

Fiber-coupled Acousto-Optic Frequency Shifters



KEY FEATURES

- Low Insertion Loss
- Broad Wavelength Range
- Low Power Consumption
- Hermetically Sealed
- Low RF Drive Power
- Stable Performance
- Good Temperature Stability and Reliability
- Custom Configurations Available

APPLICATIONS

- Fiber Sensing
- Heterodyne Detection
- Interferometric Fiber Sensor Systems
- Laser Doppler Configurations
- OEM Designs

Fiber-coupled Acousto-Optic Frequency Shifters

Brimrose's Fiber-coupled, Acousto-Optic Frequency Shifter Systems are used to shift the frequency of various optical signals. 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.

The typical 3 dB spectral range of an AOFS device is ~60-120 nm and the 3 dB frequency shift range is ~10% of the center frequency. For wide bandwidth applications, Brimrose developed an AOFS with an extended frequency shift range of up to 100 MHz.

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



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Fiber-coupled Acousto-Optic Frequency Shifter Specifications

Model #	Wavelength XX (nm)	Insertion Loss (dB)	Frequency Shift (MHz)	Fiber Type
TEF-125-XX-2FP	360-1600	2.5-4.0	+125 or -125	SM or SMPM
TEF-200-XX-2FP	360-1600	2.5-4.0	+200 or -200	
TEF-300-XX-2FP	360-1600	3.0-5.0	+300 or -300	
TEF-1000-XX-2FP	360-1600	8.0-12.0	+1000 or -1000	
IPF-200-XX-2FP	980-2000	2.3-5.0	+200 or -200	SMPM
IPF-500-XX-3FP	980-2000	2.3-6.0	+500 or -500	
IPF-1000-XX-3FP	980-2000	8.0-11.0	+1000 or -1000	
IPF-1500-XX-3FP	980-2000	9.0-12.0	+1500 or -1500	
AMF-25-XX-2FP	980-2900	2.0-2.2	+25 or -25	SM or SMPM
AMF-55-XX-2FP	980-2900	2.0-2.2	+55 or -55	
AMF-100-XX-3FP	980-2900	2.1-3.3	+100 or -100	
AMF-150-XX-3FP	980-2900	2.1-3.9	+150 or -150	
IPF-200-100-XX-2FP	980-2000	6.0-8.0	+150 to +250 or -150 to -250	SMPM
IPF-300-100-XX-2FP	980-2000	6.0-8.0	+250 to +350 or -250 to -350	
TEF-200-100-2FP	360-1000	6.0-8.0	+150 to +250 or -150 to -250	SM or SMPM

The Fiber-coupled Frequency Shifter models shown above represent some examples of our fabrication capabilities. In addition, other wavelengths, frequencies or configurations are available.

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



Fixed Frequency Driver Specifications

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 minute warm-up	
Output Power (watt)	Power is optimized for peak efficiency with 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 240 mm (9.75 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.	



Variable Frequency Driver Specifications

Driver Model #		VFF-XX-YY-V-A-F2	
Frequency Range	Corresponding to the AO device requirements		
Tuning Voltage	0 - 10 V DC analog (tolerates -2 to +20 V DC)		
Frequency Accuracy	≤ 1% after 15 minute warm-up		
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 240 mm (9.75 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.		

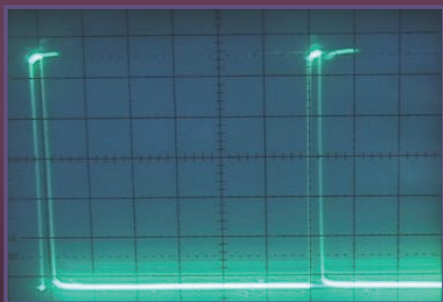
OEM packaging is also available.

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

If there are any questions please contact Brimrose at office@brimrose.com.



