



## **USER'S MANUAL**

### **Models 7220 and 7221**



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## GENERAL INFORMATION

### Introduction

The Pure Digital Fiberlink® 7220 Series is a transmitter/receiver pair that transmits a single channel of RGBHV video and two audio channels over one single mode or multimode fiber. It is available as a free-standing 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 Number Configurations:

Unit Type	Part Number
Transmitter Box	7220-B7S
Transmitter Rack Card	7220-C7S
Receiver Box	7221-B7S
Receiver Rack Card	7221-C7S

All units transmit at 1310 nm wavelength over single mode or multimode fiber. ST connectors are provided.

#### Video:

Input Impedance ..... RGB: 75 Ohms; H&V: Hi-Z  
Input Level ..... RGB: 714 mV p-p; H&V: 3 to 5 V p-p  
H Sync Frequency Range ..... 31.5 to 60 kHz  
V Sync Frequency Range ..... 30 to 85 Hz  
Number of Video Channels ..... 1 RGBHV  
RGB Format Supported ..... RGB with separate H and V

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Signal Connectors .....	HD-15F
RGB Processing .....	24 bits, no compression or scaling
<b>Audio:</b>	
Number of Audio Channels .....	2, unbalanced
Frequency Response .....	+0/-0.5 dB, 20 Hz to 20 kHz
Input Impedance .....	>24 k Ohms
Output Impedance .....	<1 Ohm
Maximum Audio Level .....	+10 dBu
THD+N .....	0.005%; 20 Hz - 20 kHz
SNR (A-Weighted) .....	95 dB
Channel Phase Differential .....	+/-0.1°
Crosstalk .....	Min. 95 dB (1 kHz)
Signal Connectors .....	3.5mm Stereo jack
Audio to Video Diff. Delay (skew) .....	<300 uS

**Optical:**

Operating Wavelength .....	1310 nm; MM or SM
Optical Fiber .....	62.5/125 microns MM, 50/125 microns MM or 8-10/125 microns SM
Optical Connector .....	ST

*Class I Laser Product complies with FDA performance standard for laser products, Title 21, Code of Federal Regulations, Sub-Chapter J*

**Miscellaneous:**

Operating Temp. Range .....	-20 to +60 degrees C
Operating Power .....	9-24 Volts AC or DC@5 watts (max.)

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## Loss Budget and Maximum Transmission Distance:

Wavelength	Loss Budget (in dB)	Distance* (in km)
1310 MM	0-15	0-0.75
1310 SM	0-15	0-35

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

**DANGER!** The transmitting element in the Pure Digital Fiberlink 7220 transmitter unit contains a solid state Laser Diode located within the optical connector. 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

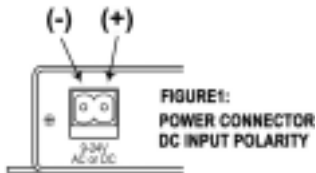
### Installation Procedure:

The Pure Digital Fiberlink® 7220 Series transmission systems are ready for immediate use. There are indicator LEDs on the units for monitoring purposes. The following instructions describe the typical installation procedure and the function of the LED indicators.

1. Connect the video source to the video input HD-15F connector on the transmitter unit.
2. Connect the video output on the receiver unit to the HD-15F connector.
3. Connect the fiber optic cable between the two Pure Digital Fiberlink units.
4. Connect the audio input signals to the transmitter stereo jack and the audio output to the receiver stereo jack.

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5. Apply power to both Pure Digital Fiberlink® units. For box versions using DC power connections, refer to Figure 1.



6. 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 8.

7. The green AUDIO LED will give an indication as stated on Page 8.

8. The system should now be operational.

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

### System Connections:

The input and output connections for the Pure Digital Fiberlink® 7220 Series system are as follows:

Audio Connector (Transmitter & Receiver): 3.5mm stereo jack

Video Connector (Transmitter & Receiver): HD-15F connector

Video Pin Out:	Transmitter	Receiver
1	Red	Red
2	Green	Green
3	Blue	Blue
4	N/C	N/C
5	Ground	Ground
6	Ground	Ground
7	Ground	Ground

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**System Connections - “Video Pin Out” continued:**

Video Pin Outs:	Transmitter	Receiver
8	Ground	Ground
9	N/C	N/C
10	Ground	Ground
11	N/C	N/C
12	N/C	N/C
13	Hor. Sync. In	Hor. Sync Out
14	Vert. Sync In	Vert. Sync Out
15	N/C	N/C

**Alarm Switch Settings (Transmitter; Card Version Only):**

Switch Position	Alarm Indication	On	Off
1	Loss of Video	Enabled	Disabled
2	N/A	N/A	N/A

**Alarm Switch Settings (Receiver; Card Version Only):**

Switch Position	Alarm Indication	On	Off
1	Loss of Signal	Enabled	Disabled
2	Loss of Video	Enabled	Disabled

*Note: “Loss of Video” refers to either loss of horizontal or vertical sync. “Loss of Signal” refers to the absence of an optical signal.*

**Indicator LEDs and Alarm Circuitry:**

The stand-alone box version of the Pure Digital Fiberlink® 7220 Series transmission unit has three 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

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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 the input.

BLINKING GREEN: Indicates either H or V sync detected at the input but not both.

STEADY GREEN: Indicates both H and V sync detected on the input.

**Audio:** 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 the output.

BLINKING GREEN: Indicates either H or V sync detected over the fiber but not both.

STEADY GREEN: Indicates both H and V sync detected over fiber and, as a result, video present on the output.

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## **RECEIVER (continued):**

**Audio:** 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 7220 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.

### **Troubleshooting:**

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.

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The status of the VIDEO and AUDIO indicator LEDs should provide the first clue as to the origin of an 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 AND REPAIRS**

The Pure Digital Fiberlink® 7220 Series transmission units have been manufactured using the latest semiconductor devices and techniques that electronic technology has to offer. They have been designed for long, reliable and trouble-free service and 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 ascertain that the optical connectors are free of dust or dirt that could interfere with light transmission and that electrical connections are secure and accurate. **DANGER!** *Always disconnect the transmitter power before removing the optical fiber from the unit!*

All other questions or comments should be directed to our Customer Service Department. It should be noted that many “problems” can easily be solved by a simple phone call.

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## LIMITED WARRANTY

Communications Specialties, Inc. (CSI) warrants that for a period of three years after purchase by the Buyer, the Pure Digital Fiberlink® 7220 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. 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 damaged by fire, war, acts of God, or similar causes, or 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**

**Hauppauge, NY 11788 USA**

**Tel: (631) 273-0404 Fax: (631) 273-1638**

**www.commspecial.com Email: info@commspecial.com**

Or, in the Asia Pacific Region:

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**100 Beach Road, #22-09 Shaw Tower**

**Singapore 189702**

**Tel: +65 6391 8790 Fax: +65 6396 0138**

**Email: csiasia@commspecial.com**

Please have your serial number (located on the top label of the unit) available with contacting us.