

High Power Faraday Rotator and Isolator

Faraday rotators change the polarization state of light traveling through it. The output polarization state is rotated by 45 degrees with respect to the input polarization. When combined with a mirror, the reflected light is rotated by another 45 degrees, resulting in a 90 degree rotation. In addition, the polarization handedness is reversed by the mirror. This results in a reflected polarization that is orthogonal to the original polarization. This is useful when used in interferometers, because polarization changes through the fiber are cancelled out on the return journey.



The high power isolator series includes in-line type, beam expanded isolator, fiber in and free space out isolator and free space isolator etc. 1064nm High Power Free Space Isolator is one of the free space in and out type isolator. They're characterized with low insertion loss, high isolation, high power handling, high return loss, excellent environmental stability and reliability. They are ideal for fiber laser and instrumentation applications.

Features

- Low Insertion Loss
- High Power Handling
- High Isolation
- Low Cost
- High Reliability
- Excellent Temperature Stability

Applications

- Multi-level laser amplifier
- Optical parametric oscillator
- Ring laser
- Erbium-doped fiber amplifier
- Seed injecting laser
- Optical modulator

Performance Specifications

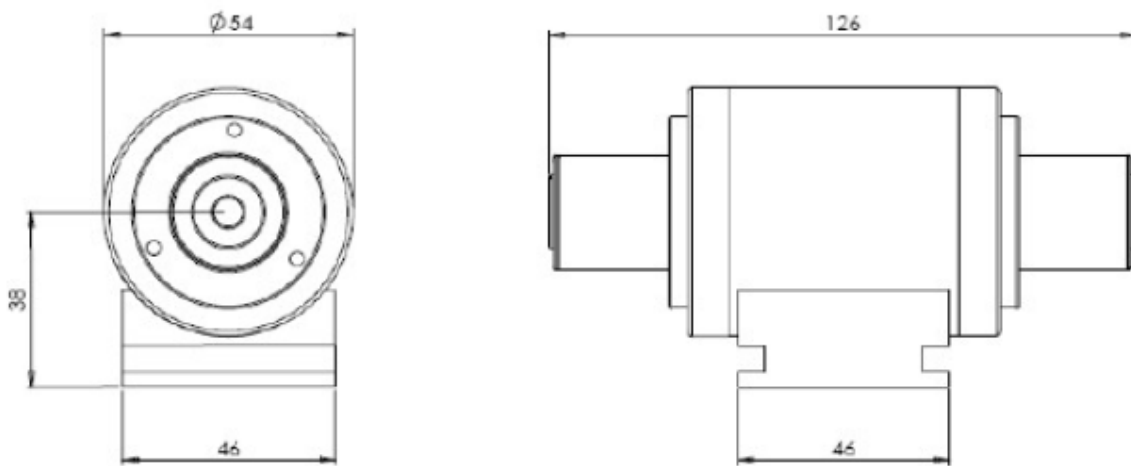
Free Space Isolator(1020-1080nm)						
Part No	Clear Aperture(mm)	Trans @25°C (%)	Isolation @25°C (dB)	Rotation	Pulse damage threshold@10ns	Operation Temperature(°C)
HPFSI-1064-3	2.8	≥92	≥30	45±2	5J/cm ²	0 ~+50
HPFSI-1064-5	5.0	≥92	≥30	45±2	5J/cm ²	0 ~+50
HPFSI-1064-6	6.0	≥92	≥30	45±2	5J/cm ²	0 ~+50
HPFSI-1064-7	6.8	≥92	≥30	45±2	5J/cm ²	0 ~+50

Faraday Rotator(1020-1080nm)						
Part No	Clear Aperture(mm)	Trans @25°C (%)	ER@25°C (dB)	Rotation	Pulse damage threshold@10ns	Operation Temperature(°C)
HPFR-1064-3	2.8	≥98	≥30	45±2	5J/cm ²	0 ~+50
HPFR-1064-5	5.0	≥98	≥30	45±2	5J/cm ²	0 ~+50
HPFR-1064-6	6.0	≥98	≥30	45±2	5J/cm ²	0 ~+50
HPFR-1064-7	6.8	≥98	≥30	45±2	5J/cm ²	0 ~+50