Recirculating Loop System (No Frequency Shift) AMM-100-8-70-C-RLS(nfs)-RM

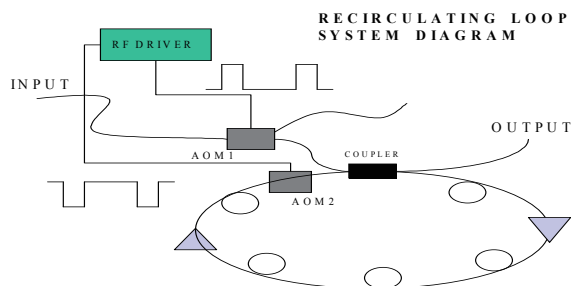


KEY FEATURES

- Low Insertion Loss
- No O-rings
- Rack-mount Enclosure
- High Extinction Ratio
- **No Frequency Shift**
- Inside Loop Recirculating Switch
- Outside Loop Loading Switch
- Custom Configurations Available

APPLICATIONS

- Simulating and Testing of Long Distance Fiber Optic Communication Lines
- OEM Designs



Recirculating Loop System

To simulate and test long distance fiber optic communication lines, Brimrose has developed a fiber-coupled AO modulation system. The recirculating loop system consists of two fiber-coupled AO modulators/switches and a corresponding RF driver. One of the AO modulators/switches is placed outside the loop to define the loading time and the second AOM is placed inside the loop to define the recirculating time or distance of the pulse transmission, which corresponds directly to the length of the long distance fiber optic line.

Since conventional Acousto-Optic devices will frequency shift the transmitted light by the acoustic carrier frequency, the Brimrose recirculating loop system utilizes a **no-shift** AO device inside the loop that will keep the frequency of light at a constant value even after multiple passes. The no-shift AO device does not complicate testing nor degrade system performance.

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Recirculating Loop System AMM-100-8-70-C-RLS(nfs)-RM Specifications

Model #	AMM-100-4-140-1550-2FP/nfs	AMM-100-8-70-1550-2FP
Max. Input Optical Power (mW)	300	300
Polarization Dependent Loss (dB)	0.2	0.2
Extinction Ratio (dB) *	>50	>50
Input Impedance (ohms)	50	50
Case Type	2-Port Fiber-coupled	2-Port Fiber-coupled
Type of Fiber	9μm Core, 125μm Cladding Single-Mode	9μm Core, 125μm Cladding Single-Mode
Fiber Connector Type	FC/SC/LC	FC/SC/LC
Polishing of the Fiber End	PC/SPC/UPC/APC	PC/SPC/UPC/APC
Fiber Jacket Type	900μm/3mm	900μm/3mm
Back Reflection (dB) **	40/50	40/50
Total Insertion Loss (dB) ***	~5.6	2.5-3.0

Brimrose offers 2-Port Fiber-coupled AO Modulators (transmitter switch is used for outside the loop) and 2-Port Fiber-coupled AO Modulators (no frequency shift switch is used for inside the loop).

* The RF driver must match this extinction ratio.

** Back reflection at FC connector is not included.

*** This spec includes: coupling losses, optical transmission through the crystal and diffraction efficiency losses.
FC connector losses are not included.

The RLS models shown above represent some examples of our fabrication capabilities. In addition, other wavelengths, frequencies or configurations are available.

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



Fixed Frequency Driver Specifications

Driver Model #	FFD-100-B2/B3-F1-IPC-3RFI-ER50
Frequency (MHz)	100
Frequency Control	Quartz crystal referenced phase locked loop.
Frequency Accuracy (%)	0.015
Harmonic Content (dBc)	≤ - 40
Stability	0.0015% minimum after 15 minute warm-up.
Output Power (Watt)	1 watt in each channel. Power is optimized for A-O device performance.
Operating Power	90-240 VAC ±10% 50-60Hz, 55 watt max.
Enclosure	The unit is available in rackmount or laboratory style version. A detachable AC line cord and RF cable are provided.
Environmental	Nominal Laboratory conditions: The maximum ambient temperature is +35° C. The unit is not sealed against moisture or condensing humidity.
Option IPC	Internal pulse generator with adjustable pulse repetition rate and adjustable pulse width. Pulse rep rate is 50-200 ms. The pulse width is 300-500 μs. Stability of pulse pattern is ~5% (0.5% short term). External modulation input. TTL compatible. Front panel switch is used to select external or internal modulation input.
Option 3RFI	Three pulse RF outputs: one for standard AOM and the other two for the "no frequency shift" modulator. RF outputs are complementary.
Option ER50	There is a 50 dB extinction ratio for each channel The system extinction ratio (AOM and driver) will be ~43 dB per channel.

