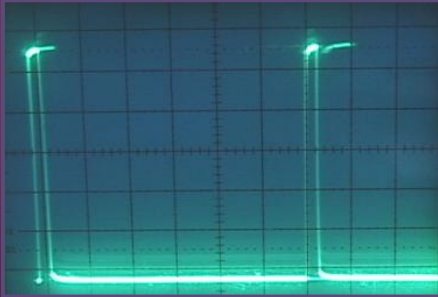


Recirculating Loop System (No Frequency Shift)

AMM-100-8-70-C-RLS(nfs)-RM

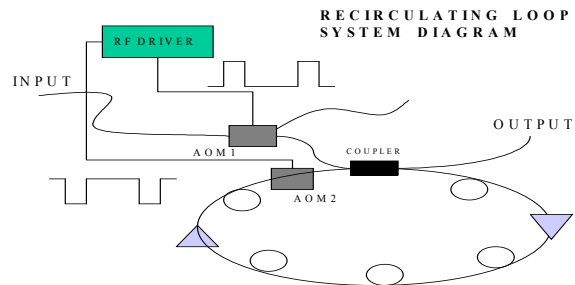


KEY FEATURES

- 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.

Brimrose Corporation of America



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	9 μ m Core, 125 μ m Cladding Single-Mode	9 μ m Core, 125 μ m 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	900 μ m/3mm	900 μ m/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 $\pm 10\%$ 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 μ s. 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.

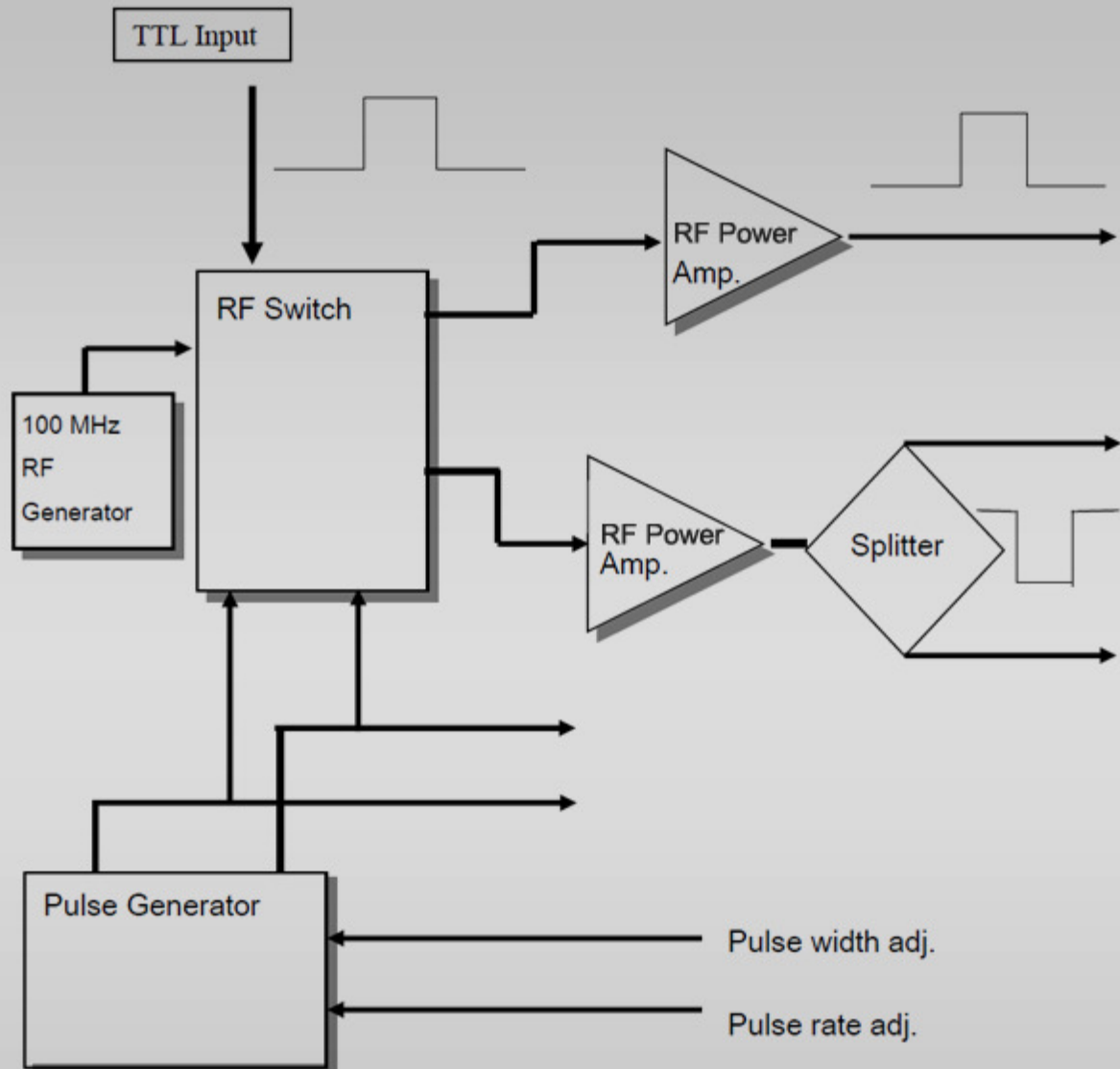
In this system, an internal or external TTL signal is used to control the switches. The amplitudes of both switches (loading and recirculating) are reciprocal in addressing the timing issues of the recirculating loop system. With option ER50, the amplitude extinction ratio for each RF signal is >50 dB.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

