



***SatellitePlus* Model OLMT**
Mini L-Band Transmitter
10-3,600 MHz
OPERATING MANUAL



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SAFETY

Safety Precautions

The optical emissions from the transmitters are laser-based and may present eye hazards if improperly used. **NEVER USE ANY KIND OF OPTICAL INSTRUMENT TO VIEW THE OPTICAL OUTPUT OF THE UNIT.** Be careful when working with optical fibers. Fibers can cause painful injury if they penetrate the skin.

Laser Safety Procedure

ALWAYS read the product data sheet and the laser safety label before powering the product. Note the operation wavelength, optical output power and safety classifications.

If safety goggles or other eye protection are used, be certain that the protection is effective at the wavelength emitted by the device under test **BEFORE** applying power.

ALWAYS connect a fiber to the output of the device **BEFORE** power is applied. Power should never be applied without an attached fiber. If the device has a connector output, a connector should be attached that is connected to a fiber. This will ensure that all light is confined within the fiber waveguide, virtually eliminating all potential hazard.

NEVER look at the end of the fiber to see if light is coming out. **NEVER!** Most fiber optic laser wavelengths (1310 nm and 1550 nm) are totally invisible to the unaided eye and will cause permanent damage. Shorter wavelength lasers (e.g., 780 nm) are visible and are very damaging. Always use instruments, such as an optical power meter, to verify light output.

NEVER, NEVER, NEVER look into the end of a fiber on a powered device with **ANY** sort of magnifying device. This includes microscopes, eye loupes and magnifying glasses. This **WILL** cause a permanent and irreversible burn on your retina. Always double check that power is disconnected before using such devices. If possible, completely disconnect the unit from any power source.

If you have questions about laser safety procedures, please call Olson Technology before powering your product.

GENERAL FEATURES

The Olson Model OLMT Miniature L-Band Transmitter is a high performance, versatile transmitter in a very compact package. The Model OLMT Miniature L-Band Transmitter has been engineered to meet today's high performance standards for L-Band transport. Its extreme bandwidth range allows the system to handle the next generation of satellite signals. The transmitter may be used with any L-Band receiver from Olson Technology, Inc. It is ideal for a wide variety of communications applications including L-Band satellite antenna remoting, trunking radio, telemetry tracking, plus GPS time and frequency reference signal distribution.

The extended frequency range to 3.6GHz allows this transmitter to accommodate additional transponders coinciding with common European satellite communication applications. The expanded RF bandwidth to 3.6GHz facilitates stacked LNB applications to accommodate additional transponders. These may contain enhanced programming services (e.g., HDTV, local channels, etc.) for DBS television signal distribution in campus, fiber-to-the-premise (FTTx), and multiple dwelling unit (MDU) environments over single-mode fiber. The transmitter offers 75Ω or 50Ω output impedance. Optical connector options include FC/APC and SC/APC. Power is via an Olson Model OTPS-12A power supply.

TRANSMITTER DESCRIPTION

The OLMT Mini L-Band Transmitter can handle 10MHz to 3,600MHz RF signals. Optical output powers range from +2.5dBm to +5dBm. Wavelengths include 1310nm, 1550nm, and CWDM wavelengths from 1470-1610nm. All versions of the transmitters use high-quality, optically-isolated DFB lasers. This guarantees excellent performance for most applications. A built-in Power LED indicator is provided.

POWER SUPPLY DESCRIPTION

The Model OTPS-12A Universal AC Power Supply outputs +12 Volts DC, 1.5 Amps.

RF PERFORMANCE

The specifications are cited below with 12dB link optical loss and >-55dB optical back-reflection. If the link optical loss differs from 12dB, the RF gain will change 2dB for each 1dB of optical loss (i.e., a link with a 6dB of optical loss will have a minimum RF gain of +3dB.) Also, when optimizing the RF performance, the main concern involves setting the RF signal level. Typically, the optimal total RF power into the transmitter should be near -37dBm per transponder, assuming 32 transponders; this corresponds to a total RF input power level of -22dBm. Due to the wide dynamic range of this system, the RF input power can deviate from this optimal value and still provide good results.

