

Direct Digital Synthesis Optical Chopper

C-995



Features

- Wide Frequency Range 4 Hz to 5000 Hz
- Rock Solid Crystal Controlled Frequency
- Large 5 Digit LED Display
- Frequency resolution of 0.001 Hz
- External Clock Synchronization
- Covers 4 Hz to 5 KHz with only one blade
- Computer Interface for easy control
- Enclosed Chopper Blade

The C-995 is a microprocessor-based control system that utilizes directdigital- synthesis to deliver precise optical chopping rates from 4 Hz to 5000 Hz. Equipped with a large fi ve-digit LED readout, the C-995 controller enables digital entry of the desired chopping rates from the front panel. Additionally, the C-995 is equipped with a bi-directional Rs-232 port that permits the user to set the desired chopping rate to a resolution of .001 Hz and to read the status of the instrument.

The C-995, designed with a phase-locked-loop control system, allows the chopping rate to also be synchronized to a user-supplied external clock ranging from 4 Hz to 5 KHz. The controller is then used to measure and display the frequency of the external clock.

The C-995 chopping head is attached to the controller by means of a 10 foot coiled cord. The precision etched blade is fully enclosed for protection from inadvertent damage. (An optional exposed blade version is also available.)

There are two apertures and two sections (30 slots and 3 slots) for the high and low frequency ranges, respectively. The aperture diameter is 15 mm with a slot width of 4.5 mm (30 slot section) or 30 mm (3 slot section). The small 4.75 inch square outline and two inch maximum depth permits easy integration into compact optical setups. Dual #8-32 mounting holes permit the apertures to be placed at a height as low as 0.75 inches above an optical bench, or with the included 1/2 inch rod and stand, as high as 13 inches above the mounting surface.

The ease of use and convenience of this instrument are matched only by the high performance to price ratio that is typical of products from Terahertz Technologies Inc. The C-995 is backed by our standard two year warranty and our guarantee of customer satisfaction.

C-995 Optical Chopper Specifications	
Chopping Frequency Range	5 Hz to 500 Hz, (using inner set of slots), 40 Hz to 5 KHz (using outer set of slots)
Chopping Frequency Ranges	4 Hz to 500 Hz (Inner slots), 40 Hz - 5 KHz (outer slots)
Aperture Size	0.6 inch diameter (15 mm), and 0.6 inch by 0.2 inch (15 x 4.5 mm)
Frequency Control	Phase-Locked-Loop, Direct Digital Synthesis
Frequency Uncertainty	±.0025 % of setting
Phase Jitter	0.1 % peak to peak, 3 slot section, 1.0 % peak to peak, 30 slot section
Settling Time to Phase Lock	< 3 seconds
External Clock Input Requirements	TTL, CMOS Compatible Square Wave, 4 Hz to 5000 Hz
Sync Signal Output	TTL, CMOS Compatible Square Wave
Display	Five Digit, high intensity green, 0.5 " high
Temperature Coefficient of Chopping Frequency	< 10 ppm/C
Frequency Resolution (using Rs-232 Control)	.001 Hz
Frequency Resolution (using Front Panel Control)	.01 Hz
Counter Resolution using External Clock	0.1 Hz, 1 Hz
Rs-232 Interface	9600 Baud, N-8-1, 3 wire
Chopper Head Mounting	Standard 8-32 tapped holes, mounting rod and stand is provided
Chopping Blade Diameter	4.1 inch diameter
Operating Temperature Range	0 - 40 C
Dimensions (Head)	4.5 " H x 4.5 " W x 2 " D, 114 mm x 114 mm x 51 mm
Dimensions (Controller)	2.7 " H x 7 " W x 9.1 " D, 69 mm, 178 mm, 231 mm
Interconnecting cable supplied	Coiled Cord 10 feet max length
Power Requirements	95-260 VAC, 50-60 Hz, 15 VA Max
CE Certification	Yes
Weight	3 lbs, 1.36 Kg
Accessories Provided	Mounting rod and stand, Rs-232 cable, Power Cord, Operating Manual
Standard Warranty	Two years, Components and Workmanship, 30 Day Satisfaction Guarantee
Application Software Provided	Downloadable from TTI website, www.terahertztechnologies.com



Open Chopper



Enclosed Chopper

Motorized Filter Wheel

FW-2000



Features

- 8 Position Filter Wheel
- Local or Remote control
- Houses Filters 1 - 8 mm Thick
- Full 360 Degree Rotation
- Windows Compatible Software
- Easily Interchangeable Wheels

The FW-2000 is an automated or manually controlled motorized filter wheel that can introduce any one of eight 25.4 mm filters or transmissive windows in series with an optical path. Applications include photography, fluorescence microscopy, and photometry.

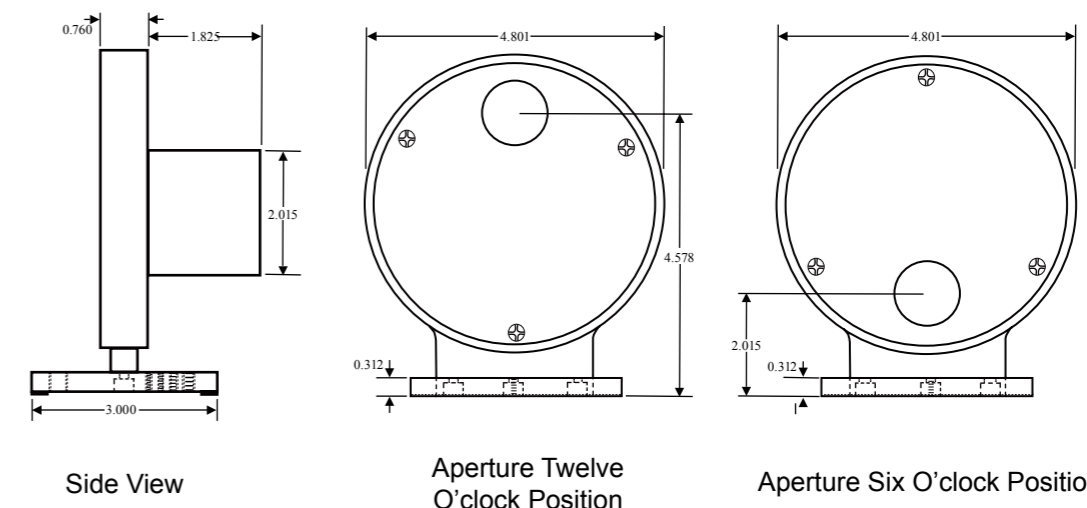
The 104 mm filter wheels are easily interchangeable and can accommodate filter/window thicknesses from 1 to 8 millimeters. The clear aperture diameter is 23 mm. The aperture may be rotated continuously through 360 degrees about the motor axis in order to provide the user maximum flexibility in a given optical setup. The unit may be controlled locally by means of two push buttons (CW, CCW) or remotely by means of the unit's USB 2.0 interface.

The current position of the wheel is indicated by a seven segment LED display. Windows™ compatible application software is provided that allows the user to determine status, command selection of any filter and also program a filter sequence to be followed with selectable dwell times.

The unit has numerous provisions for mounting. It may be mounted to a standard optical bench with the base provided or it may be post-mounted using a number of standard threaded posts (8-32, M-3, 1/4-20 or M6).

Operating power is supplied by a wall mount supply that automatically accommodates line voltages of 95 to 260 VAC, 50-60 Hz. Four mains adaptors are supplied to accommodate North American, Continental Europe, British and Australian standards.

FW-2000 Specifications	
Filter Accepted	Up to eight 1" Dia. windows or filters
Filter Settling Time	< 0.25 sec. to adjacent location, <0.62 sec. to move 4 locations
Aperture Placement	May be rotated 360° about the units axis, may be as close as 42 mm above mounting surface
Display and Controls	7 segment green LED display of position, CW and CCW buttons
Computer Interface	USB 2.0
Power Requirements	<10vA, 95-260VAC, 50-60Hz
Mounting	Thru hole plate for optical bench plus 1/4-20, 8-32, M4 and M6 threaded holes
Mains Connectors Supplied	North America, Continental Europe, Great Britain and Australia
Dimensions (mm)	4.8" Dia., 5.5"H, wheel house 0.75" thick
Weight	1.5 lbs.
Operating Temperature Range	0-40C
Accessories Supplied	Usb Cable, wall mount power supply, 8 retaining rings, manual and application software



HyperTest Advanced Fiber Optic Loss Test Set

HPT-5100



Features

- Real time display of Dual Wavelength Loss and ORL
- Automated dual wavelength loss and ORL measurements
- Bi-directional measurements using a single fiber
- Built in fiber identifier
- Text Messaging Communications
- Computer and Printer interface
- Q VGA Graphic Display
- Display Backlighting
- Rugged, Watertight Case
- Storage for 1000 records
- Free PC application software
- Rechargeable NiMH batteries , 16 Hours / charge

The HPT-5100 Advanced Fiber Optic loss Test Set represents a significant improvement in technology at a competitive price. This high performance loss test set has advanced features commonly found in instruments costing far more.

As a true bi-directional loss test set it proves real-time (updated four times per second) measurements of Loss and Optical Return Loss of a single fiber in both directions at wavelengths of 1310 and 1550 nm.

When used as a Power Meter it measures optical signals over a dynamic range of 25 to - 60 dBm. Six calibrated wavelengths are provided. DB reference levels may be stored at each calibrated wavelength.

To maximize measurement productivity, text messaging is provided between the master and slave units. This allows quick and reliable communication between workers at each end of the fiber installation. The unit's Fiber Identification capability is useful for locating one of a number of fibers for measurement.

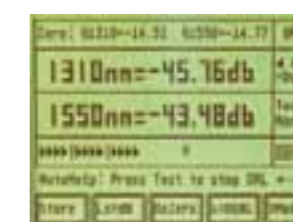
Up to 1000 records may be stored for later downloading to a computer for purposes of system documentation.

With its large four inch diagonal backlit graphic display, rugged casework and ease of use, the HPT-5100 is the perfect tool for the installation, characterization and maintenance of fiber optic systems

HPT-5100 Specifications	
Loss Measurement Dynamic Range	0 - 45 dB in Hypertest Mode, 60 dB in Manual Mode
Loss Measurement Wavelengths	1310, 1550 nm, ± 20 nm
Laser Output Power 0	dBm, 1 mw
Units of Measurement	dBm, dB, 0.01 dB resolution
Measurement Rate	Four updates per second
Inter-unit Communications	Text, eight standard messages provided, Transmitted via Fiber-Under-Test
Hypertest Displayed Quantities	Loss A-B, Loss B-A, ORL from A, ORL from B, Each value @ 1310 and 1550 nm
Laser Safety Classification.	Class I safety per FDA/CDRH and IEC-825-1 regulations
Laser Output Power	0 dBm, 1 mw
Laser Output Stability	± 0.1 dB for 1 hour
Laser Linewidth	< 5 nm
Optical Return Loss Dynamic Range	0 - 65 dB
Optical Return Loss Accuracy	± 0.5 dB @ a -55 dB reflection
Power Meter Detector	InGaAs, 2 mm diameter with universal 2.5 mm ferrule adaptor
Calibrated Wavelengths Provided	850, 1300, 1310, 1490, 1550, 1625 nm
Modulation Modes Provided, (transmit and detect)	CW, 270 Hz, 1000 Hz, 2000 Hz
Power Meter Accuracy	± 0.18 dB under reference conditions, ± 0.3 dB +20 to - 50 dBm
Power Meter Display	.01 dB resolution, unit of dBm or dB
Memory Storage Locations	1000
Display	4 " QVGA LCD Graphic Display with Electroluminescent Back light
Standard Optical Connector Interface	FC/APC, (other types available or request)
Batteries Supplied	Rechargeable NiMH AA cells, eight
Operating Time	Approximately 16 hours following a full charge
Power Supply / Charger Provided	Wall Mount, 120 VAC, 50 -60 Hz, or 220 VAC 50-60 Hz, Specify
Power Requirements	10 VA Max
Temperature Range	0 to 50 C Operating,, -20 to 60 C Storage
Dimensions (L x W x D)	8.1" x 6.4" x 3.5", 210 x 160 x 90 mm
Weight	2.8 lbs, 1.3 Kg
Accessories Provided	Batteries, Power supply/charger, manual, Rs-232 Cable, PC application software
Standard Warranty	Two years, Components and Workmanship, 30 Day Satisfaction Guarantee



Optical Return Loss Mode



HyperTest Mode



Power Meter Mode

Fiber Optic Laser Tachometer

LT-880

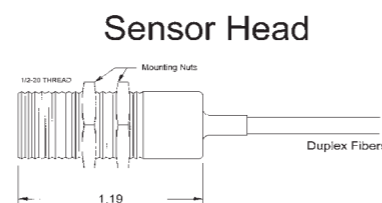


Features

- Remote Sensing of RPM and Angular Vibration
- No Special Reflective Tape Required
- Large 5 Digit LED Display Sensing rates to 40 000 PPS
- Ni-mH Powered with Fast Charger
- Measures RPM, RPS, PPS
- Entry of number of encoder sectors

The LT-880 Laser Tachometer is a hand-held, battery operated device that senses the passage of reflective/non-reflective markings on a rotating or linearly translated piece of machinery in order to determine the target's rotational rate or its linear velocity. The sensing head is remote from the electronics package and is fiber coupled. This permits measurement of objects in hostile environments or in hard-to-get-to locations. The sensed change in reflectivity from black to white generates a transition at its output. This TTL/CMOS compatible signal may be utilized by a spectrum analyzer, computer or electronic counter in order to provide information concerning vibration, angular or linear velocity of the machinery under test. The high speed of the unit, 40, 000 PPS, coupled with its small spot size can provide high resolution measurements unattainable with conventional incandescent source tachometers.

A six digit LCD display indicates the rate of passage of the white/dark areas of the encoder and registers the results in units of revolutions per minute, (RPM), revolutions per second, (RPS), or pulses per second (PPS). The reading is updated twice per second. The user may input the number of pulses per revolution of the encoder for use in the subsequent calculations. They may range from 1 pulse per revolution to 255 pulses per revolution.



