

**Broadband Fiber-Optic CATV
Headend Transceiver**



FEATURES & BENEFITS

- Up to 15 dB Link Budgets
- Up to 860 MHz Bandwidth
- Automatic Level Control
- On-line Redundant Power Supply
- Fully Modular
- Digital or Analog Upstream Path
- 110 Volt, 220 Volt or -48 Volt Power Options
- Prevents Network Outages Due to Power Supply Failure
- Provides the Highest Signal Quality to your Customer over Long Distances
- Flexible Platform Provides Digital Overlay or 110 Video Channels Downstream
- Provides Optimum OMI Automatically when Channel Count Changes
- Permits Simple Expansion, Upgrade and Facilitates Repair
- Excellent Customer Response with Upstream Status Monitoring and/or Video Transport

FIBERTRUNK FUNCTIONAL DESCRIPTION

INTRODUCTION

The IPITEK FiberTrunk™ system is a broadband modular fiber-optic transmitter and receiver system, including associated power supplies. This rack-mount unit is suitable for installation into any Cable TV headend or equivalent location.

CHASSIS

The FiberTrunk Chassis accepts up to four highly linear fiber-optic analog transmitter modules. The chassis also can accept two upstream receivers and one status monitor module used for network monitoring, interactive or pay-per-view applications. The FiberTrunk chassis incorporates a redundant power supply system for increased system reliability. The two power supplies are on-line to provide uninterrupted power in the case of a single unit failure.

