

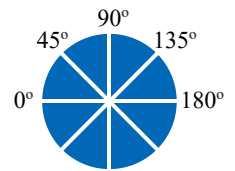
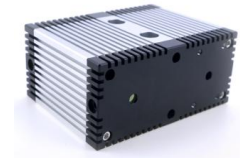
Free Space Isolators

Free space isolators are divided into two categories: polarization dependent isolator and polarization independent isolator.

The polarization dependent isolator, or Faraday isolator consists of three major parts which are input polarizer (polarized vertically), Faraday Rotator, and output polarizer (aligned at 45° relative to the input polarizer).

The polarization independent isolator consists of three main components, which are birefringent beam displacer (polarizer), Faraday Rotator, half-wave plate. It's usually used for maintaining the stability of optical system effectively in fiber laser system.

CASTECH adopts high quality magneto-optic crystals with low absorption and high extinction ratios, and polarizers with low transmission losses to achieve outstanding performance. Customized free space isolators are available with peak isolation up to 45dB, maximum transmission above 95%, and aperture up to 45mm.

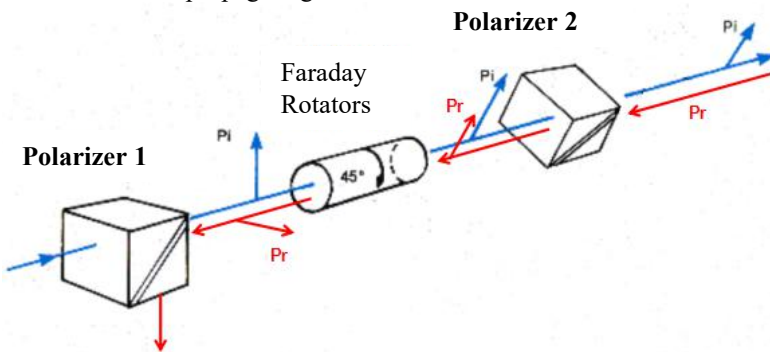


Polarization Reference:

- All Free Space Isolators non-reciprocally rotate the plane of polarized light in 45°;
- Extra half-wave plate for modifying output polarization is available on request.

Beam selection of polarization-dependent isolators:

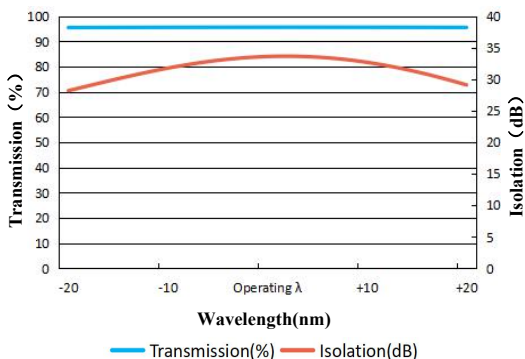
- Forward propagating beam P_i
- Reverse propagating beam P_r



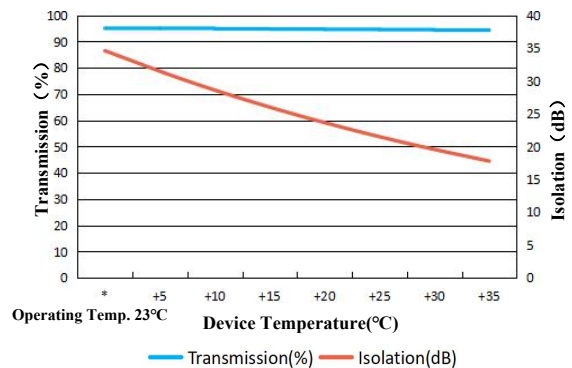
Applications

- Laser precision machining
- Laser sensing
- Ultrafast laser system
- OCT system
- Laser detection

Typical Isolator Performance



Typical Isolator Performance



Free Space Isolators

Polarization-Dependent Type Model Number: HPISO-t-p-a-λ-w-h

Type(t)	Power(p)	Aperture(a)	Wavelength(λ)	Waveplate(w)	Housing(h)
FS (Free Space) DS (Dual Stage) AB (Adjustable bandwidth)	1 W 5 W 30 W 50 W 100 W 500 W** ...	2 mm 3 mm 4 mm 5 mm 8 mm 10 mm 12 mm 15 mm 25 mm 45 mm ...	550-880nm*	C (Contained) N (Not Contained)	A03* A04 A06 A08 A23 A31 ...
			355 nm		
			405 nm		
			532 nm		
			633 nm		
			780 nm		
			850 nm		
			980 nm		
			1030 nm		
			1064 nm		
			1319 nm		
			1550 nm		
			2000 nm		
4500 nm					
...					