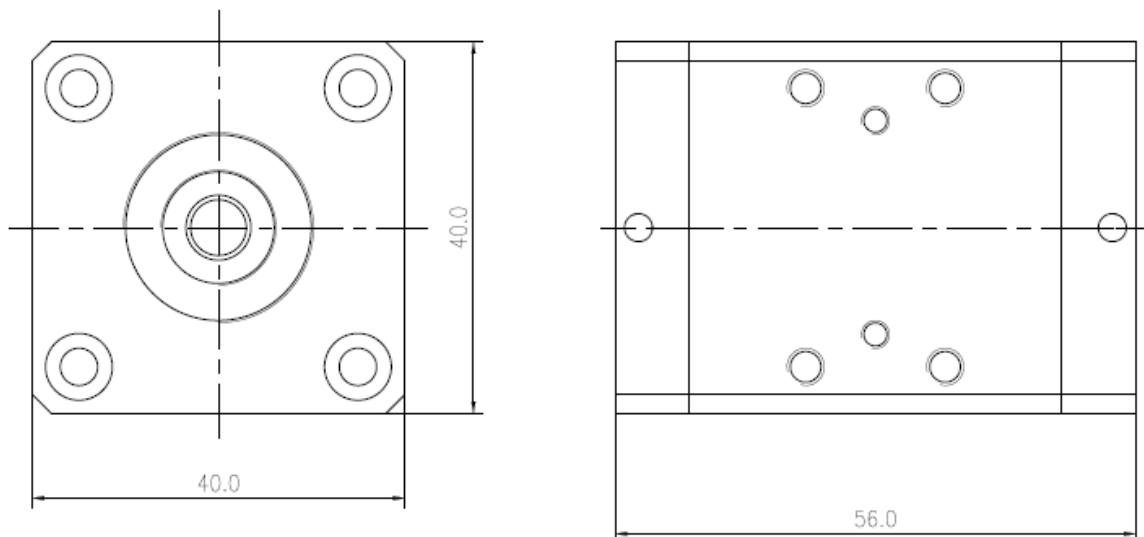
- Note: a. Other wavelength available.
b. Customer made larger clear aperture.

Package Dimension

Free Space Isolator(Clear Aperture \leq 5.0mm)

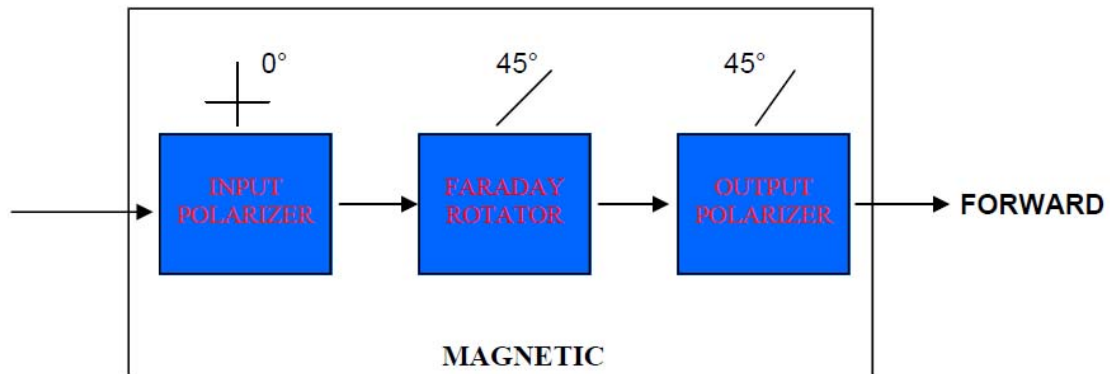


Faraday Rotator(Clear Aperture \leq 5.0mm)

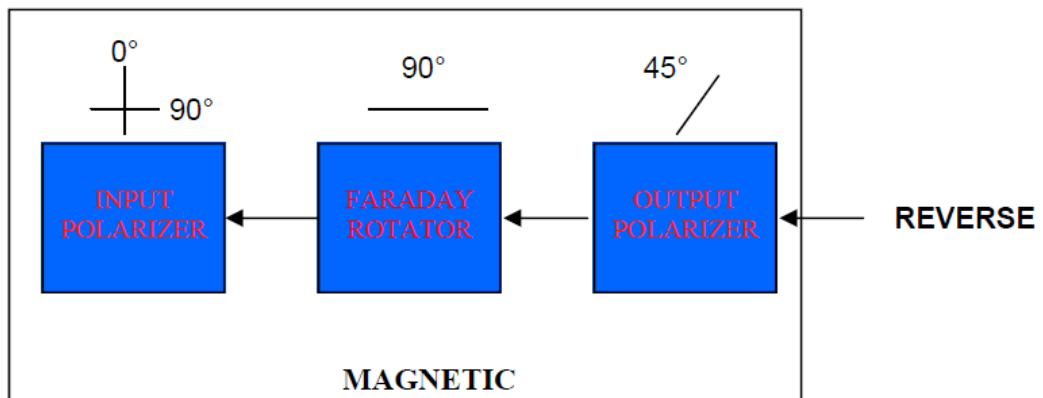


*Due to ongoing design improvements, the package size is subject to change. Please contact DK Photonics for confirmation.

How does a rotator work?



The forward light by the input polarizer, through the faraday rotator under the magnetic field, rotating 45 degrees and exits through the output polarizer.



The reverse light by the output polarizer, through the faraday rotator under the magnetic field, rotating 45 degrees again in the same direction and becomes 90 degrees with the forward light, reflected or absorbed by the input polarizer.