



**Fiber Optic
Transmission
Systems**

SHORT FORM CATALOG

For cost-effective, interference-free transmission of analog and digital signals by means of modern optical technology.

Since 1977 the people of **Liteway**[™] have been devoted entirely and exclusively to the technology of fiber optics. Based upon that experience, all of the products offered in this catalog use the latest semiconductor and optical devices available and incorporate the features most often desired in a fiber optic transmission system.

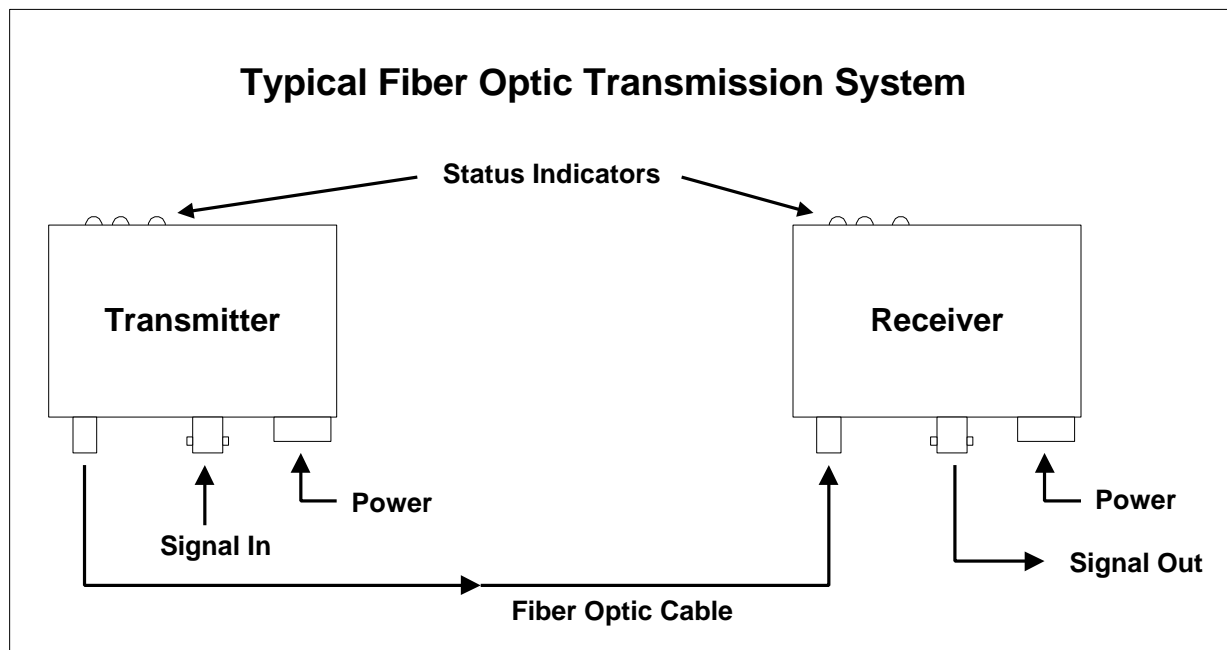
A unique housing has also been designed that allows all **Litelink**[™] fiber optic transmission units to be used as either stand-alone devices, or directly rack mounted by means of a series of affordable EIA compatible rack mounting panels and matching power supplies. Environmental specifications have been extended to cover the operating temperature range of -35° to $+75^{\circ}\text{C}$ and built in test equipment in the form of LED type indicators that continuously monitor the presence of signals as well as operating power are now provided on all units.

This short-form catalog describes the standard **Litelink**[™] fiber optic transmission systems offered by **Liteway**[™]. In addition, we are always pleased to quote on custom, OEM or private labeled fiber optic systems. With more than 30 years of experience in the field, we have an extensive knowledge of virtually all of the signals typically sent over a fiber optic link and are easily capable of accommodating your specific requirements.

