



L3HARRIS™
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MODEL H-111 ACOUSTO-OPTIC MODULATOR (AOM)

Tellurium dioxide (TeO₂) cavity dumper/pulse picker for argon-ion, Ti:sapphire and Nd:YAG lasers

The L3Harris Model H-111 AOM is a high-speed, Brewster-windowed device. It is designed to support pulse picking and mode-locking applications requiring higher diffraction throughput efficiency than is possible with fused silica devices that offer similar modulation capability. Light from a coherent optical source is focused to a beam waist within the optical medium, which is composed of low-loss, optical-grade TeO₂ crystal. The light is proportionally directed into a primary intense diffraction order when an acoustic pulse is introduced by a suitable radio frequency (RF) source. The RF input signal is converted to an equivalent traveling acoustic pulse via a single crystal piezoelectric transducer, which is alloy bonded to the TeO₂ substrate under high vacuum.

PERFORMANCE PARAMETERS

PARAMETER	SPECIFICATION
Unless otherwise noted, all specifications are at 514.5 nm wavelength	
Rise time	<8 ns
Optical polarization	Perpendicular to acoustic axis
Diffraction efficiency	>30% at 200 mW drive power (single pass)
Bandwidth	>100 MHz
Static contrast ratio	>500:1
Center frequency	380 MHz
Maximum average/peak drive power	1 W/10 W for 1 ms max
Nominal input impedance	50 ohms



APPLICATIONS

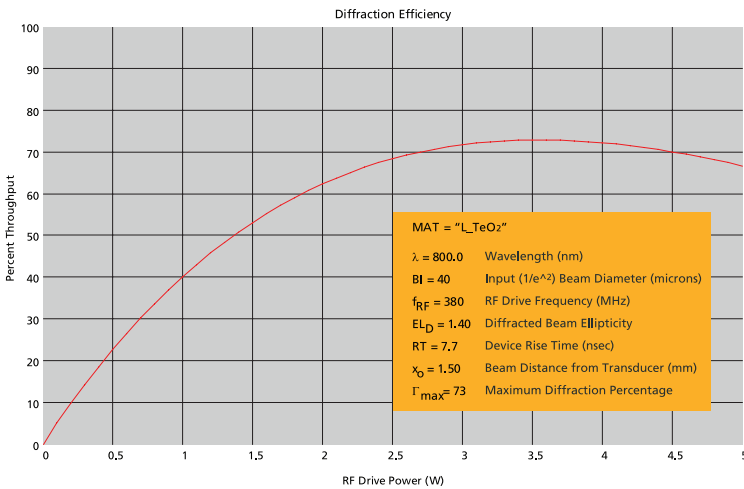
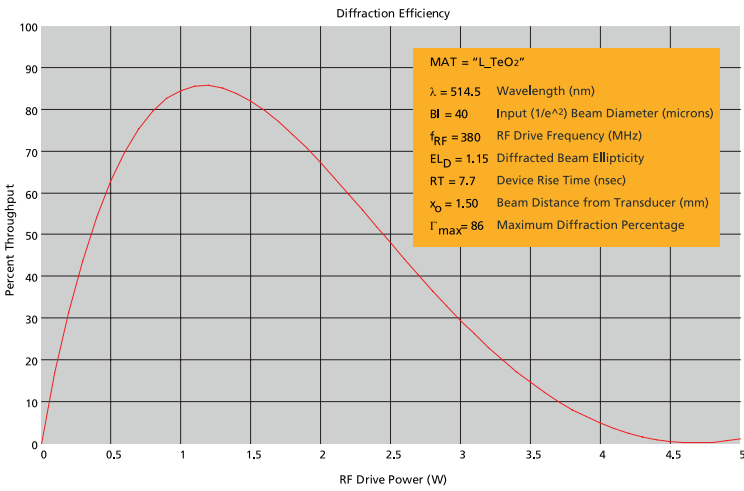
- > Electrically controlled optical switch for selecting a single pulse out of a pulse train
- > Intracavity use in conjunction with mode locker to increase the energy of a single pulse or select ultrashort pulses
- > General-purpose, high-speed modulation

HIGHLIGHTS

- > Delivers exceptional performance due to specialized fabrication techniques
- > Uses high-frequency, bulk wave transducers
- > Assures high reliability with high-vacuum application of alloy-bonded transducer
- > Has rise of less than 8 nanoseconds

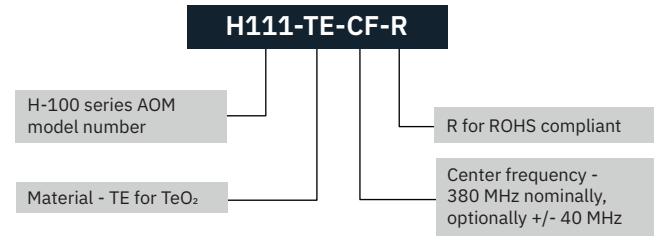
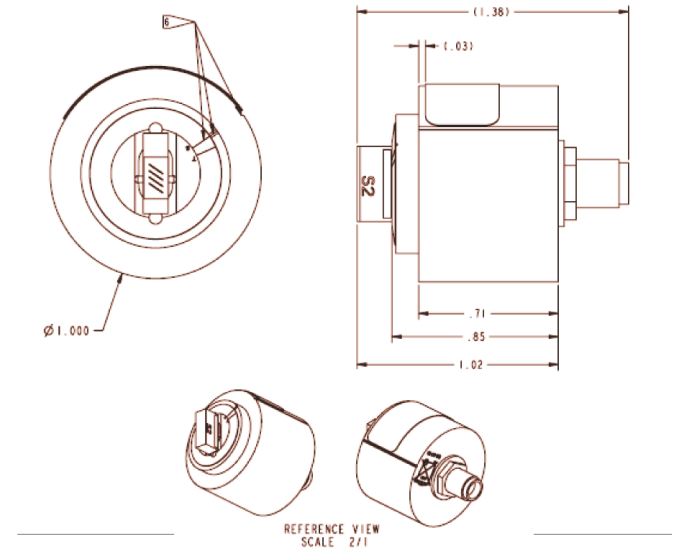
PREDICTED PERFORMANCE VS. WAVELENGTH

The following plots show the simulated performance for the H-111 AOM at various wavelengths and may be used as a guide for extrapolating performance at other wavelengths. See specifications for guaranteed performance characteristics and applicable wavelength.



For additional information, email Acousto-Optics@L3Harris.com or visit www.L3Harris.com/Acousto-Optics.

MECHANICAL CONFIGURATION



H111-TE-CF-R is the standard configuration. Please call the factory for pricing and availability of optional configurations. Specifications subject to change without notice.

Model H-111 Acousto-optic Modulator

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Nonexport-controlled Information

L3Harris Technologies is an agile global aerospace and defense technology innovator, delivering end-to-end solutions that meet customers' mission-critical needs. The company provides advanced defense and commercial technologies across air, land, sea, space and cyber domains.



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