Free Space Optical Isolator

(405-1060nm, 2mm to 40mm apertures, TGG Crystal)

DATASHEET

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The OITG Series Free Space Optical Isolator is a unidirectional light valve designed to transmit light in the forward direction while blocking back-reflection and backscattering in the reverse direction. This ensures effective protection of laser sources from destabilizing feedback or damage caused by back-reflected light. The isolators utilize high-quality TGG Faraday crystals known for their low loss and high optical power threshold, making them suitable for demanding applications. The OITG isolators are available with various options, including mounted polarizers, peak wavelength tuning configurations, and integrated tap monitors for feedback. Adding polarizers enhances isolation by filtering unwanted light. For high-power applications, fused silica PBS cubes are used, while thin-film PolaCores are employed for low-power, compact setups. An optional waveplate allows users to adjust the peak isolation wavelength by rotation and fixation. Agiltron specializes in providing customized design solutions to meet the unique requirements of specific applications, ensuring optimal performance and flexibility.

Features

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

Specifications

Parameter	Min	Typical	Max	Unit
Center Wavelength	450		1060	nm
Insertion Loss		0.3	0.6	dB
Wavelength Dependent Loss			0.2	dB
Isolation Single Stage	25	35	38	dB
Isolation Double Stage	40	45	55	dB
Optical Aperture Ø	2	5	40	mm
Pulse Damage Threshold @10ns	3.5		5	J/cm^2
Operating Temperature	-10		45	°C
Polarizer Type	Horizontal			
Polarizer Type	PBS Cube, Polacore			

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.

Applications

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

Rev 12/04/24

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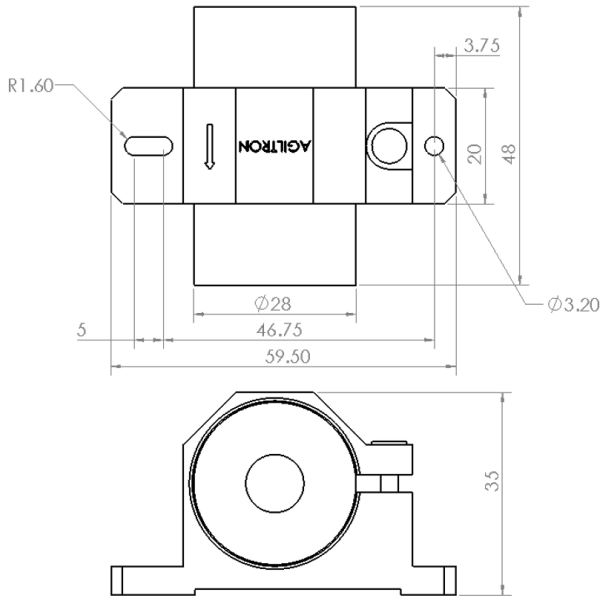
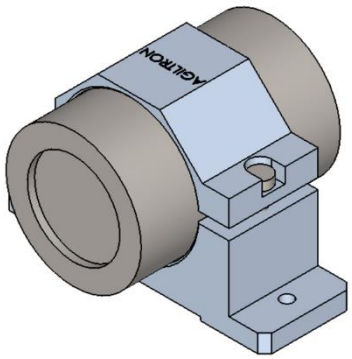
Mechanical Dimensions (mm) – Single Stage