LT-880 Laser Tachometer Specifications

Units of Measurement	Revolutions per Second, Revolutions per Minute, Pulses per Second
Measurement Update Rate	Twice per Second
Readout Uncertainty	± .02 % of Reading, ± 1 LSD
Maximum Measurement Rate	40 000 PPS
Range from Sensor to Target	12 to 125 mm (using white copier paper)
Laser Wavelength	650 nm ± 10 nm
Laser Output Power	< 2 milliwatts
Laser Spot Size	< 1.9 mm @ 13 mm range
Laser Beam Divergence	< 13 milliradians
Display	Six Digit LCD, 0.375 height, Six LED annunciators
Frequency Output Port	TTL pulse for each reflective sector sensed, (0 to 5 volts)
Output Impedance	100 Ohms
Standard Fiber Optic Cable Length	5 meters
Standard Fiber Types	Receiver - 400 u m core, Transmitter - 62.5 um core
Standard Connector Type	ST Type
Batteries Supplied	Four AA NimH, 2500 ma-H
Charger Power Requirements	95 - 260 VAC, 50-60 Hz Universal, < 10 VA
Mains Connectors Supplied	North American, Great Britain, Continental Europe, Australian
Charging Time	Approximately two hours
Dimensions (Controller)	200 mm L x 98 mm W x 38 mm D
Dimensions (Sensor)	36 mm K x 13 mm Diameter, 1/2 by 20 Thread, Jam Nuts Included
Operating Temperature, Electronics, Sensor Head	0 - 50 C, - 40 - 120 C
Weight	0.6 Kg
Accessories Provided	Carrying Case, Batteries, Power Supply/Charger, Operating Manual
Standard Warranty	Two years, Components and Workmanship, 30 Day Satisfaction Guarantee

Automated Fiber Optic Loss Test Set

LTS-1500



Features

- Automated loss measurements for three wavelengths
- Auto wavelength switching
- Universal Power Meter and Light Source adapters FC/ST and SC
- Power Meter with -75 dBm Dynamic Range
- Single port laser source with up to three wavelengths
- Storage for 2000 triple wavelength loss measurements
- Rechargeable Li polymer 9V battery
- USB interface
- Free Windows® compatible report software
- Reference level storage

The LTS-1500 is a small, rugged automated fiber optic loss test set that characterizes singlemode and multimode fiber links at wavelengths of 850, 1300, 1310, 1490 and 1550 nm. It is comprised of a sensitive InGaAs based optical power meter calibrated at six wavelengths with better than -75 dBm noise level plus a stabilized laser light source with up to three selectable wavelengths.

In the Autotest mode, the master unit changes wavelengths at a fixed rate and informs the slave unit of the wavelength currently being measured. Storing the loss measurement saves the loss at each wavelength in memory. Up to 2000 triple wavelength measurements may be stored and recalled via the unit's USB port or from the front panel. PC application software is provided for downloading stored data and organizing the information.

The units also performs fiber identification functions with modulation frequencies of 270, 1000 and 2000 Hz.

Power is obtained from a rechargeable lithium polymer battery that provides more than 15 hours of continuous operation, its universal power supply, or in a pinch, any common 9V alkaline battery.

Standard accessories include a protective rubber boot and stand, USB cable, adaptors for FC, ST or SC connectors, universal power supply/charger, CD containing application software and an operating instruction booklet.

LTS - 1500 Specifications

Power Meter Detector Type	InGaAs
Dynamic Range	+5 to -77 dB
Calibrated Wavelengths	850, 1300, 1310, 1490, 1550, 1625 nm
Units of Measurement	dBm, dB,
Resolution	0.01dB
Power Input Range	+5 dBm to - 77 dBm
Power Measurement Uncertainty	± 0.18 dB under reference conditions, ± 0.25 dB from 0 to -65 dBm, ± 0.35 dB from 0 to +5 dBm and from -65 to -77 dBm
Laser Output Power	0 dBm, 1mw
Output Stability	± .05 dB / 24 hrs @ constant temp, ± .02 dB/C temperature coefficient
Laser Wavelengths Provided	850nm, 1300nm, 1310 nm , 1490, 1550 (± 20 nm)
Modulation Modes	CW, 270 Hz, 1000 Hz, 2000 Hz
Laser Safety Classification	Class I safety per FDA/CDRH and IEC-825-1 regulation
Autotest Range	0 to - 36 dB
Display	LCD, power reading, 0.4" high digits, .01 dB resolution Power meter, laser wavelength display 0.16" high digits
Annunciators	Fiber ID, - 3, modulation mode - 4, Autotest - 2, Lo Bat, Auto Off
Storage Locations	2000
Battery/Operating Time	Rechargeable Li Polymer/Approximately fifteen hours following a full charge
Power Supply / Charger	Universal, US, UK, Continental Europe, and Australian Plugs Included
Power Requirements	95-260 VAC, 50-60 Hz, 3 VA Max
Operating Temperature Range	-10 to 45 C
Dimensions (with rubber boot)	5.9" L x 3.9" W x 1.37" H (150mm L x 100mm W x 35mm H)
Weight	0.52 Kg
Accessories Provided	FC, ST, SC adaptors for both Power Meter and Light Source, rubber boot, battery, Power supply/Charger, manual , USB Cable, PC application software

LTS - 1500 Ordering Information

LTS-1500-813	Loss Test Set with 850/1300nm Light Source
LTS-1500-3	Loss Test Set with 1310nm Light Source
LTS-1500-5	Loss Test Set with 1550nm Light Source
LTS-1500-35	Loss Test Set with 1310/1550nm Light Source
LTS-1500-345	Loss Test Set with 1310/1490/1550nm Light Source

Spectroscopes
 CCD Cameras
 Imaging
 Semiconductors
 Communications
 Lighting
 Solar Cells
 Tests
 Instruments
 Sensors
 Detection
 Components
 Mechanics
 Positioning
 Lasers
 Light Sources

Fiber Optic Product



Electrical to Optical Converter

LTX-510



Features

- Two Voltage Input Ranges
- Two Impedance Settings
- Transmit without conducting
- Bandwidth to >60MHz (-3dB)

The LTX-510 Electrical to Optical Converter is a convenient device that is intended to transmit analog or digital signals to a remote location via a multi-mode fiber optic cable. The primary applications are those situations in which the signal of interest has a high common mode voltage with respect to the measurement equipment. These applications include plasma physics experiments, power transmission equipment, and high power laser equipment. Trigger information from electrically noisy sources such as high current discharge laser systems may be transmitted without conducting Electro-Magnetic Interference, (EMI), to the measurement equipment.

The LTX-510 is intended for use with the TIA-525S Optical to Electrical Converter but can be used with other o/e converters that respond at 850 nm and have the appropriate responsivity and bandwidth. The input impedance may be set to 50 ohms for high speed signals sent over a transmission line or to 1 Megohm for use at lower frequencies. The input connector is a female BNC and the output connector is a ST style.

LTX-510 Specifications

Input Voltage Range	0 to + 1 V or 0 to + 5 V, selectable
Input Impedance	50 ohms or 1 Megohm in parallel with 20 pF
Output Power	10 microwatts, - 20 dBm Typical
Input Without Damage	+/- 7 V
Bandwidth (- 3 dB)	DC to 60 MHz
Accuracy	+/- 5% from DC to 35 MHz, +/- 20% from DC to 50 MHz
Output Wavelength	850 nm, 100 nm FWHM
Input Connector	BNC Female
Fiber Output Connector	ST
Usable Fiber Type	Multi-mode, 62.5/125 or 100/140
Power requirements	12 +/- 0.5 VDC@ 100mA or 120 VAC with wall-mount power supply
Dimensions	4.5"W, 2.5"L, 1.0"H (114,63,25mm)
Weight	8 oz., 230 g
Operating temperature	10 - 40 C
Limited warranty	2 years from date of receipt

Analog/Digital Bidirectional Fiber Optic Link

LTX721X



Transmit and receive precise analog data from DC to 25 Mhz over a single optical fiber!

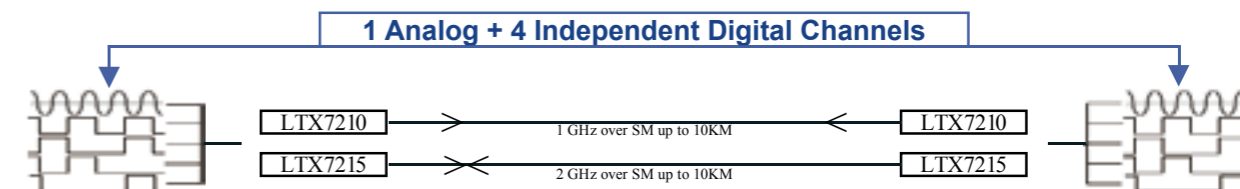
Features

- Single Fiber Transceivers
- DC-25MHz Analog
- Four Independent Digital Channels
- 0 to 48Mb/s per Digital Channel
- +/-5V or +/-1V Full Scale I/O
- Digital LVTTTL, CMOS/TTL Input
- Analog I/O - 12 bit Precision
- AC/DC Operation

The LTX-721X Bidirectional Fiber Optic Links multiplex one analog signal along with up to 4 independent TTL/CMOS/LVTTTL digital channels to over 10 kilometers with a single fiber. The incoming analog data is digitized to 12 bit precision at up to 100 mega samples per second and the digital channels operate at data rates of 0 to 50Mb/s. This is then transmitted at speeds up to 2 Gb/s second for distances up to 10 kilometers. The digital signal is then received and the analog signal is accurately reproduced at the far end of the fiber optic link.

Depending on the model the analog signal bandwidth may be from DC to 25 MHz (-3dB). The LTX- 721X has input voltage ranges of ±1 Volt or ±5 Volts. The input impedance of the analog channel may be set to 50 ohms or 1 megohm (75 ohms is optional)

The LTX721X series has a battery option that will allow for up to 4 hours of operation for experiments at extremely high potentials.



Specifications

	LTX-7210 Standard Speed	LTX-7215 High Speed
Number of Digital Channels	4	
Digital Inputs	TTL, LVTTTL, CMOS compatible	
Digital Outputs	LVTTTL (0 - 3.3 V)	
Signal Latency (with one meter of fi ber)	Approximately 300 ns	
Digital switching Rates	0 - 12.5 MHz	0 - 25 MHz
Digital Signal Edge Uncertainty	0 - 10 ns	

Analog Channels	LTX-7210 Standard Speed	LTX-7215 High Speed
Number of Analog Channels	1	
Analog Signal Bandwidth	DC to 12.5MHz (-3 dB)	DC to 25MHz (-3 dB)
Resolution	12 Bits	
Input Voltage Ranges	+/- 1 V or +/- 5 V	
Transfer Accuracy	+/- 10 mV offset, +/- 0.1% Full Scale(100Hz sine wave 8v pk-pk)	
Output Impedance	50 Ohms	
Output Drive Capability	+/- 5 V open circuit, +/- 2 V into 50 ohm load	
Input Impedance	50 Ohms or 1 Megohm 20 pF, (selectable)	
A/D Sampling Rate	50 Mega samples p/s	100 Mega samples p/s

General	LTX-7210 Standard Speed	LTX-7215 High Speed
Laser Wavelength	LTX-5515-850; 850 nm+/- 20 nm, LTX-5515-1310; 1310 nm +/- 20 nm	
Optical Transmission Rate	1.0 Gb/S	2.0 Gb/S
Loss Budget	7 dB	
Laser Safety	Classification Class I safety per FDA/CDRH and IEC-825-1 regulations	
Typical Transmission Distances	10 KM with 9/125 micron fiber	
Fiber Optic Connectors	ST standard, FC available upon request	
Analog Connector	BNC	
Digital Connector	(Cable and Breakout Board Supplied)	
LED Annunciators Provided	Input Overload (transmitter), Optical Signal and Power (receiver)	
Power Supplies	Wall Mount, Universal, US, UK, Continental Europe and Australian plugs included	
Power Requirements	95 - 260 VAC, 50 - 60 Hz, 16 VA Max.	
Batteries/hrs of Operation	6 AA NiMH / 4 hrs	6 AA NiMH / 3 hrs
Operating Temperature Range	0 - 40 C	
Transmitter Dimensions (mm)	214 L x 114 W x 59 H	
Weight (each)	0.578 Kg	
Standard Warranty	Two Years, Components and Workmanship, 30 day Satisfaction Guarantee	

Ordering Information	
LTX-7210-1310	Singlemode, 1.0 Gb/s Analog/Digital Signal Transporter
LTX-7215-1310	Singlemode, 2.0 Gb/s Analog/Digital Signal Transporter
LTX-7210-1310-BAT	Singlemode, 1.0 Gb/s Analog/Digital Signal Transporter with Battery Pack
LTX-7215-1310-BAT	Singlemode, 2.0 Gb/s Analog/Digital Signal Transporter with Battery Pack

Bidirectional Fiber Optic Link

LTX722X

Features

- Single Fiber Transceivers
- Transmits 16 independent Channels
- 0 to 25 Mb/s Bandwidth
- 1310nm for Links to 10km
- Digital LVTTTL, CMOS/TTL Input
- Outputs are LVTTTL (0-3.3V)
- AC/DC Operation

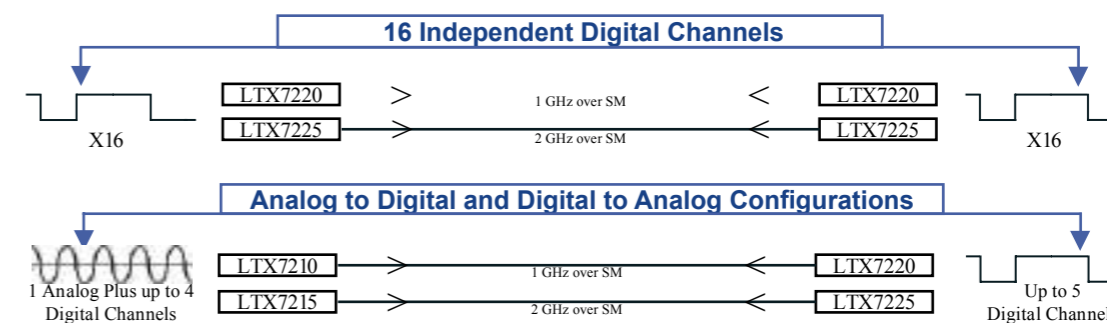


Pair a LTX-722X with a LTX-721X to configure remote high speed 12 bit A/D and D/A converter links

The LTX-722X Bidirectional Fiber Optic Links multiplex up to 16 independent channels of digital TTL/CMOS/LVTTTL information to over 10 kilometers with Singlemode fiber. The LTX-722X samples each of the channels up to 100 million times a second, The signals are then multiplexed and transmitted serially over a single optical fiber at up to 2 gigabits per second. The far end of the fiber link demultiplexes the signal back into independent outputs. Each of these channels may be toggled at rates up to 50 Mb/s.

Using the LTX-721X in conjunction with a LTX-722X unit, the result is a remote fiber-coupled 12-bit data acquisition system, digitizing the signal at 50 Mb/s and reconstructs the signal by means of a fast D/A converter. The units may also be employed in the reverse direction if desired.

Applications include data acquisition for plasma physics experiments, signal transmission and control of equipment at high voltage potentials, operations through Faraday shields, and precise noise-free signal transmission in hostile EMI environments.



