



PURE DIGITAL
FIBERLINK®

**2 Channel/4Channel
Video Multiplexer
with 2-way Data**

USER'S MANUAL

7300 and 7400 Series



CSI **Communications
Specialties, Inc.**

WORLD HEADQUARTERS

55 Cabot Court

Hauppauge, N.Y. 11788 USA

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

www.commspecial.com

Email: info@commspecial.com

Communications Specialties Pte Ltd

100 Beach Road

#22-09 Shaw Tower

Singapore 189702

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

Email: csiasia@commspecial.com

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CONTENTS

General Information	3
Introduction	3
Technical Specifications	3
Installation Instructions	5
Installation Procedure	5
Indicator LEDs and Alarm Circuitry	6
System Switch Settings	7
System Terminal Block Connections	8
Operating Pointers and Troubleshooting	9
Maintenance	11
Warranty	12

GENERAL INFORMATION

Introduction

The Pure Digital Fiberlink® 7300 and 7400 Series transmit multiple channels of uncompressed composite video and bi-directional data in RS-232/422/485 protocols over a single fiber optic cable. (Two fiber versions are also available.) The 7300 Series (2 channels video) and 7400 Series (4 channels video) provide 7 MHz bandwidth per video channel and are compatible with NTSC, PAL and SECAM video standards. Systems are offered for use with single mode or multimode fiber. With a wide operating temperature range, the systems are suitable for any indoor or protected outdoor environment.

Systems consist of two units (transmitter and receiver), each equipped with indicator LEDs to continuously indicate the presence of power and video signals. The system is available in box or card version. Card units fit within the model 6000A card cage.*

Technical Specifications

Model Part Numbering
Configurations:

One Fiber Units**	Part Number
Transmitter Box	7310/7410-BXY
Transmitter Card*	7310/7410-CXY
Receiver Box	7311/7411-BXY
Receiver Card*	7311/7411-CXY

Two Fiber Units	Part Number
Transmitter Box	7320/7420-BXY
Transmitter Card*	7320/7420-CXY
Receiver Box	7321/7421-BXY
Receiver Card*	7321/7421-CXY

***One fiber units are available only in -3 or -7 wavelengths.*

*Card versions for the 7310/7311 fill one slot in the model 6000A card cage. Card versions for the 7320/7321, 7410/7411 and 7420/7421 fill two slots.

X Values:

- 1 = 850 nm Multimode
- 3 = 1310 nm Multimode
- 7 = 1310 nm Single Mode
- 9 = 1550 nm Single Mode

Y Values:

- S = ST connector
- F = FCPC connector

Video

Bandwidth 7 MHz (-3dB)
Input/Output Impedance ... 75 Ohms
Input/Output Voltage 1 Vp-p nom., 1.1 Vp-p max.
Differential Phase 0.5° typical
Differential Gain 1.0% typical
Signal-to-Noise Ratio 62 dB CCIR weighted
Signal Connectors BNC

Data/PTZ

Protocols Supported RS-232, RS-422, RS-485 2-wire,
RS-485 4-wire
Data Rate DC to 115 Kb/s
Signal Connectors Removeable terminal block

Optical

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

Wavelength	Loss Budget (in dB)		Distance* (in km)	
	1 Fiber	2 Fiber	1 Fiber	2 Fiber
850 MM	N/A	0-14	N/A	0-0.75
1310 MM	0-14	0-14	0-2	0-2
1310 SM	0-23	0-23	0-55	0-55
1550	N/A	0-23	N/A	0-75

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

Miscellaneous

Operating Temp. Range -35 to +75 degrees C
Operating Power 9 to 24 Volts AC or DC@5 watts (max)

CAUTION!

Some versions of the Pure Digital Fiberlink transmitter unit contain 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

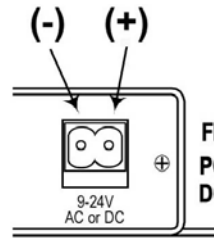
Installation Procedure

The Pure Digital Fiberlink 7300 and 7400 Series transmission systems are normally preset 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 fiber optic cable or cables between the two Pure Digital Fiberlink units.
2. The various options, as already mentioned, have been preset, with data protocol set as RS-232. If RS-422 or RS-485 (2 or 4 wire) are preferred, please refer to the instructions beginning on page 7.
3. If connecting more than one Pure Digital Fiberlink unit on one data line (daisy chaining) while in either RS-422 or RS-485 4-wire modes, you must set the unit to the RS-485 4-wire multidrop mode.
4. When power is applied, the green POWER LED will light, indicating the presence of operating power. Refer to Figure 1 on the following page for DC power connection. The green VIDEO LED(s) will give an indication as stated on the following page. Note that the

rack card version will have an additional red LED to indicate the presence of an alarm condition.

