



QFMN

QFMN Fiber Mini Node Distribution Amplifier

Installation & Operation Manual



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INTRODUCTION

1. Introduction

The QFMN device is a cost effective mini indoor fiber node.

QFMN provides the user with a two-way 870 MHz node with excellent RF and optical performance. The forward optical detector will accept either 1310nm or 1550nm wavelengths. The QFMN device is designed to operate with a nominal optical input level of 0 dBm that provides the best RF performance.

QFMN also provides a factory installed 5 to 42 MHz Fabry-Perot return path transmitter with a built-in gain potentiometer to set the optimum drive level to the laser driver amp and a factory selected plug-in-pad after the laser driver amp to set the optimum laser RF drive level.

The QFMN device can provide RF output levels of +45 dBmV. For set-up and monitoring purposes, QFMN provides a -20 dB Forward RF test point located at the output of the amplifier and a -20 dB test point for the return path located after the laser driver amp. Internally a 10-segment LCD optical power meter is available to aid in proper set-up of the forward path optical input.



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INSTALLATION

2. Installation

QFMN is designed as a wall or cabinet mounted device. Four mounting holes are available on the chassis to provide the installer the ability to secure the QFMN device in the required mounting method. QFMN is specified to operate from 0°C to +70°C (+32°F to +158°F). The QFMN device should be mounted in an adequately ventilated area to provide adequate air flow across the chassis and should not be installed in areas of high humidity. Extremely dusty areas should be avoided as well to eliminate potential contamination of the optical interfaces.

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POWERING

3. Powering

The QFMN device operates with an external class 2 transformer (ATX model: #951, 120VAC to 26VAC, 60 Hz, 50 VA). Alternately an external universal power supply (ATX model: EPS 267-ND, 100-240VAC to 24VDC) is available for requirements other than typical 110VAC installations. AC powering is accomplished by connecting the terminals of the #951 transformer (or alternate EPS 267-ND universal power supply) at the terminal block located on the underside of the QFMN device.

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OPTICAL CONNECTORS & CLEANING

4. Optical Connectors & Cleaning

The QFMN device is available with either SC/APC (green) or SC/UPC (blue) style optical connectors. The optical connector is located on the rear of the unit. Be sure to only mate the same style connectors. Mating APC with UPC-style connectors can cause undesirable results. Fiber connectors should never be left uncovered due to the possibility of contamination.

Commercially available fiber cleaning products are easily available (such as pre-packaged alcohol wipes, Kimwipes®, etc.) and should be used to ensure that the fiber connections are free of any contaminants.

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OPERATIONAL SET-UP

5. Operational Set-up

After attaching power and securely mounting the QFMN device, connect the forward optical input (labelled **FORWARD OPTICAL INPUT**) ensuring that the optical connectors are kept free of contaminants. If applicable, connect the return path optical connector (labelled **RETURN LASER**).

If installing a QFMN Node with an integrated WDM for bidirectional communications, only the **FORWARD OPTICAL INPUT** connection will be utilized for both forward and return transmission.

Connect the forward RF output (labelled **FWD. OUTPUT**) using a 75 Ohm F-style connector.

The optical input range of the QFMN device is -4 dBm to +4 dBm. The recommended operating range of the QFMN device is -2 dBm to +2dBm. Optimum performance of the QFMN device is specified with 1mW (0 dBm) of optical input power to achieve the stated specifications. Optical inputs which are less than -2 dBm or above +2 dBm will result in slightly decreased RF performance of the QFMN device.

As shown in Figure 1 below, a 10-bar LED located inside the unit provides a quick indication of forward optical input power.

When the LED lights **GREEN**, you are within the recommended operating range of the node (-2 dBm to +2 dBm) as shown in the figure below. When the LED lights either **YELLOW** or **RED** you are outside of the recommended operating range and should decrease or increase optical input power as needed until the LED displays **GREEN**.

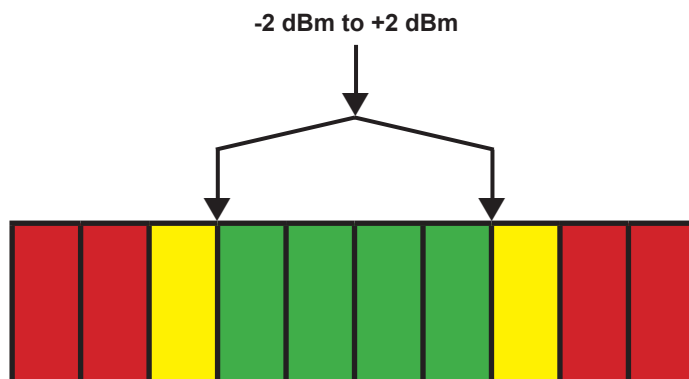


Figure #1: Forward Optical Input LED Bar Graph

After connection of the forward and return optical connections into the QFMN device and verifying the correct optical input power, RF tilt and gain adjustments can be made to help achieve the required output slope and output RF levels. The locations for the tilt and gain controls are shown below on the logical schematic labelled Figure 2.