Specifications

Digital Channels	LTX-7220 Standard Speed	LTX-7225 High Speed
Number of Digital Channels	16	
Digital Inputs	TTL, LVTTTL, CMOS compatible	
Digital Outputs	LVTTTL (0 - 3.3 V)	
Signal Latency (with one meter of fiber)	Approximately 300 ns	
Digital switching Rates	0 - 12.5 MHz	0 - 25 MHz
Digital Signal Edge Uncertainty	0 - 10 ns	
Laser Wavelength	1310 nm +/- 20 nm	
Optical Transmission Rate	1.0 Gb/S	2.0 Gb/S
Loss Budget	7 dB	
Laser Safety Classification	Class I safety per FDA/CDRH and IEC-825-1 regulations	
Typical Transmission Distances	10 KM with 9/125 micron fiber	
Fiber Optic Connectors	ST standard, FC available upon request	
Analog Connector	BNC	
Digital Connector	HDMI (Cable and Breakout Board Supplied)	
LED Annunciators Provided	Input Overload (transmitter), Optical Signal and Power (receiver)	
Power Supplies	Wall Mount, Universal, US, UK, Continental Europe and Australian plugs included	
Power Requirements	95 - 260 VAC, 50 - 60 Hz, 16 VA Max.	
Batteries/hrs of Operation	6 AA NiMH / 4 hrs	6 AA NiMH / 3 hrs
Operating Temperature Range	0 - 40 C	
Transmitter Dimensions (mm)	214 L x 114 W x 59 H	
Weight (each)	0.578 Kg	
Standard Warranty	Two Years, Components and Workmanship, 30 day Satisfaction Guarantee	

Ordering Information

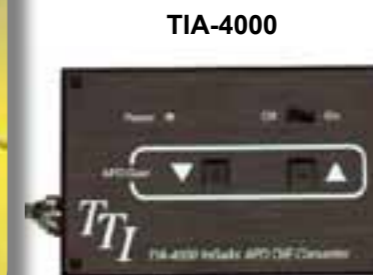
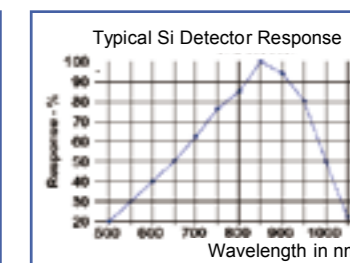
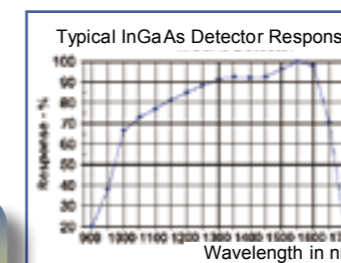
LTX-7220-1310	Singlemode, 1.0 Gb/s 16 Channel Digital Signal Transporter
LTX-7225-1310	Singlemode, 2.0 Gb/s 16 Channel Digital Signal Transporter
LTX-7225-1310-BAT	Singlemode, 1.0 Gb/s 16 Channel Digital Signal Transporter with Battery Pack
LTX-7225-1310-BAT	Singlemode, 2.0 Gb/s 16 Channel Digital Signal Transporter with Battery Pack

Optical to Electrical Converter

The TIA-525, 527 and 952 series have BNC outputs for direct connection to your oscilloscope or digitizer. The TIA-1200, 2000, 3000, and 4000 use a type K SMA female output connector. Free space options are available. Patch cords and adapters can be supplied to mate with various fiber optic connectors. The TIA-525 and 527 have dual power capability, battery and external universal power supply.

Features

- 400 nm to 1700 nm wavelengths
- Battery or External AC Operation
- Bandwidth to 20 GHz
- Compact Size



Model/BW	Detector	Wavelength	Power	AC/DC Coupling	Conversion Gain @ Peak Wavelength
TIA-525S-ST (125 MHz)	Silicon	400 - 1000 nm	9 V Lithium Battery*/ Univ. Power Supply	Selectable	100,000 V/W
TIA-525I-FC or -ST (125 MHz)	InGaAs	850 - 1700 nm	9 V Lithium Battery*/ Univ. Power Supply	Selectable	100,000 V/W
TIA-527-FC (125 MHz)	Matched InGaAs	850 - 1700 nm	9 V Lithium Battery*/ Univ. Power	Supply Selectable	100,000 V/W
TIA-952-FC (750 MHz)	InGaAs	900 - 1700 nm	Universal Power	Supply	AC 2500 V/W
TIA-1200-FC (12 GHz Typ.)	InGaAs	900 - 1700 nm	Universal Power	Supply	DC 0.8 A/W
TIA-2000-FC (20 GHz Typ.)	InGaAs	1260 - 1620 nm	Universal Power	Supply	DC 0.8 A/W
TIA-3000 (11 GHz Typ.)	InGaAs	900 - 1700 nm	Universal Power	Supply	AC 500 V/W
TIA-4000-FC (30KHz - 7 GHz)	InGaAs	APD	950 - 1650 nm Universal Power	Supply	AC 2500 V/W

See reverse side for full specifications

*30 hrs avg. (no load) 9 V Lithium, use of std 9 Volt battery will provide approx. 1/3 life of Lithium battery.

Specifications subject to change without notice

Spectroscopes · Imaging · CCD Cameras · Semiconductors · Communications · Solar Cells · Tests · Instruments · Sensors · Detection · Components · Mechanics · Positioning · Lasers · Light Sources

Fiber Optic Product



O/E Converter Selection Chart

	TIA-525	TIA-527	TIA-952
Detector Types	Silicon(400-1000nm) InGaAs (850 -1700nm)	Matched InGaAs InGaAs (850 -1700nm)	InGaAs (850-1700nm)
Transimpedance Ranges	1.4 K,14 K	1.4 K,14 K	1.2 k
Current Responsivity	N/A	N/A	N/A
Post Amplifier Gain	1.0, 10.0 selectable	1.0, 10.0 selectable	1.0, 5.0 selectable
Max. Linear Input Power	1.2 mW	1.2 mW	2 mW
Max. Input w/o Damage	10 mW	10 mW	15 mW
Bandwidth (-3 dB) 50 Ohms	DC - 125 MHz gain 1.0 DC - 35 MHz gain 10 12GHz (min.) 14 GHz (typical)	DC - 125 MHz gain 1.0 DC - 35 MHz gain 10 12GHz (min.) 14 GHz (typical)	30KHz - 800 MHz Gain 1.0 30KHz - 300 MHz Gain 5.0
Output Impedance	50 Ohms	50 Ohms	50 Ohms
Output Connector	Male BNC	Male BNC	Male BNC
F. O. Input Connector	ST, FC or Free-Space	FC	FC or ST
Input Numeric Aperture	0.295	0.295	0.29
Inter-Stage Coupling	AC or DC selectable	AC or DC selectable	AC
Output Offset Voltage	+/- .1 V at Max Gain	+/- .1 V at Max Gain	N/A
Max Output Voltage	4 V pk-pk, no load, 2 V pk-pk 50 ohm load	4 V pk-pk, no load, 2 V pk-pk 50 ohm load	2 V pk-pk 50 ohm load
Noise Level	3 pW/Hz ^{1/2}	3.6 pW/Hz ^{1/2}	9.5 pW/Hz ^{1/2}
Power Required	9 V Lithium Battery or Univ. Power Supply	9 V Lithium Battery or Univ. Power Supply	Universal Power Supply
Dimensions	1.2W, 2.5L, 1.5H inches 30.5W, 63L, 39H mm	1.2W, 2.5L, 1.5H inches 30.5W, 63L, 39H mm 39 mm H	1.2W, 2.5L, 1.5H inches 30.5W, 63L, 39H mm
Weight	5.6 oz, 160 g	5.6 oz, 160 g	5.6 oz, 160 g
Operating Temperature	0 to 40 C	0 to 40 C	0 to 40 C
Limited Warranty	2 yrs from date of receipt	2 yrs from date of receipt	2 yrs from date of receipt

O/E Converter Selection Chart

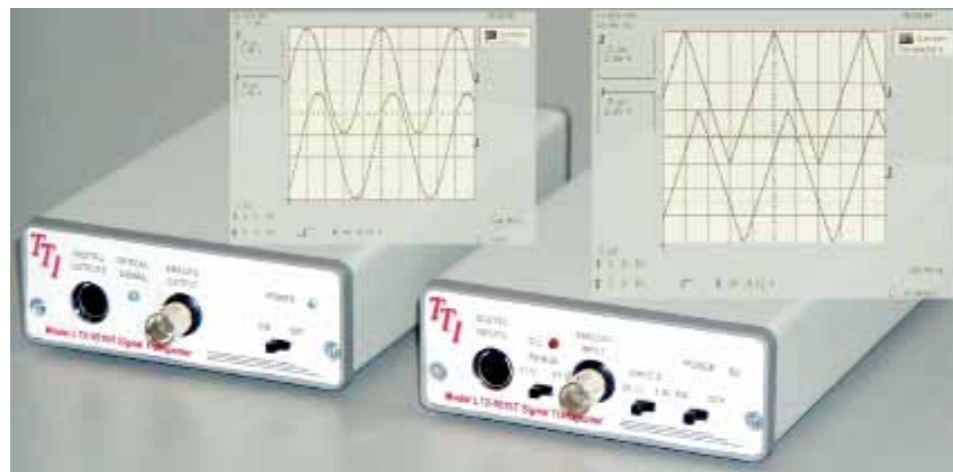
	TIA-1200	TIA-2000	TIA-3000	TIA-4000
Detector Types	InGaAs (900 -1700nm)	InGaAs/InP (1260- 1620nm)	InGaAs (900 -1700nm)	InGaAs (950 -1650nm)
Transimpedance Ranges	50 Ohm internal in parallel, user supplied load	50 Ohm internal in parallel, user supplied load	V _R = 500 V/W	R _v = 2500 V/W
Current Responsivity	0.8 A./W @ 1550nm Typ.	0.8 A./W @ 1550nm Typ.	N/A	N/A
Post Amplifier Gain	Not amplified	Not amplified	NA	NA
Max. Linear Input Power	3 mW	3 mW	2 mW	1.0 mW Max.
Max. Input w/o Damage	10 mW	10 mW	3 mW	5 mW
Bandwidth (-3 dB) 50 Ohms	DC to 14GHz Typ, 12 GHz Minimum	DC to 20GHz Typ, 18 GHz Minimum	100 KHz to 8.5 GHz (min.) 100 KHz to 11 GHz (typ)	30 KHz to 7 GHz (typ)
Output Impedance	50 Ohms	50 Ohms	50 Ohms	50 Ohms
Output Connector	SMA Type K Female	SMA Type K Female	SMA Type K Female	SMA Type K Female
F. O. Input Connector	FC or FC/APC	FC/UPC or FC/APC	FC or FC/APC	FC/APC
Input Numeric Aperture	0.11 9 μm Singlemode	0.11 9 μm Singlemode	0.11 9 μm Singlemode	0.11 9 μm Singlemode FC o
Inter-Stage Coupling	DC	DC	AC	AC
Output Offset Voltage	0	0	NA	NA
Max Output Voltage	0.1 V	0.1 V	0.65 V into 50 Ohms	0.65 V into 50 Ohms
Noise Level	Dark Current <1.0 nA	Dark Current <1.0 nA	15pW/Hz ^{1/2}	16pW/Hz ^{1/2}
Power Required	Univ. Power Supply	Univ. Power Supply	Universal Power Supply	Universal Power Supply
Dimensions	1.2W, 2.5L, 1.5H inches 30.5W, 63L, 39H mm	1.2W, 2.5L, 1.5H inches 30.5W, 63L, 39H mm	1.2W, 2.5L, 1.5H inches 30.5W, 63L, 39H mm	2.5W, 4.0L, 1.2H inches 63W, 102L , 31H mm
Weight	5 oz, 150 g	5 oz, 150 g	5 oz, 150 g	5 oz, 150 g
Operating Temperature	0 to 40 C	0 to 40 C	0 to 40 C	0 to 40 C
Limited Warranty	2 yrs from date of receipt	2 yrs from date of receipt	2 yrs from date of receipt	2 yrs from date of receipt

Specifications subject to change without notice

Spectroscopes
· Imaging
· CCD Cameras
· Communications
· Semiconductors
· Lighting
· Solar Cells
· Tests
· Instruments
· Sensors
· Detection
· Components
· Mechanics
· Positioning
· Lasers
· Light Sources

"Signal Transporter" E/O - O/E Converter pair

LTX-5510



Features

- One analog plus four digital channels
- DC to 12.5 MHz analog bandwidth
- Input ranges of ± 1 V and ± 5 V
- Analog signal digitized to 12 bit precision
- Four independent digital (TTL) channels
- DC to 24 Mb/s data rate (each channel)



The LTX-5510 enables the precise conveyance of one analog channel plus four digital channels of information over fiber optic links ranging from meters to more than 10 kilometers.

Incoming analog data is digitized to 12-bit precision at 50 megasamples per second and transmitted over optical fiber at one giga-bit per second. The receiver acquires this digital data and accurately reconstructs the analog signal at the far end of the fiber optic link.

The analog signal bandwidth is from DC to 12.5 MHz (-3 dB). Two input voltage ranges are provided, ± 1 Volt and ± 5 Volts. The input impedance of the transmitter analog channel may be set to 50 ohms or 1 megohm (75 ohms is optional).

Multiplexed along with the analog data, are four independent TTL/CMOS/LVTTL digital signals that may be toggled at rates of up to 24 Mb/s.

Two models are available. Selection depends on the fiber type and the length of the fiber optic link that is required. The LTX-5510- 850 transmits at 850 nm over multi-mode fiber optic links of up to 500 meters in length, while the LTX-5510-1310 transmits at 1310 nm over single-mode fiber to span distances exceeding 10 km.

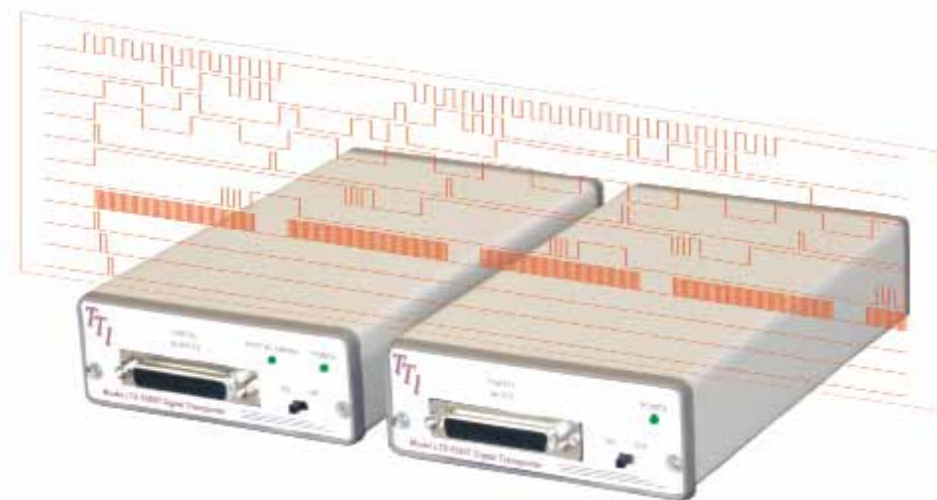
Applications include data acquisition for plasma physics experiments, signal transmission and control of equipment at high voltage potentials, transmission of high quality video, and precise noise-free signal transmission in hostile EMI environments.

