PURE DIGITAL
FIBERLINK®

Wideband Video with Four Audio Channels

USER'S MANUAL

Model 7130 Series

CSI Communications Specialties, Inc.

WORLD HEADQUARTERS

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GENERAL INFORMATION

Introduction:

The Pure Digital Fiberlink® 7130 Series is a transmitter/receiver pair that transmits a single channel of wideband video and four audio channels over one single mode or multimode fiber. It is available as a freestanding box unit or as a card version for use in the rackmountable 6000A card cage.

The system's all digital encoding delivers noise-free transmissions that retain all of their initial parameters, regardless of fiber optic cable attenuation. System operation may be easily monitored using integral indicator LEDs on each unit that continuously signify the presence of baseband video and audio signals.

Technical Specifications:

Model Part Numbering Configurations:

Unit Type	Part Number
Transmitter Box	7130-Bxy
Transmitter Rack Card	7130-Cxy
Receiver Box	7131-Bxy
Receiver Rack Card	7131-Cxy

x values: 1=850 nm MM
3=1310 nm MM
7=1310 nm SM
9=1550 nm SM

y values: S=ST connector
F=FCPC connector

Video

Frequency Response ..... 15 MHz (-3dB), +/-0.1 dB to 8 MHz

Input/Output Impedance ..... 75 Ohms

Input/Output Voltage ..... 1 V p-p nom.

Video Gain Adjust	+/- 4%
Differential Phase	0.5° typical
Differential Gain	0.7% typical
Signal-to-Noise Ratio	67dB per RS-250C
Y/C Delay	4 ns
Signal Connectors	BNC

Audio

Frequency Response	+0/-0.5 dB, 20 Hz to 20 kHz
Input Impedance	600 Ohms terminated or >24 k Ohms unterminated; balanced or unbalanced
Output Impedance	50 Ohms
Input/Output Voltage	+ 24 dBu max
THD+N	0.002%; 20 Hz - 20 kHz
SNR (A-Weighted)	95 dB
Channel Phase Differential	+/- 0.1°
Crosstalk	Min. 95 dB (1 kHz)
Signal Connectors	Removable terminal block

Optical

Operating Wavelength	850nm, 1310nm, 1550nm MM/SM
Optical Fiber	62.5/125 microns MM or 8-10/125 microns SM
Optical Connectors	ST or FCPC

Loss Budget and Maximum Transmission Distance:

Wavelength (nm)	Loss Budget (in dB)	Distance* (in km)
850 MM	0-20	0-.75
1310 MM	0-25	0-2
1310 SM	0-23	0-60
1550 SM	0-25	0-80

**Distance specifications are only approximate and are not guaranteed. Operating loss budget must not be exceeded.*

Miscellaneous:

Operating Temp. Range ..... -35 to +60 degrees C

Operating Power ..... 9-24 Volts AC or DC@7 watts (max)

CAUTION! The transmitting element in some versions of the Pure Digital Fiberlink transmitter unit is a solid-state Laser Diode located in the optical connector on the unit. This device emits invisible infrared electromagnetic radiation which can be harmful to human eyes. The radiation from this optical connector, if viewed at close range without a fiber optic cable connected to the optical connector, may be of sufficient intensity to cause instantaneous damage to the retina of the eye. Direct viewing of this radiation should be avoided at all times.

INSTALLATION INSTRUCTIONS

Installation Procedure

The Pure Digital Fiberlink 7130 Series transmission systems are preset for immediate use with audio input circuitry set for balanced 600 Ohm input impedance and output set for balanced audio. Other protocols may be easily selected using the flip switches located on the back panel of the unit. (See table on Page 7.) There are indicator LEDs on the units for monitoring purposes and several user selectable options for configuring audio inputs and

outputs. The following instructions describe the typical installation procedure and the function of the LED indicators.

1. Connect the video source to the video input BNC connector on the transmitter unit.
2. Connect the video output BNC on the receiver unit to the coax cable BNC connector.
3. Connect the fiber optic cable between the two Pure Digital Fiberlink units.

