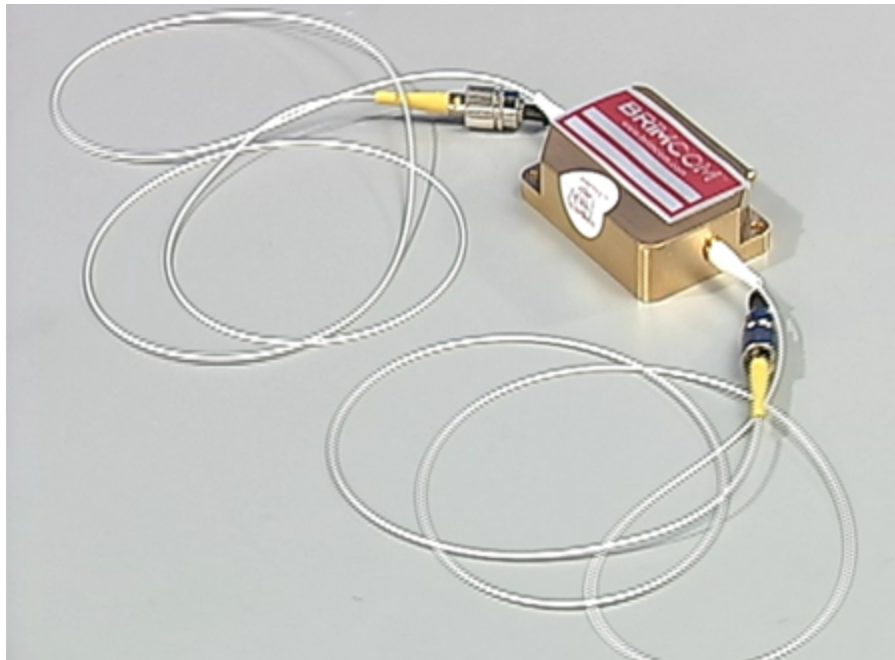




AO Modulators System for Recirculating Loop System

For application of simulating and testing of long distance fiber-optic communication lines Brimrose has developed a fiber-pigtailed AO modulator system. The recirculating loop system consists of 2 fiber-pigtailed AO modulators and a corresponding RF driver. One of the modulators is placed outside the loop to define the transmitted pulse width and the second device is placed inside the loop to define the distance of the pulse transmission which corresponds directly to the length of the long distance fiber-optic line.

Since conventional AO devices will frequency shift the transmitted light by the acoustic carrier frequency, the Brimrose approach utilizes a no-shift AO devices inside the loop which does not complicate testing nor degrade system performance.





Specification

<i>3 Port Fiber Pigtailed AO Modulator</i> <i>(transmitter switch for outside the loop)</i>	
The supporting driver electronics has two complementing RF outputs , one for each device. Pulse width and length adjustment are standard.	
<i>Specification</i>	Model # AMM-100-8-70-1550-3FP Amplitude Modulator
Wavelength of Operation	1550 nm
Optical Power Density	3 W/mm ²
Carrier Frequencies	100 MHz
Active Aperture	0.3 mm
Beam Diameter Inside the Crystal	0.2 mm
Rise Time	70 ns
Digital Modulation Bandwidth	8 MHz
Bragg Angle	31 mrad
Separation Angle	62 mrad
Acoustic Velocity (m/sec)	2.52E+3
Maximum RF Power (Watt)	~1.0 W
Optical Transmission	95%
Diffraction Efficiency	65%
Extinction Ratio*	>50 dB
Input Impedance	50 ohms
V.S.W.R.	2.1:1
Optical Polarization	Linear
Case Type	3 Port Fiber Optically Pigtailed
Type of Fiber, Port 1,2 & 3	9 μm core, 125 μm cladding Single Mode
Fiber Connector Type	FC
Polishing of the Fiber End	APC
Fiber Length	1 m
Fiber Jacket Type	3 mm OD loose tube kevlar
Back Reflection**	40 dB
Total Insertion Loss*** at 1550 nm	
First Order	3.6 dB
Zero Order	2.3 dB
Case Type	FP003
* - The RF driver must match this extinction ratio	
** - Back reflection at FC connector are not included.	
*** - This spec includes: coupling losses, optical transmission through the crystal and diffraction efficiency losses. Losses at FC connectors are not included.	



2 Port Fiber Pigtailed AO Modulator

(no frequency shift switch for inside the loop)

<i>Specification</i>	Model#: AMM-100-8-70-1550-2FP/X
	Amplitude Modulator
Wavelength of Operation	1550 nm
Optical Power Density	3 W/mm ²
Carrier Frequencies	100 MHz
Active Aperture	0.3 mm
Beam Diameter Inside the Crystal	0.2 mm
Rise Time	70 ns
Digital Modulation Bandwidth	8 MHz
Bragg Angle	31 mrad
Separation Angle	62 mrad
Acoustic Velocity (m/sec)	2.52E+3
Maximum RF Power (Watt)	~1.0W
Optical Transmission	95%
Diffraction Efficiency	65-70%
Extinction Ratio*	>50 dB
Input Impedance	50 ohms
V.S.W.R.	2.1:1
Optical Polarization	Linear
Case Type	2 Port Fiber Optically Pigtailed
Type of Fiber, Port 1&2	9 μm core, 125 μm cladding Single Mode
Fiber Connector Type	FC
Polishing of the Fiber End	APC
Fiber Length	1 m
Fiber Jacket Type	3 mm OD loose tube kevlar
Back Reflection**	40 dB
Total Insertion Loss***	First Order - ~5.6 dB
Option X	"no frequency shift"

* - The RF driver must match this extinction ratio

** - Back reflection at FC connector are not included.

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