Recirculating Loop System

- *low insertion loss*
- *no O-rings*
- *high extinction ratio*
- *rack-mount enclosure*

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 a second device is placed inside the loop to define the distance of the pulse transmission that corresponds directly to the length of the long distance fiber-optic line.

Since conventional AO device will frequency shift the transmitted light by the acoustic carrier frequency, Brimrose offers, in addition to a standard unit, a no-shift AO switch. The new no-shift AO switch placed inside the loop will keep the frequency of light at a constant value even after multiple passes. Depending on the application, both combinations of switches can be used. Especially for the Telecom market, Brimrose has developed a new packaging technique for these devices to improve their stability in a shake or vibration environment. The new package is compact and eliminates the use of o-rings. We put a lot of thought and consideration into making a product that is stable and reliable on the path to Telecordia qualifications.

In this system an internal or external TTL signals are used to control the switches. The amplitude of both switches (loading and recirculating) are reciprocal to each other to address 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.

Brimrose Corporation of America
19 Loveton Circle, Hunt Valley Loveton Center
Baltimore, Maryland 21152-9201 USA

PHONE: 410 - 472 7070
FAX: 410 - 472 7960
EMAIL: office@brimrose.com

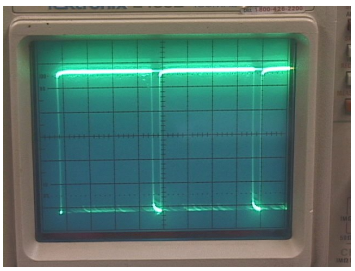
www.brimrose.com

Date: 2/19/2013

Recirculating Loop System

Model#: AMM-100-8-70-C-RLS(nfs)-RM-2AO
Specification:

- *Loading and recirculating switch*
- *no frequency shift*
- *high extinction ratio*



1. AMM-100-6-100-1550-2FP/nfs

Wavelength of Operation	C band
Maximum Input Optical Power	300 mW
Carrier Frequencies	100 MHz
Active Aperture	0.5 mm
Beam Diameter Inside the Crystal	0.3 mm
Rise Time	100 ns
Digital Modulation Bandwidth	4 MHz
Bragg Angle	31 mrad
Separation Angle	62 mrad
Acoustic Velocity (m/sec)	2.52E+3
Maximum RF Power (Watt)	~1.0 W
Polarization Dependent Loss	0.2 dB
Extinction Ratio*	>50 dB
Input Impedance	50 ohms
V.S.W.R.	2.1:1
Optical Polarization	Any
Case Type	2 Port Fiber Optically Pigtailed
Type of Fiber, Port	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	900 um OD
Back Reflection**	40 dB
Total Insertion Loss***	~5.6 dB

Brimrose Corporation of America
19 Loveton Circle, Hunt Valley Loveton Center
Baltimore, Maryland 21152-9201 USA