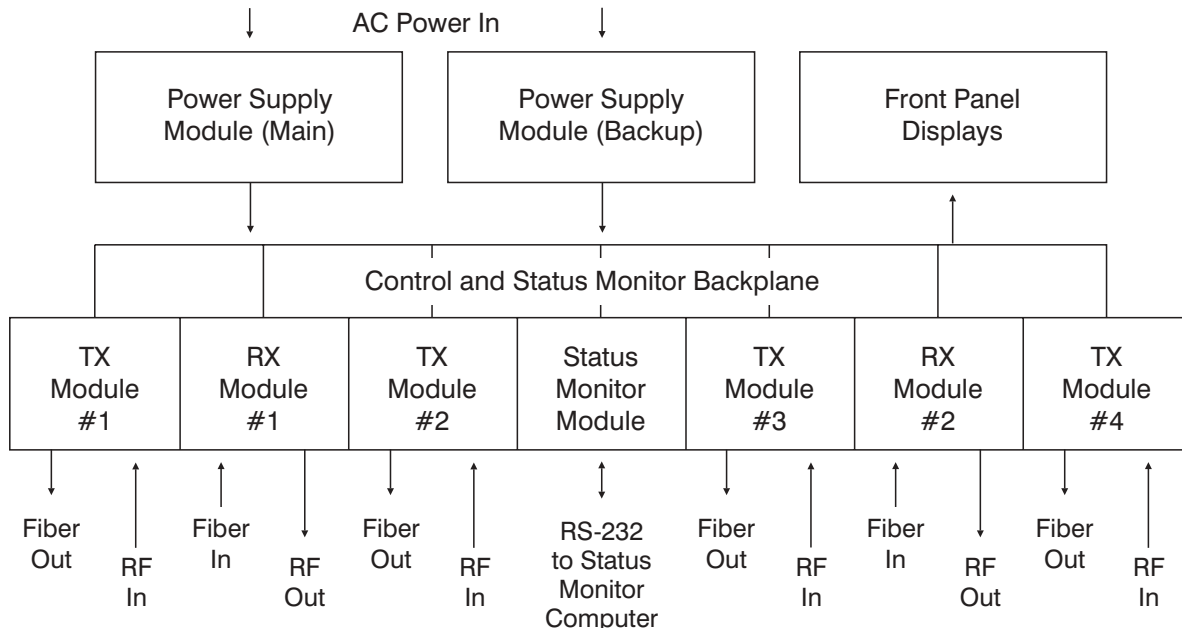
DOWNSTREAM TRANSMITTERS

From the headend location, AM-VSB carriers are combined and are input to the IPITEK FiberTrunk Downstream Transmitter module to intensity modulate a Distributed Feedback (DFB) laser. The transmitter also optionally inserts a 10.7 MHz pilot tone used for Automatic Gain Control (AGC) with the appropriate matching receiver. The AGC ensures constant RF carrier levels at the receiver output despite varying optical loads. Additionally, the transmitter features wideband Automatic Level Control (ALC) which allows the Optical Modulation Index

(OMI) to be factory preset for optimum performance. The ALC automatically adjusts the OMI for changes in channel loading according to operator preference. The laser driver circuit biases the laser diode to its optimum operating optical power while stability is maintained by both an automatic temperature control and an automatic power control circuit. Advanced predistorter circuitry helps linearize the laser and reduce distortions. The DFB laser