST/PC = 6 LC/PC = 7 LC/APC = A LC/UPC = U Special = 0

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

[2]. 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.

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 μm) 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 how handling by expanding the core side at the fiber ends.

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