LTX-5510 Specifications

Analog Signal Bandwidth	DC to 12.5 MHz (-3 dB)
Input Voltage Ranges	+/- 1 V or +/- 5 V (selectable)
Resolution	12 Bits
Transfer Accuracy	+/- 0.1% Full Scale, +/- 20 mV offset
Signal Latency (with one meter of fiber)	Approximately 300 nS
A/D Sampling Rate	50 Megasamples per second
Input Impedance	50 Ohms or 1 Megohm 20 pF, (selectable)
Output Drive Capability	+/- 5 V open circuit, +/- 2 V into 50 ohm load
Output Impedance	50 Ohms
Digital Inputs	TTL, LVTTL, CMOS compatible
Digital Outputs	LVTTL (0 - 3.3 V)
Digital switching Rates	0 - 12 MHz
Digital Signal Edge Uncertainty	0 - 20 nS
Laser Wavelength	LTX-5510-850; 850 nm +/- 20 nm, LTX-5510-1310; 1310 nm +/- 20 nm
Optical Transmission Rate	1.0 Gb/S
Loss Budget	15 dB max.
Optical Return Loss	> 15 dB
Laser Safety Classification	Class I safety per FDA/CDRH and IEC-825-1 regulations
Typical Transmission Distances (850 nm)	500 M with 50/125 micron fiber, 300 M with 62.5/125 micron fiber
Typical Transmission Distances (1310 nm)	10 KM with 9/125 micron fiber
LED Annunciators Provided	Input Overload (transmitter), Optical Signal - ON (receiver)
Fiber Optic Connectors	ST standard, FC available upon request
Power Supplies	Wall Mount, Universal, US, UK, Continental Europe and Australian plugs included
Power Requirements	95 - 260 VAC, 50 - 60 Hz, 16 VA Max.
Operating Temperature Range	0 - 40 C
Weight (each)	0.46 Kg
Transmitter Dimensions (mm)	175 L x 105 W x 40 H
Receiver Dimensions (mm)	175 L x 105 W x 40 H
Standard Warranty	Two Years, Components and Workmanship, 30 day Satisfaction Guarantee
Accessories Supplied	5 pin DIN connector for digital inputs/outputs, xmtr and receiver

“Signal Transporter” E/O - O/E Converter Pair

LTX-5520 Digital



Benefits

- Transmits 16 independent TTL signals over a single fiber
- Each channel has 0 to 25 Mb/S bandwidth
- Inputs accepts LVTTTL and/or CMOS/TTL
- Outputs are LVTTTL (0 - 3.3 V)
- 850 nm version for multimode links up to 500 M
- 1310 nm version for SM links up to 10 KM
- May be paired with elements of the LTX- 5510 system to configure remote high speed 12-bit A/D and D/A converter modules

The LTX-5520 enables the conveyance of sixteen independent channels of digital information over fiber optic links ranging from meters to more than 10 kilometers.

Each of the 16 incoming TTL channels is sampled at 50 mega-samples per second, multiplexed and transmitted serially over an optical fiber at a 1 Gb/s data rate. The receiver acquires this digital data and de-multiplexes it to 16 separate output ports. Each of these channels may be toggled at rates ranging from 0 - 25 Mb/S.

Two models are available. Selection depends on the fiber type and the length of the fiber optic link that is required. The LTX-5520-850 transmits at 850 nM over multimode fiber optic links of up to 500 meters in length, while the LTX-5520-1310 transmits at 1310 nm over single-mode fiber to cover distances in excess of 10 kilometers.

The LTX-5510 precision analog fiber optic link was the first in our series of “Signal Transporters”. It digitizes an analog signal at a 50 Ms/S rate with 12-bit precision and reconstructs it at the LTX-5510 receiver by means of a fast D/A converter. If the user employs the LTX-5520 receiver with the LTX-5510 transmitter, the result is a remote fiber-coupled 12-bit data acquisition system.

Similarly one can employ the LTX-5520 transmitter with the LTX-5510 receiver to generate fast high-resolution analog signals at a remote location. Applications include data acquisition for plasma physics experiments, signal transmission and control of equipment at high voltage potentials, operation through Faraday shields, and precise noise-free signal transmission in hostile EMI environments.

LTX-5520 Specifications

Number of independent channels	16
Digital Inputs	TTL, LVTTTL, CMOS compatible
Digital Outputs	LVTTTL (0 - 3.3 V)
Signal Latency (with one meter of fiber)	~300 nS
Sampling Rate	50 Ms/S
Digital Switching Rates	0 - 25Mb/S
Digital Signal Edge Uncertainty	+/-10 nS
Laser Wavelength	LTX-5520-850: 850 nm +/- 20 nm, LTX-5520-1310: 1310 nm +/- 20 nm
Optical Transmission Rate	1.0 Gb/s
Loss Budget	0 - 15 dB
Optical Return Loss	> 15 dB
Laser Safety Classification	Class I safety per FDA/CDRH and IEC-825-1 regulations
Typical Transmission Distances (850 nm)	500 M with 50/125 MM fiber, 300 M with 62.5/125 MM fiber
Typical Transmission Distances (1310 nm)	10 KM with 9/125 SM fiber
Fiber Optic Connectors	ST Type standard, FC available on request
Signal connectors	DB - 25 on input and output
LED Indicators Provided	Optical Signal - ON (receiver)
Power Supplies	Wall Mount, Universal, US, UK, Continental Europe, and Australian Plugs Included
Power Requirements	95-260 VAC, 50-60 Hz, 16 VA Max
Operating Temperature Range	0 - 40 C
Transmitter Dimensions (mm)	175 L x 104.5 x 40 H
Receiver Dimensions (mm)	175 L x 104.5 x 40 H
Weight Each	0.46 Kg
Standard Warranty	Two years, Components and Workmanship, 30 Day Satisfaction Guarantee

"Signal Transporter" E/O - O/E Converter pair

LTX-5525

Benefits

- Transmits 16 independent TTL signals over a single fiber
- Each channel has a capacity of from 0 - 50 Mb/S
- Inputs accepts LVTTTL and/or CMOS/TTL
- Outputs are LVTTTL (0 - 3.3 V)
- 850 nm version for multimode links up to 300 M
- 1310 nm version for SM links up to 10 KM



The LTX-5525 conveys sixteen independent channels of digital information over a fiber optic link ranging from meters to more than 10 kilometers. Each of the 16 incoming TTL channels is sampled 100 million times per second, multiplexed and transmitted serially over an optical fiber at two gigabits per second. The receiver acquires this digital data and de-multiplexes it to 16 separate output ports. Each of these channels supports a channel capacity of 0 to 50 Mb/S.

Two models are available. Selection depends on the fiber type and the length of the fiber optic link that is required. The LTX-5525-850 transmits at 850 nm over multimode fiber optic links of up to 300 meters in length, while the LTX-5525-1310 transmits at 1310 nm over single-mode fiber to span distances exceeding 10 kilometers.

The new LTX-5525 doubles the data capacity of our previous word-width digital fiber optic links. Paired with elements of our high-speed analog links, the LTX-5525 allows the user to configure remote precision A/D or D/A converters. This eliminates the need for the user to digitize analog signals at the receiving end of the analog data link.

Applications include data acquisition for plasma physics experiments, signal transmission and control of equipment at high voltage potentials, operation through Faraday shields, and precise noise-free signal transmission in hostile EMI environments.

LTX-5525 Specifications	
Number of independent channels.	Sixteen
Digital Inputs	TTL, LVTTTL, CMOS compatible
Signal Latency (with one meter of fiber)	≈ 300 ns
Digital Outputs	LVTTTL, (0 - 3.3 V)
Input Sampling Rate	100 million samples per second
Digital Input Data Rate	0 - 50 Mb/S
Digital Signal Edge Uncertainty	± 5 ns
Laser Wavelength	LTX-5525-850: 850 nm ± 20 nm, LTX-5525-1310: 1310 nm ± 20 nm
Optical Transmission Rate	2.0 Gigabit per second
Loss Budget	0 - 15 dB
Laser Safety Classification.	Class I safety per FDA/CDRH and IEC-825-1 regulations
Typical Transmission Distances (850 nm)	300 m with 50/125 fiber, 175 m with 62.5/125 fiber
Typical Transmission Distances (1310 nm)	10 Km with 9/125 SM fiber
Fiber Optic Connectors	ST Type standard, FC available on request
Signal connectors	DB25 on input and output
LED Indicators Provided	Optical Signal - ON (receiver)
Power Supplies	Wall Mount, Universal, US, UK, Continental Europe, and Australian Plugs Included
Power Requirements	95-260 VAC, 50-60 Hz, 16 VA Max
Operating Temperature Range	0 - 40 C
Transmitter Dimensions (mm)	175 L x 104.5 x 40 H
Receiver Dimensions (mm)	175 L x 104.5 x 40 H
Weight Each	0.46 Kg
Standard Warranty	Two years, Components and Workmanship, 30 Day Satisfaction Guarantee



Optical to Electrical Converter

TIA-525



Features

- Silicon or InGaAs detectors
- DC to 125 MHz Analog Bandwidth
- Selectable Gain Settings
- Operates from Battery or Line Power
- Capability to drive 50 Ohm output loads
- Low Noise - 3.0 pW/root-Hz

Applications

- General laboratory testing of optical components
- Field Service Testing and Troubleshooting
- Laser alignment and tuning
- Plasma physics measurements

The TIA-525 optical receiver is a convenient, easy to use O/E converter. It is extremely useful in a variety of laboratory and field service situations where a quick check of the operation of a laser source, optical transmitter, or the output of a fiber optic communications link is required. The unit conveniently mounts directly on the vertical input BNC connector of your oscilloscope, digitizer, or other readout device.

Both Silicon and Indium-Gallium-Arsenide detectors are available to cover respectively the 400 to 1000 nm or the 900 to 1700 nm spectral regions. Gains are selectable and provide peak responsivity values of approximately 1000 to 100,000 volts per watt. AC coupling between stages may be introduced in order to examine weak high frequency optical signals in the presence of a strong DC optical component.

The TIA-525 electrical bandwidth exceeds 125 MHz in the low and medium gain configurations and exceeds 35 MHz in the highest gain configuration.

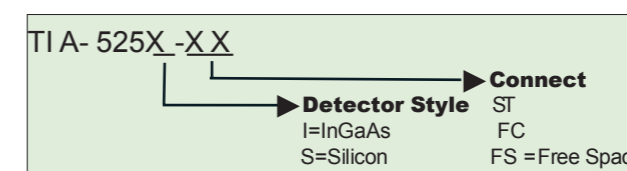
The unit's output stage is fully capable of driving a 50 ohm coaxial cable terminated in its characteristic impedance. Fiber connector options include either ST or FC receptacles. An unconnectorized detector is optionally available so that the unit may be used with free space beams. Powered by an internal 9V Lithium battery, or its universal power supply, the TIA-525 is handy to use and store.

The ease of use and convenience of this instrument are matched only by the high performance-to-price ratio that is typical of products from Terahertz Technologies. It is also backed by our standard two year warranty and guarantee of satisfaction.

TIA-525 Specifications

Detector Type	Silicon or InGaAs (TIA-525S, TIA-525I respectively)
Analog Signal Bandwidth (-3 dB)	DC to 125 MHz (Tr = 1.4 K), DC to 35 MHz (Tr = 14 K)
Selectable Transimpedance settings	1.4 K Ohms, 14 K Ohms
Second Stage Gain Selections	X 1 or X 10
Maximum Linear Input Power	1.2 mW
Maximum Input power without damage	10 mW
Spectral Response	Silicon: 400 to 1000 nm, InGaAs: 850 - 1700 nm
Output Impedance	50 Ohms
Output Connector	Male BNC
Fiber Optic Connector	Specify FC or ST or Free-Space
Input Numerical Aperture	0.29
Inter-stage Coupling	DC or AC (100 Hz Low Frequency Cutoff)
Output Offset Voltage	+/- 0.1 Volt
Noise Level	3.0 pW/ root-Hz at peak responsivity
Maximum Output Voltage	4 V pk-pk, no load, 2 V pk-pk with 50 Ohm Load
Power Requirements	Power Requirements 9 V Battery or supplied universal wall-mount power supply
Battery Life	Approximately 30 hours, (no load)
Wall-mount Supply Power Requirements	95-260VAC, 50 - 60 Hz, 16 VA Max.
Mains Connectors Supplied	North America, British, Continental Europe, Australian
Dimensions (mm)	63 L x 30.5 W x 30 H
Weight	5.6 oz (0.16 Kg)
LED Annunciators Provided	Power On
Operating Temperature Range	0 - 40 C
Standard Warranty	Two Years, Component and Workmanship, 30 Satisfaction Guarantee
Accessories Supplied	Transit Case, Universal Power Supply, 9 V ULTRALIFE Lithium Battery, Manual

To Order



Balanced O/E Converter

TIA-527



Features

- Matched InGaAs detectors
- DC to 125 MHz Analog Bandwidth
- Selectable Gain Settings
- Operates from Battery or Line Power
- Capability to drive 50 Ohm output loads
- Low Noise - 3.6 pW/root-Hz

Applications

- Coherent Heterodyne Detection
- Polarization-Shift-Keying Modulation
- Spectroscopy
- Binary Differential Phase-Shift Keying (2-DPSK)

The TIA-527 balanced optical to electrical converter operates by subtracting the photo currents from two well-matched Indium Gallium Arsenide detectors. The result is then amplified and presented to the output port. Each of the optical signals causes the output to move with a different sense. Common mode signals (e.g. laser RIN noise) are effectively cancelled out.

With selectable gain settings and a bandwidth of DC to 125 MHz this receiver is useful for coherent heterodyne detection applications, differential polarization or phase shifted keying modulation systems, spectroscopy, and similar applications for which the ability to discern small variations in signal strength in two optical paths is critical.

Use of this converter can greatly simplify signal processing requirements downstream from the experiment. Gains of 1400 V/W, 14 000 V/W and 140 000 V/W may be selected as well as selectable AC inter-stage coupling.

The unit is designed to be conveniently mounted on an oscilloscope input BNC connector and may be powered by its internal battery or with the universal wall-mount supply that is provided with each unit.