module includes an integrated opto-isolator to reduce reflected power back into the laser that tends to increase laser noise. The thermo-electric cooler and monitor photodiode in the laser module are used for the associated sensing and feedback circuitry. All of the aforementioned electronics ensure that the FiberTrunk downstream transmitter maintains the highest CNR and minimal distortion to the user.

UPSTREAM

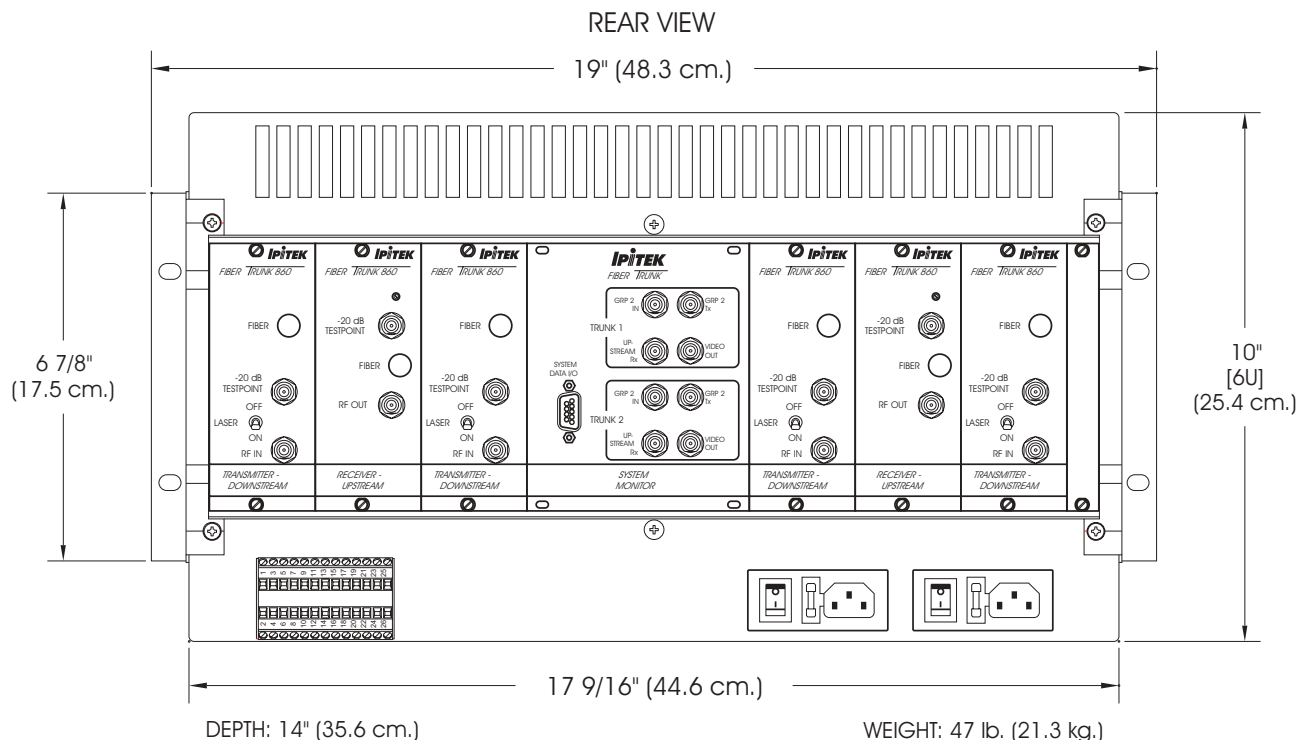
In addition to the multiple video channels, a 9600 baud RS-232 command signal from the Status Monitoring computer (PC-compatible) is FSK-modulated (carrier at 24.5 MHz) and combined with the AM-VSB video signals. Used in concert with the two Upstream Receivers and the Status Monitor module, the FiberTrunk system is capable of providing downstream and upstream transport of both video and digital information. This duplex network is used with the IPITEK FiberSentry™ software to provide a network management system that allows the fiber network to be directly or remotely controlled and monitored.



