

D943-P185L-2

NIR Acousto-Optic Deflector



0421

The D943-P185 is a beam steered, medium resolution, high speed AO deflector designed for use with laser diodes operating in the 750-850nm wavelength region. In addition, the expanded RF bandwidth and large active aperture of this device are well suited to double-pass NIR frequency shifting applications.

SPECIFICATIONS

Operating Wavelength:	750-850nm *
Interaction Material:	PbMoO ₄
Laser Wavelength:	800nm *
Acoustic Velocity:	3630 m/s
Active Aperture:	2 x 6mm
Centre Frequency:	185 MHz
RF Bandwidth:	120MHz
Diffraction Efficiency:	>30% @ 3.2 Watts (total)
Input Bragg Angle @ fc:	19.3 mrad
Separation Angle @ fc:	38.6 mrad
Scan Angle:	26.4 mrad
Input Impedance:	50ohms (nominal)
Access Time (τ):	1.6μsec
τΔf Resolution:	190 spots
Static Insertion loss:	≤ 5% (750 - 850nm)

* Please contact Isomet for other wavelengths

RECOMMENDED RF DRIVE ELECTRONICS

IMS2-HF synthesizer with AF0-200T-3 amplifiers (x2)

BRAGG ANGLE AND BEAM STEERING

First order deflection efficiency is maximised when the angle (θ) of the input laser beam satisfies the Bragg condition:

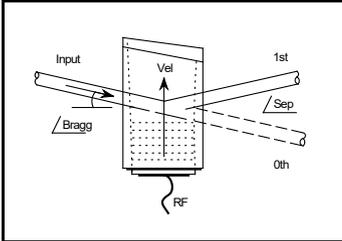
$$\theta_{\text{Bragg}} = \frac{\lambda \cdot f_c}{2 \cdot v}$$

As the drive frequency is swept about the centre frequency f_c so the efficiency will vary due to the Bragg angle mismatch. To minimize this effect the acoustic signal in the AO material can be made to track the optimum Bragg conditions over a wider range of frequencies. This 'beam steering' technique requires an array of electrodes on the device transducer. By applying an appropriate delay between the electrodes the resultant phase change steers the angle of the transmitted acoustic beam from the transducer in relation to the applied drive frequency.

A typical response is shown below. The optimum RF drive power is proportional to the wavelength². At NIR wavelengths this power can exceed the maximum recommended input level. The result is a reduction of the overall efficiency across the scan to around 30% at 830nm as shown overleaf.

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 ISOMET CORP, 10342 Battlevue Parkway, Manassas, VA 20109, USA.
 Tel: (703) 321 8301 Fax: (703) 321 8546
 E-mail: ISOMET@ISOMET.COM Web Page: WWW.ISOMET.COM

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In-house: Crystal Growth,
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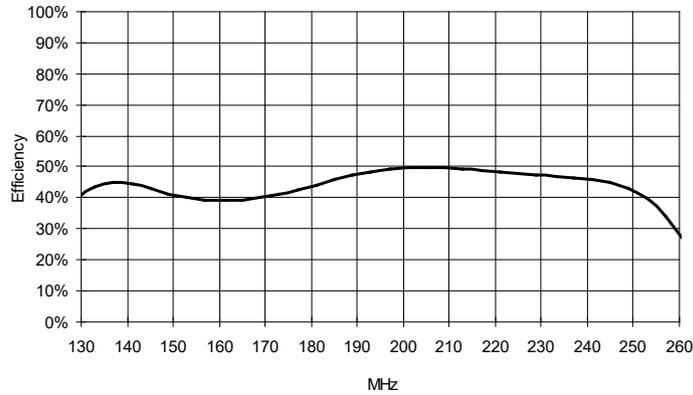


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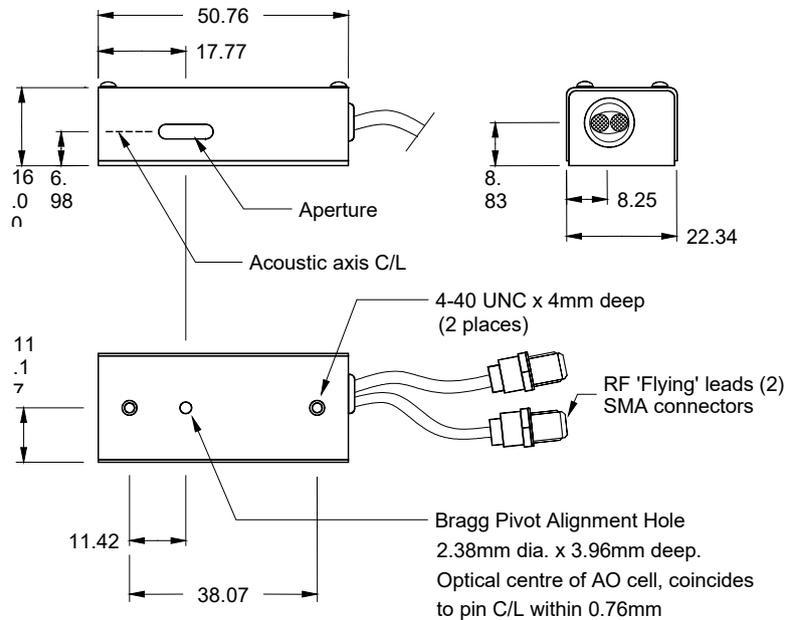


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OUTLINE DRAWING

Dim'n: mm



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