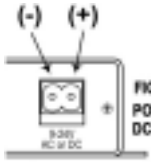

FIGURE1:
POWER CONNECTOR
DC INPUT POLARITY

4. Apply power to both Pure Digital Fiberlink units. Refer to Figure 1 for DC power connection.
5. When power is applied, the green POWER LED will light, indicating the presence of operating power. The VIDEO LED will give an indication as described on Page 9.
6. Adjust the "VIDEO GAIN" trim pot on the receiver unit to the desired output video level. It is located on the rear panel of the box version and the front panel of the card version.
7. Connect the audio input signals to the proper positions on the removable terminal blocks. Refer to the next section for details. Be certain to check all connections, making sure that inputs and outputs are not intermixed. Remember...the various audio options have been preset (as explained previously). If unbalanced high-input impedance or unbalanced output is desired, please refer to the instructions on Page 7.
8. The green AUDIO LEDs (one per channel) will give an indication as stated on Pages 9 and 10.

Note that the rack card version has an additional red LED for indicating the presence of an alarm condition (loss of signal). See table on page 8 for alarm enables.

9. The system should now be operational.

System Terminal Block Connections

The input and output connections for the Pure Digital Fiberlink 7130 Series system are as follows:

Audio Connector - Transmitter Unit:

	Balanced	Unbalanced
Position 1-	Channel 1 Input (-)	Channel 1 Ground
Position 1+	Channel 1 Input (+)	Channel 1 Signal
Position G	Ground	
Position 2-	Channel 2 Input (-)	Channel 2 Ground
Position 2+	Channel 2 Input (+)	Channel 2 Signal
Position 3-	Channel 3 Input (-)	Channel 3 Ground
Position 3+	Channel 3 Input (+)	Channel 3 Signal
Position G	Ground	
Position 4-	Channel 4 Input (-)	Channel 4 Ground
Position 4+	Channel 4 Input (+)	Channel 4 Signal

Audio Connector - Receiver Unit:

	Balanced	Unbalanced
Position 1-	Channel 1 Output (-)	Channel 1 Ground
Position 1+	Channel 1 Output (+)	Channel 1 Signal
Position G	Ground	
Position 2-	Channel 2 Output (-)	Channel 2 Ground
Position 2+	Channel 2 Output (+)	Channel 2 Signal
Position 3-	Channel 3 Output (-)	Channel 3 Ground
Position 3+	Channel 3 Output (+)	Channel 3 Signal
Position G	Ground	
Position 4-	Channel 4 Output (-)	Channel 4 Ground
Position 4+	Channel 4 Output (+)	Channel 4 Signal

System Switch Settings

The audio interface circuit used in this product has external switches that are used to configure the signal options. If you wish to make changes to the factory default settings, please refer to the following charts:

Audio Input (Transmitter Unit)

Audio Input Channel	Switch Position	On	Off
1	1	600 Ohm input impedance	24K Ohm input impedance
	2	unbalanced input	balanced input
2	3	600 Ohm input impedance	24K Ohm input impedance
	4	unbalanced input	balanced input
3	5	600 Ohm input impdance	24K Ohm input impedance
	6	unbalanced input	balanced input
4	7	600 Ohm input impedance	24K Ohm input impedance
	8	unbalanced input	balanced input

Audio Output (Receiver Unit)

Audio Output Channel	Switch Position	On	Off
1	1	unbalanced output	balanced output
2	2	unbalanced output	balanced output
3	3	unbalanced output	balanced output
4	4	unbalanced output	balanced output

Note: Switches 5,6,7 and 8 are not used on the 7031-Bxy and should be left in the off position.

Alarm Switch Settings (Transmitter; Card Version Only)

Switch Position	Alarm Indication	On	Off
1	Video Detect	Enabled	Disabled
2	Spare	N/A	N/A
3	Spare	N/A	N/A
4	Spare	N/A	N/A

Alarm Switch Settings (Receiver; Card Version Only)

Switch Position	Alarm Indication	On	Off
1	Link Detect	Enabled	Disabled
2	Video Detect	Enabled	Disabled
3	Spare	N/A	N/A
4	Spare	N/A	N/A

Indicator LEDs and Alarm Circuitry

The stand-alone box version of the Pure Digital Fiberlink 7130 Series transmission unit has six integral indicator LEDs that are used to monitor the state of the unit.