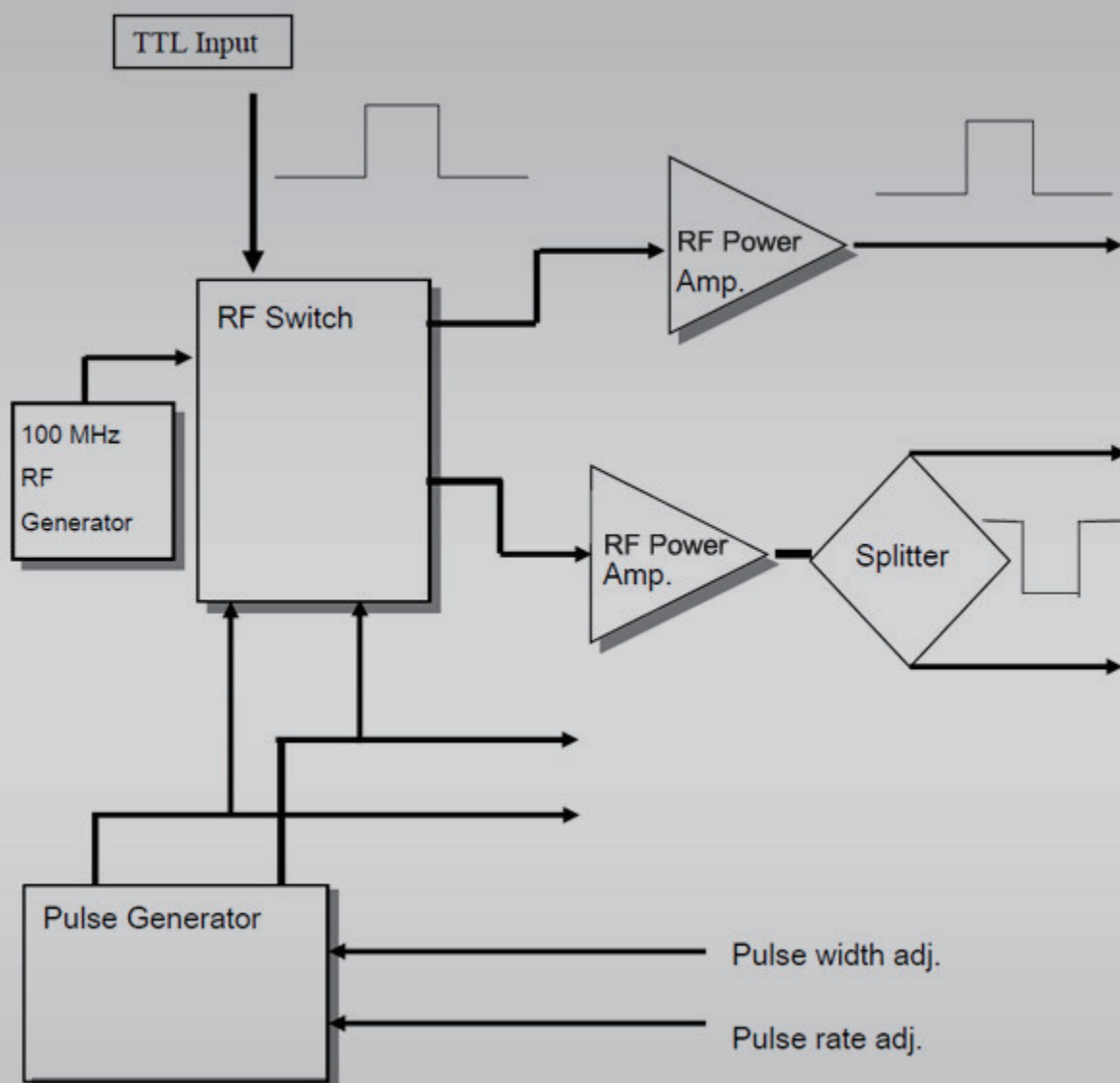
In this system, an internal or external TTL signal is used to control the switches. The amplitudes of both switches (loading and recirculating) are reciprocal in addressing the timing issues of the recirculating loop system. With option ER50, the amplitude extinction ratio for each RF signal is >50 dB. Combined with the AOM, the system extinction ratio will be >40 dB.

