

External Modulation 1550nm CATV Optical Transmitter High-Performance Model OTOT-EM55XL

Features and Benefits

High performance externally modulated 1550nm DFB laser CATV transmitter.

Low noise, narrow linewidth CW-DFB laser. DWDM ITU grid wavelength is adjustable to $\pm 100\text{GHz}$ via front panel.

Adjustable SBS threshold from +13dBm to +19dBm on 0.1dB steps increases system flexibility.

Dual, hot plug-in power supplies available for high reliability; 100 to 240V_{AC} or ± 36 to ± 72 V_{DC}.

LCD display, LED status indication, and front panel -20dB front panel RF test point aide in set-up and operation.

Electro-optical modulator offers dual +6dBm optical outputs.

Automatic RF gain control: CW, video, and manual modes.

Sophisticated web and SNMP interface control and monitoring.

General purpose I/O interface for remote functions.

Housed in a 1RU 19" rack-mount enclosure for use in standard equipment racks.

SC/APC optical connector standard. FC/APC optional.



The high performance Olson Model OTOT-EM55XL 1550nm Externally Modulated CATV Optical Transmitter uses a low-noise, narrow bandwidth, CW laser as a light source. The external modulator amplitude modulates the light, allowing the transmitter to eliminate the chirp associated with 1550nm direct modulation lasers. It is ideal for CATV supertrunk links (100km & more) and multipoint distribution networks. The OTOT-EM55XL provides state-of-the-art bandwidth from 47MHz to 1,000MHz. It also offers superb stability over the full operating temperature range from 0°C to +50°C.

Direct modulation 1550nm CATV transmitters suffer from the effects of dispersion that can occur even in modest length fiber runs (10-20km). The key degradation is CSO caused by the laser chirp. In networks using an EDFA, the output fiber optical launch power must also be closely regulated to avoid performance degradation of due to SBS. Olson's Externally Modulated CATV transmitter can compensate for these types of distortion, allowing for high quality signal transmission of multiple CATV channels for distances up to 100km or more.

The widely adjustable SBS value on the XL version further increases the transmitter's flexibility, allowing the network to be optimized for a wide range of fiber lengths. The unique ability of the OTOT-EM55XL to tune to several different DWDM channels simplifies logistics by allowing one spare to cover multiple installed units.

The transmitter is enclosed in a 19" wide, 1RU rack chassis for using in a standard EIA 19" rack. Front panel controls and a LCD display allow the user to quickly monitor and control system parameters. Optical connectors are SC/APC standard, with an option for FC/APC connectors. Single or Dual AC and DC power supply options are available.

System Specifications

General Characteristics (with SM 9/125µm Fiber)

	Min	Typ	Max	Units
Laser Wavelength (ch. 22-46)	1540		1560	nm
Optical Connector		ITU Grid SC/APC FC/APC		
Side Mode Suppression		>30		dB
Relative Intensity Noise	<-158	<-160		dBc/Hz
Nom. Input Level per Tx Ch.		20		dBmV
RF Monitor Output Level (+0.2 to -0.8dB @ 862 MHz; -1.3dB @ 1GHz)		-20		dB
AGC Dynamic Range	-6		+3	dB
Impedance (F-female)		75		Ohm
Return Loss (47 MHz, -1.5dB/oct.)	>15	>20		dB
Control Interface	Ethernet 10/100			MB/s

Physical Characteristics

	Min	Typ	Max	Units
Weight		21.4 9.7		lbs. kg
Dimensions (W x L x H)	19 x 11 x 1.75 482.6 x 279.4 x 44.5			in. mm

Electrical and Environmental Characteristics

	Min	Typ	Max	Units
Power Supply Voltage	100		240	V _{AC}
Power Supply Voltage	±36		±72	V _{DC}
Power Consumption (110V _{AC})		<50		W
Power Consumption (48V _{DC})		<50		
Operating Temp. Range	0		+50	°C
Storage Temp. Range	-20		+85	°C
Humidity	20		85	%

EMI meets EN50083-2 (April 1996) and EN50083-2/A1 (February 1998).

Optical and RF Performance (with SM 9/125µm Fiber)

	Min	Typ	Max	Units
Laser Wavelength (ch. 23-38)	1547		1560	nm
Wavelength Adjust (50 GHz steps)	-100	ITU Grid	+100	GHz
Laser Linewidth		0.3		MHz
Optical Output Power (dual)	+5.0	+6.0	+7.0	dBm
SBS Suppression (adj 0.1dB Steps)	+13		+19	dBm
RF Frequency Range	47		1000	MHz
Flatness (47-860MHz)		<±0.75		dB
Flatness (860-1000MHz)		<±1.5		MHz
Version		PAL84		
Channel Plan		PAL-D		
Number of Channels TV/FM (-4dB) /QAM64 (-10dB)		84/0/0		
Noise Bandwidth		5		MHz
CNR Tx/Rx		52.5		dB
CNR Link 1		52.0		dB
CNR Link 2		50.5		dB
CNR Link 3		49		dB
CSO Tx/Rx and Link 1		65		dBc
CSO Link 2		65		dBc
CSO Link 3 at output #1		63		dBc
CTB		65		dBc
Version		N77		
Channel Plan		NTSC		
Number of Channels TV/FM (-4dB) /QAM64 (-10dB)		77/0/0		
Noise Bandwidth		4		MHz
CNR Tx/Rx		53.5		dB
CNR Link 1		53.0		dB
CNR Link 2		52.0		dB
CNR Link 3		50.0		dB
CSO Tx/Rx and Link 1		65		dBc
CSO Link 2		65		dBc
CSO Link 3 at output #1		65		dBc
CTB		65		dBc

Test Configurations

	Booster EDFA	First Fiber Length	In-Line EDFA	Second Fiber Length	Rx
Tx/Rx	No	No	No	No	0dBm
Link 1	No	35km	No	No	0dBm
Link 2	16dBm	65km	No	No	0dBm
Link 3	13dBm	52km	13dBm	52km	0dBm

NOTES: 1) Rx with 7pA/Hz Input Noise Current Density
 2) EDFA's with 5dB Noise Figure
 3) RF Input Level at 20dBm/Channel

Ordering Information

OTOT-EM55	XL	Freq. Plan (See Below)	Opt. Conn. (See Below)	RF Conn. (See Below)	Power Supp. (See Below)	XX (ITU Ch.)
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Frequency Plans

N = NTSC 77 Chan
 P = PAL 84 Chan

Optical Connector

SA = SC/APC
 FA = FC/APC

RF Connector Location

F = On Front Side
 R = On Rear Side

Power Supply

AC/AC = 2x (100 to 240V_{AC})
 DC/DC = 2x (± 36 to ± 72 V_{DC})
 AC/DC = Mixed 230 V_{AC}/48 V_{DC})

ITU Channel

Std = 1550±5nm
 or
 Two digit DWDM ITU channel from Channel 22 to 46