When your application requires a fiber optic transmission system, **Litelink**[™] products are the perfect choice to fulfill all of your needs in an easy to use, cost-effective and reliable manner.

Markets Served

- Security/CCTV
- Access Control
- Data Communications
- Energy Management
- Utilities
- Industrial Process Control
- Instrumentation
- Military/Defense
- Radar



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Designing your Fiber Optic Transmission System

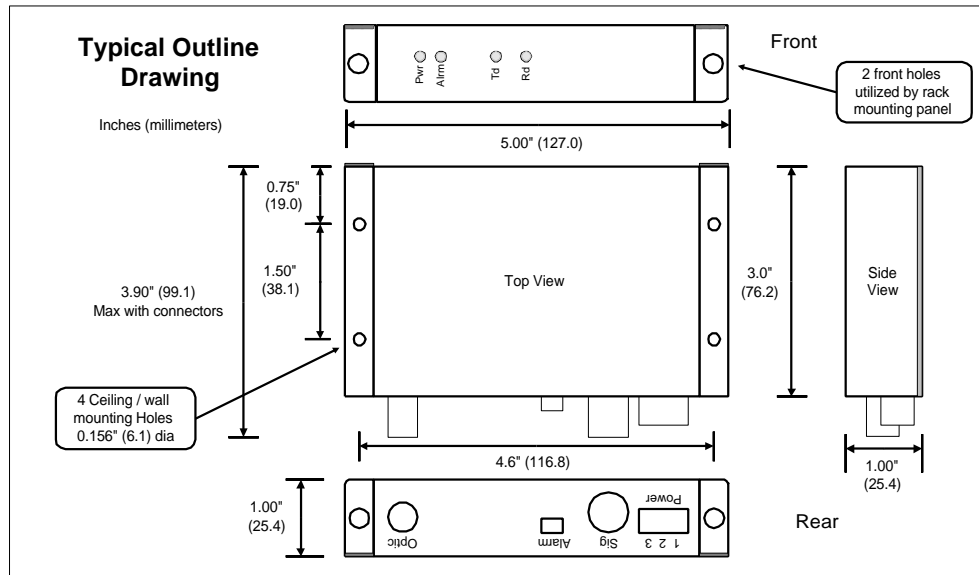
Designing your fiber optic transmission system with **Litelink™** components and accessories is simple and straightforward. Since all components and accessories are fully compatible, any of the company's products may be used "side-by-side" with other products thereby allowing the exact signal flow configuration desired to be easily achieved. The procedure to use to choose the correct system for your application is as follows:

- Select the transmission system for the signal or signals you wish to transmit.
- Determine the fiber optic cable and optical connectors you need or have. This will usually be multimode (62.5/125 micron, ST connectors) or single-mode (8/10/125 micron, FCPC connectors) depending on the transmission distance to be covered.
- Determine the - number suffix of your system in accordance with the following:

-No.	Wavelength	Fiber Type	Connector	Transmission Distance Covered*
-1	850nm	multimode	ST	up to 2 miles (3 Km)
-3	1310nm	multimode	ST	up to 6 miles (10 Km)
-7	1310nm	single-mode	FCPC	up to 20 miles (30 Km)
-8**	1310nm	single-mode	ST	up to 20 miles (30 Km)
-9	1550nm	single-mode	FCPC	up to 40 miles (60 Km)

* The transmission distances listed are only approximate and will depend on the loss of the actual fiber employed.
 ** Although ST connectors are not recommended for single-mode applications, they can be provided if desired.
 Adapters can also be provided for various non-standard connectors. Please contact the factory for specific details.

- Determine if you will power the system locally or if you need to order power supplies. Most **Litelink™** units operate from 10 to 18 V AC (50/60Hz) or DC and require less than 500 ma.
- All units may be mounted individually by using the mounting holes provided on the housing (see diagram below). If rack mounting is desired, the same housing can be mounted to any of the EIA compatible 19-inch **Litelink™** RMP series mounting panels.
- Remember that **Litelink™** products and accessories are not warranted, authorized or recommended for use in critical life support systems or applications of any kind.