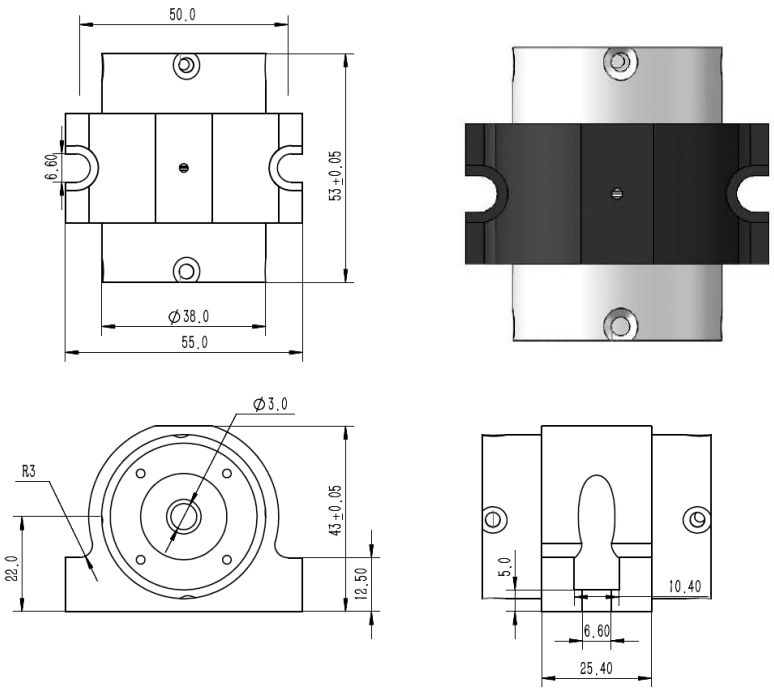
- 850-1060nm 2mm Aperture





Note: The listed dimensions are for using thin polacore, for PBS version both ends add about 5mm extrusions

- 850-1060nm 3/5 mmm Aperture



Polarizer Type: High Power(HP)
Transmission@1020-1060nm >92%
Clear Aperture: 3mm/5mm
Optical Rotation: 45.5°
Damage Threshold: 10J/cm^2@10ns

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

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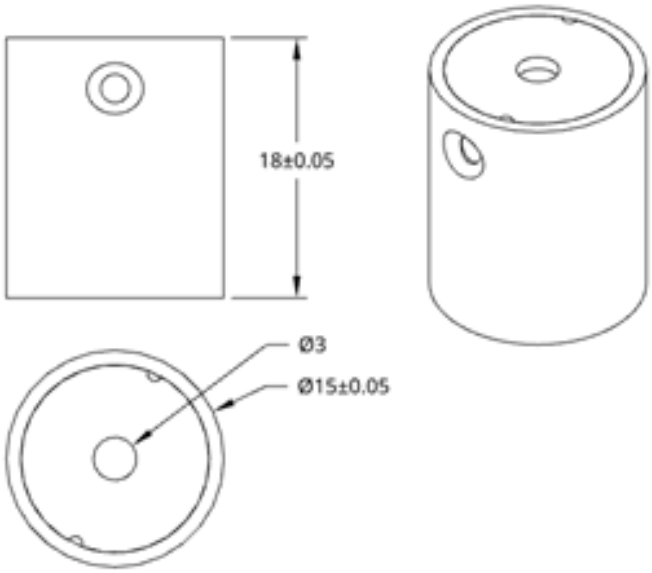
Mechanical Dimensions (mm)

- <5300nm 3/mmm Aperture without polarizers



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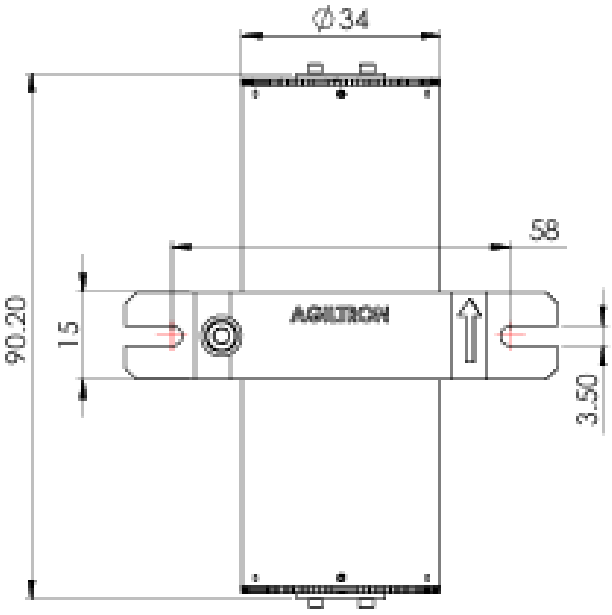
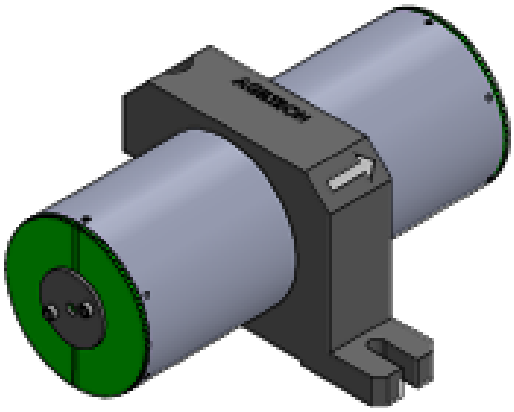
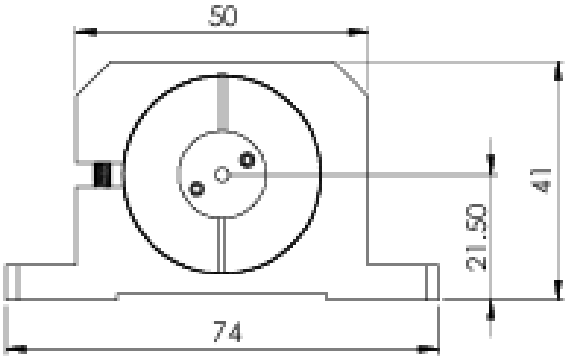
Mechanical Dimensions (mm)

