GE
Security

**Fiber Optic System**
**Digital Four-Channel Video Multiplexer**
**Models S707V and S7707V**

# installation instructions

imagination at work

## GENERAL

This manual is a guide to the installation and operation of the S707V series fiber optic video multiplexer systems. Please read the entire manual before installing the equipment.

**NOTE:** The series numbers S707VT and S707VR are used to describe all models of transmitters and receivers unless noted otherwise.

The Series S707V digital video multiplexers offer simultaneous digital transmission of four full-frame video signals (color or monochrome) over multimode or single-mode fibers.

A complete system consists of an S707VT transmitter and an S707VR receiver.

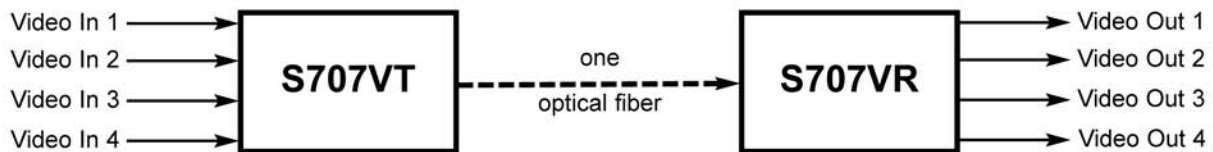Units are designed for installation in Fiber Options' 503H, 515R1 or 517R1 Card Cages.

### Unpacking the Unit

In the event that anything is missing from the following list, contact your authorized Fiber Options dealer or representative.

    S707VT Transmitter or S707VR Receiver
    (S7707T Transmitter or S7707VR Receiver)
    Instruction manual

Save the original packing materials in case it becomes necessary to return the unit.

## SYSTEM DIAGRAM

Video In 1 ——→ | **S707VT** | - - one optical fiber - -→ | **S707VR** | ——→ Video Out 1
Video In 2 ——→
Video In 3 ——→
Video In 4 ——→
Video Out 2
Video Out 3
Video Out 4

## INSTALLATION

### Installation Considerations

This fiber-optic link is supplied as a standalone module or as a rack card. Units should be installed in dry locations protected from extremes of temperature and humidity.

### Standalone Modules

1. Determine where the module will be installed, and ensure that there is adequate space at both ends for making the various cable connections. See Figure 1.

**FIGURE 1: MOUNTING PLATE**

Mounting plate attaches to selected surface with four suitable screws. Standalone modules are mounted by sliding it onto the plate's hooks until firmly seated. The module can be easily removed and remounted.

MOUNTING HOLES
#6 FLAT HEAD
4 PL

.87 — 1.50

3.00

2.62

3.25
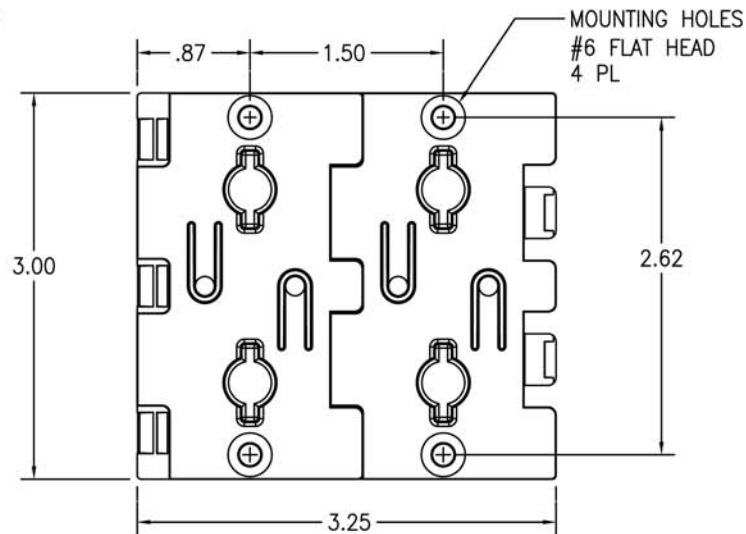
## Rack Cards

Rack cards are designed to be installed in one of Fiber Options' 19-inch (483-mm) EIA standard card-cage racks, either the 503H, 515R1, or the 517R1, or in the 501R standalone enclosure. Follow these guidelines to install rack cards after performing the MODULE SETUP procedures.

