

# **FibreLink III Standalone Version Operations Manual**



**TELEDYNE  
INSTRUMENTS**  
*Monitor Labs*

*A Teledyne Technologies Company*



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## **APPENDIX A Spare Parts**

## **APPENDIX B Drawings**

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1808-0009-01	1 of 1	-	FibreLink III Installation Drawing

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## 1.0 CAUTIONS AND WARNINGS

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**WARNING:** *Never view the fiber emitters (ST-TX connectors) under magnification with power on. To do so could result in damage to the human eye.*

**WARNING:** *Disconnect mains power from the FibreLink III during installation and replacement of components. Failure to do so may result in damage to personnel and/or equipment.*

**CAUTION:** *The ST fiber connectors are constructed of molded plastic. While they are durable, it is wise to attach and remove ST fiber optic cable connectors with care to avoid damage, especially if said connectors are of metal construction.*

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## 2.0 DESCRIPTION

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Fiber optic communication has in many cases provided increased immunity to electrical interference due to electrostatic discharge (ESD) and conductive and radiative electromagnetic fields. Many users have reported significant reductions in the severity and frequency of lightning strike damage to electrical equipment after proper installation of fiber optic communication devices between stack-mounted and control room equipment.

The FibreLink III Standalone Version fiber optics interface is a repeater device designed to create an electrically isolated fiber optic bridge between two FTT10A LONWORKS<sup>®</sup> twisted pair networks.

The Stack Unit is packaged in a NEMA4X enclosure and as such is designed for use in outdoor applications. The Control Room Unit is packaged in an extruded aluminum case and is not suitable for outdoor use. The Control Room Unit is intended for use in indoor environments such control rooms and temperature controlled Continuous Emission Monitoring System (CEMS) shelters. Both units contain an identical, interchangeable circuit board that converts FTT10A twisted pair network signals into fiber optic signals running at approximately 78K BAUD. The Stack Unit contains a transformer to reduce power mains voltage to approximately 24VAC for use in by the internal circuit board. The Control Room Unit is shipped with a wall transformer that performs the equivalent function. See Figure 1, FibreLink III Block Diagram.

All network packets are passed between both ends of the network. Routing functions are not supported. These features make the FibreLink III ideally suited for use with the LightHawk 560 and Model 550 Opacity Monitor. Though not specifically designed for use with the Ultraflow 150, it may be employed in a similar manner with this instrument.

The fiber optic signals in the FibreLink III are multimode near infrared with a nominal wavelength of 850 nanometers (nm). The fiber emitters are based on light emitting diode (LED) technology. The device is designed for use with ST connectors and 62.5/125 micron multimode fiber. Two fibers are required for operation, though the installation of spare fibers is strongly encouraged.

For an overview of proper installation practice, consult the installation drawings in this manual. There are two sets, one for the LightHawk 560 and one for the Model 550.

