

With two independent receivers in the module, the OmniStar GX2-RX200BX2 return path receiver module provides a high-density solution for advanced upstream video and data traffic. The wide optical input power range can accommodate today's evolving networks with varying link budgets. An integrated low-noise pre-amplifier and high-performance post-amplifier offers high RF output level and exceptional distortion performance. Enhanced with PowerPC technology by Motorola, these receivers introduce a new found intelligence to traditional headend equipment. The hot-swappable modules with unique embedded features, like Quick-Swap Module Configuration, maximize in-service time by eliminating the need for manual configuration. This receiver, coupled with the full complement of other OmniStar GX2 application modules, provides extreme flexibility for network design and fiber link optimization.

*Capturing 32 separate optical return path signals in a 4 RU space is possible with the OmniStar GX2 Dual Return Path Receiver.*

#### **BENEFITS INCLUDE:**

- High Module Density—Up to 16 dual receiver modules in a four rack-unit housing
- High Performance—An integrated low-noise preamp and high-performance post amp allows a high RF output level and exceptional distortion performance
- Intelligence—Contains high-performance PowerPC microprocessor provided by Motorola
- Quick-Swap Capability—Replacement modules are recognized and updated with settings pre-stored by the Control Module
- Flexibility—A wide optical input range from 0 to -16 dBm accommodates various system architectures
- User Friendly—Two independent front panel RF test points (one for each receiver) and two gain modes simplify link optimization—Plug-n-Play application modules with blind-mate RF connectors in the rear
- Energy Efficient—Designed with advanced integrated circuits for low power consumption



*Enhanced with Power PC technology by Motorola, these receivers introduce a newfound intelligence to traditional headend equipment.*

### **Product Description**

The GX2-RX200BX2 is a dual return path receiver module for the OmniStar GX2 optical broadband transmission platform. It contains two independent return path receivers in a single module that occupies one slot in the OmniStar GX2 Housing.

Optical input connectors are located on the front of the module for easy cleaning and installation. The standard optical connector is SC/APC. E2000 is also available. The dual fans on each module are field-replaceable and the fan voltage is monitored to provide operational status.

### **Module Features**

The user can select from two modes of operation: Manual Gain Control (MGC) mode and a high isolation OFF mode. The MGC mode allows the user to adjust the RF output level for customized C/N and distortion performance based on channel loading and system requirements. The OFF mode is provided so that an unused receiver or a receiver in a link with ingress problems can be muted. Firmware is downloadable and can be upgraded while the module remains in operation. No hardware changes are needed.

The module features two independent, front panel RF test points for convenient setup and maintenance. Each test point directly monitors the RF output of each receiver. Blind-mate RF output connectors on the rear of the module allow hot-swapping without disconnecting cables from the back panel of the housing.

To provide path and equipment redundancy, the GX2-RX200BX2 is designed to interface with the GX2-RSW1000B RF Switch Module. The unique design allows RF switching even in the bursty RF traffic environment of the return path. The GX2-OSW10B Optical Switch Module can also be used if optical switching is desired.

### **Intelligence**

Each OmniStar GX2 module utilizes the intelligent PowerPC microprocessor provided by Motorola. The powerful processor allows sophisticated control functions along with high integration; this single-chip design contains flash memory, random access memory and analog/digital converters. Manufacturing test data, and all specific module information (i.e. firmware, bitmaps, menu structure, etc.) are stored in the nonvolatile memory.

### **Communications**

Several communication methods are available for real-time system monitoring and control. A tri-colored LED on each module indicates general operating status. The optional shelf door unit with display provides monitoring and control with an alphanumeric display and simple push button navigation. Finally, a PC interface is available through an Ethernet port on the front of the control module. Using a standard web browser, the graphical user interface provides a point-and-click method of configuring the shelf. For higher-level management, OmniStar GX2 can be easily connected to a remote network management system using the standard Ethernet SNMP interface.



# performance

## **DISTORTION**

Noise Power Ratio (NPR)  $\geq$  40 dB

Injection of 5 to 40 MHz block of noise with a 52 dB notch at 22 MHz through 20km of fiber plus optical attenuator if needed to achieve -9 dBm received optical input power. Total noise power equal to power of 20% OMI tone. RF output level set to 43 dBmV.

**Figure 1: Receiver Output Levels (dBmV total power)**

Optical Link Loss (dB)	TRANSMITTER MODEL						
	AM-RPTD	AM-RPTV1	AM-MB-RPTD	SG2-IFPT	SG2-DFBT	SG2-DFBT3	AM-OMNI-RPT
0	53	58	53	58	61	67	67
1	51	56	51	56	59	65	65
2	49	54	49	54	57	63	63
3	47	52	47	52	55	61	61
4	45	50	45	50	53	59	59
5	43	48	43	48	51	57	57
6	41	46	41	46	49	55	55
7	39	44	39	44	47	53	53
8	37	42	37	42	45	51	51
9	35	40	35	40	43	49	49
10	33	38	33	38	41	47	47
11	31	36	31	36	39	45	45
12	29	34	29	34	37	43	43

Notes:

- The receiver should not be operated above +52 dBmV output. Outputs above +52 dBmV are shown in bold.
- Output levels given are nominal and assume that the transmitter has been setup according to the equipment's user manual.
- Output levels given with attenuator set at mid-range (42 dB).

## SPECIFICATIONS

### Optical

Optical Wavelength	1270 – 1610 nm
Optical Input Power	-16 to 0 dBm
Optical Connector Types	SC/APC or E2000 with Optical Safety Shutter

### RF

Operational Bandwidth	5 – 200 MHz
Channel Loading	35 MHz of Data
Maximum Gain (@ min. attenuation)	52 dB
Nominal Gain (attenuator @ mid setting)	42 dB
Gain Control Range	20 dB
RF Output Level	+52 dBmV @ 0 dBm Optical Input Level @ 20% OMI (See Figure 1)
RF Flatness	1.0 dB p-p @ Nominal Gain
RF Output Test Points (1 for each receiver)	-20 +/-0.5 dB Relative to RF Output Port
RF Output Impedance	75 Ohms
RF Output Return Loss	18 dB Min (5 – 200 MHz)
RF Connector Types	RF Outputs: F-type (using supplied G to F back-plane adapter Test Points: F-type)

### General

Dimensions	1" W x 5.9" H x 15" D (2.5 cm x 15 cm x 38 cm)
Weight	2.0 lbs. (1 kgs)
Mounting	GX2-HSG* Equipment Shelf
Operating Temperature Range	-20° C to +65° C (-4° F to +149° F)
Storage Temperature Range	-40° C to +80° C (-40° F to +176° F)
Power Consumption	17 Watts Max.
Visual Interface	Tri-Colored Module Status LED
Data/Control Interface	Serial Peripheral Interface (SPI) to Control Module

Model Number	Description
GX2-RX200BX2	Dual return path receiver module, SC/APC optical connector
GX2-RX200BX2/E	Dual return path receiver module, E2000 optical connector

For more technical information regarding the latest in optical broadband transmission technology from Motorola, refer to the OmniStar GX2 data sheets.

