



OmniStar GX2-RX200BX4

Quad Return Path Receiver

Capturing 64 separate optical return path signals in a 4 RU space is possible with the OmniStar GX2 Quad Return Path Receiver.

With four independent receivers in the module, the OmniStar GX2-RX200BX4 return path receiver module provides a high-density solution for advanced upstream video and data traffic. The increased optical input power range relative to the RX200BX2 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. The GX2-RX200BX4 receiver continues the GX2 tradition of module level intelligence. 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.

GX2-RX200BX4 Benefits

- **High Module Density** — Up to 16 quad receiver modules in a four rack-unit housing, allowing up to 64 independent optical return path signals.
- **Redundancy** — Supports path redundancy through secondary output muting, eliminating the need for an RF switch.
- **High Performance** — An integrated low-noise preamp and high-performance post amp allows a high RF output level and exceptional distortion performance.
- **Quick-Swap Capability** — Replacement modules are recognized and updated with settings pre-stored by the Control Module.
- **Flexibility** — A wide optical input range from -18 to +2 dBm accommodates various system architectures.
- **User Friendly** — An RF test point and three gain modes simplify link optimization. Plug-n-Play application module with blind-mate RF connectors in the rear.

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Product Description

The GX2-RX200BX4 is a quad return path receiver module for the OmniStar GX2 optical broadband transmission platform. It contains four 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 connectors are also available. The front panel fan on each module is field-replaceable, and the fan current is monitored to provide operational status.

Module Features

The user can select from three modes of operation: Manual Gain Control (MGC) mode, Automatic Gain Control (AGC), 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. In AGC mode, an internal RF attenuator automatically adjusts the RF output level and compensates for changes in the optical input levels. 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 a front panel RF test point for convenient setup and maintenance. The output of the test point can be selected from any of the four receivers. The test point directly monitors the RF output of the 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.

For improved path and equipment redundancy, the GX2-RX200BX4 provides muting of secondary outputs and inter-module communications to signal failures. This feature allows the use of a simple RF coupler to enable redundancy and eliminates the need for an external RF switch.

Intelligence

A powerful processor allows sophisticated control functions along with high integration. 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.

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RF Output Level

GX2-RX200BX4 RF output levels are listed in dBmV. The values in parenthesis are the recommended RF attenuator setting in the receiver to achieve optimum RF output levels. Note that when high output powers are used and the link loss is low, high optical power levels are available at receivers. It is recommended to add some passive optical loss to reduce the optical input power to the receiver as noted in the following table.