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

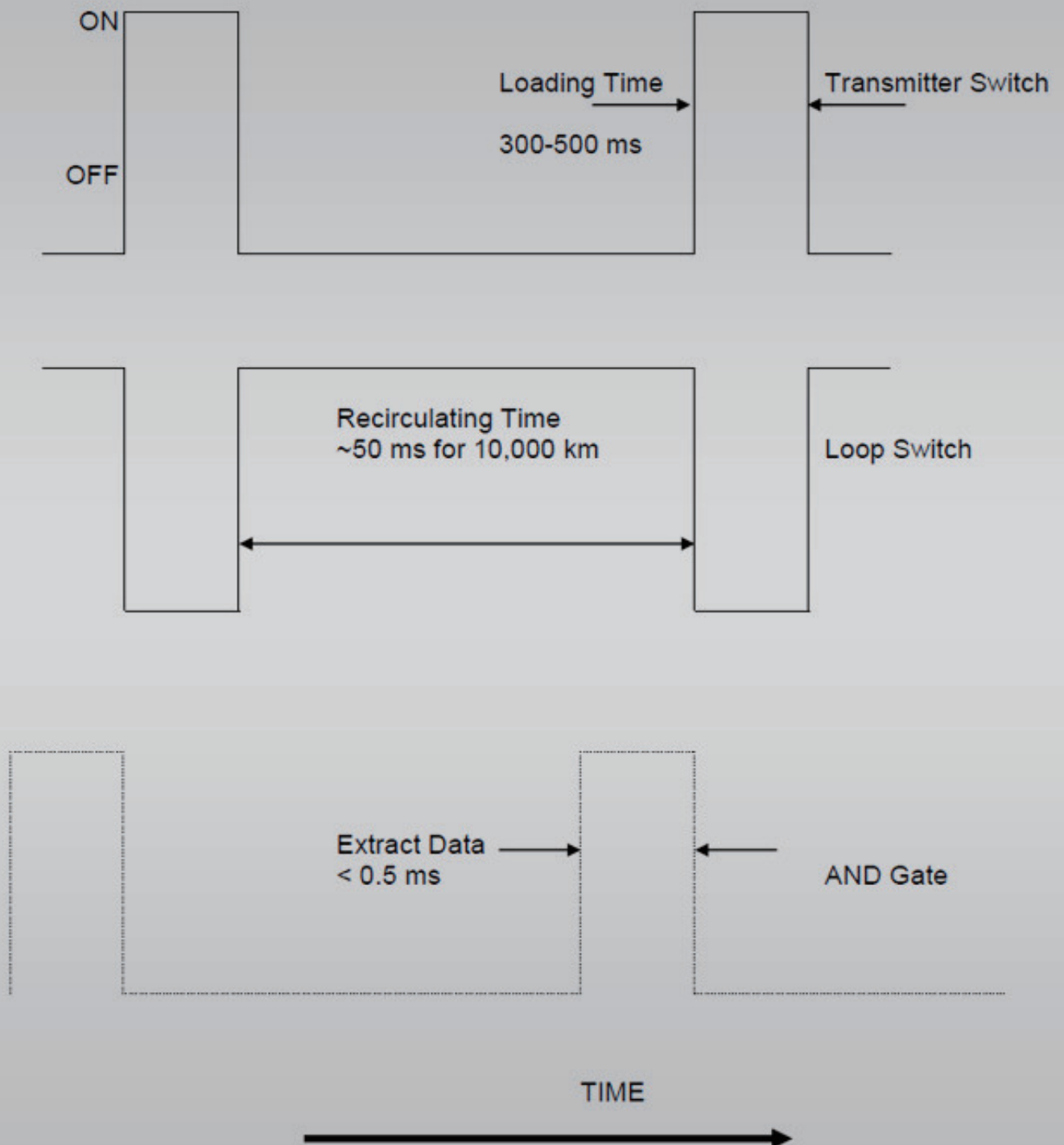
If there are any questions please contact Brimrose at office@brimrose.com.