Audio Transmission Systems (Line Level)

AT-1001	Audio Transmitter	Transmit line level audio (1Vrms, 3Vpp) from point-to-point.
AR-1001	Audio Receiver	Input / Output may be balanced or unbalanced (600Ω).
AX-1001	Audio Transceiver	Audio bandwidth; 20 Hz to 50 KHz.

Video Transmission Systems (Baseband)

VT-1001	Video Transmitter	Transmit a NTSC, PAL or SECAM baseband video signal from point-to-point. Bandwidth; 20 Hz to 10 MHz
VR-1001	Video Receiver	
VR-1002	Dual Video Receiver	The dual receiver is to VR-1001 in a single small housing.
VT-1301	Video Transmitter	Transmit a wide bandwidth NTSC, PAL or Radar type video signal from point-to-point. Bandwidth; 20 Hz to 30 MHz.
VR-1301	Video Receiver	

Video & Bi-Directional Data Transmission

VDT-1001	Video Data Tx	Transmission baseband video in one direction and data in both directions on one fiber. Video bandwidth; 10 MHz, Data bandwidth; 100 Kb/s.
VDR-1001	Video Data Rx	

Video & Audio Transmission

VAT-1001	Video Audio Tx	Transmit video and stereo line level audio in one direction on one fiber. They are used in teleconferencing and A/V intercom systems. Bandwidth; 8 MHz Video, 50 KHz Audio.
VAR-1001	Video Audio Rx	

Video Transmission Multiplexers

VT-2004	Video Transmitter	Transmit 4 separate channels of baseband video on a single fiber. Bandwidth; 5 MHz, SNR 60dB. Low Cost.
VR-2004	Video Receiver	
VADT-9004	Video Transmitter	Transmit 4 video, 8 Audio, 4 data channels on a single fiber. 10 bit digital. SNR 67dB, Diff Phase 0.5, Diff Gain 0.5%
VADR-9004	Video Receiver	

Video & Bi-Directional Data Transmission Multiplexers

VDT-8004	Video Data Tx	Transmit 4 separate channels of baseband video and bi-directional data from point-to-point on one fiber. Bandwidth; 10 MHz, SNR; 65dB(typ), Crosstalk; -80dB.
VDR-8004	Video Data Rx	
VDT-9008	Video Data Tx	These units are an 8 channel version of the above.
VDR-9008	Video Data Rx	

Data Transmission Systems

DX-7001	Universal Data Xcvr	Transmits bi-directional RS-232, RS-422, RS-485 or TTL signals point-to-point or in a drop and repeat/insert mode. Protocols may be mixed when required. Signal connector; removable terminal block. Data rate; DC to 10 Mb/s.
DX-7101	RS-232 Data Xcvr	Transmits bi-directional RS-232 signals point-to-point or in a drop and repeat/insert mode. Data rate; DC-200 Kb/s, Signal connector; DB-25F, DCE/DTE selectable.
DX-7501	Current Loop Xcvr	Digital current loop transceiver. 0-20 or 30 mA, 100Kb/s
CT-7008	Contact Closure Tx	Transmit 8 separate contact closures or TTL signals on a single fiber. Contacts;10VA. Single channel version available.
CR-7008	Contact Closure Rx	
WT-7001	Wiegand™ Tx	These units transmit Wiegand™ signals from point-to-point on a single fiber. Wiegand™ is trademark of Emerson Electric Company
WR-7001	Wiegand™ Rx	

Telephone & Intercom Transmission Systems

TLPX-1001	Phone Transmitter	A fiber optic interface between a standard US telephone sets and lines. Bogen™ compatible systems are available.
TLLX-1001	Phone Receiver	
INCX-4001	Intercom Station	A Fiber optic Intercom station with speaker & microphone. Optional headset input. Can be used in a point-to-point or in party line configuration. Master station available.