- 780/850nm dual stage free space isolator.







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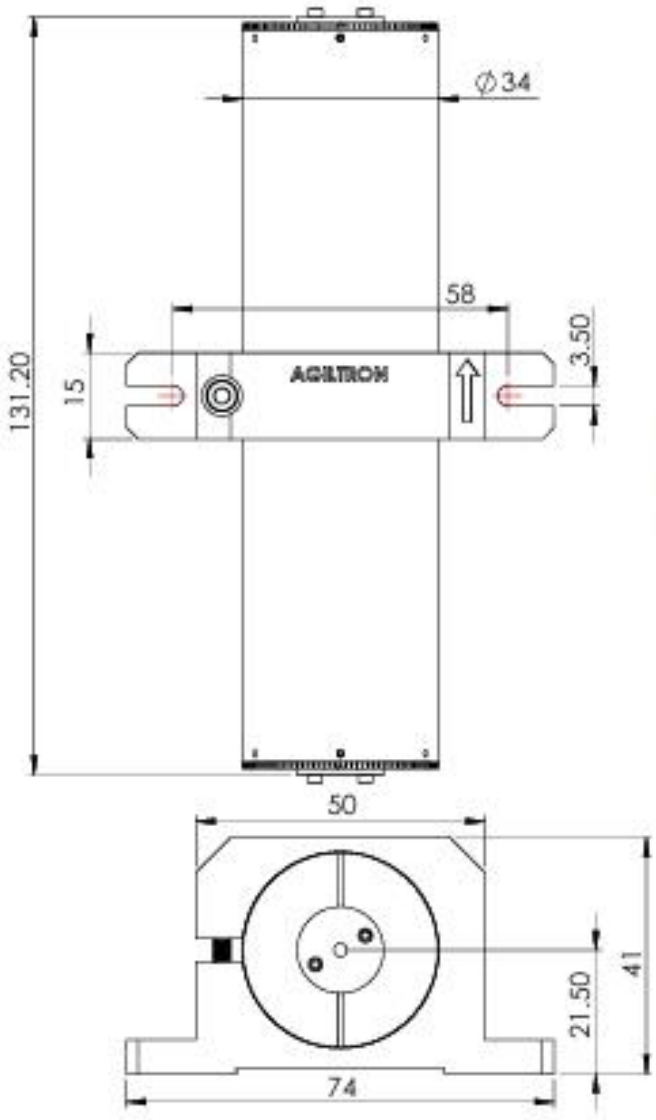
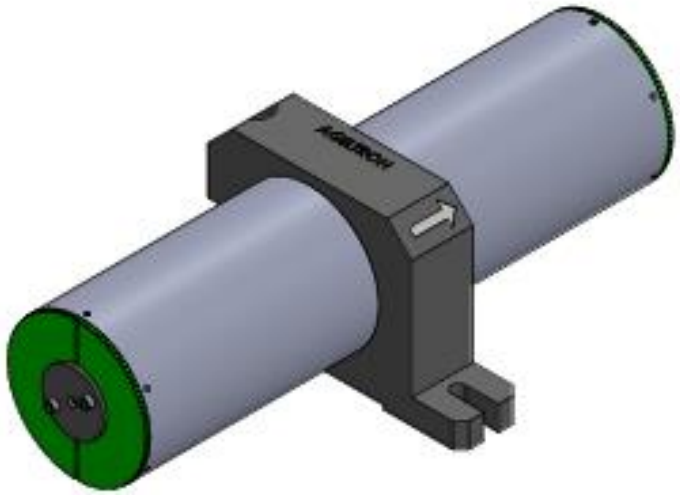
Mechanical Dimensions (mm)

- 1060nm dual stage free space isolator.





