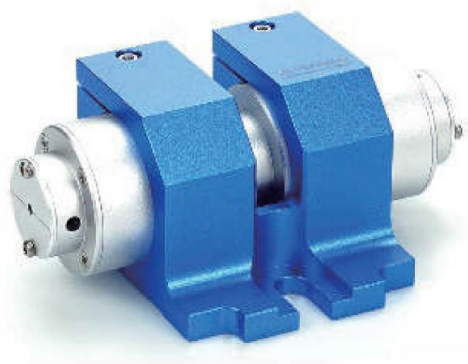
Photonics On Crystals

POC-OC-120202-Free Space Isolators Datasheet

Key Features

- High isolation efficiency to block reverse transmitted beams and enhance laser system stability.
- Available in polarization-dependent and polarization-independent configurations.
- Peak isolation up to 45 dB and maximum transmission over 95%.
- Aperture sizes range from 2 mm to 45 mm for flexible integration.
- Supports customized designs for specific wavelength ranges (355–4500 nm).



General Description

The free space isolators offered by Photonics of Crystals (POC) are engineered to ensure exceptional performance in optical systems by minimizing back reflections and reverse transmitted beams. These isolators are available in two categories: polarization-dependent and polarization-independent.

Polarization-dependent isolators feature three core components: an input polarizer, a Faraday rotator, and an output polarizer. Together, these components provide effective isolation, ensuring laser polarization stability.

Polarization-independent isolators integrate birefringent crystals, a Faraday rotator, and half-wave plates, making them suitable for maintaining optical system stability, especially in fiber laser systems.

POC uses high-quality magneto-optic crystals with superior Verdet constants, low absorption coefficients, and advanced polarizer coatings to achieve outstanding extinction ratios and low transmission losses. With customization capabilities, POC ensures that each isolator meets specific operational demands, ranging from ultrafast laser systems to precision laser machining.

Applications

Photonics On Crystals

1. **Laser Precision Machining**
   Free space isolators enhance laser machining processes by preventing destabilizing back reflections, ensuring cleaner cuts and more accurate material processing.

2. **Laser Sensing Systems**
   These isolators support high-precision sensing by maintaining the integrity of the transmitted signal, ensuring enhanced sensitivity and reliability.

3. **Ultrafast Laser Systems**
   Designed to handle high-power ultrafast laser pulses, these isolators minimize interference, enabling stable operation in demanding applications.

Standard Products and Model Numbers

Model Number	Type (t)	Power (p)	Aperture (a)	Wavelength (λ)	Wave Plate (w)	Housing (h)
HPISO	FS (Free Space)	1-500 W	2–20 mm	355–4500 nm	C (Contained)	A01, A02

Typical Specifications

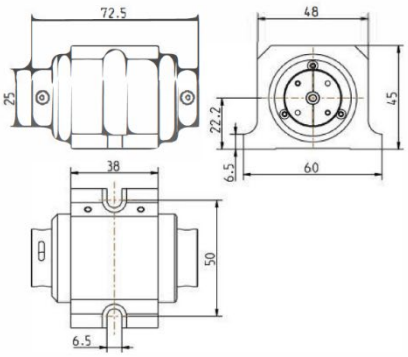
Aperture	Wavelength	Withstand Power	Transmission (%)	Peak Isolation
2–15 mm	355–1080 nm	100 W	>93%	>33 dB
2–10 mm	1310–3000 nm	100 W	>93%	>33 dB
15–20 mm	600–1080 nm	500 W	>93%	>33 dB
1.5–8 mm	800–2000 nm	10–500 W	>93%	>33 dB

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

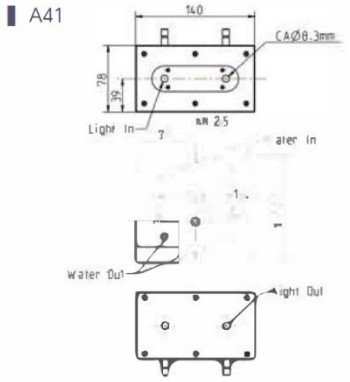
Housing Dimensions

- **A04:** Compact design with an aperture of ≤5 mm, suitable for standard applications.
- **A41:** Water-cooled housing designed for larger apertures (≤12 mm), ideal for high-power laser systems.

A04



A41



POC Strength and Capabilities

Photonics On Crystals

Photonics of Crystals (POC) excels in delivering advanced photonics solutions tailored to the needs of modern optical systems. With a focus on quality, precision, and customization, POC employs state-of-the-art facilities and techniques to manufacture isolators with low transmission losses and superior extinction ratios. Our team ensures each product undergoes stringent quality checks, ensuring reliable performance across diverse applications. POC's dedication to innovation and customer satisfaction positions us as a trusted partner for photonic solutions.