TIA-527 Specifications

Detector Type	Matched InGaAs
Analog Signal Bandwidth (-3 dB)	DC to 125 MHz (Tr = 1.4 K), DC to 35 MHz (Tr = 14 K)
Selectable Transimpedance settings	1.4 K Ohms, 14 K Ohms
Gain Selections	X 1 or X 10
Maximum Linear Input Power	1.2 mW
Maximum Input power without damage	10 mW
Spectral Response	850 - 1700 nm
Output Impedance	50 Ohms
Output Connector	Male BNC
Fiber Optic Connector	FC
Input Numerical Aperture	0.29
Inter-stage Coupling	DC or AC (100 Hz Low Frequency Cutoff)
Output Offset Voltage	+/- 0.1 Volt
Noise Level	3.6 pW/ root-Hz
Maximum Output Voltage	4 V pk-pk, no load, 2 V pk-pk with 50 Ohm Load
Power Requirements	Power Requirements 9 V Battery or supplied universal wall-mount power supply
Battery Life	Approximately 30 hours, (no load)
Wall-mount Supply Power Requirements	95-260VAC, 50 - 60 Hz, 16 VA Max.
Mains Connectors Supplied	North America, British, Continental Europe, Australian
Dimensions (mm)	63 L x 30.5 W x 30 H
Weight	5.6 oz (0.16 Kg)
LED Annunciators Provided	Power On
Operating Temperature Range	0 - 40 C
Standard Warranty	Two Years, Component and Workmanship, 30 Satisfaction Guarantee
Accessories Supplied	Transit Case, Universal Power Supply, 9 V ULTRALIFE Lithium Battery, Manual

Optical to Electrical Converter

TIA-952



Features

- Large Area InGaAs detector
- 800 MHz Analog Bandwidth
- Selectable Gain Settings
- Universal Power Supply
- Capability to drive 50 Ohm output loads
- For use for Single or Multi Mode Fibers

Applications

- General laboratory testing of optical components
- Field Service Testing and Troubleshooting
- Laser alignment and tuning
- Plasma physics measurements

The TIA-952 optical receiver is a convenient, easy to use O/E converter. It is extremely useful in a variety of laboratory, factory, and field service situations where a quick check of the operation of a laser source, optical transmitter, or the throughput of a fiber optic communications link is required. The unit conveniently mounts directly on the vertical input BNC connector of your oscilloscope, digitizer, or other readout device.

The large area Indium-Gallium-Arsenide detector provided is optimized for use with both single mode and multi mode fibers and covers the 900 to 1700 nm spectral region. Gains are switch selectable and provide peak responsivity values of approximately 500 and 2500 volts per watt. The electrical bandwidth of the TIA-952 exceeds 800 MHz using the low gain setting and exceeds 300 MHz in the high gain mode.

The units output stage is fully capable of driving a 50 ohm coaxial cable terminated in its characteristic impedance. Fiber connector options include either ST or FC receptacles. Powered by a universal wall mount power supply (90 - 260 VAC, 50-60 Hz with four mains adaptors) , the TIA-952 is handy to use and store.

The ease of use and convenience of this instrument are matched only by the high performance-to-price ratio that is typical of products from Terahertz Technologies. It is also backed by our standard two year warranty and guarantee of satisfaction.

TIA-952 Specifications

Detector Type	Large area InGaAs
Analog Signal Bandwidth (-3 dB)	30 KHz to 800 MHz, Low gain, 30 KHz to 300 MHz High Gain
Selectable Responsivity Settings	500 V/W or 2500 V/W @ 1550 nm when terminated in a 50 Ohm Load
Maximum Linear Input Power	2 mW
Maximum Input power without damage	15 mW
Spectral Response	InGaAs: 850 - 1700 nm
Output Impedance	50 Ohms
Output Connector	Male BNC
Fiber Optic Connector	Specify FC or ST
Input Numerical Aperture	0.29
Input fiber accomodated	9um Single mode or 50/125 & 62.5/125um multi-mode
Output Offset Voltage	N/A Volts
Noise Level	9.5 pW/ root-Hz at peak responsivity
Maximum Output Voltage	Low gain, 2.0 V pk-pk, High Gain 4 V pk-pk, (Into 50 Ohms)
Power Requirements	Supplied wall-mount universal power supply
Wall-mount Supply Power Requirements	90-260VAC, 50 - 60 Hz, 16 VA Max.
Mains Connectors Supplied	North America, British, Continental Europe, Australian
Dimensions (mm)	63 L x 30.5 W x 30 H
Weight	(0.16 Kg)
LED Annunciators	Provided Power On
Operating Temperature Range	0 - 40 C
Standard Warranty	Two Years, Component and Workmanship, 30 Satisfaction Guarantee
Accessories Supplied	Transit Case, Universal Power Supply, 9 V ULTRALIFE Lithium Battery, Manual

Optical to Electrical Converter

TIA-1200



Features

- Large Area InGaAs detector
- DC to 14GHz Bandwidth
- 900-1700nm
- Universal Power Supply
- Capability to drive 50 Ohm output loads

Applications

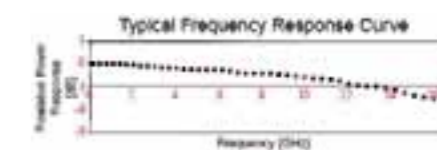
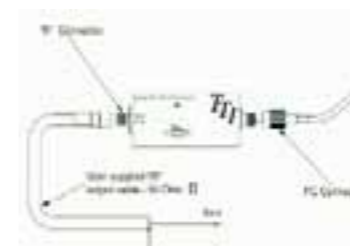
- General laboratory testing of optical components
- Field Service Testing and Troubleshooting
- Laser alignment and tuning
- Plasma physics measurements

The TIA-1200 Optical to Electrical Converter is a wide-band detection system for fiber optic applications. With a typical bandwidth of DC to 14 GHz (min 12 GHz), it accurately provides an electrical replica of the optical signal presented to it. It is intended to drive a 50 ohm cable terminated in its characteristic impedance.

The unit is equipped with an InGaAs/InP detector that is responsive in the wavelength range of 900 - 1700 nm. The TIA- 1200 is provided with an FC or FC/APC fiber optic receptacle. The output signal is presented to a type K SMA female connector.

The TIA-1200 detector is 50 microns in diameter. Optionally, it may be ordered with a 50 micron fiber, thus allowing both singlemode and multimode sources to be tested without incurring excessive coupling losses.

Typical optical return loss is 35 dB and is caused primarily by the FC/PC connector employed. If higher return loss is needed, The unit may be optionally equipped with singlemode angled PC connectors for ORLs of around 52 dB.



TIA-1200 Specifications	
Detector Type	InGaAs/InP (900-1700nm)
Current Responsivity	0.8 A/W @ 1550nm Typical
Maximum Linear Input Power	3mw
Maximum Input Power without Damage	10mw
Bandwith-(3dB)	DC to 14GHz Typical, 12 GHz Minimum
Output Impedance	50 Ohms
Output Connector	Type K SMA Female
Fiber Optic Input Connector	FC or FC/APC
Input Numerical Aperture	0.11
Optical Return Loss	>35dB, >52dB with APC Connection
Power	Universal Power Supply
Dimensions	1.2"W x 2.5"L x 1.5"H (30.5mm x 63mm x 38mm)
Weight	5.6 oz (0.16 Kg)
LED Annunciators Provided	Power On
Operating Temperature Range	0 - 40 C
Standard Warranty	Two Years, Component and Workmanship, 30 Day Satisfaction Guarantee
Accessories Supplied	Transit/Storage Case, Operating Manual, Universal Power Supply

Optical to Electrical Converter

TIA2000



Features

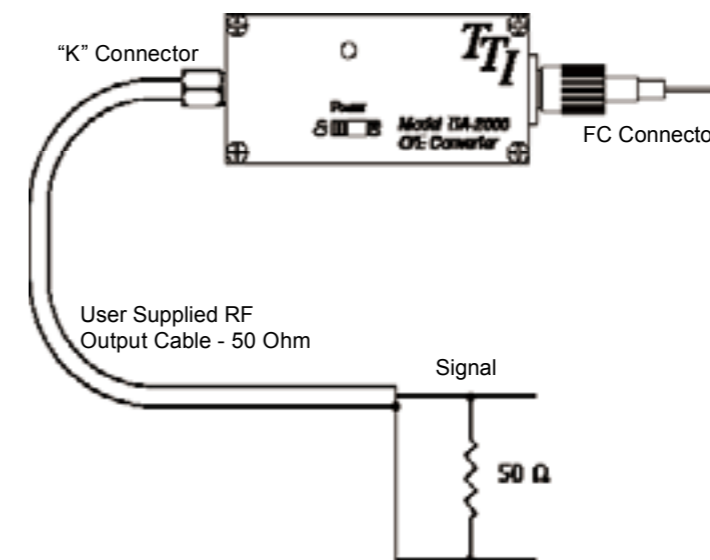
- DC to 20 GHz Bandwidth typical, 18 GHz min
- Spectral Response 1260 - 1620 nm
- Universal Power Supply
- Two Year Warranty

Applications

- RF over fiber links
- System Characterization
- 20 GHz digital and analog links
- High speed test and measurement

The TIA-2000 Optical to Electrical Converter is a high speed photodetector module designed for direct optical-to-electrical conversion of RF-modulated optical signals and provides a typical bandwidth of DC-20 GHz. The optical input is supplied through a singlemode 9/125 fiber connector equipped with an ultra-polish FC-PC connector or optionally an angle polished, low reflection FC/APC connector. The RF output of the device is provided through a high performance SMA connector. The typical optical responsivity is 22 V/W at 1550 nm when the unit is terminated with a 50 ohm load.

Typical Setup of the TIA-2000



TIA-2000 Specifications

TIA-2000 Specifications	
Detector Type	InGaAs/InP (1260-1620nm)
Current Responsivity	0.8 A/W @ 1550nm Typical
Maximum Linear Input Power	3mw
Maximum Input Power without Damage	10mw
Bandwith-(3dB)	DC to 20 GHz Typ, 18 GHz min.
Output Impedance	50 Ohms
Output Connector	Type K SMA Female
Fiber Optic Input Connector	FC/UPC or FC/APC
Input Numerical Aperture	0.11
Optical Return Loss	>35dB, >52dB with APC Connection
Electrical Return Loss	10 dB
Power	Universal Power Supply
Dimensions	1.2"W x 2.5"L x 1.5"H (30.5mm x 63mm x 38mm)
Weight	5.6 oz (0.16 Kg)
LED Annunciators Provided	Power On
Operating Temperature Range	0 - 40 C
Standard Warranty	Two Years, Component and Workmanship, 30 Day Satisfaction Guarantee
Accessories Supplied	Transit/Storage Case, Operating Manual, Universal Power Supply

Optical to Electrical Converter

TIA-3000



Features

- Wavelength Response 900nm to 1700nm
- Low Noise, High Gain
- Responsivity 450V/W
- Bandwidth- 11 GHz (SM)
- Type K SMA Output Electrical Connector
- FC/UPC Style Fiber Optic Input Connector

Applications

- General Laboratory Testing of Optical Components
- Front-End O/E Converter For Test Instruments
- Rapid Doppler-Shift LIDAR Measurements
- Analog RF Links Over Fiber

The TIA-3000 is a versatile Optical to Electrical converter for laboratory or field use. This low profile O/E converter will faithfully reproduce an optical signal on a wide range of oscilloscopes and digitizers.

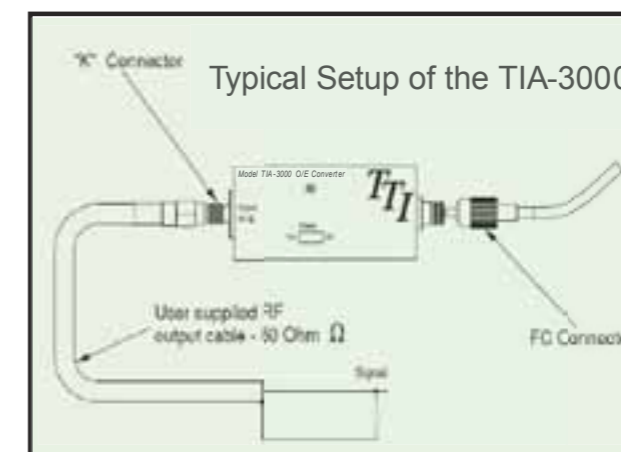
The unit is equipped with an InGaAs/InP detector that is responsive in the wavelength range of 900 - 1700 nm. The TIA-3000 bandwidth ranges from 30KHz to 10GHz (-3dB).

Applications for this converter include the General purpose testing of fiber optic components, data links and transmitter testing, LIDAR and analog RF-over-fiber links.

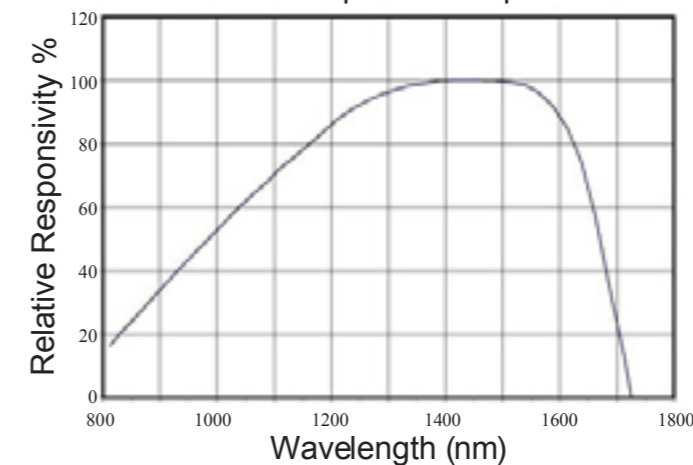
The TIA-3000 like other Terahertz Technologies Inc. TIA O/E devices are shipped in a hard case with universal power supply that has interchangeable AC plugs.