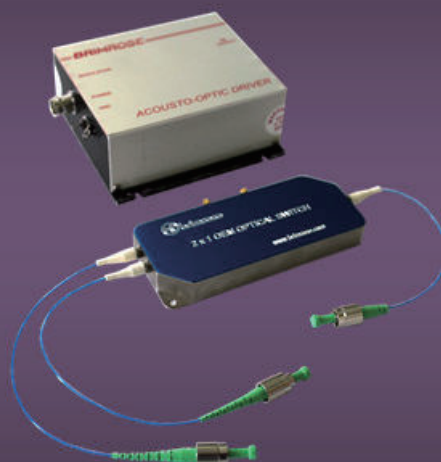
Functional Schematic of RF Driver FFD-100-B2/B3-F1-X-Y



Loop Synchronization



3-Port Fiber Optical Switch Systems (Nanosecond Switches)



KEY FEATURES

- 3-Port Fiber Optically Pigtailed
- 1x2 and 2x1 Configurations
- Compact Size and Rack Mount
- Solid-state: No Moving Parts
- Nanosecond Speed Response: ~200 ns
- Low Insertion Loss
- Low Power Consumption
- High Reliability, Environmentally Stable
- 9/125 μm Single-Mode (SM) Fiber
- Custom Configurations Available

APPLICATIONS

- Optical Add/Drop, Cross Connect, and Ring Protection
- System Monitoring
- Telecommunication Applications
- Test & Measurement
- Optical Component Network or Field Projects in Fiber Optics Sensing System
- OEM Designs

3-Port Nanosecond Fiber Optical Switch Systems

The Brimrose 3-port fiber optical switch system plays a major role in modern fiber optic telecommunication and sensing systems that demands high-reliability operation, response, and continuous high-frequency switching.

This fiber optical switch is a powerful tool to switch an optical signal at nanosecond speed (200ns). The optical switch has two configurations: 1x2 or 2x1. The switch is bi-directional. The optical switch consists of the all fiber optic switch device and corresponding driver packaged in a rack-mountable enclosure. The switching is done by an external TTL compatible low voltage signal.

The Brimrose high-speed RF optical switch driver is packaged in a rack-mountable instrument case. The optical switch driver is an RF generator utilizing a Quartz crystal referenced phase locked loop (PLL) synthesizer.

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3-Port Nanosecond Optical Switch System Preliminary Specification

Model #	OS-2-1-C-55	
Switch Type	1x2 or 2x1	
Wavelength Range (nm) *	C Band	
Control Input (V) - TTL Signal **	0-5	
Switch Time (ns)	~200	
Number of Input Ports per Switch	2x1 Optical Switch	1x2 optical Switch
	2 Input Ports	1 Input Port
Number of Output Ports per Switch	2x1 Optical Switch	1x2 optical Switch
	1 Output Port	2 Output Ports
Case Type	3-Port Fiber Optically Pigtailed	
Fiber Type *	9/125 μ m Single-Mode	
Optical Connector Types *	FC/APC	
Total Insertion Loss (dB)	< 2.5-3.0	
Delay Time (μ s)	~1	
Case Size (mm)	150 x 45 x 14	

* Others available.

** TTL compatible voltage source for drive switch.

One optical channel will be up-shifted by 55 MHz and the other will be downshifted by -55 MHz.

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



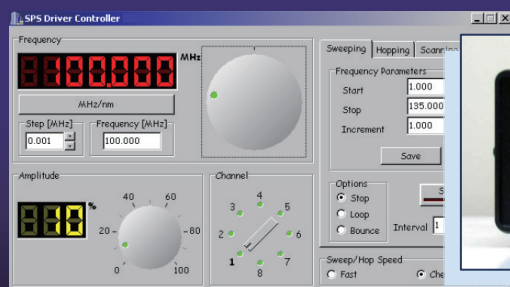
RF Driver Specification

Driver Model #	FFE-XX-B2-FY-X
Frequency (MHz)	XX MHz (compatible with the AO device)
Frequency Control	Quartz crystal referenced phase locked loop.
Frequency Accuracy (%)	0.015
Frequency Stability (Hz)	< 100
Harmonic Content (dBc)	≤ - 10 (Max)
Output Power (Watt)	Nominal on both RF Out 1 and RF Out 2.
Modulation	B2 TTL; DC-8 MHz:
Modulation Input	0-5 V; 330 Ω
Operating Power	117 VAC +/-10% 50-60Hz, (220 VAC ±25% optional) 55W max.
Enclosure	The unit will be packaged in a 190 mm (7.5 inch) wide by 90 mm (3.5 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 ambient temperature is +35° C. The unit is not sealed against moisture or condensing humidity.
Option X	Two RF outputs with a single "TTL in" to switch between.