### 515R1 and 517R1 Card Cage Racks

**CAUTION:** Although rack cards are hot-swappable and may be installed without turning off power to the rack, Fiber Options recommends that the power switch on the rack power supply be turned OFF and that the rack power supply is disconnected from any power source.

1. Make sure that the card is oriented right-side up, and slide it into the card guides in the rack until the edge connector at the back of the card seats in the corresponding slot in the rack's connector panel. Seating may require thumb pressure on the top and bottom of the card's front panel.

**CAUTION:** Take care not to press on any of the LEDs.

2. Tighten the two thumb screws on the card until the front panel of the card is seated against the front of the rack.

### 503H Horizontal Card Cage

**CAUTION:** The rack card module can only be powered by 13.5 - 16 VDC. AC power must not be used.

**CAUTION:** Fiber Options recommends that the card cage is not connected to any power source during installation.

1. Look inside the card cage to determine the location of the socket for the edge connector on the card. Orient the card so that it will seat in the socket, and slide it into the card guides in the card cage until the edge connector at the back of the card seats in the socket. Seating may require thumb pressure on the top and bottom of the card's front panel.

**CAUTION:** Take care not to press on any of the LEDs.

2. Tighten the two thumb screws on the card until the front panel of the card is seated against the front of the card cage.
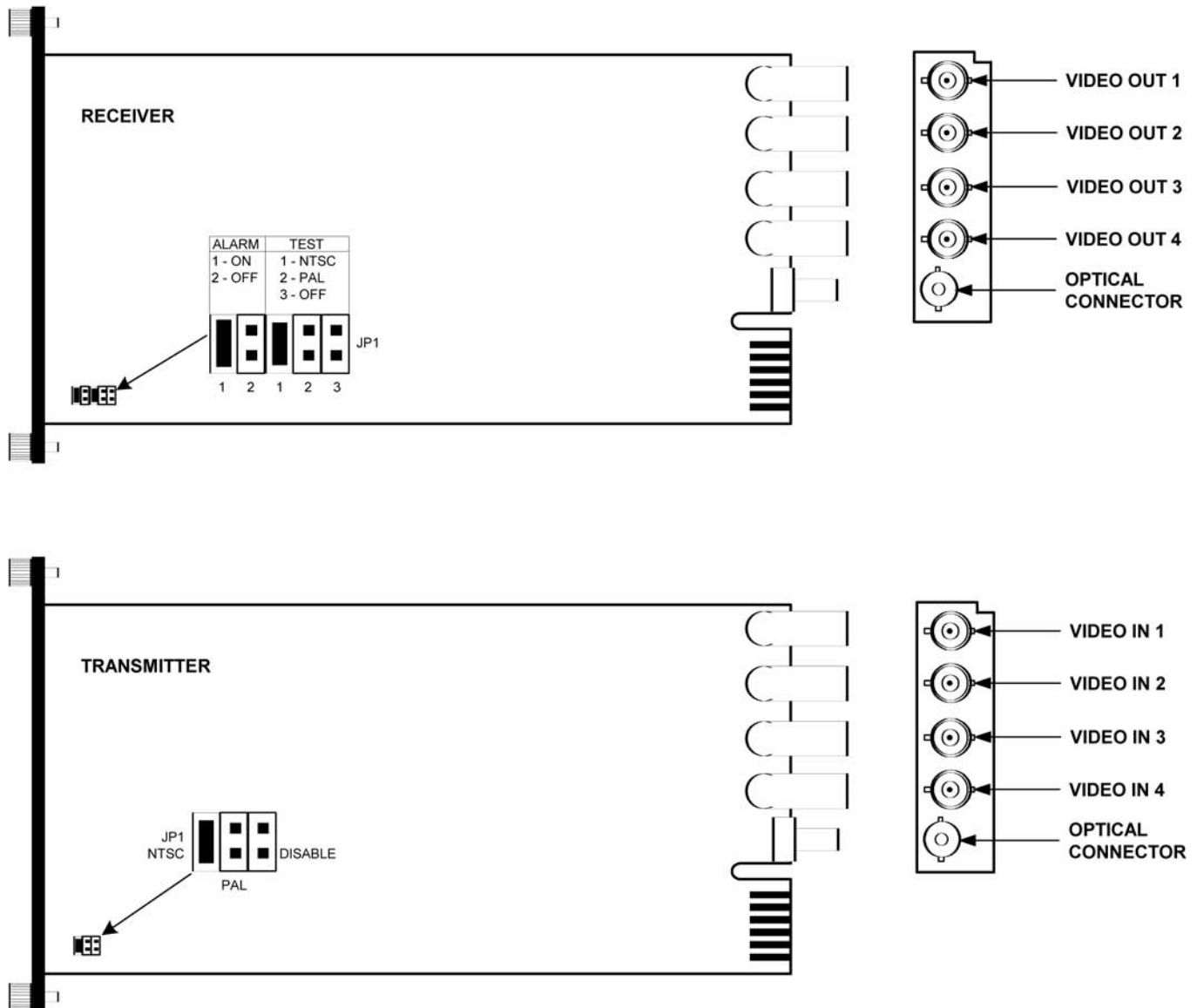
### 501R Rack Card Enclosure

