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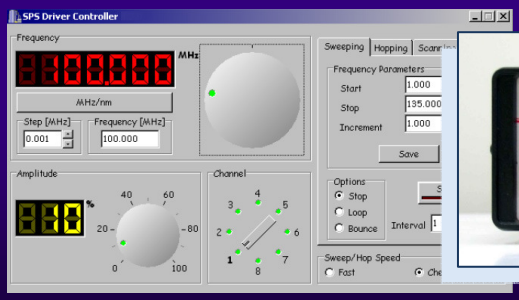
ROBUST . RELIABLE . ACCURATE

Free Space
Acousto-Optic Tunable Filter



KEY FEATURES

- All Rugged, Solid State
- No Moving Parts – Immune to vibrations
- Use with Multiple Laser Lines Simultaneously
- Wide Spectral Wavelength Range
- Fast Switching Speed
- Low Sensitivity to Input Angle
- High Optical Throughput
- Auto Calibration between Each Measurement
- Custom Configurations Available
- **Ideal for Real-Time NIR**

APPLICATIONS

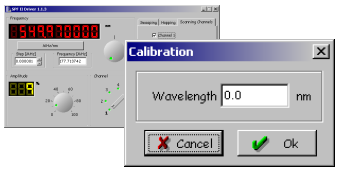
- Scientific:
  - Spectrophotometry Monochromation
  - Florescence Analysis, Transmission
  - Laser Displays
- Industrial:
  - Process Control
- Biomedical:
  - Confocal Microscopy
  - Polarimetric Hyperspectral Imagery (the AOTF is inserted in the imagery system)
- Other OEM Applications

Free Space Acousto-Optic Tunable Filters

The Brimrose Acousto-Optic Tunable Filter (AOTF) is a solid state acousto-optic device with no moving parts. It functions as a tunable transmissive filter. It is able to precisely and rapidly adjust the wavelength, and intensity of the diffracted/filtered light by varying the RF power.

Brimrose offers both standard and custom AOTFs. AOTFs are used widely in numerous optical systems and applications, especially in industrial or process control near-infrared (NIR) spectroscopy applications.

SPS/SPF PC Controlled AOTF Drivers



The SPS and SPF AOTF Controllers are high performance, RF frequency generators. They provide fast frequency sweep (up to 16,000 λ/sec) using a direct digital synthesizer incorporated into a self-contained case with AC power supply. Standard units are provided in laboratory enclosures with one, four or up to eight RF output channels.

Brimrose Corporation of America

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Acousto-Optic Tunable Filters (AOTF) Specification

Model #	Spectral Range (nm)	Drive Freq. (MHz)	Optical Aperture (mm)	Spectral Resolution (nm)			Acceptance Angle (deg.)		DE (%)
QZAF-.20-.40	200-400	90-250	2.0 x 10.0	1.2-7.0			4.4-7.2		20-30
TEAF_-.36-.52_	360-520	100-190	5.0 x 5.0 Available Standard Optical Apertures Includes: 3.0 x 3.0 5.0 x 5.0 7.0 x 7.0 10.0 X 10.0 Other Optical Apertures Are Available Upon Request.	S	H		S	H	70
				0.8-4.0	0.5-2.2		4.18-4.36	2.85-3.4	
TEAF_-.40-.65_	400-650	220-110		1.0-5.1	0.5-2.5		4.8-6.2	3.4-4.4	70-90
TEAF_-.45-.70_	450-700	180-100		1.7-6.2	0.8-3.2		5.2-6.5	3.6-5.0	70-90
TEAF_-.55-1.0_	550-1000	155-70		1.5-8.3	0.9-5.0		4.3-5.9	3.2-4.5	70-90
TEAF_-.40-1.0-2CH*	400-1000	220-70		1.2-8.3	0.7-5.0		3.8-5.9	2.8-4.6	50-60
TEAF_-.80-1.6_	800-1600	130-60		S	H	EH	S	H	70-90
				4-10	3-8	2-6	5.39-5.71	4.96-7.2	
TEAF_-1.2-2.0_	1200-2000	90-50		6-16	6-12	4-9	6.78-8.56	5.3-7.5	25-35
TEAF_-1.5-3.0_	1500-3000	68-34		9-37	8-29	6-22	7.4-9.26	6.6-7.95	30
TEAF_-2.4-4.5_	2400-4500	40-20		25-83	18-65	14-48	8.43-11.38	7.3-9.72	40
TEAF_-0.8-1.6-UH	800-1600	190-90		S	H		S	H	60
				2-6	2.0-4.5		9.9-15.2	8.65-13.3	
TEAF_-1.2-1.7-UH	1200-1700	120-80		5-7	3.0-5.0		11.9-14.68	9.47-12.88	50
TEAF_-1.5-2.4-UH	1500-2400	90-55		6-14	4.5-11.0		13.4-16.95	11.9-15.2	40
TEAF_-2.4-3.2-UH	2400-3200	55-40		14-25	11.0-17.0		16.95-19.8	15.2-17.29	35
TEAF_-3.2-4.5-UH	3200-4500	45-30		24-48	17.5-37.0		19.8-23.44	17.29-20.9	30

* Available in low or standard resolution.

Brimrose uses a crystal of Tellurium Dioxide (TeO_2) AOTF that operates in the NIR region in a so-called non-collinear configuration - the acoustic and optical waves propagate at quite different angles through the crystal.

Material: TE – Tellerium Dioxide (350-5000 nm) QZ – Quartz (SiO_2)
Options: S – Standard Resolution H – High Resolution
EH – Extra high Resolution UH – Ultra high Resolution

For more information, please check the Brimrose website or contact us at office@brimrose.com.

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SPS/SPF Model AO Controller Specification

The SP Model AO Controllers are high performance RF frequency synthesizers incorporated into a self-contained case with AC power supply. A modular cable with a DB9 connector interface allows frequency control via the Personal Computer USB port (Serial RS232 optional). Using simple commands with any terminal (modem) program (such as ProComm) allows the user to set any frequency from the computer keyboard. In addition, included with the unit is a frequency control program that can be used with any IBM PC computer.

Driver Model #	VFI-XX-YY-SPS-A-C3	VFI-XX-YY-SPF-A-C3
Frequency Range	Matching the AOTF requirements.	
Frequency Step Size	4 Hz	10 Hz
Frequency Stability	0.010% absolute (100 PPM); +15°C to +75°C	0.015%; +15°C to +75°C
Frequency Switching Speed	15 ms typ. (from f_{min} to f_{max})	8 ns
Minimum Duration of Each Step	N/A	32 ns for sweeping mode 1 ms for hopping mode (for <300 hops) 15 ms for hopping mode (>300 hops)
Power Output	Optimized for maximum performance of the AOTF device.	
Power Control	N/A	12 bit attenuator with 25 dB range (min.)
Modulation	None (TTL or Analog Optional)	
Enclosure	The unit will be packaged in a 190 mm (7.5 inch) wide by 100 mm (4 inch) high by 220 mm (8.75 inch) deep instrument case. The rear panel heat sink increases the depth to 270 mm (10.5 inches) maximum. The size is exclusive of connectors. A detachable AC line cord and RF cable are provided.	
Environmental	Nominal Laboratory Conditions: The maximum temperature is +35° C. The unit is not sealed against moisture or condensing humidity.	
Output Impedance	50 ohms	
Output Connectors	SMA jack on front panel	

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