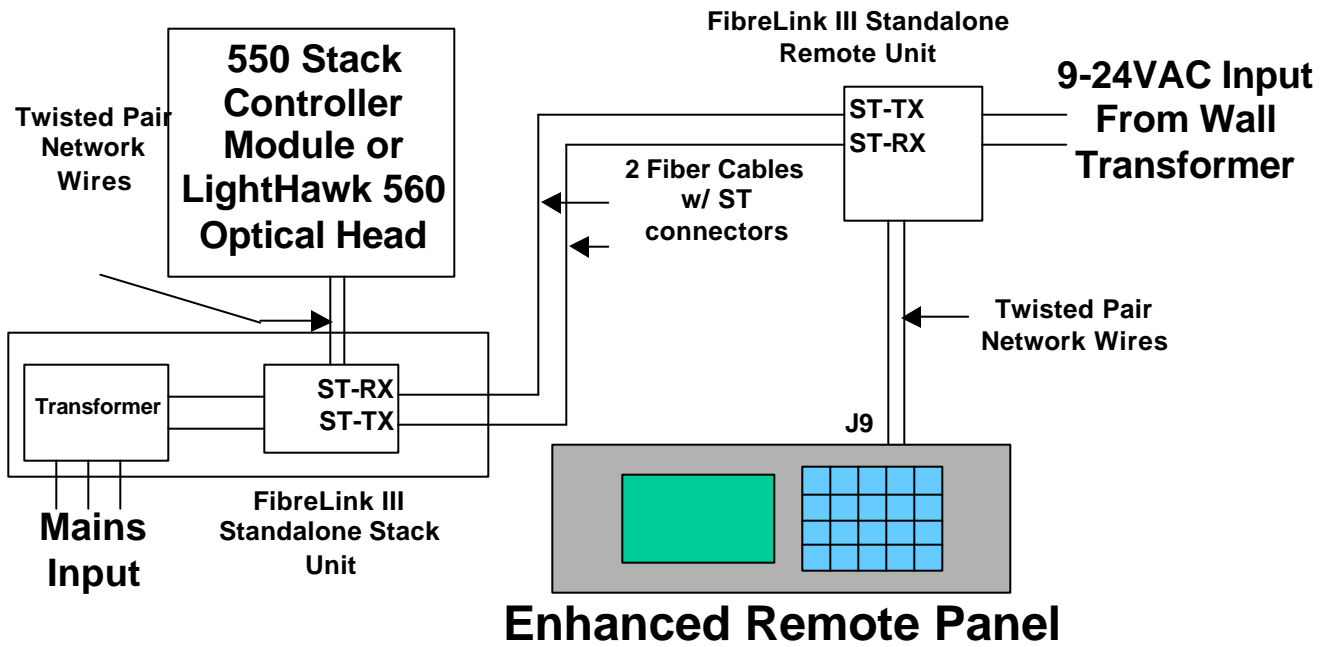


Figure 1  
FibreLink III Block Diagram

## 3.0 SPECIFICATIONS

### PHYSICAL DIMENSIONS

Stack Unit	5-3/8" (137mm) (L) X 11-1/2" (292mm) (W) X 13-1/2" (343mm) (H)
Control Room Unit	1-7/8" (47.6mm) (L) X 6-1/4" (82.6mm) (W) X 5-1/8" (130mm) (H)

### PHYSICAL WEIGHTS

Stack Unit	8.9 lbs. (4.04 kg)
Control Room Unit	1.2 lbs. (0.544 kg)

### OPTICAL CHARACTERISTICS

Nominal Wavelength	850 nm
Fiber Optic Connectors	ST Style
Number of Fibers Required for Operation	2
Cable Type	62.5/125 micron, Multimode
Maximum Fiber Optic Cable Length	6,561.7 feet (2 km) (Assuming attenuation of 3.75 db/km from cable, 0.5 dB each for two ST connectors per fiber and 3dB of margin.)

### POWER REQUIREMENTS

Stack Unit	98 to 132 VAC, 47-63Hz, Single Phase, 1.5 VA Maximum Fuses: 0.5 Amp, 250V, SLO-BLO
Control Room Unit	9 to 24 VAC, 47-63Hz, Single Phase, 1.5 VA Maximum -01 provided with Wall Mount Transformer for 98 to 132 VAC, 47-63Hz, Single Phase power -02 provided with Wall Mount Transformer for 196 to 264 VAC, 47-63Hz, Single Phase power

### AMBIENT OPERATING CONDITIONS

Stack Unit	Temperature Range: -40 to +150°F (-40 to +65.6°C) Relative Humidity Range: 5% to 100% condensing Enclosure Rating: NEMA4X
Control Room Unit	Temperature Range: -40 to +150°F (-40 to +65.6°C) Relative Humidity Range: 5% to 95% noncondensing Enclosure Rating: NEMA1

### WIRING REQUIREMENTS

Network Transceiver Type	Free Topology Transceiver (FTT10A)
Cable Type	2 conductor unshielded twisted pair, 16 AWG (Belden 85102, Belden 8471 or equivalents). If shielded cable is used, see Note 2.
Termination Style	Jumper Selectable Single / Double Termination (Internal)
Maximum Wire Length Between Optical Head & FibreLink III	820 feet (0.25 km) [must be Double Terminated] SEE NOTE 1.
Maximum Wire Length Between Enhanced Remote Panel & FibreLink III	820 feet (0.25 km) [must be Double Terminated] SEE NOTE 1.