*Only applicable to types with adjustable bandwidth

**500W is only suitable for the wavelength of 1030/1064nm

Typical Specifications

Aperture	Damage Threshold	Withstand Power	Transmission	Peak Isolation
2~15 mm	3J/cm ² at 10ns @(532~980)nm	50 W	>93%*, >90%**	>33 dB*, >45 dB**
2~10 mm	10J/cm ² at 10ns @(1319~2000)nm	50 W	>93%	>33 dB
15~25 mm	10J/cm ² at 10ns @1030/1064nm	500W	>93%	>33 dB

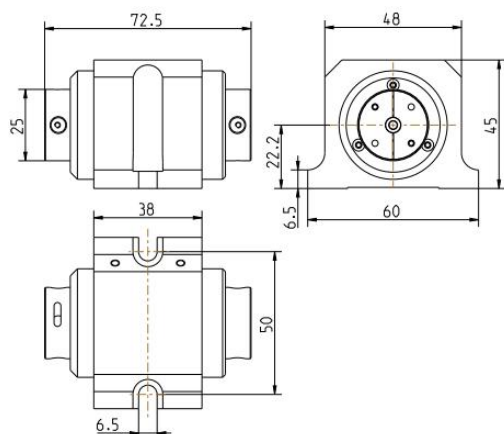
Operating temperature range: 10°C-30°C.

* Only applicable to conventional isolator

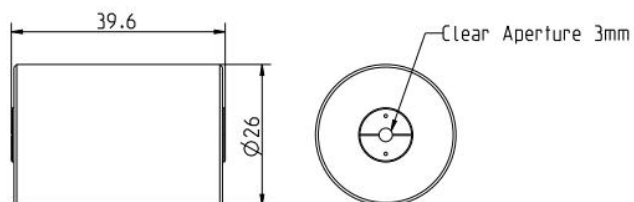
**Only applicable to dual-stage isolator

Housing dimensions(mm):

A04 (Aperture ≤5 mm)



A46 (Compact, 1064 nm)



Free Space Isolators

Polarization-Independent Type Model Number: HPISO-t-p-a-λ-w-h

Type(t)	Power(p)	Aperture(a)	Wavelength(λ)	Wave Plate(w)	Housing(h)
PI (polarization-independent)	50 W 100 W 500 W 1000 W ...	1.5 mm 5 mm 8 mm ...	980 nm 1030 nm 1064 nm ...	C (Contained) N (Not Contained)	A16 A29 A38 A41 ...

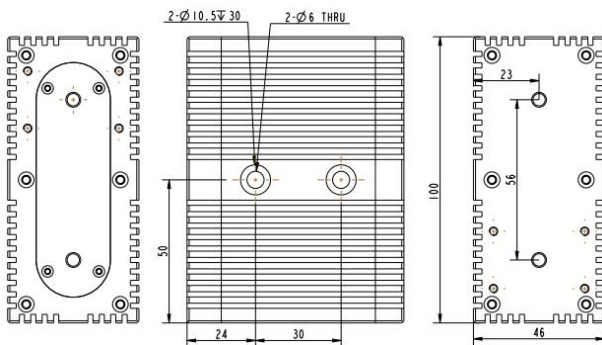
Typical Specifications

Aperture	Damage Threshold	Withstand Power	Transmission	Peak Isolation
1.5 mm	10J/cm ² at 10ns @(980~1064)nm	50 W	>93%	>33 dB
5 mm	10J/cm ² at 10ns @(980~1064)nm	100 W	>93%	>33 dB
8 mm	10J/cm ² at 10ns @(980~1064)nm	1000 W	>93%	>33 dB

Operating temperature range: 10°C-30°C.

Housing dimensions(mm):

A16 (Aperture ≤ 5 mm)



A41 (Aperture ≤ 8 mm, Water-cool)

