About the Product

The PBN AIMA3000 RRAQ series advanced quad return-path receivers are designed for multi-services operators to increase network-return capacities for the ever-growing data and voice bandwidth, while minimizing physical headend space and power requirements.

The RRAQ, as a key element of the AIMA3000 platform, is designed to plug into PBN's next-generation Advanced Intelligent Multi-Service Headend Platform (AIMA3000). The RRAQ incorporates four independent optical return-path receivers that operate at a wavelength between 1260~1620 nm. This density allows up to 64 independent receivers in a 4RU rack space. The user can set each receiver individually for operation in either manual gain control (MGC) mode or automatic gain control (AGC) mode. The unit hosts low-noise and high-performance amplifiers to ensure good signal-to-noise as well as low distortion. The RRAQ is backward-compatible with PBN's existing optical nodes including the ODN2P, ODN4P etc. With high RF outputs, the RRAQ is flexible for various headend configurations.

Microprocessor-based status monitoring and control requires an ASMM module in slot 0 of the chassis.

The RRAQ can be controlled through a netbook or laptop connected to one of the Ethernet ports on the AIMA3000's ASMM module. The RRAQ can also be conveniently monitored and controlled by a PDA via a USB connection to the ASMM. Remote control and monitoring by network operating centers is possible via SNMP and HTTP.

All module settings are retained in memory to ensure trouble-free operation. Furthermore, bulk updating, automatic uploading and downloading of configuration files and NMS Web-based Management system are available for this module.

Key Features and Functions

- Bandwidth 5 ~ 200 MHz for future DOCSIS frequency band
- RF output 108 dBµV @ -6 dBm optical input and 6% OMI
- 1260 ~ 1620 nm operating wavelength, to suit CWDM, DWDM and RFoG applications
- 19-inch 4RU chassis supports up to 16 Application Modules
- A single RRAQ module has 4 optical inputs; the full chassis supports up to 64 channels
- Redundancy feature supports modules in the same or different chassis
- Fast switching time of less than 15 ms ensures zero interruption to the network
- User-selectable Manual Gain Control (MGC) or AGC

- Remote status monitoring of connected PBN optical nodes
- Bulk updates, auto upload/download of configuration files
- Real-time alarm monitoring
- Remote firmware upgrade for ease of maintenance
- Plug-and-play hot-swappable AIMA3000 platform module with four independent return-path receivers
- Easy to install, with blind RF connector plugs
- Independent RF test points for ease of setup and maintenance
- A single receiver consumes less than 2 W
- Fully RoHS and CE compliant

Block Diagram
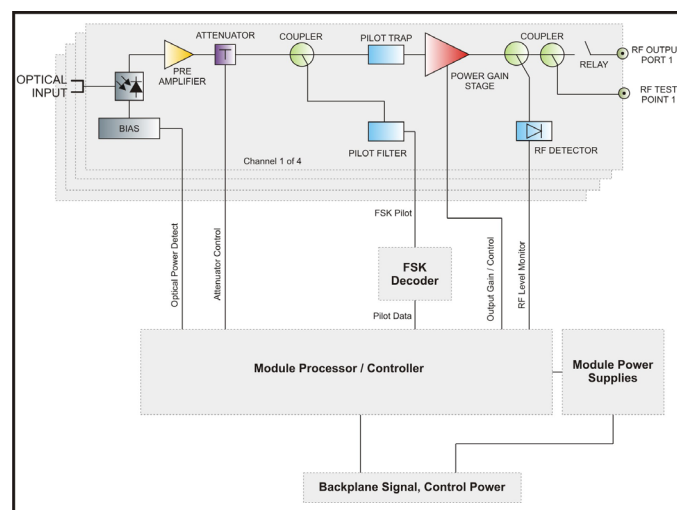
Specifications

Optical Performance

Optical wavelength	1260 nm to 1620 nm
Optical inputs	-18 dBm to +2 dBm (RRAQ standard option)
	-28 dBm to -12 dBm (RRAQ RFoG option)
Optical connectors	4 x SC/APC [(1)] , E2000/APC, FC/APC

RF Performance

RF bandwidth	5 MHz to 200 MHz (RRAQ standard option)
	5 MHz to 85 MHz (RRAQ RFoG option)
RF output level [(2)]	108 dBµV
RF flatness	± 0.75 dB (5 MHz to 100 MHz, no 4.5 MHz pilot tone option)
Gain adjustment	0 dB to 52 dB
RF impedance	75 Ω
RF return loss	> 16 dB
Receiver isolation	> 60 dB
RF test point relative to RF output port	-20 dB ± 1 dB
RF OUT connectors	4 x GSK-type female
RF test points	4 x Mini-SMB
Alarms and status	Front-panel LEDs, SNMP traps

Link Performance

CNR [(3)]	> 48 dB
IMD2 [(4)]	> 52 dB
NPR [(5)]	> 35 dB (over dynamic range of 15 dB)

Redundancy Performance

Return paths	Hardware cable connecting two RRAQs, which can be installed on two independent AIMA3000 chassis.
Switching time	< 15 ms

General

Power supply	Powered via AIMA3000 backplane
Power consumption	< 8 W
Operating temperature	0 ℃ to +50 ℃
Storage temperature	-20 ℃ to +70 ℃
Dimensions (WxDxH)	24.6 x 410 x 152.5 mm
Weight	0.87 kg
Network management	NMS3 via AIMA3000 ASMM

Notes

(1) Standard option. Contact a PBN Sales Representative for availability of other options.

(2) Measured in a typical system with -6 dBm optical input, 6% OMI, gain setting adjusted to maximum (the stated RF output level does not necessarily apply with other optical input levels).

(3) Measured @ -2 dBm, 6% OMI, 4 channels

(4) Measured @ -2 dBm, 6% OMI, 4 channels

(5) Measured @ -6 dBm to 0 dBm

Order Details

AIMA-RRAQ-[Y]-[Z] ----------| Return Receiver Analog Quad Module

Options:

Y		Version
	ST	Standard
	FK	With FSK decoder and remote node monitoring
	RD	With redundancy setting
	RG	Low-noise RFoG
Z		Optical Connector Type
	S	SC/APC *
	E	E2000/APC
	F	FC/APC

Standard option. Contact a PBN Sales Representative for availability of other options.

Accessories

AIMA-RCBL-[Z] ---------------| Redundancy Interconnect Cable **

Options:

Z		Length
	03	3 feet (0.915 m)
	06	6 feet (1.829 m)

*** For use with redundant forward and return receivers.*

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