Item	Specifications @ +25°C
RF Frequency Range	10-3,600MHz
Gain Flatness (>50MHz)	± 1.5dB for any 500MHz ± 0.35dB for any 40MHz
Return Loss	10dB typical
Input Impedance (F-std)	75Ω
Input Impedance (SMA-Option)	50Ω
Tx Input IP3	-9.5dBm
Tx Input 1dB Compression	>-17dBm
Tx RF Total Input per Transponder	-22dBm
Tx RF Input per Transponder	-37dBm

OPTICAL PERFORMANCE

Item	Specification
Optical Fiber	Single Mode 9/125μm (SMF-28 or Equiv.)
1310nm Wavelength	+3dBm to +5dBm Optical Output
1550nm Wavelength	+2.5dBm to +4dBm Optical Output
CWDM (470-1610nm) Wavelengths	+2.5dBm to +4dBm Optical Output
Tx Optical Return Loss	>55dB typical
Tx Optical Connector	SC/APC or FC/APC

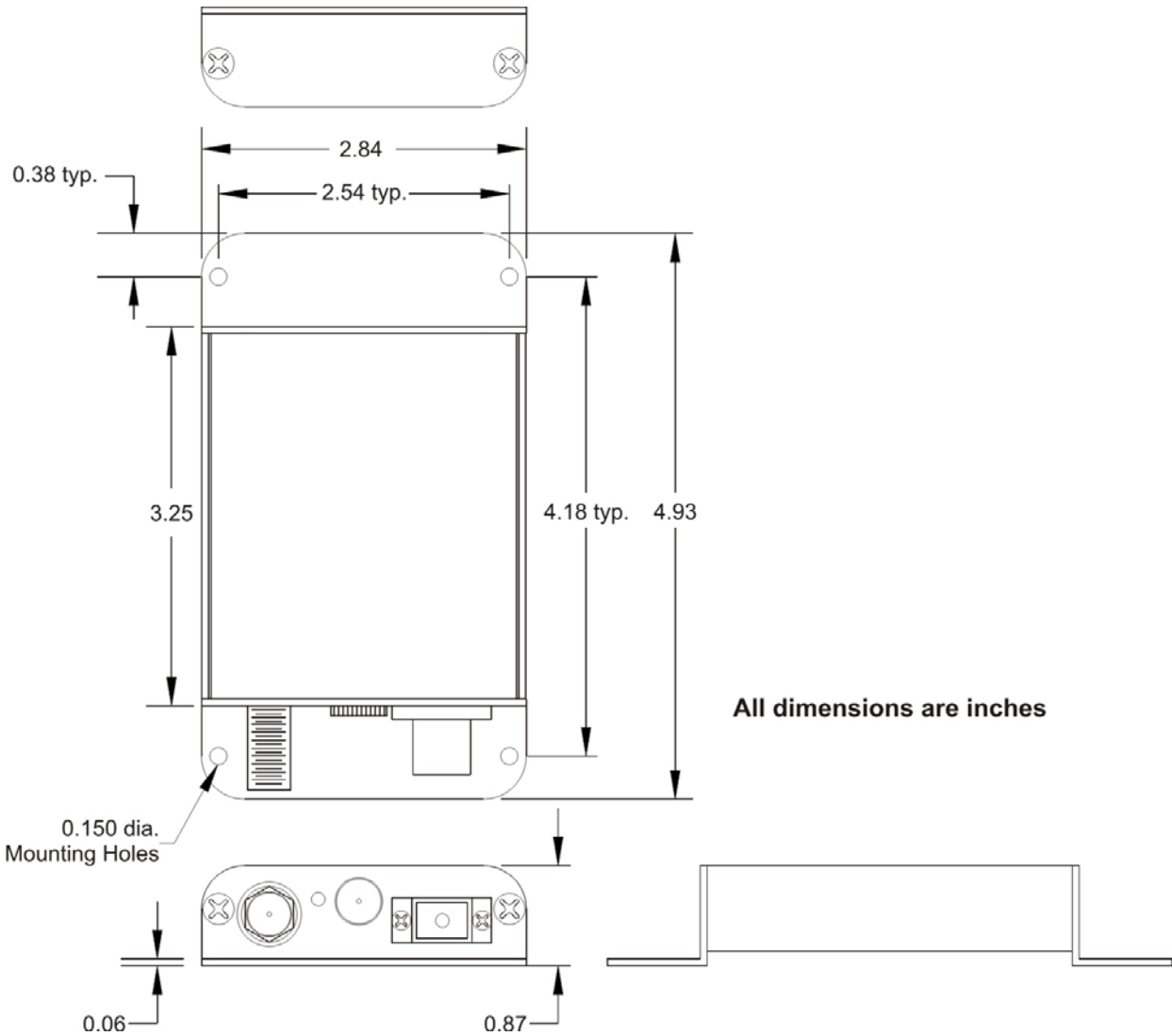


Figure 1 - Dimensioned Unit

DC POWERING AND INDICATORS

The transmitter operates with the OTPS-12A AC/DC power supply. The typical current requirements for the transmitter with that power supply is 170mA. The current draw for other voltages is as follows:

Input Voltage	10V _{DC}	12V _{DC}	15V _{DC}
Tx Current	200mA	170mA	135mA

A Power LED indicator is provided.

INSTALLATION

Optical Connectors

There are many types of optical connectors on the market. There are also different variations on the same type of connector such as "Flat" and "Angled". For instance, the two types most often encountered are SC/UPC (Ultra-Polished Connector, considered to be a "Flat" type). SC/UPC connector bodies are usually blue. SC/APC (Angled Polished Connector) which is the "Angled" variety usually has a green body. All Olson L-Band links are only offered with SC/APC and FC/APC types of optical connectors. The reason for this is that all analog signals transmitted over optical fibers can be seriously degraded by optical reflections. The advantage of the APC types of connectors is that the reflections are controlled and are always very low.



Comparison of SC/APC and SC/UPC Connectors

One of the most common errors encountered in the field is the use of the wrong type of connectors. The most common is using SC/UPC (Blue/Flat) with SC/APC (Green/Angled). The connectors will fit together, but the optical loss will be high and the performance is unpredictable and unstable. When Flat and Angled connectors are mated, both may be permanently damaged. Such damage is considered abuse and is not covered by the warranty.