If there are any questions please contact Brimrose at office@brimrose.com.



Fiber-coupled Dynamic Tunable Bandpass Filter



AOTF - Our Legacy!

KEY FEATURES

- Compact Size
- No O-rings
- Low Insertion Loss
- Low Power Consumption
- Narrow Bandwidths
- Excellent Tuning Resolution
- Hermetically Sealed
- Broad Tuning Range
- SM, SM/PM, MM Fiber Coupling Options
- Custom Configurations Available
- **Ideal for Real-Time NIR**

Dynamic Tunable Bandpass Filters

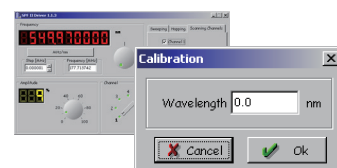
The Dynamic Tunable Bandpass Filter adjusts the center wavelength of a narrow band of light over a 100 - 200nm range. It offers very high resolution of ~1.5nm and either single or simultaneous multiple wavelength selection. It is able to precisely and rapidly adjust the wavelength and intensity of the diffracted/filtered light by varying the frequency (see graph) and RF power.

Brimrose offers both free-space and fiber-coupled configurations. AOTFs are used widely in numerous optical systems and applications, especially in industrial or process control near-infrared (NIR) spectroscopy applications.

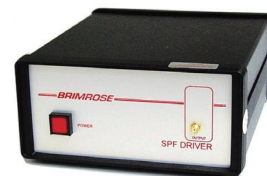
APPLICATIONS

- Dense WDM Transmission Systems
- Laboratory Test and Measurement Systems
 - tuning the center wavelength of broadband sources (white light sources or LEDs)
- Other OEM Applications

SPS/SPF II Model AOTF Controller System



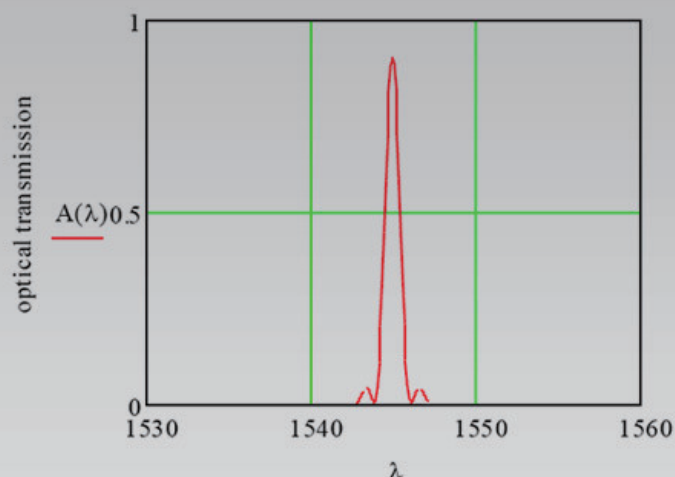
Brimrose offers **AOTF RF drivers** compatible with our AOTF devices. Our AOTF drivers include SPF II drivers, which can control up to four RF output channels, and SPS drivers, which can control up to eight RF output channels. Changing the RF level will vary the intensity of the light being diffracted/filtered.



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Fiber-coupled Dynamic Tunable Filters Specification



The Brimrose dynamic tunable bandpass filters are commonly used to dynamically select among different wavelength channels at the receiver end of dense WDM transmission systems.

Other applications include tuning the center wavelength of broadband sources (such as white light sources or LEDs) in laboratory test and measurement systems.

A typical band-pass shape of the selected light by AOTF filter is shown in the diagram at left.

Mode #	Wavelength Range (nm)	Spectral Resolution (nm)	RF Frequency (MHz)	Insertion Loss (dB)
TEAF-0.40-0.60-2FP	400 - 600	1 - 5	59 - 100	3 - 5
TEAF-0.45-0.7-S-2FP	450 - 700	3 - 9	100 - 180	3 - 5
TEAF-0.9-1.2-UH-2FP	900 - 1200	1	130 - 160	4 - 5
TEAF-1.2-1.7-UH/EH-2FP	1200 - 1700	1.0 - 2.5	80 - 120	~ 5
TEAF-1.5-1.65-UH/EH-2FP	1500 - 1650	1.5 - 2.5	80 - 100	~ 5
TEAF-1.1-2.1-S-2FP	1100 - 2100	4.0 - 15.0	50 - 100	5 - 7

Brimrose offers the fiber coupling options for our all-standard, Fiber-coupled, Acousto-Optic Tunable Filters.

