Acousto-optic Tunable Filters

STTF Series

2022 V1

For customized projects please Contact us:

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Acousto-optic Tunable Filters

A device used to rapidly and dynamically select specific wavelengths from a wideband laser

Acousto-optic tunable filter (AOTF) is a kind of solid-state, electronically addressed, and random-access optical passband filter. It can be used to quickly and dynamically select specific wavelengths from wideband or multiline sources. Diffraction occurs when specific matching conditions are met between acoustic beams and beams. Thus, it becomes possible to electronically control filter parameters such as wavelength, modulation depth, and even bandwidth to provide fast (usually US), dynamic, random access optical filtering.

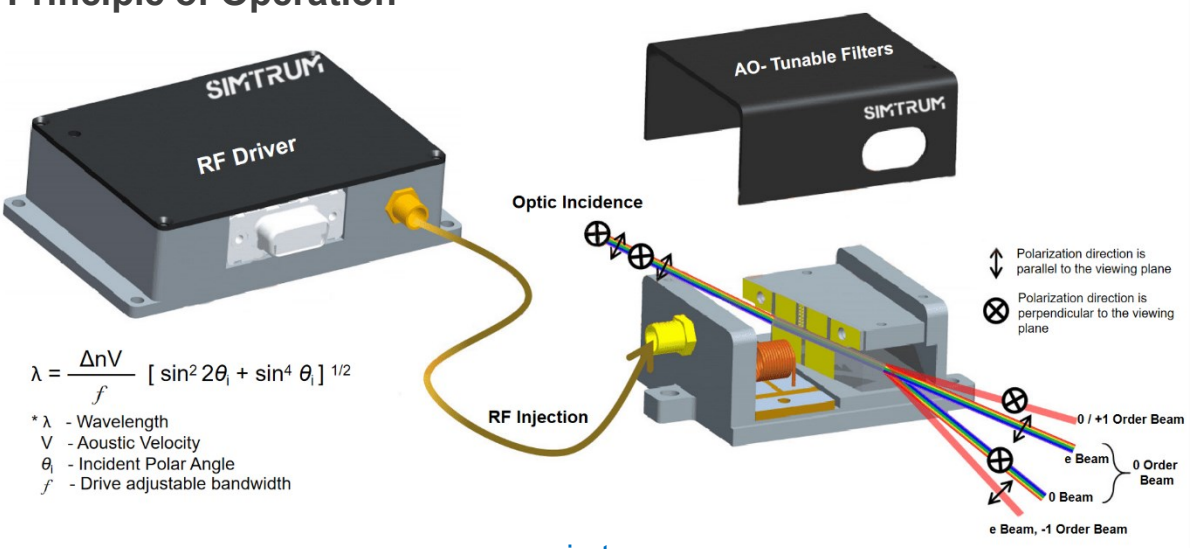
According to the existing material characteristics, SIMTRUM offers AOTF products based on TeO2 shear wave acoustic mode. The wavelength range covers 350-2500 nm. Optimum performance is achieved in each wavelength range and meets most applications: resolution as low as 1 nm, FOV Angle up to 20 degrees, and aperture up to 10 mm. In most cases, the filtering output of AOTF is collinear. After the randomly deflected input light passes through AOTF, two horizontally polarized or vertically polarized lights with different deflection directions will be obtained, which can be easily used by users and fiber coupling can be carried out according to needs.

For best performance, we recommend matched RF drivers, including digital frequency synthesizer (DFS) driver technology and random-access wavelength control.

Applications

- Quantum electronics
- Spectroscopy
- Spectral polarization
- Fluorescence spectroscopy
- HYPER spectral imaging
- Laser wavelength tuning
- Wavelength selection
- Optical communication

Principle of Operation



Product Specifications

General Specifications	
Interaction Material	Tellurium Dioxide
Acoustic Mode	Shear / Off Axis
Operating Wavelength	400 ~ 1100 nm
Polarization	Incident Beam: Linear, horizontal to base Diffraction Beam: Linear, vertical to base 0 Order Beam: Linear, horizontal to base
Transmission	> 94% ~ 95%
Active Aperture	2.0 ~ 2.5 mm
Resolution	≤ 5 ~ 10 nm
Center Frequency (Fc)	45 ~ 200 MHz
Diffraction Efficiency @RB	> 70%
RF Power	2 ~ 3 W (Max)
Input Impedance	50Ω Nominal
VSWR @Fc	< 3.5:1
RF Connector	SMA-F
Cooling	Conduction-cooled
Shell Material	Aluminum alloy 6063

Selection Guide

Ordering Information

Active aperture **Wavelength**

STTF0001 - TS	XXX	-	XXX	-	XXX
1 mm 2 mm 3 mm	010 020 030	450 nm 640 nm	450 640	650 nm 1100 nm	650 1100

Product Code	Wavelength	Active Aperture	Resolution	Diffraction Efficiency	Optical Material
STTF0001-TS020-640_1100	640-1100 nm	2.0 mm	≤ 10 nm	> 70%	Tellurium dioxide
STTF0002-TS020-400_700	400-700 nm	2.0 mm	≤ 5 nm	> 70%	Tellurium dioxide
STTF2001-TS025-400_1000	400-1000 nm	2.5 mm	≤ 10 nm	> 40%	Tellurium dioxide

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