The rack card version of this product has an additional red indicator LED that lights when an alarm condition exists The rack card unit also provides an output to drive a model 6020 Alarm Sensing Module which provides an audible tone and activates a set of contacts for external signaling purposes.

The status of the LEDs are as follows:

TRANSMITTER and RECEIVER:

Power: ON: (Green) Indicates that correct power has been applied

TRANSMITTER:

Video: OFF: Indicates no video detected on input BNC.
STEADY GREEN: Indicates video detected on input BNC.

Audio 1,2,3,4: OFF: Indicates no audio detected on the transmitter unit
BLINKING: Indicates audio detected on the transmitter unit

Alarm: ON: Loss of video (rack card only)

RECEIVER:

Video: OFF: Indicates no video detected over fiber and, as a result, no video present on output BNC

STEADY GREEN: Indicates video detected over fiber and, as a result, video present on output BNC.

RECEIVER (continued):

Audio 1,2,3,4: OFF: Indicates no audio detected over fiber and, as a result, no active audio detected by the receiver unit

BLINKING: Indicates audio detected over fiber and, as a result, active audio detected by the receiver unit

Alarm: ON: Loss of video or optical signal (rack card only)

OPERATING POINTERS AND TROUBLESHOOTING

Optical Fiber:

The 7130 Series is available in versions that operate with most multimode (MM) and single mode (SM) optical fibers. Be certain that the correct size fiber is being used for the particular transmitter/receiver combination.

Also, remember to check the attenuation and bandwidth of the fiber optic cable. The system will only operate properly if these specifications fall within the range of the system's loss budget.

Trouble shooting:

Multimode fiber optic cable contains an optical fiber with a light carrying "core" that is only .0025 inches (62.5 microns) in diameter. Single mode fiber optic cable has an even smaller "core," only .00032 to .0004 inches (8-10 microns). This is smaller than a human hair! Therefore, any minute particles of dirt or dust can easily block the fiber from accepting or radiating light. To prevent this from happening, always use the provided dust caps whenever optical connectors are exposed to air. It is also a good idea to

gently clean the tip of an optical connector with a lint-free cloth moistened with alcohol whenever dust is suspected.

The status of the VIDEO and AUDIO indicator LEDs should provide the first clue as to the origin of any operational failure. If these are off, it usually means that the fiber is broken or has too much attenuation. Next, be certain that the input and output signal connections are correct.

Finally, although multimode and single mode devices may look the same, they will not operate properly together. Using the wrong device or fiber can easily add more attenuation than specified, resulting in poor overall performance.

If, after reviewing the above possibilities, the system is still not operating, please contact the Customer Service Department for further assistance.

MAINTENANCE

The Pure Digital Fiberlink 7130 Series transmission units have been manufactured using the latest semiconductor devices electronic design techniques and should provide long, reliable and trouble-free service. They are not normally field repairable. Should difficulty be encountered, Communications Specialties maintains a complete service facility to render accurate, timely and reliable service of all products.

The only maintenance that can be provided by the user is to make sure that optical connectors are thoroughly clean and that electrical connections are secure and accurate.

All other questions or comments should be directed to our Customer Service Department. Many problems can easily be solved by a simple telephone call.

LIMITED WARRANTY

Communications Specialties, Inc. (CSI) warrants that for a period of three years after purchase by the Buyer, the Pure Digital Fiberlink 7130 Series Transmission System will be free from defects in material and workmanship under normal use and service. A Return Material Authorization (RMA) number must be obtained from CSI before any equipment is returned by the Buyer. All material must be shipped to CSI at the expense and risk of the Buyer. CSI's obligation under this warranty will be limited, at its option, to either the repair or replacement of defective units, including free materials and labor. In no event shall CSI be responsible for any incidental or consequential damages or loss of profits or goodwill. CSI shall not be obligated to replace or repair equipment that has been serviced by unauthorized personnel, altered, improperly installed or abused.

RMA numbers and repairs can be obtained from:

Communications Specialties, Inc.
55 Cabot Court
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Please have your serial number (located on the top label of the unit) available when contacting us.