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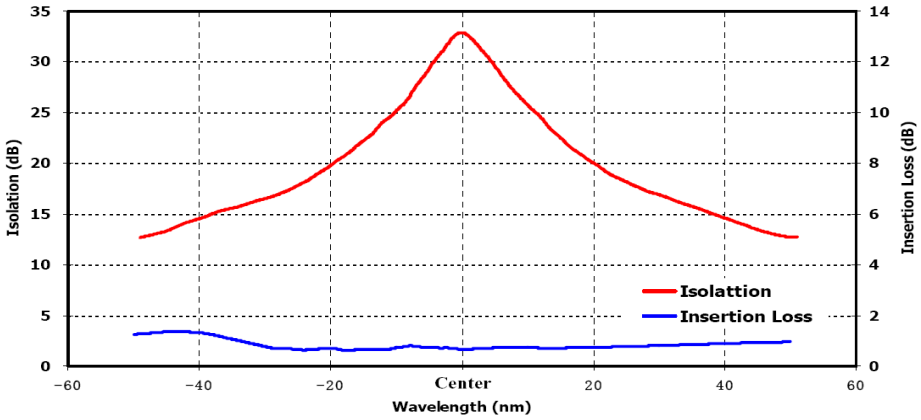
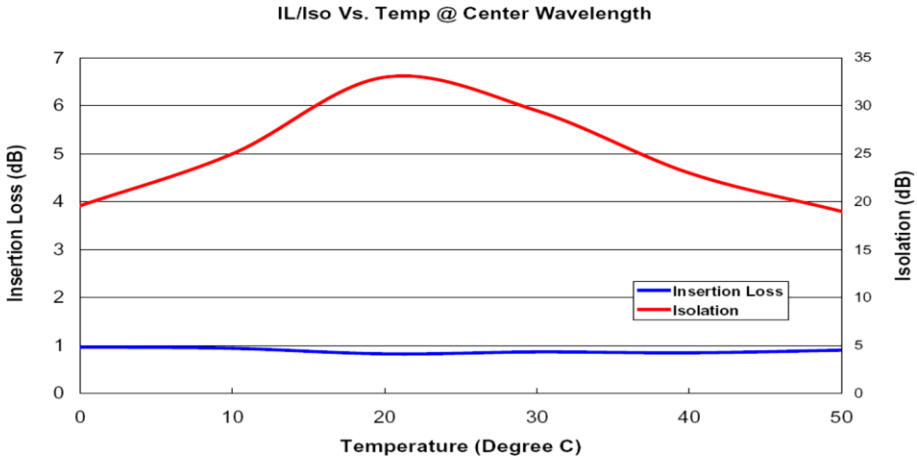
Optical Performance (Single Stage)





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Ordering Information

	☐	☐☐	☐	☐	☐	☐	☐	☐
Prefix	**Type**	**Wavelength (nm)**	**Isolation Stage**	**Aperture**	**Power Handling**	**Waveplate* Rotation**	**Mounting Plate**	**Polarizer**
OITG-	Free Space = 1 Special = 0	1060 = 16 1050 = 15 1030 = 13 980 = 98 940 = 94 895 = 89 850 = 85 830 = 83 780 = 78 633 = 63 660 = 66 670 = 67 593 = 59 589 = 58 561 = 57 560 = 56 532 = 53 495 = 49 488 = 48 473 = 47 457 = 45 440 = 44 420 = 42 405 = 40	Single = 1 Double = 2 Special = 0	2mm = 1 3mm = 2 5mm = 5 8mm = 8 10mm = A 25mm = B 40mm = C	0.2W = 1 1W = 2 5W = 5 10W = 6 15W = 7 Special = 0	Non = 2 Yes = 1	None = 2 Yes = 1	None = 1 One Cube = 2 Two Cube = 3 One Polacore = 4 Two Polacore = 5

* For peak wavelength tuning