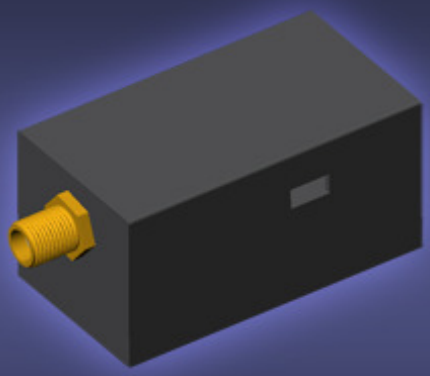
ROBUST . RELIABLE . ACCURATE

Free Space
Acousto-Optic Frequency Shifters



KEY FEATURES

- Compact Integrated Design
- Wide Spectral Wavelength Range
- Low Drive Power
- Fast Switching Speed
- High Diffraction Efficiency
- Good Temperature Stability
- Custom Configurations Available

APPLICATIONS

- Industrial:
  - Vibrometry
  - Process Control
  - Pulse Picking or Power Control
  - Atom Cooling
- Scientific:
  - Optical Heterodyning
  - Interferometric System
  - Laser Doppler Velocimetry
- OEM Designs

Free Space Acousto-Optic Frequency Shifters

The Brimrose Free Space Acousto-Optic Frequency Shifter (AOFS) with RF driver is used to modify the frequency of the optical beam. Due to a Doppler shift, the frequency of the diffracted first order optical beam in the AO modulator or AO frequency shifter is shifted in frequency (wavelength) by the acoustic carrier frequency (wavelength).

If the incident acoustic wave is introduced in the direction of the incident optical wave, the laser frequency shifts towards the higher side. If the incident acoustic wave is introduced in the opposite direction of the incident optical wave, the laser shifts toward the lower frequency side.

Brimrose offers a large variety of **RF drivers** compatible with our AO Frequency Shifters. Typically, those are fixed-frequency or variable-frequency drivers.

Brimrose Corporation of America

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Free Space Acousto-Optic Frequency Shifters Specification

Model #	Spectral Range (nm)	Diffraction Efficiency Up To (%)	Frequency Shift (MHz)	Active Aperture (mm)	Material
AMF-90-2-2.1	1000-2200	15	90	1.0	AM
AMF-55-1.3	1000-2200	80	55	2.0	AM
AMF-100-1.3	1000-2200	80	100	2.0	AM
GEF-40-10	2000-12000	75	40	2.0	Ge
GEF-60-1.5	2000-12000	75	60	1.5	Ge
GEF-80-20	2000-12000	70	80	1.0	Ge
GPF-250-100	590-1000	60	250	0.75	GaP
GPF-650-225	590-1000	50	650	0.18	GaP
GPF-1000-500	590-1000	40	1000	0.076	GaP
GPF-1500-1000	590-1000	10	1500	0.076	GaP
GPF-1700-500	590-1000	30	1700	0.076	GaP
IPF-200-50	1000-1600	40	200	0.75	InP
IPF-400-200	1000-1600	35	400	0.50	InP
IPF-600-200	1000-1600	30	600	0.18	InP
IPF-800-300	1000-1600	20	800	0.076	InP
IPF-1000-350	1000-1600	15	1000	0.076	InP
IPF-1300-400	1000-1600	10	1300	0.076	InP
LNF-2500-1000	400/830	20	2500	0.076	$LiNBO_3$
LNF-3500-1000	400-630	5	3500	0.076	$LiNBO_3$
QZF-80-20	200-4500	75	80	1.0	SiO_2
QZF-150-30	200-4500	75	150	0.75	SiO_2
QZF-210-40	200-4500	75	210	0.5	SiO_2
TEF-200-50	400-1600	60	200	0.75	TEO_2
TEF-270-100	400-1600	60	270	0.75	TEO_2
TEF-540-200	400-1600	40	540	0.18	TEO_2
TEF-600-400	400-1600	40	600	0.18	TEO_2
TEF-1000-300	400-1600	40	1000	0.076	TEO_2
TEF-1700-350	400-1600	15	1700	0.076	TEO_2

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

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Fixed Frequency Driver Specification

Driver Model #	FFF-XX-B1-FY	FFF-XX-B2-FY
Frequency (MHz)	XX MHz (compatible with the AO device)	
Frequency Control	Quartz crystal referenced phase locked loop	
Frequency Accuracy (%)	0.015	
Harmonic Content (dBc)	≤ - 10	
Frequency Stability	0.0015% minimum after 15 minutes warm-up	
Output Power (Watt)	Power is optimized for peak efficiency with the supplied A-O device.	
Output Protection	Power amplifiers used will tolerate an infinite V.S.W.R. without damage. Rated power is available only when a proper RF load is connected.	
Rise/Fall Time	To match AO Frequency Shifter requirements	
Modulation Type (optional)	Analog amplitude modulation	TTL compatible
Modulation Rate	To match AO Frequency Shifter requirements	
Modulation Input	50 Ω; 0-1 V	330 Ω; 0-5 V
Operating Power	90-240 VAC, 50-60 Hz, 55 Watts max.	
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 a maximum of 270 mm (10.5 inches). 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.	

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Variable Frequency Driver Specification

Driver Model #	VFF-XX-YY-V-A-F2	
Frequency Range	Corresponding to the AO Device Requirements	
Tuning Voltage	0 - 10 V analog (-2 to +20 VDC no damage)	
Frequency Accuracy	1% nominal after 15 minute warm-up, constant temperature	
Scanning Speed	50 micro sec from min to max frequency with step change in tuning voltage	
Output Power	Power is optimized for peak efficiency with supplied AO device.	
Modulation Type (optional)	Analog amplitude modulation	TTL compatible
Modulation Input	50 Ω; 0-1 V	330 Ω; 0-5 V
Operating Power	90-240 VAC, 50-60 Hz	
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 a maximum of 270 mm (10.5 inches). 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.	

OEM Packaging is also available.

In addition to the standard product shown, customer configurations are available for specialized applications.

For questions, please contact Brimrose at office@brimrose.com.

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