FIBERTRUNK™ MODULE DESCRIPTIONS AND SPECIFICATIONS

MODEL NUMBER	MODEL DESCRIPTION																
FT - DTX - X - XX	<p>Downstream laser transmitter module for FiberTrunk, 1310 nm DFB laser, packaged modularly with ALC, fully connectorized, automatic power control, thermo-electric cooler, opto-isolator, laser on/off switch, with status monitor sense & control points.</p> <p>Electrical</p> <table> <tr> <td>RF Connector:</td> <td>F-type</td> </tr> <tr> <td>Input RF Level:</td> <td>+32 dBmV per channel</td> </tr> <tr> <td>Input Impedance:</td> <td>75 ohms</td> </tr> <tr> <td>Input Return Loss:</td> <td>≥14.0 dB</td> </tr> <tr> <td>RF Test Points:</td> <td>-20 dB from RF input level</td> </tr> </table> <p>Optical</p> <table> <tr> <td>Optical Connector:</td> <td>Single mode FC/APC</td> </tr> <tr> <td>Optical Wavelength:</td> <td>1310 ±30 nm</td> </tr> <tr> <td>Frequency Response:</td> <td>±1.0 dB over the specified frequency range</td> </tr> </table> <p><i>For laser transmitter performance see inserted performance sheet.</i></p>	RF Connector:	F-type	Input RF Level:	+32 dBmV per channel	Input Impedance:	75 ohms	Input Return Loss:	≥14.0 dB	RF Test Points:	-20 dB from RF input level	Optical Connector:	Single mode FC/APC	Optical Wavelength:	1310 ±30 nm	Frequency Response:	±1.0 dB over the specified frequency range
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FT - CH - X - X	<p>Optical trunk 19" rack mount chassis with front panel LED displays, including one power supply or two for redundancy. Backplane board and external status monitor sense & control points at chassis terminal block. 110 VAC, 220 VAC or -48 VDC.</p> <p>Electrical and Environmental</p> <table> <tr> <td>Operating Power:</td> <td>150 watts under full load</td> </tr> <tr> <td>Input Voltages:</td> <td>110 VAC @ 60 Hz, 220 VAC @ 50 Hz or -48 VDC</td> </tr> <tr> <td>Fully Loaded Oper. Temp:</td> <td>+10°C to +50°C</td> </tr> <tr> <td>Humidity:</td> <td>5% to 95%</td> </tr> <tr> <td>EMI:</td> <td>Fully compliant to VDE 0871 Class B</td> </tr> </table>	Operating Power:	150 watts under full load	Input Voltages:	110 VAC @ 60 Hz, 220 VAC @ 50 Hz or -48 VDC	Fully Loaded Oper. Temp:	+10°C to +50°C	Humidity:	5% to 95%	EMI:	Fully compliant to VDE 0871 Class B						
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FT - URX	<p>Upstream optical receiver module, with manual gain control, plug-in compatible with the FiberTrunk chassis, transports 3 video channels and FSK carrier for status monitor.</p> <p>Electrical</p> <table> <tr> <td>Input Impedance:</td> <td>75 ohms</td> </tr> <tr> <td>Output RF Level:</td> <td>> +20 dBmV per channel for 9.0 dB optical link</td> </tr> <tr> <td>RF Connector:</td> <td>F-type</td> </tr> <tr> <td>Bandwidth:</td> <td>5 MHz - 200 MHz</td> </tr> <tr> <td>Frequency Response:</td> <td>±1.0 dB</td> </tr> </table> <p>Optical</p> <table> <tr> <td>Optical Connector:</td> <td>FC/APC</td> </tr> <tr> <td>Optical Wavelength:</td> <td>1310 nm or 1550 nm</td> </tr> </table>	Input Impedance:	75 ohms	Output RF Level:	> +20 dBmV per channel for 9.0 dB optical link	RF Connector:	F-type	Bandwidth:	5 MHz - 200 MHz	Frequency Response:	±1.0 dB	Optical Connector:	FC/APC	Optical Wavelength:	1310 nm or 1550 nm		
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FT - SMM	<p>Upstream status monitor FSK modem with RS-232 port for PC-compatible computer.</p> <p>Electrical</p> <table> <tr> <td>RF Connector In:</td> <td>F-type</td> </tr> <tr> <td>Input RF Level:</td> <td>+ 12 dBmV</td> </tr> <tr> <td>Input Impedance:</td> <td>75 ohms</td> </tr> <tr> <td>Output Connector:</td> <td>RS-232 D-type (for status monitor), F-type (for video)</td> </tr> <tr> <td>Data Rate:</td> <td>9600 baud</td> </tr> <tr> <td>Remote Monitoring/Control:</td> <td>Via modem using standard telephone lines</td> </tr> <tr> <td>Items Controlled:</td> <td>Laser on/off and other using chassis terminal block</td> </tr> <tr> <td>Items Monitored:</td> <td>AC & DC power supply operation RF drive level in Laser bias, temperature and cooler current Return path optical power Other, using chassis terminal block</td> </tr> </table>	RF Connector In:	F-type	Input RF Level:	+ 12 dBmV	Input Impedance:	75 ohms	Output Connector:	RS-232 D-type (for status monitor), F-type (for video)	Data Rate:	9600 baud	Remote Monitoring/Control:	Via modem using standard telephone lines	Items Controlled:	Laser on/off and other using chassis terminal block	Items Monitored:	AC & DC power supply operation RF drive level in Laser bias, temperature and cooler current Return path optical power Other, using chassis terminal block
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MECHANICAL



ORDERING INFORMATION

FT	-	DTX	-	X	-	XX
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FiberTrunk	Type Downstream Laser Transmitter	Bandwidth 6 = 45 - 610 MHz 7 = 45 - 750 MHz ¹ 9 = 45 - 862 MHz ¹	Optical Link 04 = 4 dB 10 = 10 dB 05 = 5 dB 11 = 11 dB 06 = 6 dB 12 = 12 dB 07 = 7 dB 13 = 13 dB 08 = 8 dB 14 = 14 dB 09 = 9 dB 15 = 15 dB
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Note 1: RF Input requirement +32 dBmV per channel

FT	-	CH	-	X	-	X
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FiberTrunk	Type Chassis	Input AC Power 1 = 110 VAC @ 60 Hz 2 = 220 VAC @ 50 Hz 3 = -48 VDC	Number of Supplies 1 = One Supply 2 = Two Supplies, on-line redundancy
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FT	-	URX	-	X		FT	-	SMM
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FiberTrunk	Type Upstream Optical Receiver	Input AC Power 1 = 110/220 VAC 2 = -48 VDC	FiberTrunk	Type Status Monitor Module
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