Photonics On Crystals

POC-OC-120209-Acousto-Optic Modulators Datasheet

Key Features

- Enables precise laser intensity modulation outside the cavity.
- Supports a wide frequency range of up to 300 MHz for versatile applications.
- Low rise/fall times, as fast as 6 ns, for high-speed modulation.
- Customizable designs to meet requirements for wavelength, power, and beam diameter.
- Constructed with high-quality materials (Crystalline Quartz or Tellurium Oxide) for durability and reliability.

General Description

Photonics of Crystals (POC) **Acousto-Optic Modulators (AOM)** are state-of-the-art devices engineered to modify the intensity of incident laser beams through amplitude modulation. Operating outside the laser cavity, these modulators utilize RF drivers to facilitate both digital (on/off) and analog modulation modes, such as sine, square wave, or linear modulation, to suit a variety of operational needs.

The performance of an AOM is characterized by its rise/fall time, determining the achievable modulation speed and bandwidth. To ensure optimal speed, POC AOMs are designed to control the beam diameter precisely, minimizing the rise/fall time to as low as 6 ns.

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With a frequency range of up to 300 MHz, POC's AOMs cater to applications requiring fast, reliable modulation. Using high-quality materials such as Crystalline Quartz (CQ) and Tellurium Oxide (TeO2), the devices ensure low insertion loss and high extinction ratios, making them ideal for a wide range of industries, from medical technology to material processing.

General Applications and Examples

1. **Laser Marking:**
   AOMs provide precise modulation control for high-speed marking of materials. This ensures clean, accurate marks, making the technology suitable for industrial and consumer product marking.
2. **Photolithography:**
   In semiconductor manufacturing, POC AOMs enable fine control of laser intensity for lithographic patterning, contributing to the precision fabrication of micro-scale electronic components.
3. **Material Processing:**
   High-frequency modulation allows POC AOMs to perform advanced processes like laser cutting, welding, and micromachining with exceptional precision.
4. **Medical Applications:**
   AOMs are utilized in laser-based medical devices for procedures such as precise tissue ablation and therapeutic treatments requiring controlled laser intensity.

Our Standard Products and Model Numbers

Model Number	Center Frequency (MHz)	Aperture (mm)	Material	Mode	Wavelength (nm)	RF Connector	Housing
CAOM-f-a-mt-w-c-h	40.68	1	CQ / TE	C (Compression)	266	SMA-F	B09

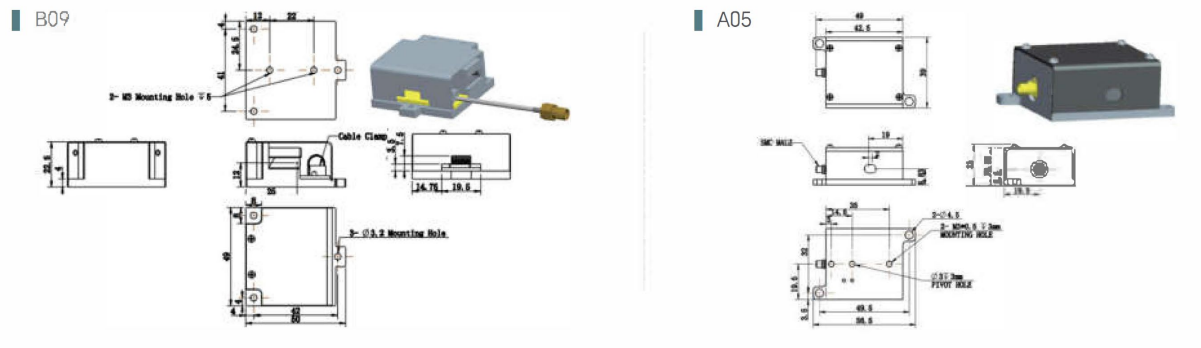
Typical Specifications

Wavelength (nm)	Active Aperture (mm)	Operating Frequency (MHz)	Rise/Fall Time (ns/mm)	Material
266, 355	3	110, 200	113	CQ
400–540	1–3	110	113	CQ
780–850	0.5	200	153	TE
1030–1064	1–5	68, 80	113	CQ
1064	0.5–1	100, 120	153	TE

9.4–10.6 µm	3–11.6	40.68	120	-

Housing Dimensions (mm)

- **B09:** 54.5 x 47.5 x 25 mm, compact and suitable for integration in confined spaces.
- **A05:** 64 x 40 x 25 mm, designed for robust industrial applications with larger housing requirements.



POC Strength and Capabilities

Photonics of Crystals (POC) is a global leader in the development of Acousto-Optic Modulators, combining innovation with precision engineering to deliver unparalleled performance across industries.

Why Choose POC?

- **Tailored Solutions:** POC offers fully customizable AOMs to meet specific customer needs, including frequency, wavelength, and beam diameter.
- **Advanced Materials:** Our use of CQ and TeO2 ensures superior performance, low insertion loss, and high damage thresholds.
- **Extensive Expertise:** Backed by years of experience, POC engineers provide unparalleled support and guidance for design, implementation, and operation.
- **Versatile Applications:** From medical technology to photolithography, our AOMs are designed to meet the diverse demands of global industries.

POC is committed to delivering the highest quality solutions, ensuring customer satisfaction and long-term reliability.