Fiber Type:

- Single-Mode (SM) fiber
- Single-Mode Polarization Maintaining (SM/PM) fiber
- Multimode (MM) fiber

Other fiber types are available on request.

Fiber Connectors: FC, SC, LC, SMA, etc.

Other fiber connectors are available on request.

Options: S – Standard Resolution
H – High Resolution
EH – Extra-high Resolution
UH – Ultra-high Resolution

Other wavelengths are available upon request.

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



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 90 mm (3.5 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 ambient 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	

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



Fiber-coupled Acousto-Optic Modulators



KEY FEATURES

- Compact Size
- Rugged Design
- Low Insertion Loss
- Fast Switching Speed
- Hermetically Sealed
- Low RF Drive Power
- Stable Performance
- Custom Configurations Available

APPLICATIONS

- TTL/Digital Amplitude Modulation
- Analog Amplitude Modulation
- Fast Attenuator
- Gain Tilt Control
- EDFA Power Control
- Loop-back Switch
- Telecommunications
- Fiber Sensing
- Pulse Picking, Q-Switching
- Spectroscopy
- Fiber Lasers
- OEM Designs

Fiber-coupled Acousto-Optic Modulators

Brimrose all fiber optic, electronically controllable modulators allow the user to vary the output light amplitude, time duration, and periodicity/frequency. Insertion Loss can be as low as 2 dB, Extinction Ratio can be as high as -50 dB, rise times can be down to 5 nsec, periodicity can be up to several hundred MHz. Applications include switching, pulse picking, fast attenuator, etc. Wavelengths can range from near UV to near IR.

A specialized application of modulators is the Programmable Attenuator. Attenuators are a key element in the design of fiber optic transmission systems. Attenuators are used to match the optical power level to the dynamic range of receivers, adjust the input and output levels in EDFAs, equalize the power between different DWDM channels and test the general performance of systems under varying optical power conditions.

Our fiber-coupled AO products are housed in environmentally stable packages, which offer superior resistance to humidity and temperature, and are suitable for laboratory as well as various OEM applications and instrumentation.

Brimrose offers a large variety of **RF drivers** compatible with our AO Modulators. A typical AO RF driver consists of an RF oscillator, amplitude modulation scheme and RF amplifier. Changing the RF power level will vary the intensity of the transmitted light.



Brimrose Corporation of America



Fiber-coupled Acousto-Optic Modulator Specifications

Typical Specifications

ON/OFF Extinction (dB)	> 50
Back Reflection (dB)	< -50
Insertion Loss (dB)	< 2.5
Wavelengths (nm)	380-2100
Low Electric Power Consumption (dBm)	< 23
Operating Wavelength Range (nm)	± 25

Model #	Wavelength (nm)	Center Frequency (MHz)	Rise Time (ns)	Modulation Bandwidth (MHz)	Fiber Type
TEM-110-10-55-2FP	380-1600	110	55	10	SM or SMPM
TEM-200-25-20-2FP	380-1600	200	20	25	
TEM-250-50-10-2FP	380-1600	250	10	50	
TEM-500-100-5-2FP	380-1600	500	5	100	
IPM-200-25-20-2FP	1000-2100	200	20	25	
IPM-500-100-5-2FP	1000-2100	500	5	100	
AMM-55-8-70-2FP	1000-2500	55	70	8	
AMM-100-20-25-2FP	1000-2500	100	25	20	

The 3-port, fiber-coupled version is available, as well.

The Fiber-coupled AOM models shown above represent some examples of our fabrication capabilities. In addition, other wavelengths, frequencies or configurations are available.

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



Fixed Frequency Driver Specifications

Driver Model #	FFA-XX-B1-FY	FFA-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)	≤ -20	
Frequency Stability	0.0015% minimum after 15 minute warm-up	
Output Power	Power is optimized for peak efficiency with supplied AO 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 Modulator requirements	
Modulation Type	Analog amplitude modulation	TTL compatible
Modulation Rate	To match AO Modulator 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 240 mm (9.75 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.	

OEM packaging is also available.

