

## RFA-1M-FM Fiber Fed Unidirectional Amplifier Datasheet

### RFA-1M-FM

#### MODEL:

RFA-1M-FM-options (see table below)

#### DESCRIPTION:

SINGLE FM MEDIUM POWER BOOSTER WITH INTEGRATED OPTICAL/RF RECEIVER-CONVERTER

#### A.1 SUMMARY

The RFA-1M-FM is an FM-band medium power Linear Booster fed by and Optic-to-RF receiver converter integrated within the unit.



It is designed to receive multiple FM carriers through a single-mode fiber optic link and boost them up to rebroadcast in tunnels, in-buildings or to extend the coverage in shadowed areas.

Visual alarms provide monitoring for excessive reverse power, low forward power, internal DC power supply and ac power drop. These signals are available through summary alarms, for remote monitoring.

#### Features:

- 1W, 5W and 20W Power Output units available.
- Optional Wallmount Stainless-Steel enclosure rated NEMA-4X (IP66)
- 88 MHz to 110 Mhz bandwidth suited for FM applications.
- 60 dB Gain Adjustment
- Fiber fed input allows the transmission of RF to greater distances using Single-mode optical links with 1310nm wavelength signal.
- Dry contact alarms available for remote monitoring of the unit.

#### A.2 SPECIFICATIONS

Datasheet			
A2.1 RF POWER AMPLIFIER			
	1 watt Option #: 1	5 watts Option #: 5	20 watts Option #: 20
Frequency Range:	88-110 MHz	88-110 MHz	88-110MHz
Bandwidth:	22 MHz	22 MHz	22 MHz
Composite Power Output (maximum)	1.3 Watt (+31 dBm)	6.3 Watts (+38 dBm)	20 Watts (+43 dBm)
System Output P1 dB: (min)	1 Watt (+30 dBm)	5 Watts (+37 dBm)	15 Watts (+42 dBm)
Output low-pass filter selectivity @150MHz:	>40 dB	>40 dB	>40 dB
Pass band Ripple:	± 1.5 dB	± 1.5 dB	± 1.5 dB
Output Monitor Ports:	1 x -23 dBc	1 x -23 dBc	1 x -23 dBc
Noise Figure (@ Max. Gain)	< 8 dB	< 8 dB	< 8 dB
System OIP3: (min)	+42 dBm	+46 dBm	+48 dBm
System net Gain: (min)	52 dB	62 dB	70 dB
Recommended maximum Output Power level per carrier:			
for 36 carriers:	+8 dBm	+15 dBm	+20 dBm
for 24 carriers:	+10 dBm	+17 dBm	+22 dBm
Gain Adjust (continuous):	60 dB	60 dB	60 dB
Output VSWR @ mid freq. range:	1.5:1	1.5:1	1.5:1
Impedance (Typical):	50 Ohms	50 Ohms	50 Ohms
RF Connector:	Female Type N, silver plated shell and gold plated center pin. Panel Bulkhead weatherproofed mounting.		

### FIBER OPTIC RECEIVER-CONVERTER INTERFACE:

- RF/Fiber Optical Receiver Module
- 87-110 MHz Bandwidth for FM
- Small package outline
- 1.3  $\mu\text{m}$  Low Noise FP Lasers (DFB optional)
- Wide Dynamic Range
- Automatic Optical Power Control
- Monitoring and Alarm
- One Way Single-Mode Fiber link
- Slow-Start circuitry to prevent Laser damage
- SC/APC optical connector (internal)

The RFA high-performance FM optical-receiver has a very wide Dynamic Range designed for RF/Fiber applications. It is designed as a compact RF plug-in package for single-mode fibers operation. The Standard optical connector is SC/APC (FC/APC available) for low back reflection applications. The receiver features a high performance InGaAs photodiode operating at 1.3  $\mu\text{m}$  over 9/125  $\mu\text{m}$  single mode fibers. Average Automatic Power Control (AAPC) is incorporated for optimal optical power stability over the full temperature range. The RF interface is via a 50 ohms connector. Status alarm and monitoring functions are available.