5. The green DATA LED(s) will give an indication as stated below.
6. The system should now be operational.



**FIGURE1:
POWER CONNECTOR
DC INPUT POLARITY**

Indicator LEDs and Alarm Circuitry

The stand-alone box versions of the Pure Digital Fiberlink 7300 and 7400 Series transmission units have integral LEDs that are used to monitor the state of the unit. There are two video LEDs and one data LED on the 7300 units. There are four video LEDs and one data LED on the 7400 units. The LEDs are labeled VID 1, VID 2, VID 3, VID 4 and data.

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

Transmitter and Receiver:

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

Transmitter:

Video: OFF: Indicates no video detected on input BNC connector

ON: Indicates video detected on input BNC connector

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

Data: BLINKING: Indicates active data detected to or from transmitter unit

OFF: No data detected to or from the transmitter unit

Receiver:

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

ON: Indicates video detected over fiber and, as a result, video present on output BNC

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

Data: BLINKING: Indicates active data detected to or from receiver unit

OFF: No data detected to or from the receiver unit

System Switch Settings

The data interface circuit used in this product has external switches that are used to configure the various signal options. These are preset to RS-232 at the time of shipment. If changes are required, the positions of these switches must be changed in accordance with the following table.

Data Input/Output Plug-in

Switches 1,2,6,7,8 and 9 are used to select the desired protocol.

Positions for these are as follows:

Protocol	1	2	6	7	8	9
RS-232	Off	Off	Off	Off	Off	Off
RS-422/485 (4 wire point-to-point)	Off	On	Off	Off	On	On
RS-485 (4 wire multidrop)	On	On	Off	Off	On	On
RS-485 (2 wire Auto xmit/receive)	On	Off	On	On	On	Off

Switches 3, 4 and 5 are used only in the RS-485 configurations to select the auto time interval that the unit will wait before switching back to the receive mode (tri-state).

The following table indicates switch positions for RS-485 protocol.

Baud Rate	Time	3	4	5
2400	4.73 mS	On	Off	Off
4800	2.20 mS	On	On	Off
9600	1.10 mS	On	On	On
19.2K	620 uS	Off	On	Off
38.4K	300 uS	Off	On	On
57.6K	180 uS	Off	Off	On
76.8K	150 uS	Off	Off	Off

Switch position 8: When switch is on, then 120 Ohm termination is applied to data input.

Switch position 9: When switch is on, then 120 Ohm termination is applied to data output.

System Terminal Block Connections

The various input and output connections for the Pure Digital Fiberlink 7300 and 7400 Series are as follows:

Video Input or Output: BNC Connectors

Data Input/Output Connector:

Data terminal block positions 1 through 5 can be used as data inputs or outputs, depending on the protocol selected. Refer to the chart on the following page.

RS-232	
Position 1	Signal to be transmitted
Position 3	Signal being received
Position G	Signal Common

RS-422/RS-485 4 wire (point-to-point or multidrop)	
Position 1	Signal to be transmitted (+)
Position 2	Signal to be transmitted (-)
Position 3	Signal being received (+)
Position 4	Signal being received (-)
Position G	Shield Ground

RS-485 2 wire	
Position 1	Signal being transmitted or received (+)
Position 2	Signal being transmitted or received (-)
Position G	Shield Ground

OPERATING POINTERS AND TROUBLESHOOTING

Optical Fiber:

The 7300 and 7400 Series are 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 be certain that the attenuation and bandwidth of the fiber optic cable being used is within the range of the system's loss budget specifications.

General:

The status of any of the VIDEO or DATA LEDs should provide the first clue as to the origin of any operational failure. If the VIDEO or DATA LEDs on the receiver unit 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 proper.

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.

Data Circuit:

Even when installed exactly as directed, it is possible that the data function may fail to operate properly when using the Pure Digital Fiberlink 7300 or 7400 units in the RS-485 2-wire auto xmit/receive mode. If this problem occurs, it may be that your units are attempting to interface with other manufacturers' products that have resting states opposite to the way in which your Pure Digital Fiberlink units have been programmed. (No standard exists.) You can compensate for this condition by simply switching the polarities of the (+) and (-) pins. To do this, first swap the Tx (+) and Tx (-) pins with one another and then do the same for the Rx (+) and Rx (-) pins. Make sure to do this on both the transmitter and receiver units.

If, after reviewing these possibilities, the system is still not operating, please contact the Customer Service Department for further assistance. (See page 8 for contact information.)

MAINTENANCE

The Pure Digital Fiberlink 7300 and 7400 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 optical connectors are free of dust or dirt that could interfere with light transmission and that electrical connections are secure and accurate.

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 telephone call.

WARRANTY

Communications Specialties, Inc. (CSI) warrants that for a period of three years after purchase by the Buyer, the Pure Digital Fiberlink 7300 and 7400 Series Transmission Systems 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 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 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:

Communications Specialties Pte Ltd
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 when contacting us.