### NOTES

1. Since the most frequent application of the FibreLink is as a means to reduce lightning strike damage to stack-mounted equipment, short distances of wire cable are highly encouraged. Long lengths of wire will reduce the effectiveness of the equipment for this purpose.
2. Shielded cable drain wires must be terminated as per installation drawing guidelines using shield termination kit, TML Part Number 0650-0400-01.
3. FibreLink III units function as repeaters, i.e., all network traffic is passed through in both directions.
4. The FibreLink III Standalone unit is designed for use with the 550 Opacity Monitor and the LightHawk 560. It may also be used with the Ultraflow 150.

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**APPENDIX A**  
**SPARE PARTS**

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## RECOMMENDED SPARE PARTS

The important spare parts for the FibreLink III are the internal circuit board, which is interchangeable between the Stack and Remote Units, and the external fuses for the Stack Unit. The following table contains recommended quantities based on the number of operating links at a given plant.

<b>Recommended Quantity</b>	<b>FibreLinks in Service At Plant*</b>	<b>Part Number</b>	<b>Description</b>
1	1 to 2	1903-2200-01	FibreLink III Standalone Circuit Board Assembly
2	3 to 5		
3	6 or more		
4	1 to 2	527367	0.5 Amp, 250 V, SLO-BLO Fuse (for Stack Unit)
8	3 to 5		
12	6 or more		

\* Each FibreLink in this table is composed of 2 circuit boards (one each for the Stack and Remote Units).

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**APPENDIX B**  
**DRAWINGS**