| Platform | GX2 | SG4000 | | | | | SG2000 | | | |
|---------------------------|------------------|------------------|---------------------------------|-----------|-----------|-----------|---------------|-----------|-----------|-----------|
| Transmitter | DM200B10 CHxx | SG4-ITU- CHxx | SG4- DFBT3- xxxx- CWDM | SG4-DFBT | SG4-EIFPT | SG4-IFPT | SG2- DFBT3 | SG2-DFBT | SG2-EIFPT | SG2-IFPT |
| Nominal Transmitter Input | 37 dBmV | 23 dBmV | 23 dBmV | 23 dBmV | 23 dBmV | 23 dBmV | 15 dBmV | 15 dBmV | 15 dBmV | 15 dBmV |
| Nominal Output | 10 dBm | 8 dBm | 3 dBm | 0 dBm | 0 dBm | -4 dBm | 3 dBm | 0 dBm | 0 dBm | -4 dBm |
| Optical Link Loss (dB) | | | | | | | | | | |
| 0 | See Note | See Note | See Note | 52 (17dB) | 54 (20dB) | 52 (14dB) | See Note | 52 (17dB) | 54 (20dB) | 52 (14dB) |
| 1 | See Note | See Note | 54 (20dB) | 52 (15dB) | 52 (20dB) | 52 (12dB) | 54 (20dB) | 52 (15dB) | 52 (20dB) | 52 (12dB) |
| 2 | See Note | See Note | 52 (20dB) | 52 (13dB) | 52 (18dB) | 52 (10dB) | 52 (20dB) | 52 (13dB) | 52 (18dB) | 52 (10dB) |
| 4 | See Note | See Note | 52 (18dB) | 52 (11dB) | 52 (16dB) | 52 (8dB) | 52 (18dB) | 52 (11dB) | 52 (16dB) | 52 (8dB) |
| 5 | See Note | See Note | 52 (16dB) | 52 (9dB) | 52 (14dB) | 52 (6dB) | 52 (16dB) | 52 (9dB) | 52 (14dB) | 52 (6dB) |
| 6 | See Note | See Note | 52 (14dB) | 52 (7dB) | 52 (12dB) | 52 (4dB) | 52 (14dB) | 52 (7dB) | 52 (12dB) | 52 (4dB) |
| 7 | See Note | See Note | 52 (12dB) | 52 (5dB) | 52 (10dB) | 52 (2dB) | 52 (12dB) | 52 (5dB) | 52 (10dB) | 52 (2dB) |
| 8 | See Note | 54 (20dB) | 52 (10dB) | 52 (3dB) | 52 (8dB) | 52 (0dB) | 52 (10dB) | 52 (3dB) | 52 (8dB) | 52 (0dB) |
| 9 | See Note | 52 (20dB) | 52 (8dB) | 52 (1dB) | 52 (6dB) | 50 (0dB) | 52 (8dB) | 52 (1dB) | 52 (6dB) | 50 (0dB) |
| 10 | 55 (20dB) | 52 (18dB) | 52 (6dB) | 51 (1dB) | 52 (4dB) | 48 (0dB) | 52 (6dB) | 51 (0dB) | 52 (4dB) | 48 (0dB) |
| 11 | 53 (20dB) | 52 (16dB) | 52 (4dB) | 49 (0dB) | 52 (2dB) | 46 (0dB) | 52 (4dB) | 49 (0dB) | 52 (2dB) | 46 (0dB) |
| 12 | 52 (19dB) | 52 (14dB) | 52 (2dB) | 47 (0dB) | 52 (0dB) | 44 (0dB) | 52 (2dB) | 47 (0dB) | 52 (0dB) | 44 (0dB) |
| 13 | 52 (17dB) | 52 (12dB) | 52 (0dB) | 45 (0dB) | 50 (0dB) | 42 (0dB) | 52 (0dB) | 45 (0dB) | 50 (0dB) | 42 (0dB) |
| 14 | 52 (15dB) | 52 (10dB) | 50 (0dB) | 43 (0dB) | 48 (0dB) | 40 (0dB) | 50 (0dB) | 43 (0dB) | 48 (0dB) | 40 (0dB) |
| 15 | 52 (13dB) | 52 (8dB) | 48 (0dB) | 41 (0dB) | 46 (0dB) | | 48 (0dB) | 41 (0dB) | 46 (0dB) | |
| 16 | 52 (11dB) | 52 (6dB) | 46 (0dB) | 39 (0dB) | 44 (0dB) | | 46 (0dB) | 39 (0dB) | 44 (0dB) | |
| 17 | 52 (7dB) | 52 (4dB) | 44 (0dB) | 37 (0dB) | 42 (0dB) | | 44 (0dB) | 37 (0dB) | 42 (0dB) | |
| 18 | 52 (5dB) | 52 (4dB) | 42 (0dB) | 35 (0dB) | 40 (0dB) | | 42 (0dB) | 35 (0dB) | 40 (0dB) | |
| 19 | 52 (3dB) | 52 (0dB) | 40 (0dB) | | | | 40 (0dB) | | | |
| 20 | 52 (1dB) | 50 (20dB) | 38 (0dB) | | | | 38 (0dB) | | | |
| 21 | 51 (0dB) | 48 (0dB) | 36 (0dB) | | | | 36 (0dB) | | | |
| 22 | 49 (0dB) | 46 (0dB) | | | | | | | | |
| 23 | 47 (0dB) | 44 (0dB) | | | | | | | | |
| 24 | 45 (0dB) | 42 (0dB) | | | | | | | | |
| 25 | 43 (0dB) | 40 (0dB) | | | | | | | | |
| 26 | 41 (0dB) | 38 (0dB) | | | | | | | | |
| 27 | 39 (0dB) | | | | | | | | | |
| 28 | 37 (0dB) | | | | | | | | | |

Table 1: GX2-RX200BX4 RF output levels in dBmV for a variety of Motorola optical transmitters.

Note: Optical attenuation should be added.

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Specifications

OPTICAL

| | |
|-------------------------|---|
| Optical Wavelength | 1260 – 1620 nm |
| Optical Input Power | -18 to +2 dBm |
| Optical Connector Types | SC/APC or E2000 with Optical Safety Shutter |

RF

| | |
|--|---|
| Operational Bandwidth | 5 – 200 MHz |
| Channel Loading | 5 to 200 MHz |
| Maximum Gain (@ min. attenuation) | 52 dB |
| Nominal Gain (attenuator @ mid setting) | 42 dB |
| Gain Control Range | 20 dB |
| RF Output Level | +52 dBmV @ -10 dBm Optical Input Level @ 20% OMI (See Table 1) |
| RF Flatness | 1.0 dB p-p @ Nominal Gain (5 to 85 MHz) 1.2 dB p-p @ Nominal Gain (5 to 200 MHz) |
| RF Output Test Point (receiver is user-selectable) | -20 +/-0.5 dB Relative to RF Output Port |
| RF Output Impedance | 75 Ohms |
| RF Output Return Loss | 16 dB minimum @ nominal gain (14 dB minimum at max. gain) |
| RF Connector Types | RF Outputs: F-type (using supplied G to F back-plane adapter) Test Point: F-type |

GENERAL

| | |
|-----------------------------|--|
| Dimensions | 1in W x 5.9 in H x 15 in 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 60° C (-4° F to 140° F) |
| Storage Temperature Range | -40° C to 85° C (-40° F to 185° F) |
| Power Consumption | 13 Watts Max. |
| Visual Interface | Tri-Colored Module Status LED |
| Data/Control Interface | Serial Peripheral Interface, (SPI) to Control Module |



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