Cleaning Optical Connectors

Never clean a fiber optic connector if light is emanating from the connector. Doing so may severely damage or destroy the connector.

Fiber optic connectors on the cable come pre-terminated should be clean and capped, so one can usually remove the cap and make the connection without cleaning the connector, but, if there is any doubt it is good practice to clean the optical connectors before making the connection. Once the connection is made, there should be no need clean the connector as long as the connector remains connected.

The fiber ends can be damaged by the insertion of contaminated connectors. Some types of customer damage to connectors are not covered under warranty. Fiber connectors should never be left uncovered. Pre-packaged alcohol wipes are a convenient means of cleaning optical connectors. Clean alcohol and lint free wipes, such as Kim-Wipe type 34155, or swabs may also be used.

More sophisticated fiber optic connector cleaners, such as the Senko SmartCleaner (SCK-SC-250) are very effective for cleaning external and internal fiber optic connectors. They remove a lot of the guesswork and skill required by other cleaning methods.



Senko SmartCleaner

Mounting and Powering Up

Mount modules to enclosure using #6 screws and split lock washers. It is suggested that the modules be mounted in a watertight enclosure with the RF and Optical connectors mounted down to prevent moisture from entering the connectors. Apply power to the transmitter. The Power LED on the transmitter should be lit. The system should now be operational as there are no user adjustments required.

Optimal performance will be obtained when the RF input signals into the transmitter are within the specified range and the optical input power into the receiver is within the optimum range. Good, stable, signal quality will only be achieved if there are no optical backreflections in the fiber path.