**CAUTION:** The rack card module can only be powered by 13.5 - 16 VDC. AC power must not be used.

**CAUTION:** Fiber Options recommends that the enclosure is not connected to any power source during installation.

1. Look inside the enclosure to determine the location of the socket for the edge connector on the card. Orient the card so that it will seat in the socket, and slide it into the card guides in the enclosure until the edge connector at the back of the card seats in the socket. Seating may require thumb pressure on the top and bottom of the card's front panel.

**CAUTION:** Take care not to press on any of the LEDs.

**FIGURE 3: S707V RACK-MOUNT RECEIVER AND TRANSMITTER**
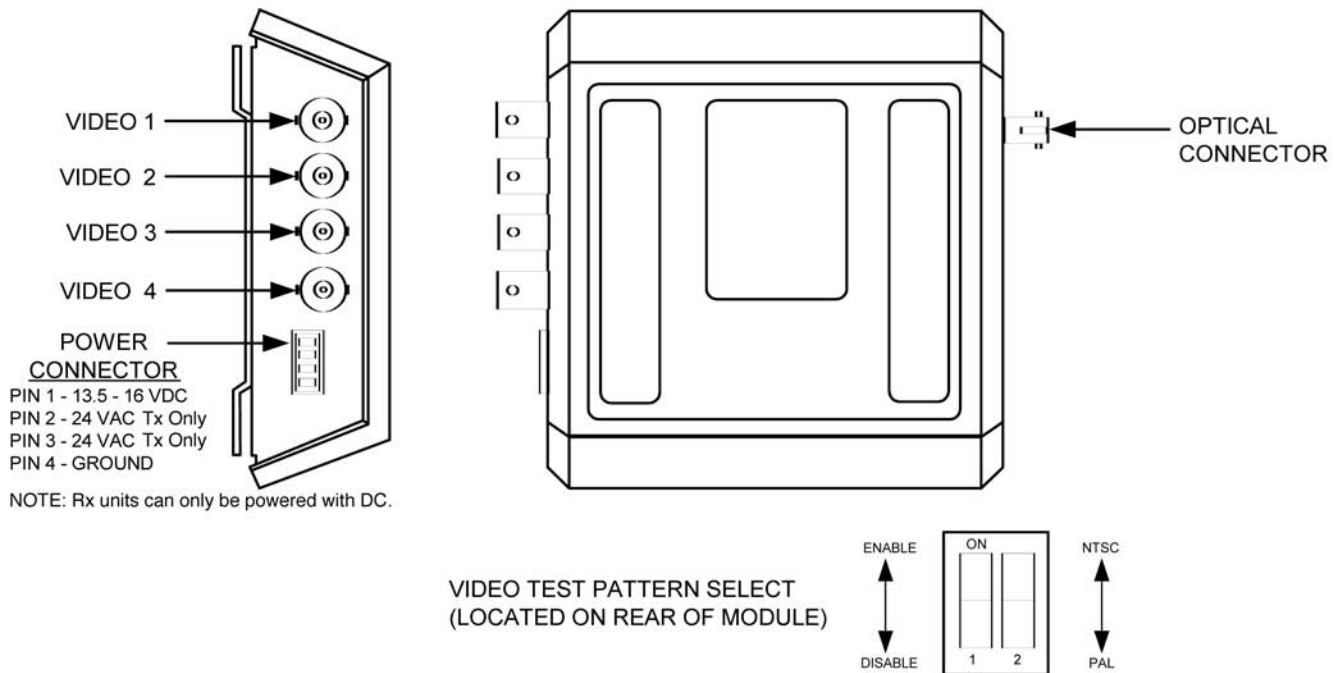


## MODULE SETUP

### Alarm Jumper

Rack cards are supplied with an alarm function that activates if the optical signal input to the receiver fails. The alarm is always indicated on the front panel of the card by a red LEVEL/LOSS™ LED.

2. Tighten the two thumb screws on the card until the front panel of the card is seated against the front of the enclosure.

The alarm may also be output to the rack power supply, where a sonalert (audible alarm) and alarm output contact closure may be activated.

The alarm is set to ON (position 1) at the factory. If the alarm output is not desired, move the ALARM jumper JP1 to position 2 (OFF). See Figure 3.

