Photonics On Crystals

POC-OC-120213-Acousto-Optic Tunable Filters Datasheet

Key Features

- Electronically tunable, solid-state bandpass filters for precise wavelength selection.
- Operating wavelength range from 400 nm to 1450 nm with resolutions as low as 3 nm.
- Non-collinear design allowing fast, random-access tuning of light beams.
- High diffraction efficiency exceeding 85% at optimal conditions.
- Flexible input/output polarization options and compatibility with fiber-coupling.

General Description

Photonics of Crystals (POC) **Acousto-Optic Tunable Filters (AOTF)** are advanced solid-state, electronically addressable devices designed for dynamic and selective wavelength tuning. AOTFs operate as bandpass filters, exploiting diffraction effects to isolate specific wavelengths when the acoustic beam and light beam meet precise matching conditions. This capability makes AOTFs ideal for applications requiring quick and precise wavelength adjustments across a wide spectrum.

Our AOTFs are crafted with Tellurium Dioxide (TeO2) to optimize performance for specific wavelength ranges, offering an operational span from 400 nm to 1450 nm. Featuring resolutions as fine as 3 nm and an effective aperture of up to 10 mm, POC's AOTFs achieve excellent tuning precision. The non-collinear architecture supports the diffraction of two orthogonal polarizations, providing robust functionality for polarized and randomly polarized light. These devices can also be fiber-coupled for enhanced usability.

For optimal operation, POC recommends the use of our RF drivers, available in fixed-frequency and variable-frequency configurations, tailored to meet diverse application needs.

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General Applications and Examples

1. **Spectral Polarization:**
   AOTFs enable accurate spectral separation and polarization analysis, making them indispensable in optical systems requiring precise control of wavelength and polarization.
2. **Hyperspectral Imaging:**
   AOTFs play a key role in hyperspectral imaging, allowing rapid scanning across multiple wavelengths for environmental monitoring, biomedical imaging, and material analysis.
3. **Optical Communication:**
   In optical communication systems, AOTFs are used for wavelength routing and signal management, ensuring high-speed and interference-free data transmission.
4. **Laser Wavelength Tuning:**
   AOTFs facilitate rapid tuning of laser wavelengths, supporting advanced research in spectroscopy and optical diagnostics.

Our Standard Products and Model Numbers

Model Number	Wavelength Range (nm)	Aperture (mm)	Material	Mode	Sidelobe Suppression	Wavelength Resolution	RF Connector	Housing
CATF-w-a-mt-w-c-h	640-1100	1	CQ / TE	C (Compression)	A (Yes)	10 (10 nm)	SMA-F	C60

Typical Specifications

Wavelength Range (nm)	Aperture (mm)	Resolution (nm)	Diffraction Efficiency (%)	Input/Output Polarization
450-650	2.5	≤3	≥80	Vertical/Horizontal
450-650	8	≤10	≥75	Horizontal/Vertical
640-1100	2	≤10	≥85	Vertical/Horizontal
400-900	3	≤5	≥65	Horizontal/Vertical
430-1450	2.5	≤15	≥50	Horizontal/Vertical

Housing Dimensions (mm)

- **B70:** 49.3 x 36.5 x 19 mm, ideal for compact optical setups.
- **C60:** 58.7 x 47.8 x 20 mm, optimized for robust, high-precision applications.

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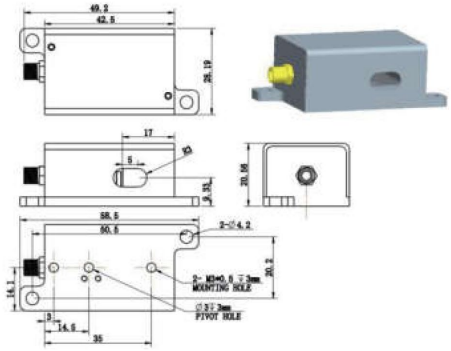
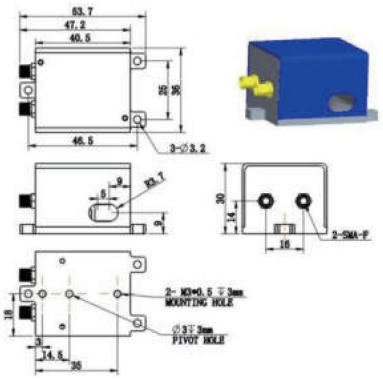
B70



C60



POC Strength and Capabilities

Photonics of Crystals (POC) is at the forefront of Acousto-Optic Tunable Filter technology, providing innovative solutions for precise wavelength control across diverse optical applications.

Why Choose POC?

- **State-of-the-Art Design:** Advanced non-collinear architecture enables high diffraction efficiency and precise wavelength tuning.
- **Superior Material Selection:** Devices are constructed from premium materials like Tellurium Dioxide (TeO2) for optimized performance and reliability.
- **Customizable Options:** AOTFs can be configured to match specific wavelength ranges, polarization requirements, and fiber-coupling needs.
- **Comprehensive Support:** From consultation to deployment, POC ensures customers achieve exceptional results with our products.

Trust POC to deliver cutting-edge Acousto-Optic Tunable Filters tailored to your needs.