

OMNISTAR® GX2

GX2-LM1000B Series

Broadcast Transmitter



The OmniStar GX2-LM1000B Broadcast Transmitter utilizes a high-power DFB laser, an integrated low-noise preamp, state-of-the-art predistortion and anticlipping circuitry. The compact, energy-efficient design allows up to 16 plug-n-play transmitter modules to operate in the four rack-unit OmniStar GX2 housing, minimizing valuable headend space requirements. As the first gigahertz 1310 nm broadcast transmitter in the industry, it enables operators to offer more revenue-generating services. Enhanced with PowerPC technology by Motorola, the LM1000B series of transmitters introduces 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. The wide range of optical output power, coupled with the full complement of other OmniStar GX2 application modules, provides extreme flexibility for network design and fiber link optimization.

The advanced design of this 1310 nm forward-path transmitter offers superior performance.

BENEFITS INCLUDE:

- High Module Density
 - Up to 16 transmitter modules in a four rack-unit housing
- High Performance
 - Advanced predistortion circuitry achieves superior CSO and CTB performance
 - Integrated low-noise preamp allows a low RF input level
 - Unique anticlipping circuitry yields excellent BER performance for digital data
- Intelligence
 - Contains high-performance PowerPC microprocessor provided by Motorola
- Quick-Swap Capability
 - Replacement modules are recognized and updated with settings prestored by the control module.
- Flexibility
 - Full range of output powers from 2 dBm to 14 dBm, separate broadcast and narrowcast RF inputs and multiple gain modes accommodate various system architectures
- User Friendly
 - Two RF test points (input & laser drive) and CW/Video modes provide accurate link optimization
- Energy Efficient
 - Designed with advanced integrated circuits for low power consumption
- Plug-n-Play
 - Application modules with blind-mate RF connectors in the rear



Product Description

The GX2-LM1000B series is a line of high- performance 1310 nm DFB laser transmitter modules for the OmniStar® GX2 optical broadband transmission platform. The modules are designed for ease of use. The optical output connector is located on the front of the module for easy cleaning and installation. Standard connector types are SC/APC. An E2000 connector is available as an option. The dual fans on each module are field replaceable and the fan voltage is monitored to provide operational status.

Module Features

The set up of the transmitter and link proofing are quick and easy. The modules are preset in the factory for optimal performance that is achieved immediately upon power-up. Targeted services can be easily added using the separate, high isolation, narrowcast RF input. Two front-panel RF test points provide convenient verification of signal inputs; one test point directly monitors the main RF input and the other test point monitors the RF drive into the laser. Firmware is downloadable and can be upgraded while the module remains in operation. No hardware changes are needed. The CW/Video modes allow the user to set up and proof a link using a CW source. When modulated signals, which have a lower average power level than CW carriers, are applied, the microprocessor adjusts the RF drive level into the laser to match the CW drive levels based on the user-selected video offset. Several different offset settings are provided to match your system needs. This feature ensures that the laser is not operating in clipping when modulated signals are applied, and provides operators with a reliable and accurate way to proof links.

Greater design flexibility is provided by offering the user three gain modes:

- Preset – Automatic Gain Control using factory settings for optimal laser performance
- Set – Automatic Gain Control to an RF level adjusted by the user to optimize noise and distortion performance based on channel loading and system requirements
- Manual – Fixed Gain to an RF level adjusted by the user to optimize noise and distortion performance based on channel loading and system requirements

Intelligence

The LM1000B Series transmitter 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, user instruction manuals and all module specific information (i.e. firmware, bitmaps, menu structure, etc.) are stored in the non-volatile 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, the OmniStar GX2 can be easily connected to a remote network management system using the standard Ethernet SNMP interface.



OmniStar GX2

performance

DISTORTION

Composite Triple Beat Distortion (CTB)	-70 dB
Composite Second Order Distortion (CSO)	-66 dB
Cross-Modulation (XMOD)	-65 dB

CARRIER-TO-NOISE (CNR)

MODEL	OUTPUT POWER (Min, dBm)	FIBER LENGTH (km)	PASSIVE LOSS (dB)	TOTAL OPTICAL LOSS (dB) (Fiber + Passive loss)															
				2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
GX2-LM1000B2	2	2.5	1.1	54	53	52													
GX2-LM1000B3	3	5.0	1.3	55	54	53													
GX2-LM1000B4	4	7.5	1.4		55	54	53	52											
GX2-LM1000B5	5	10.0	1.5			55	54	53	52										
GX2-LM1000B6	6	12.5	1.6				55	54	53	52									
GX2-LM1000B7	7	15.0	1.7					55	54	53	52								
GX2-LM1000B8	8	17.5	1.9						54.5	53.5	52.5	51.5							
GX2-LM1000B9	9	20.0	2.0							54.5	53.5	52.5	51.5						
GX2-LM1000B10	10	22.5	2.1								54.5	53.5	52.5	51.5					
GX2-LM1000B11	11	25.0	2.2									54	53	52	51				
GX2-LM1000B12	12	27.5	2.4										54	53	52	51			
GX2-LM1000B13	13	30.0	2.5											54	53	52	51		
GX2-LM1000B14	14	32.5	2.6												54	53	52	51	

Notes:

- All performances specified for a channel loading of 79 NTSC channels @ +15 dBmV/ch + 320 MHz digital at -6 dBc.
- Specifications measured using a GX2-RX1000B receiver.
- Specifications are measured using CW carriers per SCTE standards.

The LM1000B Series transmitter module utilizes the intelligent Power PC microprocessor provided by Motorola

SPECIFICATIONS

OPTICAL

Optical Wavelength	1310 nm +/- 20 nm
Optical Output Ports	1 Port
Optical Connector Types	SC/APC or E2000 with Optical Safety Shutter
Laser Shutdown	Enable/Disable via Control Module

RF

Operational Bandwidth	47 – 1000 MHz
Broadcast Input Level	+15 ± 0.5 dBmV/ch (79 NTSC Channels + 320 MHz Digital at -6 dBc)
Narrowcast Input Level (Analog/Digital)	+22 dB above Broadcast Input Levels
RF Input Test Point	-20 +/-0.5 dB Relative to Main RF Input Port
RF Input Impedance	75 Ohm
RF Input Return Loss (Broadcast and Narrowcast)	16 dB Min. 47 – 870 MHz; 14 dB Min. 870 – 1000 MHz
Narrowcast to Main RF Input Isolation	50db Min, 47Mhz-1Ghz

SPECIFICATIONS

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
RF Connector Types	F-type (using G-to-F adaptor on chassis)
Input Test points	F-type
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., 12 Watts Typ
Eye Protection	Optical Safety Shutter
Visual Interface	Tri-Colored Module Status LED
Data/Control Interface	Serial Peripheral Interface (SPI) to Control Module

Model Number	Description
GX2-LM1000B**	Broadcast Transmitter, SC/APC Optical Connector
GX2-LM1000B**/E	Broadcast Transmitter, E2000 Optical Connector

** Indicates optical output power. See Carrier-To-Noise table for all types.
 For more technical information regarding the latest in optical broadband transmission technology from Motorola, refer to the OmniStar GX2 data sheets.

