

LaserLite: 1GHz FTTP/CATV DM Transmitter (OTOT-1000-FF/FG) STANDALONE -or- 1RU 19" EIA RACKMOUNT 1550nm OPTICAL TRANSMITTER

Features / Benefits

- **Low-Cost Direct Modulated (DM) ECL 1550nm analog optical transmitter alternative to conventional Externally Modulated (EM) LiNbO₃ optical transmitters for deployment in CATV HFC -or- FTTP AON/PON large-scale multichannel distribution applications**
- **48-1,000MHz available RF bandwidth for CATV analog & digital multichannel transport**
- **Electronic SBS dispersion compensation and advanced predistortion circuitry enables full analog and digital QAM loading while minimizing second-order and third-order distortions**
- **+10dBm optical output to drive up to four(4) multi-port EDFAs in short-haul (0-20+km) apps**
- **Also accomodates optical loss budgets up to 14dB (or up to 20+ km) without an EDFA**
- **Optimized for fiber distances of 0-10+km (-FF) -or- 0-20+km (-FG)**
- **(41) ITU-grid wavelengths @ 100GHz spacing available; Standard 1550nm \pm 10nm wavelength option available for non-DWDM, CATV HFC and FTTx AON/PON deployments**
- **Self-Contained, Low Profile, Rugged Flange-Mount Package for Low-Density Applications**
- **Optional 19" EIA Rack Mount Kit mounts up to three(3) OTOT-1000's on a 1RU chassis panel**
- **Low Power Consumption; Runs Cool; Integrated 90-240 V_{AC} power supply (24V_{DC} optional)**

The Olson Technology, Inc. Model OTOT-1000-FF/FG 1550nm 1GHz FTTx/CATV Broadcast Transmitter is a cost-effective,



high quality, full-featured standalone or a 1RU 19" EIA optical transmitter. It's **revolutionary design** was specifically engineered for optical transport of analog and digital QAM broadcast signals in traditional CATV Hybrid Fiber Coax (HFC) applications, as well as in newer Fiber-to-the-Premise (FTTP) deployments using Active/Passive Optical Network (AON/PON) architectures. Specifically, this transmitter was designed for high power, one-transmitter-to-multiple-receiver (up to 1:2048 fanout) point-to-point AON and point-to-multipoint PON system topologies. Each transmitter's +8dBm optical output can directly feed up to 12 remote HFC nodes/receivers (via **Model OTCP 1x12** optical coupler) or can also be split externally (**Models OTCP 1x2, 1x3 or 1x4**) to drive EDFA fiber amplifiers subsequently feeding up to 2048 homes with multichannel CATV-style video and/or data. In this scenario, each transmitter feeds up to four(4) 16-port EDFAs, such as the **Model OTEA-CO-B32-1616**, for large-scale distribution of broadcast broadband signals in short-haul FTTP applications, with maximum runs of up to 20+km of standard SMF-28 singlemode fiber, or up to 50+km of 1550nm low dispersion (NZ-DSF) optical fiber. (NOTE: This unit is NOT suitable for long-haul CATV trunking applications).

The rugged, low-profile **Model OTOT-1000-FF/FG** transmitter utilizes a next-generation directly modulated, high-quality, low-chirp, optically isolated DWDM External Cavity (ECL) Laser with a single +10dBm optical output. ECL lasers exhibit the same inherent linear capability of directly modulated DFB lasers, and are also capable of a higher degree of modulation than their externally modulated counterparts (i.e. increased signal strength). But, low spectral purity in conventional DFB-based DM transmitters promotes fiber-induced second-order distortions, making them less than suitable over long distances. However, an ECL-based DM transmitter can also achieve a high level of spectral purity, similar to that of EM sources (but at <30% of the cost of comparable EM transmitters), making it the ideal choice for today's FTTH & CATV deployments.