PHONE: 410 - 472 7070
FAX: 410 - 472 7960
EMAIL: office@brimrose.com

www.brimrose.com

Date: 2/19/2013

Recirculating Loop System

- *RF driver*

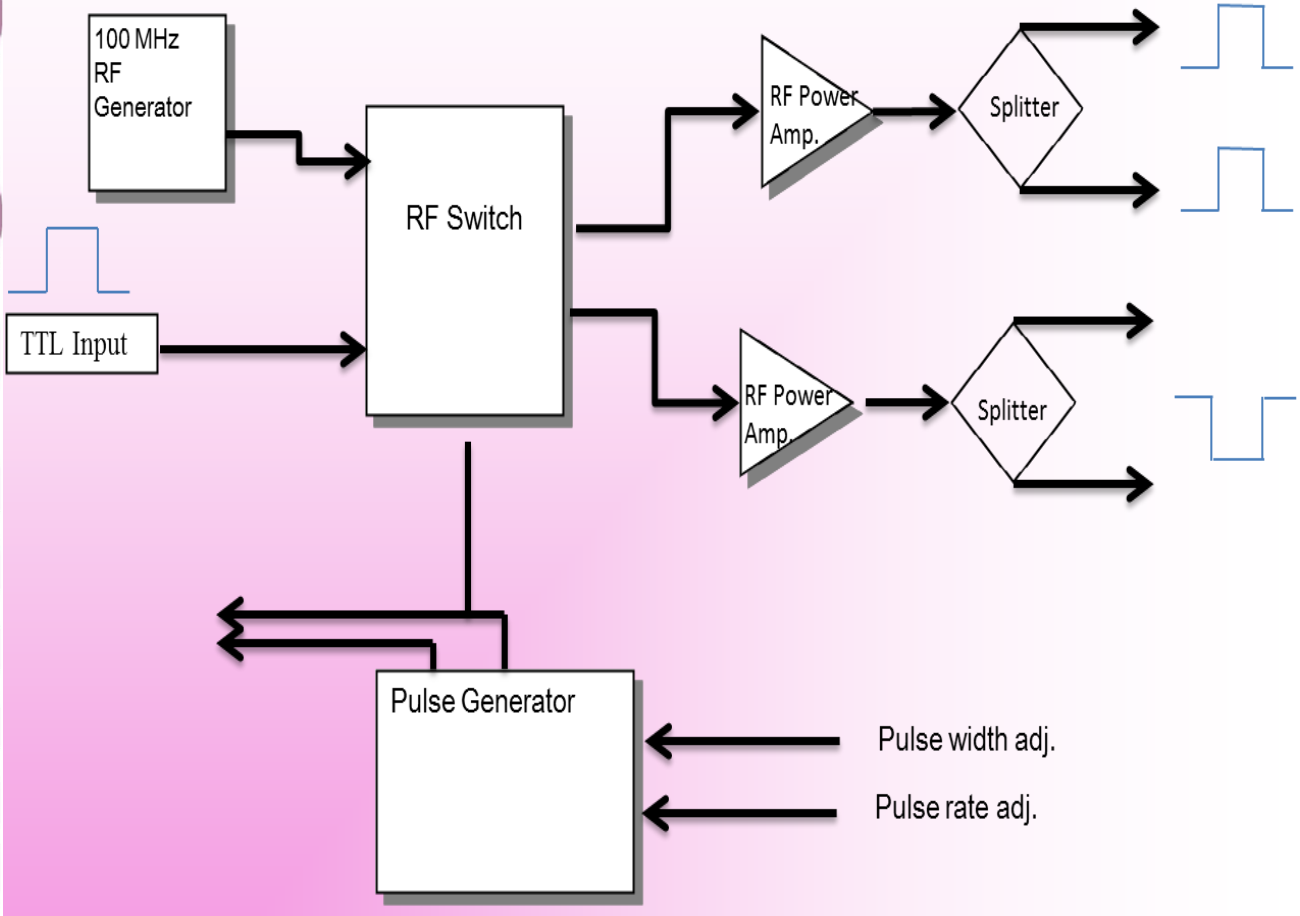
3. FFD-100-B2/B3-F3-IPC-4RFI-ER50

Frequency	100 MHz
Frequency Control	Quartz crystal referenced phase locked loop.
Frequency Accuracy	0.015%
Harmonic Content	≤ - 40 dBc
Stability	0.0015% minimum after 15 minute warm-up.
Output Power	0.5 Watt in each channel. Power is optimized for A-O device performance.
Operating Power	90-240 VAC +/-10% 50-60Hz, 55W max.
Environmental	Nominal Laboratory conditions: Max ambient temperature - +35 deg C; the unit is not sealed against moisture or condensing humidity. A detachable AC line cord is provided.
Option IPC	Internal pulse generator with adjustable pulse repetition rate and adjustable pulse width. Pulse rep rate 2-100 ms. Pulse width 100-500 µs. Stability of pulse pattern is ~5% (0.5% short term). Monitor output with SMA connector from the pulse generator. External modulation input; TTL compatible. Front panel switch to select external or internal modulation input.
Option 4RFI	Four pulse RF outputs for 2 nfs AO switches referenced to the same crystal; two same RF outputs for loading switch and the other two for the recirculating switch. RF outputs are complementary to each other.
Option ER50	50 dB extinction ratio for each channel The system extinction ratio (AOM and driver) will be ~43 dB per channel.