TYPICAL APPLICATION

MDU (Multiple Dwelling Unit)

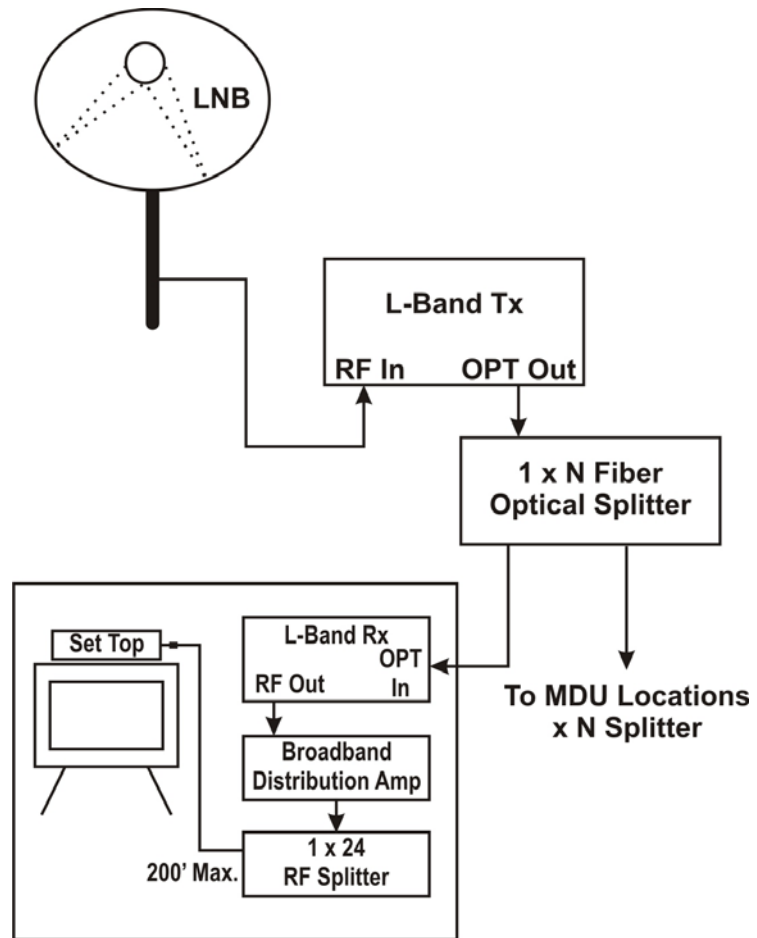


Figure 2 - Typical Multiple Dwelling Unit Application

ORDERING INFORMATION

Model Number	Description
OLMT-X3613-D5-75-SA	Mini L-Band Transmitter, DFB, 1310nm, +5dBm, 75Ω, SC/APC
OLMT-X3613-D5-75-FA	Mini L-Band Transmitter, DFB, 1310nm, +5dBm, 75Ω, FC/APC
OLMT-X3615-D5-75-SA	Mini L-Band Transmitter, DFB, 1550nm, +5dBm, 75Ω, SC/APC
OLMT-X3615-D5-75-FA	Mini L-Band Transmitter, DFB, 1550nm, +5dBm, 75Ω, FC/APC
OLMT-X36-ww-C4-75-SA	Mini L-Band Transmitter, CWDM, +4dBm, 75Ω, SC/APC
OLMT-X36-ww-C4-75-FA	Mini L-Band Transmitter, CWDM, +4dBm, 75Ω, FC/APC
OLMT-X3613-D5-50-SA	Mini L-Band Transmitter, DFB, 1310nm, +5dBm, 50Ω, SC/APC
OLMT-X3613-D5-50-FA	Mini L-Band Transmitter, DFB, 1310nm, +5dBm, 50Ω, FC/APC
OLMT-X3615-D5-50-SA	Mini L-Band Transmitter, DFB, 1550nm, +5dBm, 50Ω, SC/APC
OLMT-X3615-D5-50-FA	Mini L-Band Transmitter, DFB, 1550nm, +5dBm, 50Ω, FC/APC
OLMT-X36-ww-C4-50-SA	Mini L-Band Transmitter, CWDM, +4dBm, 50Ω, SC/APC
OLMT-X36-ww-C4-50-FA	Mini L-Band Transmitter, CWDM, +4dBm, 50Ω, FC/APC

Model Number	Description
OTPS-12A	Universal AC Power Supply, +12 Volts, 1.5 Amps