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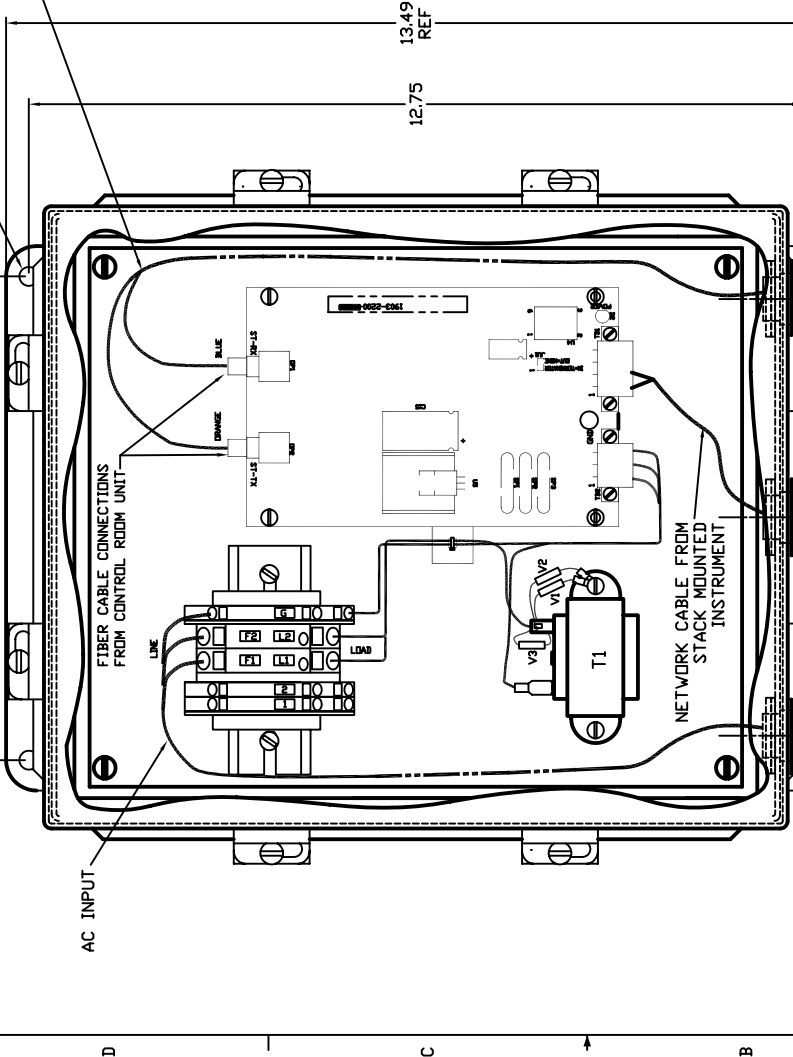
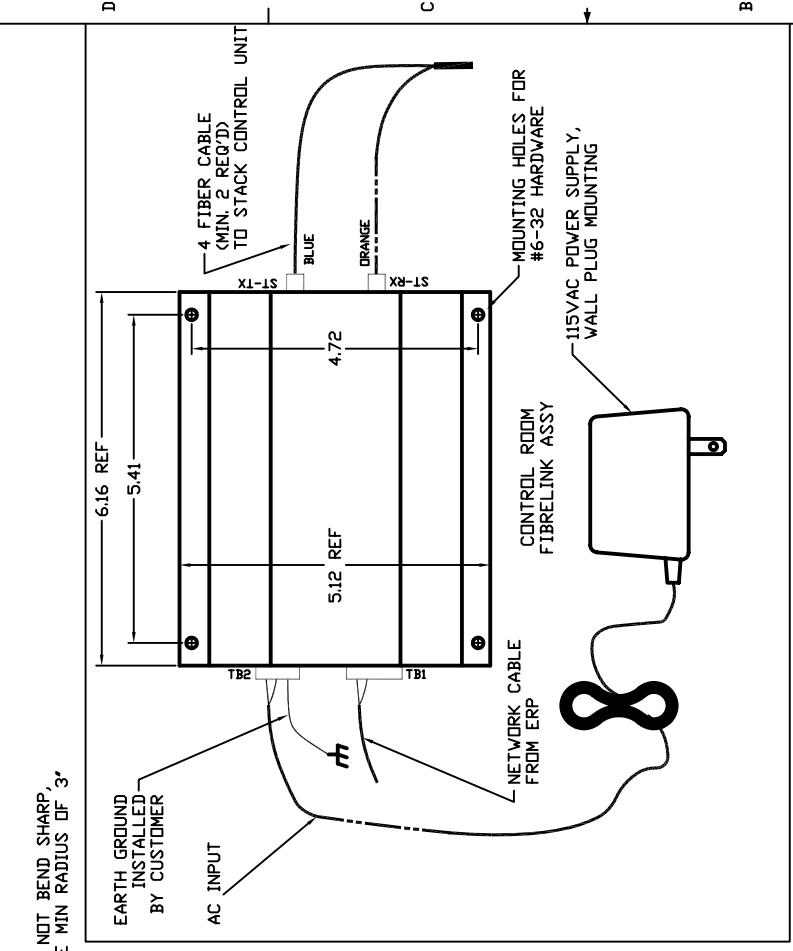












2. FIBERLINK III INTERFACE CONSISTS OF TWO CONTROL UNITS. ONE IS STACK MOUNTED IN A NEMA 4X ENCLOSURE AND THE OTHER IS LOCATED IN THE CONTROL ROOM. SUPPLIED WITH A WALL PLUG-IN POWER SUPPLY, THE NETWORK CABLES CONNECT BETWEEN THE T1M ELECTRONICS AND THE CONTROL UNITS AT EACH LOCATION. THE FIBER CABLE CONNECTS BETWEEN THE CONTROL UNITS.

1. FOR WIRING SEE DRAWING 1808-0003, SHEET 6 (550); 1808-0003, SHEET 5 (560); 1808-0003, SHEET 4 (150).

NOTES:

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