OPTICAL MODULE LINK CHARACTERISTICS						
Parameter	Symbol	Min.	Typical	Max.	Units	Notes
Receiver Operating Wavelength	$\lambda$		1310		nm	
Frequency Response (48-2500 MHz)			$\pm 1.5$		dB	
Output Impedance			50		Ohm	
Spur Free Dynamic Range	SFDR		109		(dB/Hz)	1
RF Link Gain (Tx-Rx), typical		-1	0	+1	dB	1
Input Noise Floor	EIN		-133	-120	dBm-Hz	1
Input Third Order Intercept	IIP3		30		dBm	1

### A2.3 ALARM OUTPUTS & INDICATORS

LED Indicators	DC Power supply and Alarms Status LED indicators on internal board.
<ul style="list-style-type: none"> <li>• 3 Pin Connector</li> </ul>	One voltage-free ("dry") form C contact:
Switchcraft EN3 Weatherproof type	Summary of: Power Amplifier status, DC Power Supply status, and F/O status.
<ul style="list-style-type: none"> <li>• 6 Pin Connector</li> </ul>	Two voltage-free ("dry") form C contacts:
Switchcraft EN3 Weatherproof type	a) Summary of: Power Amplifier status, DC Power Supply status, and F/O status b) AC Power Fail.
Relay Contact Specifications	Max Voltage 220 VDC @1A or 250 VAC @1A

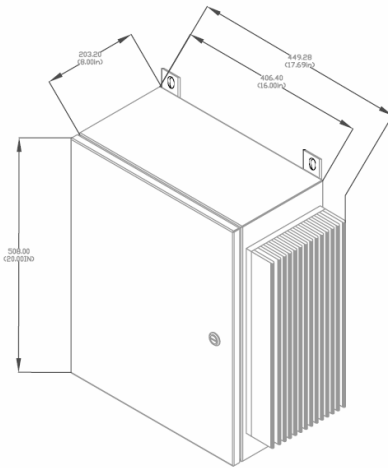
### A2.4 POWER REQUIREMENTS

	1 watt	5 watts	20 watts
	Option #: 1	Option #: 5	Option #: 20
AC Power Supply ( $\pm 10\%$ ):	230/110 VAC	230/110 VAC	230/110 VAC
AC Power Consumption:	< 50 Watts	< 80 Watts	< 140 Watts
AC Plug	Standard to be specified by the customer. Max. Current: 10 A		

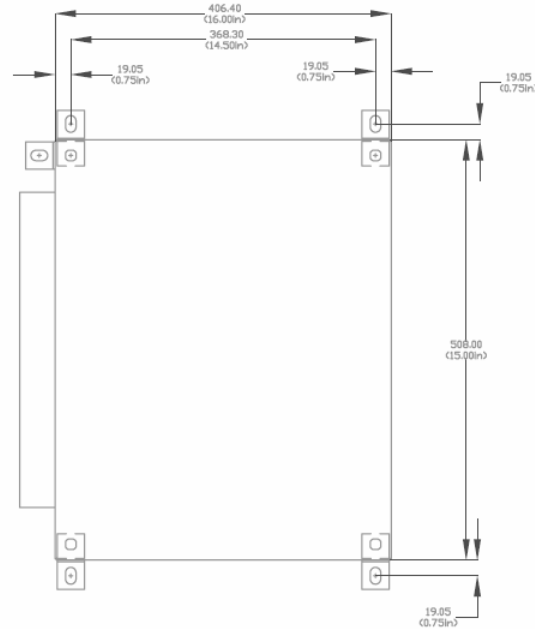
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### A2.5 MECHANICAL SPECIFICATIONS FOR OPTION WSS

Mechanical:	304 type Stainless Steel Wall Mount Enclosure Hinged-Door, Quick-turn key latch
Protection rating:	IP66 (NEMA4X)
Dimensions:	508 x 406 x 203 mm (20" x 16" x 8" in)
Weight:	< 25 Kgs
Cables & connectors location	Top, left-side or bottom, to be specified by the Customer.



ISOMETRIC VIEW



REAR VIEW LAYOUT & MOUNTING BRACKETS

### A2.6 ENVIRONMENTAL SPECIFICATIONS

Operating Temperature Range:	-20 to +35 °C
Storage Temperature:	-30° to +70 °C
Cooling:	Natural Convection
Humidity:	95%