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 \(-35^\circ\text{C}\) 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

Typical Fiber Optic Transmission System

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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:

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

* 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.

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### 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**: The dual receiver is to VT-1001 in a single small housing.
- **VR-1002 Video Receiver**: The dual receiver is to VT-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.

### 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**: on one fiber. They are used in teleconferencing and A/V intercom systems. Bandwidth; 8 MHz Video, 50 KHz Audio.

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

### 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**: 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%

### 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**: These units are an 8 channel version of the above.

### 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**: These units transmit Wiegand™ signals from point-to-point
- **WT-7001 Wiegand™ Tx**: These units transmit Wiegand™ signals from point-to-point
- **WR-7001 Wiegand™ Rx**: on a single fiber. Wiegand™ is trademark of Emerson Electric Company
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.

RMP-1000

RMP-2000

RMP-3000

Rack Mounting Plate Configurations

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.