Non-Fiber Optic Accessories

ALM-1000	Alarm Module	This unit provides a visual and audible alarm upon the loss of signal from any Litelink™ unit. A set of external contacts is also activated for remote indications.
VM-1004	Video DA	Video Distribution Amplifier. 1 in, 4 out, with loss of video alarm indicator. Bandwidth; 30 MHz, Connectors; BNC
RSW-1002	Redundant Switch	This unit is used to implement a redundant, fail-safe video system by providing a common output from one of two separate baseband video inputs. If the primary signal fails, the system automatically switches to the secondary signal.

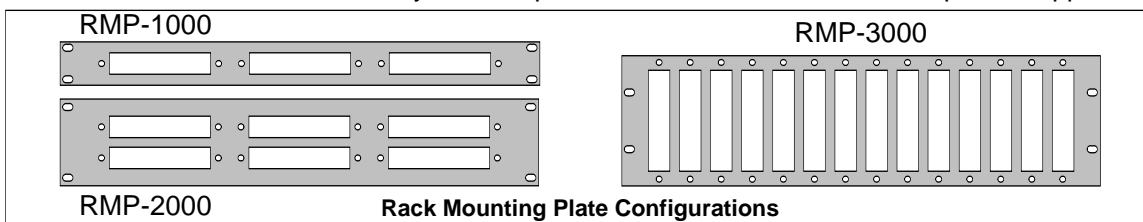
Twisted Pair Systems

For installations where fiber cannot be installed, these units can be utilized to transmit video and/or UTC control signals over Category 3 or 5 structured unshielded twisted pairs.

VDX-2001	Passive Transceiver	This unit will function as a transmitter or receiver for video signals and "Up The Coax" (UTC) control systems. Bandwidth; 5 MHz, Typical Range; 1000'
VR-2001	Active Rx	This is active receiver, which will extend range of the XVD-2000 to 2500', Bandwidth; 5 MHz. Not UTC compatible.
VDR-2001	Active Rx	Like VR-2001 but "Up The Coax" (UTC) compatible.

Rack Mounting Panels

These panels are used to mount any **Litelink™** fiber optic transmitter, receiver or transceiver in a standard EIA 19" rack frame. They will accept all transmission units as well as power supplies.



Power Supplies

The supplies listed below (suffix "US") are for use in North America. Versions are available for other areas of the world. Please contact factory for the proper suffix to use for your location.

PS-1205US	12 VDC @ 0.5 Amp Wall-type plug-in adapter.
PS-1210US	12 VDC @ 1.0 Amp Supply. One RMP position
PS-1260US	12 VDC @ 6.0 Amp Supply. Two RMP positions.

All **Litelink™ Transmission units can be provided in a direct plug-in version for use with an older Math Associates MCR-1000A rack mountable card.**

Why Use a Fiber Optic Transmission System?

No Interference: The only carrier of signal information in a fiber optic cable is light, at a frequency that is thousands of times higher than normal electrical signals. As a result, conventional forms of interference do not affect the fiber optic cable. RF, AC power lines, arcing high voltages and even nearby lightning strikes will not compromise the signal in any way.

Total Electrical Isolation: Since the only carrier of signal information in a fiber optic cable is light, the cable can be fabricated of totally non-electrically conducting materials such as glass and plastic. This completely eliminates any electrical connection between the two ends of the link thus eliminating ground loops, hum bars in a video system, short circuits or signal leakage from one conductor to another. In addition, since the fiber optic cable is non-conducting, high voltages and even total immersion in water have no effect on the signal.

Safety: Glass is unaffected by most chemicals and solvents. As a result, the fiber optic cable can be used in all sorts of adverse environments such as are found in industrial complexes. Since the communication signal is optical not electrical it is intrinsically safe. A break in a fiber will not produce any shock hazard to human beings nor will it produce any spark in an explosive atmosphere.