TIA-3000 Specifications

Detector Type	InGaAs/InP (900nm-1700nm)
Current Responsivity	0.8 A/W @ 1550nm Typical
Maximum Linear Input Power	2mw
Maximum Input Power without Damage	3mw
Bandwith@1550nm Typ.	11 GHz
Output Impedance	50 Ohms
Output Connector	Type K SMA Female
Fiber Optic Input Connector	FC/UPC
Input Numerical Aperture	0.11
Noise Figure	3dB
Detector Optical Return Loss @1550nm Typ.	30dB
Power	Universal Power Supply
Dimensions	1.2"W x 2.5"L x 1.5"H (30.5mm x 63mm x 38mm)
Weight	5.6 oz (0.16 Kg)
LED Annunciators Provided	Power On
Operating Temperature Range	0 - 40 C
Standard Warranty	Two Years, Component and Workmanship, 30 Day Satisfaction Guarantee
Accessories Supplied	Transit/Storage Case, Operating Manual, Universal Power Supply



TIA-3000 Spectral Response



Photodiode Transimpedance Amplifier

PDA-750



Features

- Eight Decade Dynamic Range
- Less Than 1 pA Noise
- Maximum Resolution 1 part in +/- 20 000
- Rechargeable Ni-mH Batteries for Low Noise
- Digital Input of A/W value yields readout in Watts
- Computer Interface for easy control
- Background Cancelation of +/- 200 %
- Digitally set bias source from -14.00 tp +14.00 V

The PDA-750 is a low noise, high gain, transimpedance amplifier designed to provide a direct digital readout of the current generated from a photodiode photomultiplier, or other similar current source. With full scale input ranges of ± 20 nA to ± 20 mA and a noise level of less than 1 pA, the PDA-750 offers superb dynamic range.

Digital entry of an Amps/Watt setting via the front panel controls permits the instrument to display current measurements in units of Watts. The A/W setting ranges from 1.000 to 0.100.

A variable bias supply is built into the instrument and may be switched into series with the device under test. It can supply digitally selectable voltages ranging from -14.00 to + 14.00 volts.

The Offset control permits the nulling of background signals as large as $\pm 200\%$ of the range currently in use.

Rechargeable batteries isolate the unit from the mains and eliminate the effects of ground loops and/or power line noise that may be present during sensitive measurements. They will power the instrument for approximately 10 hours between charges. The unit may be operated normally while the batteries are charging.

The large 4 1/2 digit Liquid Crystal Display provides a maximum resolution of 1 part in $\pm 20,000$, thus enabling the detection of very small changes in the signal under test.

An analog output port provides a ± 2 Volt full-scale signal that is directly proportional to the display reading of $\pm 20,000$ counts.

The PDA-750 is equipped with a bi-directional Rs-232 serial port that enables the user to remotely control the instrument and read data and the instrument's status.

Applications for the PDA-750 include: serving as a precision readout device for Unity Quantum Efficient detectors such as the QED-150 manufactured by UDT Instruments, characterization of detector dark current, a readout interface for spectrometers, spectral calibration of detectors, a high gain precision transimpedance amplifier and as a sensitive, high precision optical power meter.

The ease of use and convenience of this instrument is typical of TTI products. This instrument is covered by our standard two year limited warranty and guarantee of satisfaction.

PDA-750 Photodiode Amplifier Specifications	
Full Scale Ranges	± 20 nA to ± 20 mA in decade steps, 1 pA maximum resolution
Measurement Uncertainty	± 0.05 % of Reading ± 2 Least Significant Digits
Maximum Input Current Without Damage	± 25 mA
A/W Setting	0.100 to 1.000 A/W in increments of .005 A/W
Input Impedance (DC to 2 KHz)	Zero Ohms Virtual Ground, Single Ended
Input Capacitance	25 pF
Output Impedance	100 Ohms
Bias Voltage	Selectable from - 14 V to + 14 V in 6.5 mv increments
Analog Output Port	± 2 V corresponds to ± 20 000 counts of range in use
Noise and Drift	$< \pm 1$ pA/5 seconds on most sensitive range
Background Cancelation	± 200 % of the range in use
Analog Output Port Frequency Response	DC to 2 KHz, most sensitive range, DC to 40 KHz, least sensitive range
Rs-232 Interface	9600 Baud, N-8-1, 3 wire, Bi-directional, Cable Provided
Display	4 1/2 Digit LCD, 0.4 " high
Power Requirements	Rechargeable Ni-mH batteries provide approximately 10 hours of use
External Power Supply/Charger	85 - 250 VAC, 50-60 Hz, < 9 VA
Mains Adaptors	Adaptors provided for US, Continental Europe, Great Britain and Australia
Operating Temperature Range	0 - 40 C
Dimensions	5.5" W x 2.5" H x 8.5" L (140 x 63 x 215 mm)
Weight	2 Lbs., 0.9 kg (excluding external power supply)
Interconnecting cable supplied	Rs-232, 14 feet max length
CE Certification	Yes
Accessories Provided	Rs-232 cable, Power Supply/Charger, Operating Manual
Standard Warranty	Two years, Components and Workmanship, 30 Day Satisfaction Guarantee
Application Software Provided	Downloadable from TTI website, www.terahertztechnologies.com

1500 Series Power Meters And Light Sources

Features

- Automated loss measurements for three wavelengths
- Auto wavelength switching
- Universal Power Meter and Light Source adapters FC/ST and SC
- Power Meter with -75 dBm Dynamic Range
- Single port Laser source with up to three wavelengths
- Storage for 2000 triple wavelength loss measurements
- Rechargeable Li polymer 9V battery
- USB interface
- Free Windows® compatible report software
- Reference level storage



The 1500 series are small, rugged automated fiber optic Power Meters and single port Light Sources available in single, dual or triple wavelengths. The power meter uses a sensitive InGaAs detector, calibrated at six wavelengths with a 75 dB dynamic range.

When PM-1500 power meter and LS-1500-X light sources are used together, they can operate in autotest mode where the Light Source changes wavelengths at a fixed rate and informs the Power Meter of the wavelength currently being measured. Up to 2000 triple wavelength measurements may be stored and recalled via the unit's USB port or from the front panel. Windows® compatible PC application software is provided for downloading stored data and printing professional reports.

The Light Source has a selectable single port output for constant wave or modulated wave signal. The Power Meter performs fiber identification functions with the modulation mode of the LS-1500-X or any other light source with modulation frequencies of 270, 1000 or 2000 Hz. Power is obtained from a rechargeable lithium polymer battery. Both units are supplied with a universal power supply, and in a pinch, any common 9V alkaline battery may be used.

Accessories included with both power meters and light sources are heavy duty case, protective rubber boot with stand, adaptors for FC, ST or SC connectors, universal power supply/ charger, and manual. The power meter is also supplied with a CD containing application software and operating instructions plus a USB cable. All power meters and light sources carry a two year, components and workmanship warranty and a 30 Day Satisfaction Guarantee.

Ordering Information

Singlemode Light Sources	
LS-1500-3	1310nm Singlemode Light Source
LS-1500-4	1490nm Singlemode Light Source
LS-1500-5	1550nm Singlemode Light Source
LS-1500-35	1310/1550nm Singlemode Light Source
LS-1500-345	1310/1490/1550nm Singlemode Light Source

Power Meters	
PM-1500	Power Meter
PM-1500C	CATV Power Meter

Multi-Mode Light Source	
LS-1500-813	850/1300nm Multi-Mode Light Source

1500 Series Specifications	
Power Meter Specifications	
Power Meter Detector Type	InGaAs
Calibrated Wavelengths	850, 1300, 1310, 1490, 1550, 1625 nm
Units of Measurement	dBm, dB,
Resolution	0.01dB
Power Input Range	+5 dBm to - 77 dBm (CATV +25 dBm to -57dBm)
Power Measurement Uncertainty	± 0.18 dB under reference conditions, ± 0.25 dB from 0 to -65 dBm, ± 0.35 dB from 0 to +5 dBm and from -65 to -77 dBm
Autotest Measurement Rate	Four seconds per wavelength
Autotest Range	0 to - 36 dB
Storage Locations	2000
Battery/Operating Time	Rechargeable Li Polymer/Approximately twenty hours following a full charge
Power Supply / Charger	Universal, US, UK, Continental Europe, and Australian Plugs Included
Power Requirements	95-260 VAC, 50-60 Hz, 3 VA Max
Operating Temperature Range	-10 to 45 C
Storage Temperature Range	Equipment -10 to 60C, Battery 0-40C
Dimensions (with rubber boot)	5.9" L x 3.9" W x 1.37" H (150mm L x 100mm W x 35mm H)
Weight	0.52 Kg
Accessories Provided	FC, ST, SC adaptors, rubber boot, battery, power supply/charger, manual, USB Cable, PC application. Software
Light Source Specifications	
Laser Output Power	0 dBm, 1 mw
Output Stability	± .05 dB / 24 hrs @ constant temp., ± .02 dB/C temperature coefficient
Laser Wavelengths Provided	850nm, 1300nm, 1310 nm ± 20 nm, 1490 ± 20 nm, 1550 ± 20 nm
Spectral Width	< 3nm typ.
Modulation Modes	CW, 270 Hz, 1000 Hz, 2000 Hz
Autotest Measurement Rate	Four seconds per wavelength
Laser Safety Classification.	Class I safety per FDA/CDRH and IEC-825-1 regulation
Battery	Rechargeable Li Polymer
Operating Time	Approximately fifteen hours following a full charge
Power Supply / Charger	Universal, US, UK, Continental Europe, and Australian Plugs Included
Power Requirements	95-260 VAC, 50-60 Hz, 3 VA Max
Operating Temperature Range	-0 to 40 C
Storage Temperature Range	Equipment -10 to 60C, Battery 0-40C
Dimensions (with rubber boot)	5.9" L x 3.9" W x 1.37" H (150mm L x 100mm W x 35mm H)
Weight	0.52 Kg
Accessories Provided	FC, ST, SC adaptors, rubber boot, battery, power supply/Charger, manual

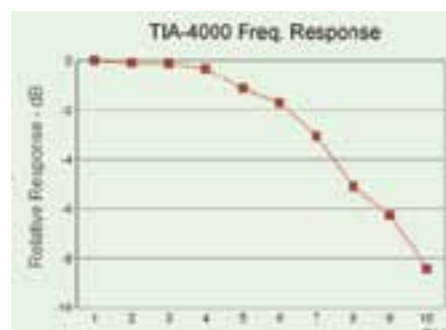
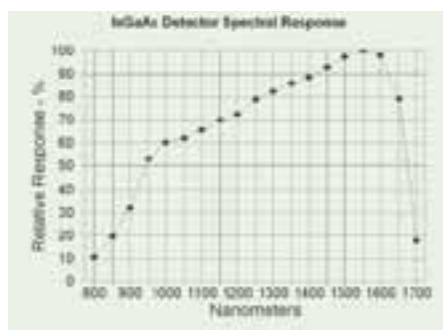
Optical Oscilloscope Probe

**TIA-4000
O/E Converter**



Benefits

- Wavelength Response 950 nm to 1650 nm
- Low Noise, High Gain
- Gain Settings from 2 to 7
- Bandwidth 30 KHz to 7 GHz typical
- SMA type K Output Electrical Connector
- FC/APC Style Fiber Optic Input Connector



The TIA-4000 is comprised of a fiber coupled InGaAs APD detector combined with a variable reverse bias voltage network and fast transimpedance amplifier. The output of the unit brought out to a type K female SMA connector. Light falling on the detector generates a positive-going proportional current. This current, multiplied by the transimpedance produces a voltage that is proportional to the light incident on the detector surface.

Normally the unit is used to drive a coaxial cable, this cable should have a 50 ohm characteristic impedance and be terminated with a 50 ohm load at the oscilloscope or other measuring device to be used.

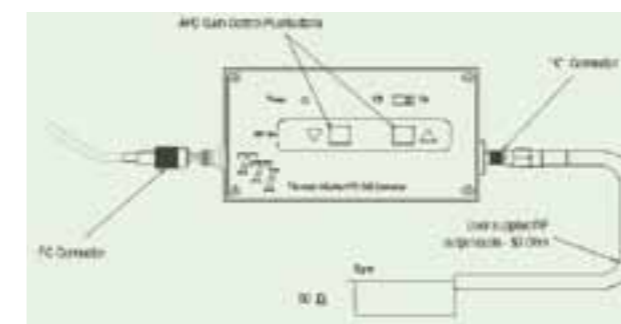
The active area of the TIA-4000 is 30 microns in diameter. It is coupled to a single mode optical fiber. Typical optical return loss is 52 dB and is caused primarily by the FC/APC connector employed.

The applied bias voltage controls the gain of the APD. This voltage in turn, is controlled by means of the two push buttons on the top panel. The rightmost button increases the gain and the leftmost button decreases the gain. There are 64 discrete gain settings that are retained in non-volatile memory when the power is turned off. Thus the gain setting will be retained even though power is disconnected from the unit.

Pressing a button once causes the unit to advance in the selected direction by one step. Holding the button down causes the unit to advance automatically until a limit is reached.

TIA-4000 Specifications

Detector Type	InGaAs/InP APD
Bandwidth (-3 dB)	30 KHz to 7 GHz typical
Transimpedance Gain	500 Ohms
Spectral Response	(950-1650) Gain 2 - 7
Maximum Linear Input Power	1 mW Max.
Maximum Input power without damage	5 mW, +3 dBm
Sensitivity	-25 dBm @ 10-12BER, 231-1 PRBS
Output Impedance	Terminate in 50 Ohms
Output Connector	Type K SMA female
Fiber Optic Connector	FC-APC or FC-PC
Input Numerical Aperture	0.11
Optical Return Loss	Typ. 30dB
Power Requirements	120/240 VAC, 50-60Hz
Wall-mount Supply Power Requirements	95-260VAC, 50 - 60 Hz, 16 VA Max.
Mains Connectors Supplied	North America, British, Continental Europe, Australian
Dimensions	4.0" L, 2.5" W, 1.2" H, (102 , 63 , 31 mm)
Weight	5 oz., 150 g.
LED Annunciators Provided	Power On
Operating Temperature Range	0 - 40 C
Standard Warranty	Two Years, Component and Workmanship, 30 Satisfaction Guarantee
Accessories Supplied	Transit Case, Universal Power Supply, Manual



Operating Considerations

The TIA-4000 is comprised of a fiber coupled InGaAs APD detector coupled with a variable reverse bias voltage network and fast transimpedance amplifier. The output of the unit brought out to a type K female SMA connector. Light falling on the detector generates a positive-going proportional current. This current, multiplied by the transimpedance produces a voltage that is proportional to the light incident on the detector surface.

Normally the unit is used to drive a coaxial cable, this cable should have a 50 ohm characteristic impedance and be terminated with a 50 ohm load at the oscilloscope or other measuring device to be used. The active area of the TIA-4000 is 30 microns in diameter. It is coupled to a single mode optical fiber. Typical optical return loss is 52 dB and is caused primarily by the FC/APC connector employed.

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Pressing a button once causes the unit to advance in the selected direction by one step. Holding the button down causes the unit to advance automatically until a limit is reached.



