

# AOTF3-LR

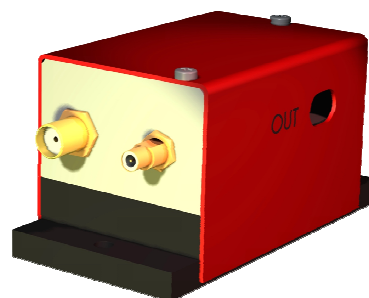
# AO Tunable Filter

## TeO<sub>2</sub> Modulator-Filter for 400-700 nm

### • 400 to 700 nm • Lamps

This solid-state AOTF is an electronically tunable bandpass filter Visible range. It uses the acousto-optic interaction inside an anisotropic medium (TeO<sub>2</sub>-S). It allows to select and transmit a single wavelength from an incoming lamp source.

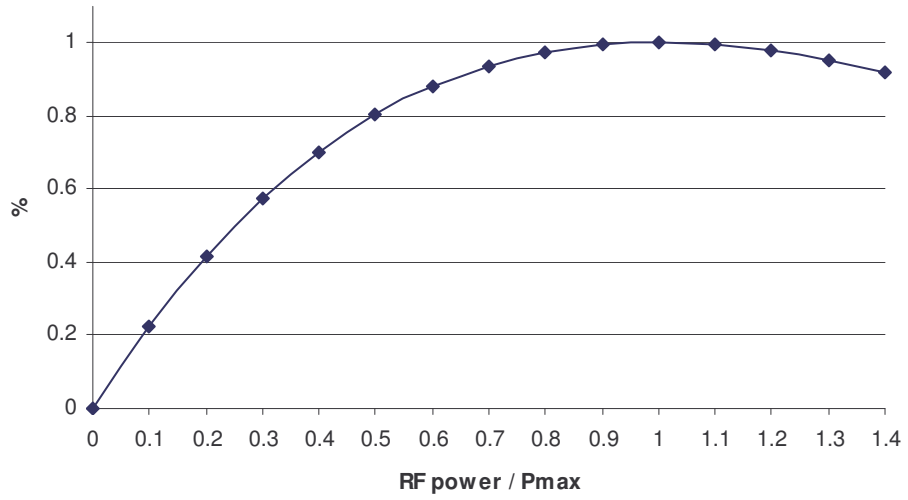
The main advantage of this technique is the total absence of any moving part which leads to a reliable, stable and fast technique for wavelength tuning. The RF frequency applied on the AOTF transducer controls the transmitted (filtered in 1st order) wavelength. A complete spectrum analysis can be done by varying the frequency corresponding to the wavelength range. The RF amplitude level applied on the transducer allows to adjust the transmitted (filtered) light intensity level. This is a unique feature that can provide the AOTF. It is fast (several  $\mu$ s), accurate and procures high extinction ratio.



## Specifications

|   |   |
|---|---|
| <b>Number of channels</b>                                 | 1 (maximum 4)   |
| <b>Material</b>   | TeO <sub>2</sub> [S]                                    |
| <b>Acoustic velocity</b>                                  | Nom 650 m/s   |
| <b>Optical Wavelength</b>                                 | 400 to 700 nm   |
| <b>AO interaction type</b>                                | Birefringent  |
| <b>Selected order</b>                                     | + 1   |
| <b>Input Light polarization</b>                           | Linear parallel to baseplate                            |
| <b>Output Light polarization (reference : base plate)</b> | « +1 » order : linear vertical                          |
| <b>Bragg (incidence) angle</b>                            | Close to autocollimation (perpendicular to input face)  |
| <b>Drive frequency range (F)</b>                          | 134 – 57 MHz  |
| <b>Active aperture</b>                                    | ∅ 6 mm  |
| <b>Light beam size</b>                                    | ≤ 5 mm  |
| <b>Spectral Resolution (FWHM) (typical)</b>               | Nom 5 nm @ 0.4 $\mu$ m 25 nm @ 0.7 $\mu$ m              |
| <b>AO Light Frequency shift</b>                           | « +1 » order : + F                                      |
| <b>Total Field of view</b>                                | ≤ 5 degrees   |
| <b>Separation "0"-"/1" angle</b>                          | ≥ 3.5 degrees   |
| <b>Chromatic Colinearity</b>                              | < 0.3 mrd (1 <sup>st</sup> order for 400-700 nm)        |
| <b>Optical transmission</b>                               | > 90 % (nom 95 %)                                       |
| <b>Temperature Stabilization</b>                          | /   |
| <b>AO efficiency in "1" order</b>                         | ≥ 90% @ PRF ≤ 1 Watt (1 line)                           |
| <b>Side lobes intensity</b>                               | < 13 %  |
| <b>Access time / Response time</b>                        | Nom 1.5 $\mu$ s / 1 mm                                  |
| <b>Max accepted RF Power</b>                              | 2 W   |
| <b>Electrical impedance</b>                               | 50 Ohms   |
| <b>VSWR</b>   | ≤ 2.5/1 (Full bandwidth)                                |
| <b>Size</b>   | ( L x l x h ) 48.5 x 27.6 x 20.8 mm <sup>3</sup> / 60 g |
| <b>Operating Temperature</b>                              | 10 to 40 °C   |

### Relative Diffraction Efficiency vs RF Power



### Nominal Resolution