Brimrose Corporation of America
19 Loveton Circle, Hunt Valley Loveton Center
Baltimore, Maryland 21152-9201 USA
PHONE: 410 - 472 7070
FAX: 410 - 472 7960
EMAIL: office@brimrose.com
www.brimrose.com

Recirculating Loop System

FFD-100-B2/B3-F1-IPC-4RFI



Brimrose Corporation of America
19 Loveton Circle, Hunt Valley Loveton Center
Baltimore, Maryland 21152-9201 USA

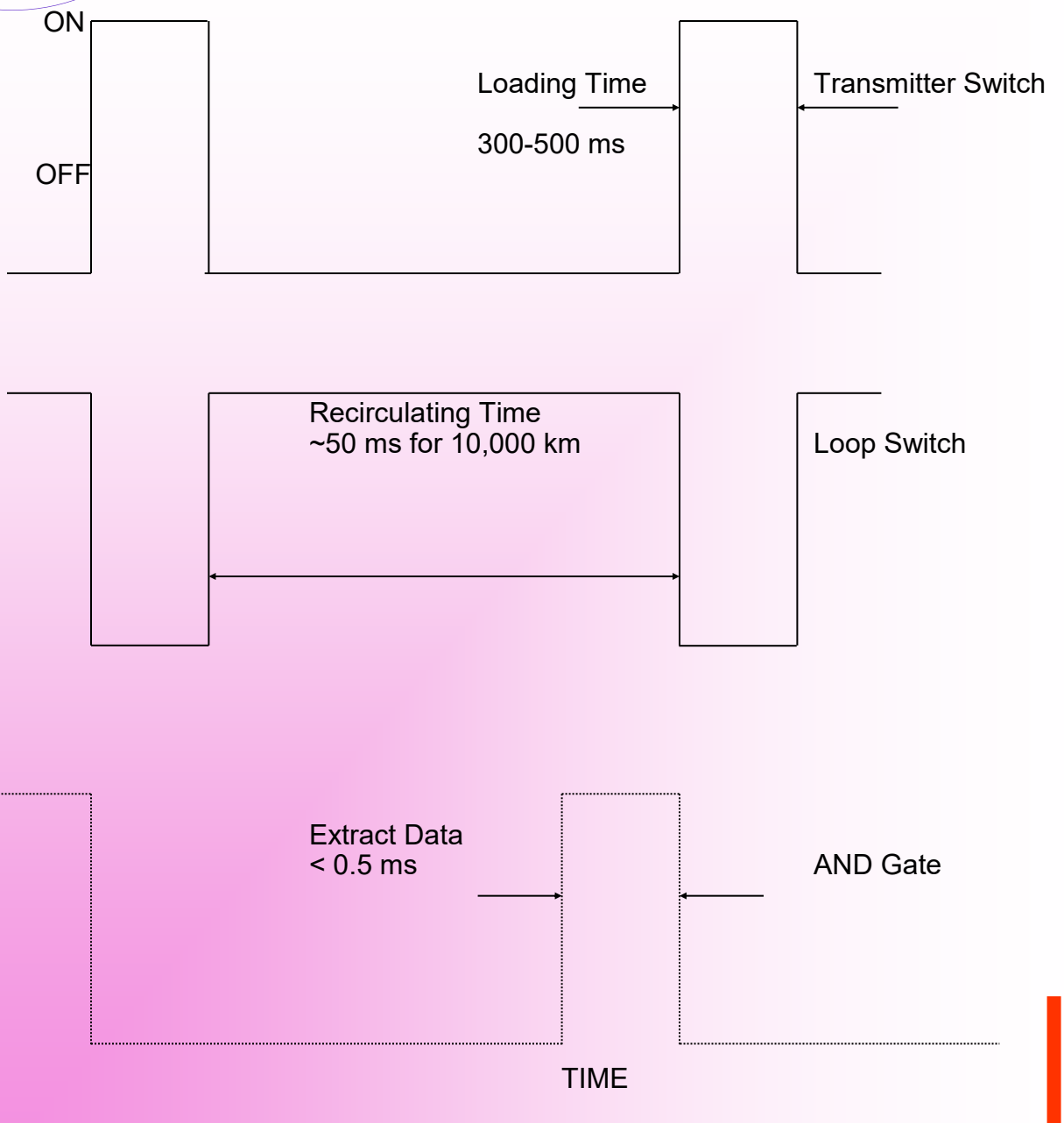
PHONE: 410 - 472 7070
FAX: 410 - 472 7960
EMAIL: office@brimrose.com

www.brimrose.com

Date: 2/19/2013

Recirculating Loop System

Loop Synchronization



BRIMROSE

Date: 2/19/2013