Optical Time Domain Reflectometer

FTE7500

Features

- Instant On
- Fast Real time
- 32 dB Dynamic Range
- Event Table with Pass/Fail Feature
- Short Dead Zone
- SM, MM and Quad Units Available
- One Button Testing
- Trace Overlay Capability
- Onboard Memory for 1000 traces
- Integrated Auto-Wavelength Loss Test Set
- Visible Fault Locator
- USB Flash Drive Port and Mini USB Port
- On-Screen Tutorials
- Light Weight Rugged Enclosure
- Easy To Read Color Display
- Telcordia SR4731 Compatible Software Included
- Long Battery Life



The TTI Future Gen OTDR is fast, easy to use, affordable and rugged. This OTDR boasts all the features that are truly needed in a hand-held OTDR. It has a short dead zone, bright 4" color display and with an onboard context sensitive help system the OTDR has a minimal learning curve for all users. The 1/2 second trace updates and great dynamic range make this unit perfect for maintenance and trouble shooting. All these aspects of the Future Gen OTDR are what makes it ideal for every day use in the field on a wide variety of networks. This OTDR can be operated by the novice while at the same time be appreciated by the seasoned user.

The FTE-7500 is sold in a variety of configurations and is standard in dual single mode, dual multimode and quad wavelength configurations. Use the Autotest button for one button testing. Examining the trace is easy using the straight forward zoom feature, A/B cursor selection button and touch-wheel. Move to events easily by pressing the select button while in trace view or with an event highlighted in the Event Analysis screen. The Future Gen OTDR's abundant dynamic Range and a 2 meter dead zone, makes it ideal for links up to 240km as well as being perfect for short LAN links within the facility. The TTI FTE-7500 weighs in at less than 2.0 pounds with a hardened water resistant enclosure, this OTDR is great for all conditions. The rubber boot with bail will add protection and provides the ideal angle for viewing the display while operating on a work bench. Trace analysis and reporting is fast and easy with a Pass/Fail feature, onboard event table and the supplied Telcordia SR4731 compatible software with multi-trace capability. The OTDR has on board storage of 1000 traces with the ability to download traces directly to your computer via USB cable or use a USB Flash Drive. Use the integrated power meter and light source capabilities to accomplish insertion loss test measurements. When paired with our companion power meter or light source the units have auto-wavelength and auto-test capabilities for advanced end to end measurements.



File Management Screen (FMS)



Trace Analysis Screen



Printout from Report Software

FTE7500-OTDR Specifications

Wavelength	850, 1300, 1310, 1550, 1625nm ±20nm
Dynamic Range	27/26dB MM, 32/30dB SM, 30/29/29 TRI
Pulse Width	20 - 10,000 ns
Units of Measurement	km, kf
Event Dead zone	2m
Attenuation Dead Zone	5m
Resolution	.25 - 64m
Distance Uncertainty	±(0.75m + 0.005% x distance + sampling resolution)
Full Scale Distance Range	1-64km MM , 1-240km SM
Typical Real-time Refresh Rate	4 Hz
Group Index of Refraction (GIR)	1.024 - 2.048
Linearity	± .05 dB/dB
Memory Capacity	1000
Memory Type	Internal and Flash Drive
Power Supply / Charger	Universal
Battery	8hr
Storage Temperature	-20 to 60 C
Operating Temperature Range	-10 to 50 C
Dimensions (w/out rubber boot)	7.75" L x 4.5" W x 2.25" H (197mm L x 114mm W x 57mm H)
Weight	2 lbs
Communications ports	USB and USB Flash Drive Ports
Connector Styles	FC, ST, SC Interchangeable
Accessories Provided	Universal Power Adapter w/US, UK, Continental Europe, and Australian Plugs, Interchangeable FC/ST and SC Adapters, Windows/Telcordia SR4731 Software, Rubber Boot

TTI reserves the right to change specifications without notice.

Visible Light Source

Emitter Type	Laser
Wavelength	650nm ±5nm
Laser Safety	Class Class IIFDA21 CFR1040.10 & 1040.11 IEC 825-1: 1993
Connector Type	2.5mm Universal
Output Power	1mW Max.

Light Source Specifications

Fiber Type	Single mode
Wavelengths	850, 1300, 1310, 1550, 1625 nm ±20nm
Output Power	0 dBm (-3dBm @ 1625nm)
Laser Safety	Classification Class I Safety Per FDA/CDRH and IEC-825-1 Regulation
Modulation Modes	CW, 270 Hz, 1000 Hz, 2000 Hz

Power Meter Specifications

Detector Type	InGaAs
Connector Type	2.5mm Interchangeable
Dynamic Range	+5 to -77dB
Calibrated Wavelengths	850,1300,1310,1490,1550,1625nm
Units of Measurement	dBm, dB
Resolution	.01 dB
Power Measurement Uncertainty	± 0.18 dB under reference conditions, ± 0.25 dB from 0 to -65 dBm, ± 0.35 dB from 0 to +5 dBm and from -65 to -77 dBm
Power input Range	+5 to -77dBm
Autotest Range 0 to	-40dB

Spectroscopes
 CCD Cameras
 Imaging
 Semiconductors
 Communications
 Lighting
 Solar Cells
 Tests
 Instruments
 Sensors
 Detection
 Components
 Mechanics
 Positioning
 Lasers
 Light Sources

Fiber Optic Product



Viper Optical Time Domain Reflectometer

FTE7000

Features

- Most Affordable OTDR on the Market
- Short Dead Zone
- 32 dB Dynamic Range
- Integrated Loss Test Set
- Ultra Fast Trace Acquisition
- One Button Testing
- Short Dead Zone
- Trouble Shooting with VFL
- Event Table with Pass/Fail Feature
- Trace Comparison with Trace Overlay
- Super Simple Graphical User Interface
- Easy Training with Onboard Help Screens
- Telcordia Compatible Software Included
- Light Weight Rugged Enclosure
- SM and MM Units Available
- Onboard Memory for 1000 traces
- Easy To Read Color Display



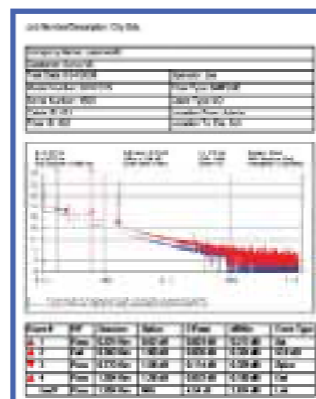
The FTE-7000 Viper OTDR is the most affordable Hand- Held OTDR on the Market today with all of the features of more expensive units. Features such as Trace Overlay, Visual Fault Locator, Loss Test Set, Color Display, One Button Autotest and Event Analysis are included. These are features one would expect to find on units costing thousands more. This OTDR can be operated by the novice while at the same time appreciated by the seasoned user.

This unit is available in dual single mode, dual multimode and single wavelength versions Testing is made simple and fast with the press of the Auto Test button. Examine the trace using the straight forward zoom feature and A/B cursor selection button. Zero in on events fast with the powerful event selection feature or with the event analysis table.

The FTE-7000 OTDR's abundant dynamic range and a 2 meter dead zone, makes it ideal for links up to 240km as well as being perfect for short LAN links within the facility. Weighing in at just over one and a half pounds, this OTDR is ideal for all conditions. The rubber boot with bail adds protection and provides the ideal angle for viewing the display while operating on a work bench.

Use the integrated power meter and light source capabilities to accomplish insertion loss test measurements. When paired with our companion power meter or light source the units have auto-wavelength and auto-test capabilities for advanced end to end measurements.

Trace analysis and reporting is fast and easy with the Pass/ Fail feature, onboard event table or the supplied Telcordia SR4731 compatible software with multi-trace capability. The OTDR has on board storage of 1000 traces and 10,000 lost tests with the ability to download traces directly to your computer via USB cable.



The FTE-7000 is shipped with Telcordia compatible software for easy report generation

Viper-OTDR Specifications:	
Wavelength	850, 1300, 1310, 1550, ±20nm
Dynamic Range	27/26dB MM, 32/30dB SM (FTE-7000E-1310 30dB)
Pulse Width	20 - 10,000 ns
Units of Measurement	km, m
Event Dead zone	2m
Attenuation Dead Zone	5m
Resolution	.25 - 64m
Distance Uncertainty	±(0.75m + 0.005% x distance + sampling resolution)
Full Scale Distance Range	1-84km MM, 1-240km SM
Typical Real-time Refresh Rate	4 Hz
Group Index of Refraction (GIR)	1.024 - 2.048
Linearity	± .05 dB/dB
Memory Capacity	1000
Memory Type	Internal
Power Supply / Charger	Universal
Battery	4hr
Storage Temperature	-20 to 60 C
Operating Temperature Range	-10 to 50 C
Dimensions (without rubber boot)	7.62" L x 3.88" W x 1.58" H (194mm L x 99mm W x 40mm H)
Weight	1.6 lbs.
Communications ports	USB
Connector Styles	FC, ST, SC Interchangeable
Accessories Provided	Universal Power Adapter w/ US, UK, CE, and AU Plugs, Interchangeable FC/ST and SC Adapters, Windows/Telcordia SR4731 Software, Rubber Boot, USB Cable, Manual

TII reserves the right to change specifications without notice.

Ordering Information:	
FTE-7000-850	Multimode OTDR 850nm WLTS
FTE-7000-1300	Multimode OTDR 1300nm WLTS
FTE-7000-8513	Dual Multimode OTDR 850/1300nm WLTS
FTE-7000-1310	Single mode OTDR 1310nm WLTS
FTE-7000-1550	Single mode OTDR 1550nm WLTS
FTE-7000-1315	Single mode OTDR 1310/1550nm WLTS
FTE-7000E-1310	Economy SM 1310 OTDR (No VFL or LTS)
FTE-7000-BC	Auxiliary Charger Kit

Visible Light Source	
Emitter Type	Laser
Wavelength	650nm ±5nm
Laser Safety Class	Class II/FDA21 CFR1040.10 & 1040.11 IEC 625-1: 1993
Connector Type	2.5mm Universal
Output Power	1mW Max.

Power Meter Specifications: Optional	
Detector Type	InGaAs
Connector Type	2.5mm Interchangeable
Dynamic Range	+5 to -77dB
Calibrated Wavelengths	850, 1300, 1310, 1490, 1550, 1625nm
Units of Measurement	dBm, dB
Resolution	.01 dB
Power Measurement Uncertainty	+/- 0.10 dB under reference conditions, +/- 0.20 dB from 0 to -40 dBm, +/- 0.25 dB from 0 to +0 dBm and from -60 to -77 dBm
Power input Range	+5 to -77dBm
Autotest Range	0 to -45dB

Light Source Specifications: Optional	
Fiber Type	Single mode
Wavelengths	850, 1300, 1310, 1550, 1625 nm ±20nm
Output Power	0 dBm (-3dBm @ 1625nm)
Laser Safety Classification	Class I Safety Per FDA/CDRH and IEC-825-1 Regulation
Modulation Modes	CW, 270 Hz, 1000 Hz, 2000 Hz

TII reserves the right to change specifications without notice.



File Management



Event Table

1500 Series Fiber Optic Loss Test Equipment

Features

- Automated loss measurements
- Auto wavelength switching
- Up to three Wavelengths in one source
- Interchangeable Power Meter adapters
- Interchangeable Light Source adapters
- Power Meter with 80+ dB Dynamic Range
- Single port laser source
- Storage for 2000 multi wave test
- Rechargeable Li polymer 9V battery
- USB interface
- Free Windows® compatible report software



1500 Series Loss Test Equipment The 1500 is available as a Loss Test Set or as a stand alone Power Meter or Light Source.

InGaAs Power Meter InGaAs based optical power meter calibrated at six wavelengths and has an +5 to -77 dBm measurement range.

Auto Test In the Autotest mode, the master unit changes wavelengths at a fixed rate and informs the slave unit of the wavelength currently being measured.

Auto Wavelength Recognition The Power Meter recognizes the wavelength being tested to help eliminate costly errors.

Available Wavelengths The stabilized laser light source has up to three selectable wavelengths and the power meter is calibrated at 850, 1300, 1310, 1490, 1550 and 1625nm.

Small Size and Rugged The 1500 Series is built into a very small package that is rugged and lightweight.

Fiber Identification The units also performs fiber identification functions with modulation frequencies of 270, 1000 and 2000 Hz.

Power Options Power is obtained from a rechargeable lithium polymer battery or in a pinch, any common 9V alkaline battery.

Test Storage Store up to 2000 three wavelength tests and download the information to your PC via USB with the supplied Windows™ compatible software



Purchase as a Loss Test Set or as Power Meters and Light Sources Kits

Specifications

Power Meter	
Power Meter Detector Type	InGaAs
Measurement Range	+5 dBm to - 77 dBm (CATV +25 dBm to -57dBm)
Calibrated Wavelengths	850, 1300, 1310, 1490, 1550, 1625 nm
Units of Measurement	dBm, dB,
Resolution	0.01dB
Power Measurement Uncertainty	± 0.18 dB under reference conditions, ± 0.25 dB from 0 to -65 dBm, ± 0.35 dB from 0 to +5 dBm and from -65 to -77 dBm
Auto Test Range	0 to -36 dB
Storage Locations	2000
Light Source	
Laser Output Power	0 dBm, 1mw
Output Stability	± .05 dB / 24 hrs. @ constant temp., ± .02 dB/C temperature coefficient
Laser Wavelengths Provided	850nm, 1300nm, 1310 nm , 1490, 1550 (± 20 nm)
Modulation Modes	CW, 270 Hz, 1000 Hz, 2000 Hz
Laser Safety Classification	Class I safety per FDA/CDRH and IEC-825-1 regulation
General	
Display	LCD, power reading, 0.4" high digits, .01 dB resolution Power meter, laser wavelength display 0.16" high digits
Battery/Operating Time	Rechargeable Li Polymer/Approximately fifteen hours following a full charge (Power Meter only approx. twenty hours)
Power Supply / Charger	Universal, US, UK, Continental Europe, and Australian Plugs Included
Power Requirements	95-260 VAC, 50-60 Hz, 3 VA Max
Operating Temp. Range	-10 to 40 C
Storage Temp. Range	Equipment -10 to 60C - Battery-10 to 40 C
Dimensions (with boot)	5.9" L x 3.9" W x 1.37" H (150mm L x 100mm W x 35mm H)
Weight	0.52 Kg
Accessories Provided	FC, ST, SC adaptors for both PM and LS, rubber boot, battery, Power supply/Charger, manual , USB Cable, PC application software

TTI reserves the right to change specifications without notice

Ordering Information

PM-1500	Auto Wave Power Meter +5 dBm to - 77 dBm	PM-1500C	CATV Auto Wave Power Meter +25 dBm to -57dBm
Loss Test Set		Light Source	
LTS-1500-813	Loss Test Set with 850/1300nm Light Source	LS-1500-813	850/1300nm Multi-Mode Light Source
LTS-1500-3	Loss Test Set with 1310nm Light Source	LS-1500-3	1310nm Singlemode Light Source
LTS-1500-5	Loss Test Set with 1550nm Light Source	LS-1500-5	1550nm Singlemode Light Source
LTS-1500-35	Loss Test Set with 1310/1550nm Light Source	LS-1500-35	1310/1550nm Singlemode Light Source
LTS-1500-345	Loss Test Set with 1310/1490/1550nm LS	LS-1500-345	1310/1490/1550nm Singlemode LS

For Loss Test Set, add a "C" for CATV version. Ex: LTS-1500C-3

FTE-4000 Variable Optical Attenuator

Features

- Up to 80 dB Attenuation
- Built in Level Control
- Typical Insertion Loss <2dB
- Remotely Program Sweep Settings
- Adjustable step sizes
- USB PC Interface w/Remote Operation
- Absolute/Relative Attenuation Settings
- Calibrated at 1310/1550
- Sealed Rugged Case
- Lowest Cost Hand Held VOA
- 4" Color Display



TTI Hand Held Variable Optical Attenuator The FTE-4000 is available in two models, with 40 dB attenuation level or 80 dB attenuation level to meet single mode needs.