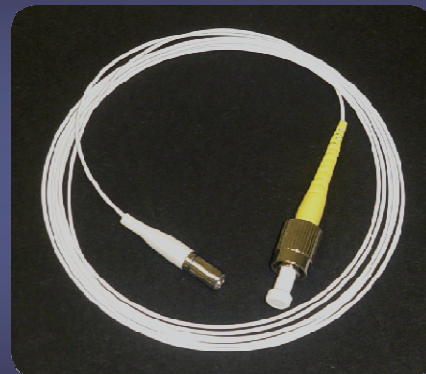
In addition to the standard product shown, customer configurations are available for specialized applications.

If there are any questions please contact Brimrose at office@brimrose.com.



Fiber Optic Collimators and Focusers

- ◆ Low Insertion Loss
- ◆ High Polarization Extinction Ratio
- ◆ Excellent Return Loss
- ◆ Custom Configurations



KEY FEATURES

- Low Insertion Loss
- Excellent Return Loss
- High Polarization Extinction Ratio
- Small Beam Divergence
- Wide Wavelength Range: 403-2000nm
- Miniature Size and Light Weight
- Optical Path, Epoxy Free, and Solder Package
- SM, PM, and MM Fibers
- Antireflection Coated Fibers / Grin Lenses
- Custom Configurations Available

REAL-TIME APPLICATIONS

- Fiber Optic Sensors, Optical Devices
- Measurement Systems
- Signal Processing
- Laboratory Testing
- OEM Designs

Fiber Optic Collimators/Focusers

Brimrose offers a complete line of high performance collimators and focusers designed to collimate or focus light exiting from a fiber to a specified beam diameter or spot size. By utilizing diffraction limited lenses, the spot size of a few microns can be achieved. We design and manufacture matched pairs of collimators and focusers to couple light in and out of the desired devices.

The Brimrose Fiber Optic Collimators are available for any wavelength from 403nm to 2000nm, utilizing multimode, single-mode, or polarization maintaining (PM) fibers. Our PM devices maintaining polarization extinction ratios of better than 20dB are available upon request. We manufacture for 60dB or better back reflection for our fiber pigtailed collimators. All of our fibers and grin lenses are antireflection coated in-house for maximum performance.

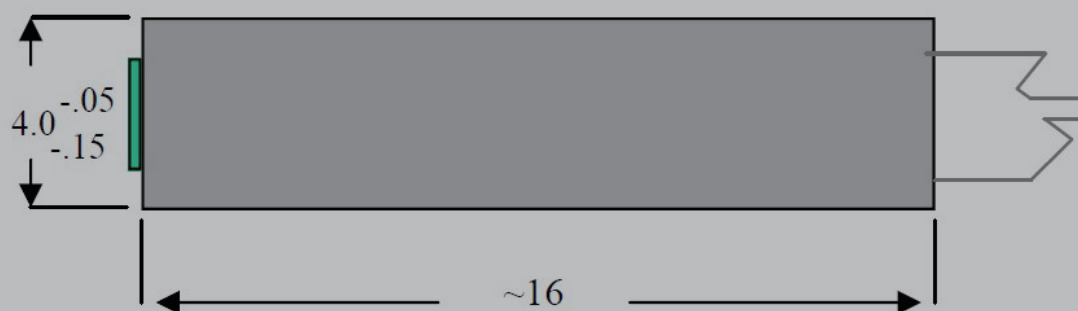
The Brimrose high performance fiber collimator is a fiber optic device that has very small insertion loss, excellent return loss, high polarization extinction ratio, small beam divergence, etc.

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Fiber Optic Collimators / Focusers Specification

Model #	COL-1550-S-0.3-60-3A-0.9-3
Wavelength of Operation (nm)	1550
Operating Temperature (°C)	0°C to +40°C
Typical Coupling Insertion Loss (dB)	~1.2 dB @ 55 mm working distance
Fiber Length (m)	1
Fiber Jacket (μm)	900
Return Loss	>60
Beam Divergence	0.26 degree
Beam Diameter (mm)	~0.3 1/e ² @ 25-30 mm
Spectral Width (nm)	>±30
Storage Temperature (°C)	-10°C to +60°C
Fiber Type	Single Mode 9 μm core 125 mm cladding
Optical Connector Types	FC/APC



Fiber Optic Collimators / Focusers Ordering Information