The **OTOT-1000** is a rugged self-contained device with exterior RF and optical connections and test points. The field-configurable SC/APC (or optional FC/APC) optical output connector can be mounted on the front-panel or rear-panel of the unit. The unit is forced air cooled via an external high-MTBF fan, which can be field-replaced without interrupting operations. It also features a unique provision which allows the unit to perform as a standalone flange-mount transmitter -OR- as a rack mount transmitter with the addition of the optional **Model OTLL-RMKIT-1**. Up to three(3) OTOT-1000's can be mounted in a 1RU (1.75") 19" EIA space with each kit, or the user can mix-and-match various **LaserLite** components (i.e. transmitters, receivers, couplers, etc.), as required.

The **LaserLite Model OTOT-1000-FF/FG** is the perfect companions to EDFAs and optical receiver products from Olson Technology, Inc., like the **LaserLite OTEA-x** and the **MetroNode Model OTMN-x** and **PremiseNode Model OTPN-x** product families, but is also designed to operate seamlessly with EDFAs and optical receivers &/or nodes from most leading manufacturers.

Specifications

RF & LINK PERFORMANCE PARAMETERS:

Frequency Range	47MHz to 1,000MHz
Frequency Response	$\pm 1.0\text{dB}$
Input Impedance	75 Ohms
Input Return Loss *	$> 15\text{dB}$
Input Level, Nominal	+18dBmV/ch (79 NTSC channels)+320 MHz Digital
Distortion Performance *	CNR $> 51\text{dB}$ CSO $> 57\text{dBc}$ (@ 0-10km); $> 55\text{dBc}$ (@ 0-20km) CTB $> 63\text{dBc}$ (@ 0-10km); $> 63\text{dBc}$ (@ 0-20km)

* Typical: Measured with 3.2% OMI, 0dBm input to Olson Model# OTPN-400 reference receiver

OPTICAL PARAMETERS:

Wavelength ($\pm 0.1\text{nm}$)	ITU channels 20 to 60 @ 100GHz (0.8nm) optical spacing
Output Power	+10dBm/10mW
SBS Threshold	$> +10\text{dBm}$

ELECTRICAL, ENVIRONMENTAL & MECHANICAL PARAMETERS:

Dimensions	5.5"W x 1.6"H x 7.5"D
Weight	1.5 lb (0.68 kg)
Operating Temperature Range	-10°C to +55°C
Cooling	Fan cooled, forced air, replaceable w/o interrupting operation
Humidity Range	to 95% (For use only in non-condensing environments)
Powering	90-240V _{AC} @ 50-60Hz; $< 11.5\text{Watts}$
Power Connector	IEC 320 with 5x20, 0.5A SloBlo Fuse

TRANSMITTER INTERFACES:

RF Input Connector	F-Type (rear of module)
RF Input Test Point (F-Type Connector)	+10dBmV/carrier @ 550MHz for optimal OMI & performance
Input Level Adjust	+4dB (to +22dBmV/carrier) via variable attenuator (front panel)
Optical Output Connector	SC/APC standard; FC/APC optional (front or rear panel)
Optical Power Test Jack	0.1V/mW
Laser Current Test Jack	1V/50mA

Ordering Options

<u>Model No.</u>	<u>Description</u>
OTOT-1000-10-FFxx	LaserLite FTTH 0-10+km Tx; 48-1,000MHz; 10dBm/10mW ECL; 90-240V _{AC} ; SC/APC
OTOT-1000-10-FGxx	LaserLite FTTH 0-20+km Tx; 48-1,000MHz; 10dBm/10mW ECL; 90-240V _{AC} ; SC/APC
	xx = DWDM ITU-Grid Channels # 60-20 (i.e. xx = 34 for 1550.12 nm)
	00 = Standard 1550nm $\pm 10\text{nm}$ (non-DWDM)
	(Channels # 60-20 = 1529.55 - 1561.42 nm)

OTLL-SCFCKIT LaserLite Optical Connector Adapter Kit; SC/APC to FC/APC

OTLL-RMKIT-1 LaserLite 1RU 19" Rack Mount Kit for up to three(3) modules (i.e. OTOT, OTOR, OTCP, etc.)



All specifications are subject to change without notice