Onboard help system As with all of our advanced test equipment the LTS has an onboard help feature.

Applications The FTE-4000 can assist in the testing of system budget compliance, balancing transmitter power and adjusting receiver attenuation settings.

Built-In Level Control The built in level control automatically adjusts for stable output power.

Sweep Mode The sweep mode can scan the attenuation across a desired level.

Rugged The FTE-4000 is manufactured in our rugged splash proof housing with a highly protective

Specifications

ATTENUATION RANGE	FTE-4000-4 2 to 40dB FTE-4000-8 4 to 80dB
WAVELENGTH RANGE	1310, 1550 nm
RESOLUTION	.01 dB
UNCERTAINTY	+/- 0.5 dB
REPEATABILITY	+/- 0.1 dB
INSERTION LOSS	<2 dB
RETURN LOSS	50 dB
MAX INPUT POWER	27 dBm
GRAPHICAL DISPLAY	4 in Color TFT
DIMENSIONS W/O BOOT	7.62" L x 3.88" W x 1.56" H (194mm L x 99mm W x 40mm H)
WEIGHT	1.6 lbs
BATTERY	Rechargeable NiMH - 6 hours operating time
POWER	100-240 universal US, GB, EU, AU Mains
ENVIRONMENTAL	Operation -10°C to + 40°C
ACCESSORIES INCLUDED	Universal power supply, FC and SC adaptors, Windows TM Compatible Software, USB Cable and Manual

Specification are Subject to Change Without Notice

Optical Spectrum Analyzer

FTE8000



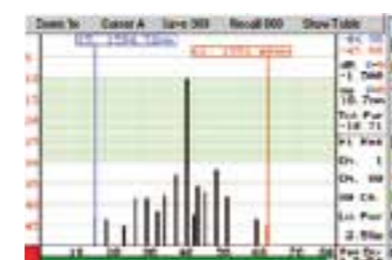
Features

- Up To 88 Channels on the ITU Grid
- 50 or 100 GHz DWDM Channel Spacing
- Pass/Fail Thresholds and Drift Statistics
- Fast Real Time with <1/2 second Update
- Bar Graph and Table Displays
- Auto Test Zooms in on Active Channels
- Rugged Case w/Impact Resistant Boot
- Solid State Optics-No Moving Parts
- Easy Operation with Help Mode
- Available in C, L or S Band
- 4" Color Display
- 8hr Battery Life
- Sealed Rugged Case
- Impact Resistant Boot
- Stores 1000 test
- USB/PC and USB Flash ports

Terahertz Technologies introduces the next generation Handheld Mini OSA. The FTE-8000 Optical Spectrum Analyzer is the most rugged and affordable full featured Mini OSA in the market. It is designed for simple operation and is suited for field or lab use. The mini OSA is available in up to 88 channels on the ITU Grid, offers 50 or 100 GHz channel spacing and displays a full scan twice a second. The FTE-8000 offers high end features such as Power Tilt for DWDM channel equalization and Gain Tilt to adjust EDFA gain flatness. With its one button AutoTest feature, and a full set of selectable scale limits and thresholds, the FTE-8000 makes zeroing in on channel measurements easy.

For flexibility the channel numbers are selected in wavelength or frequency and the information is displayed in graph or table mode on the 4 inch, high brightness color LCD. The unit allows users to set Pass/Fail thresholds and can store up to 1000 tests that can be downloaded via the USB PC or USB flash ports and documented with the included certification software for fast, easy reporting. The onboard Help system guides new users through operation and assists in parameter settings. The FTE-8000 is housed in a rugged metal enclosure with a robust protective boot.

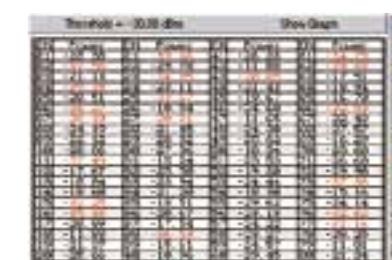
Graph View



The FTE-8000 graph display can be configured to optimize the view of test information.

The user can zoom in on specific channels, mark the display area in which channels meet power criteria and even limit the number of overall channels viewed.

Table View



In the table view, the FTE-8000 displays failed channels in red and when a channel is highlighted, statistical information is displayed including the minimum, maximum and average power levels.

Tuneable Laser Source

FTE6000

FTE-8000 Specifications	
Wavelength Range	FTE-8000S 1492-1528nm (200.9 THz - 196.2 THz) FTE-8000C 1530-1561nm (196.0 THz - 192.0THz) FTE-8000L 1570-1625nm (190.5 THz - 186.3 THz) FTE-8000CWDM 1270-1610nm
Wavelength Accuracy	±0.1nm
Channel Spacing	50GHz, 100GHz or 20nm (CWDM)
Channel Power Range	+10dBm to -50dBm
Absolute Accuracy	±1 dB
Readout Resolution	0.01dB
PDL	±0.15dB
Optical Rejection Ratio	40dBc (@50GHz)
Measurement Time	< 1/2 Second
Return Loss	>40dB
Optical Interface	Universal UPC (FC/SC)
Graphical Display	Bar Graph and Table View
Display	4 in Color TFT
Dimensions	7.75 x 4.5 x 2.25 inches
Weight	2 lbs
Battery	Rechargeable NiMH - 8 hours operating time
Power	100-240 universal US, GB, EU, AU Mains
Environmental	Operation -10°C to 50°C
Accessories Included	Universal power supply with mains for US, UK, CE and AU. Interchangeable FC and SC adapters, Window's™ compatible software, USB cable, manual and rubber boot

Features

- Selectable Step Size Down to 50 GHz
- Selectable Start & Stop Channels
- Settable in Wavelength or Frequency
- Settable Dwell Time
- Available in C or L Band
- Sealed Rugged Case with Impact Resistant Boot
- USB PC Interface with Remote operation Capability
- Battery Operated or International Line Voltage
- Simple Operation with On-Line Help Mode
- Lowest Cost Hand Held Tunable Laser Source
- Interchangeable Fiber Optic Connectors
- Up to 88 Channels on the ITU Grid
- Fast Turn-On
- 4" Color Display
- 4 hr Battery Life

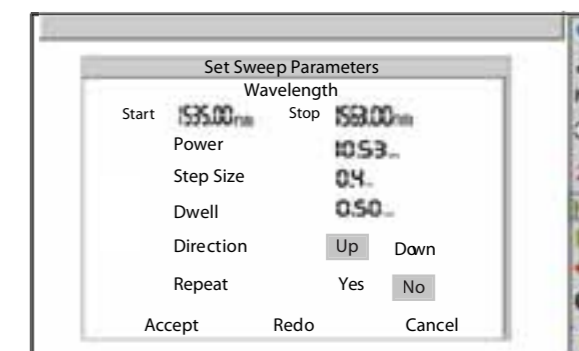


The Terahertz Technologies FTE-6000 Hand Held Tuneable Laser Source (TLS) Is available in C and L Bands. The FTE-6000 is manufactured in our rugged splash proof housing with a highly protective boot. Our TLS displays in wavelength, frequency or ITU channel. The Tuneable Laser Source is a great match with our FTE-8000 (Optical Spectrum Analyzer) for installation, commissioning and trouble shooting of DWDM networks. If necessary, the supplied virtual instrument software may be used to operate the unit remotely.

The FTE-6000 offers a fast start up with minimal warm up required and provides very stable wavelength and power outputs. As with all of our Advanced tests equipment series, the FTE-6000 is affordable, easy to use and rugged. Ask about our kit offerings, such as the FTE-8600 Combo Kit.

Ideal for Installation, Maintenance and Upgrades of DWDM Systems

With the TTI FTE-6000 Tuneable Light Source, you can conduct a sweep of the ITU Grid by setting your beginning and ending wavelengths. You can also set your step size, power level, dwell time and whether you want the sweep to move up or down the scale. You can even set it to repeat the sweep.



Fiber Optic Video Link

V-250

Features

- Easy to Install and Use
- Low Cost
- AGC is Standard
- Eliminates Ground Loops
- Distances up to 20 Km
- NTSC, PAL and SECAM compatible
- Available in MM and SM
- LED Indicator of Video Signal



Specifications	
Frequency Range	FTE-8000 C 191 - 196 THz (1529-1563nm) FTE-8000 L 186 - 191 THz (1570-1610nm)
Accuracy	1.5 GHz
Line Width	1 MHz
Side Mode Suppression Ration	45 dB
Output Power Range	+8 dBm to +14 dBm
Power Setting Resolution	0.01 dB
Power Stability	0.5 dB
Minimum Channel Spacing	50 GHz (0.4nm)
Fiber Type	9/125 μm
Relative Intensity Noise	-140 dB/Hz
Graphical Display	4 in Color TFT
Dimensions	7.75 x 4.5 x 2.25 inches
Weight	2 lbs
Battery	Rechargeable NiMH - 4 hours operating time
Power	100-240 universal US, GB, EU, AU Mains
Environmental	Operation -10°C to + 40°C
Accessories Included	Universal power supply with mains for US, UK, CE and AU. Interchangeable FC and SC adaptors, Windows TM Compatible Software, USB Cable, Manual and Rubber Boot

Part Numbers	
FTE-6000C	C-Band Tuneable Laser Source
FTE-6000L	L-Band Tuneable Laser Source
FTE-8600C	C-Band Tuneable Laser Source with C Band Optical Spectrum Analyzer
FTE-8600L	L-Band Tuneable Laser Source with L Band Optical Spectrum Analyzer

The V-250 is designed for transmitting high quality video in any standard format over much longer distances than are possible with coaxial cable. The plug and play design make this system simple to install and use, the builtin automatic gain control eliminates the need for adjustments by automatically compensating for varying cable lengths, degradation of splices and variations in video signal strength. The unit comes equipped with a bi-color LED that indicates the presence of video signals and proper operation of the units. This rugged, low-cost system is immune to the effects of radiated interference, high voltage differentials, water, ground loops, and the effects of hazardous environments.

The V-250 video transmission system consists of the VXT-250 Fiber Optic Transmitter, the VR-250 Fiber Optic Receiver and two 115/240 VAC power adapters. The system is fully compatible with NTSC, SECAM, PAL and D2MAC video standards. Small in size, the VXT-250 mounts directly on the output BNC connector of the camera or video source. The V-250-850 operates at an optical wavelength of 850 nm. With its 16 dB link budget it can support transmission distances in excess of 5 km. If greater distances are required, the V-250-1300MM and V250-1300SM can be used for distances of 10 or 20 km.

Visual Fault Locator

VFL-280



Features

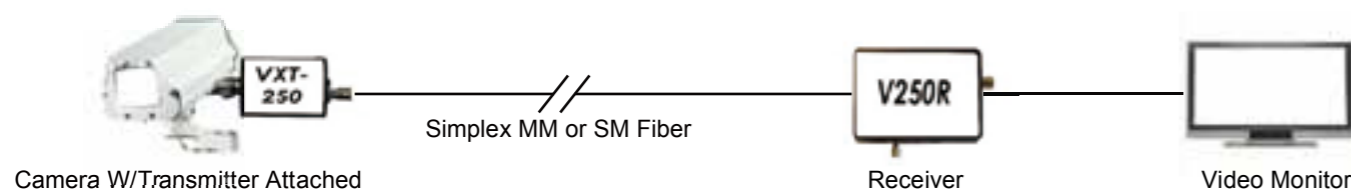
- Universal 2.5 mm Adapter
- Modulated Mode for Easier Fault Locating
- Standard AA Batteries
- >100 Hour Battery Life
- Multi-Mode and Singlemode Applications
- Compact Size

The VFL-280 Visual Fault Locator is an easy to use piece of equipment that allows the precise location of a breaks or severe micro bends in a fi ber or cable under test by visually checking your fi ber for leaks of visible light. In the same manner leaky splices or connectors within patch panels can be located and the VFL can assist in locating breaks within the dead zone of an OTDR. Visual fault locators make fi ber identification easy in multi-fi ber cables.

The VFL-280 is rugged, lightweight and sized to fi t in any tool kit. It operates on 2 AA alkaline batteries and the unit has an over-rideable power saver feature that will power down the unit after 30 minutes. It is shipped with a Standard 2.5mm universal adapter. The internal ferrule is easily cleaned and the split sleeve is replaceable. The Unit is designed to be used on both Singlemode and Multi-mode fi bers.

V-250 Specifications	
System Bandwidth	10Hz - 10MHz (-3dB)
Input/Output Impedance	75 Ohms
Norminal Input/Output Voltage	1V p-p
Operating Wavelength	850/1300nm
Optical Connectors	ST
Signal Connectors	BNC
Link Budget (850/1300)	16/14 dB
Differential Gain	2% Typical
Differential Phase	2 Degrees Typical
Signal To Noise Ratio	65dB Minimum
Operating Temperature	0 - 50 C
Dimensions Transmitter	1.5" Dia. x 1.5" L
Dimensions Receiver	4.5" L x 2.5" W x 1" H
Power Requirement	120/240 VAC 50-60Hz

Typical Installation



Model Selector			
Part Number	Wavelength	Cable	Max. Distance
V250-850	850nm	Multi-Mode	5 km
V250-1300MM	1300nm	Multi-Mode	10 km
V250-1300SM	1310nm	Singlemode	20 km

Specifications	
Output Power	1mW max
Wavelength	650 nm +/- 5nm
Pulse Rate	6 Hz
Emission Indicator	LED
Standard F/O Connector	Universal 2.5 mm Ferrule
Duty Cycle	50%
Battery	2 (AA) Alkaline
Battery Life	>100 hrs.
Size	4.0" L x 2.5" W x 1.1" D
Weight	4.2 oz.
Operating Temperature	-10 to 50 C
Storage Temperature	30 to 60 C
Auto Shut-Off	30 Min.