Utilize the -20 dB test point to measure the FWD path gain and slope.

A -20 dB TX test point, located on the side of the unit can be utilized for setting up the return path.

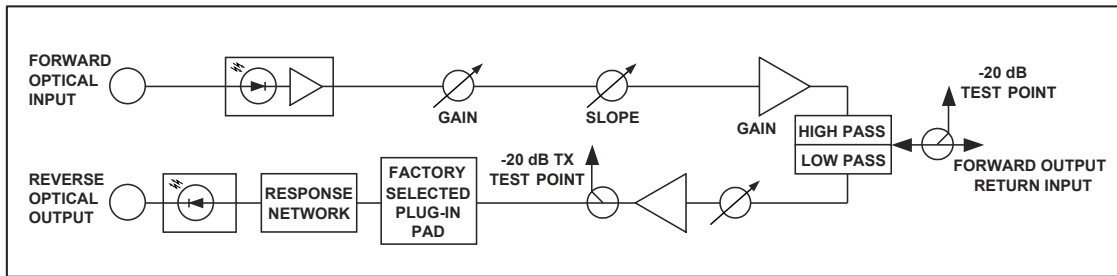


Figure #2: QFMN Functional Schematic

SPECIFICATIONS	FORWARD	RETURN LASER ⁽²⁾
	QFMN	Fabry-Perot
BANDWIDTH (MHz)	54-870	5-42
FREQUENCY RESPONSE	+/- 0.5 dB	+/- 0.25 dB
CHANNEL LOADING	79	1
GAIN CONTROL RANGE	10 dB	20 dB
SLOPE CONTROL RANGE	18 dB	Fixed
GAIN	n/a	17
OUTPUT LEVELS ⁽¹⁾	45	1mW
DISTORTIONS	COMP. TR. BT. (-dB)	n/a
	COMP. 2nd ORD. (-dB)	Typ.49
CARRIER TO NOISE (dB)	53	n/a
RETURN LOSS (Worst Case)	15 dB	15 dB
DC AMPERES @ 24 VDC	0.66	0.18
POWER DISSIPATION (Watts) ⁽³⁾	27	7
OPERATING TEMPERATURE	0°C to +50°C (+32°F to +122°F)	
HUMIDITY	20%-55% (without condensation)	
DIMENSIONS	8.38"H x 5.0"W x 2.25"D (21.29H x 12.7W x 5.72D cm)	
WEIGHT	7.5 lbs (3.40 kg)	
<p>NOTES:</p> <p>All forward node specifications are based on 1mW (0 dBm) optical power input with 3.7% OMI per channel.</p> <p>(1) Output levels of 45 dBmV with GaAs push-pull technology are suitable for 8 dB sloped output with output levels set at 37/45 dBmV referenced from 54-870 MHz.</p> <p>(2) Return laser specification is for discrete 2nd order beats, not composite second order.</p> <p>(3) Power dissipation is measured at 120 VAC.</p>		

Figure #4: QFMN Specifications

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SERVICE & SUPPORT

6. Service & Support

6.1 Contact ATX Networks

Please contact ATX Technical Support for assistance with any ATX products. Please contact ATX Customer Service to obtain a valid RMA number for any ATX products that require service and are in or out-of-warranty before returning a failed module to the factory.

RF & OPTICAL TECHNICAL SUPPORT

Tel: (905) 428-6068

Toll Free: (800) 565-7488 (USA & Canada only)

► Press *3 for **Technical Support**

► Then press 2 for **RF & Optical Products (MAXNET, SignalOn, HFC Enhance, PCI Filters, Q-Series, FLEXNET, SCN, SMAC FiberLinx)**

Email: rfsupport@atxnetworks.com

CUSTOMER SERVICE

ATX Networks

1-501 Clements Road West

Ajax, ON L1S 7H4 Canada

Tel: (905) 428-6068

Toll Free: (800) 565-7488 (USA & Canada only)

► Press *1 for **Customer Service**

Fax: (905) 427-1964

Toll Free Fax: (866) 427-1964 (USA & Canada only)

Web: www.atxnetworks.com

Email: support@atxnetworks.com

6.2 Warranty Information

All of ATX Networks' products have a 1-year warranty that covers manufacturer's defects or failures.



1-501 Clements Road West, Ajax, ON L1S 7H4 Canada
Tel +1 (905) 428-6068 Toll Free +1 (800) 565-7488
Fax +1 (905) 427-1964 Toll Free Fax +1 (866) 427-1964
www.atxnetworks.com support@atxnetworks.com