**NOTE:** Setting the ALARM jumper JP1 to position 2 (OFF) does not affect the operation of the LEVEL/LOSS™ LED. Loss of optical signal will always be indicated by a red LEVEL/LOSS™ LED.

**FIGURE 4: S707V STANDALONE TRANSMITTER/RECEIVER**

VIDEO 1

VIDEO 2

VIDEO 3

VIDEO 4

POWER
CONNECTOR
PIN 1 - 13.5 - 16 VDC
PIN 2 - 24 VAC Tx Only
PIN 3 - 24 VAC Tx Only
PIN 4 - GROUND

NOTE: Rx units can only be powered with DC.

OPTICAL
CONNECTOR

VIDEO TEST PATTERN SELECT
(LOCATED ON REAR OF MODULE)

ENABLE / DISABLE    ON    1    2    NTSC / PAL

## Video Format/Test Pattern Generator

The S707V links support both NTSC and PAL video standards without adjustment. The S707VT transmitter and S707VR receiver have jumpers to select the video format for the test pattern generator. To set the video format for the test pattern generator:

**NOTE:** In order for the test pattern generator to operate properly, both the transmitter and receiver must be set to the same format.

1. On rack modules, place jumper on JP1 as per local video standard (the PC Board is labeled "NTSC, PAL, OFF"). See Figure 3.

2. On standalone units, switch S1, located through a hole on back of the unit, configures the test pattern generator. Position 1 enables test patterns when in the "ON" position. S1 position 2 selects video standard; "ON" selects NTSC, while "OFF" selects PAL. See Figure 4.

## CONNECTIONS

All fiber-optic links convert electrical signals into a light source at the transmitter and convert the light back to electrical signals at the receiver.

The electrical connections to the S707V series consist of four BNC connectors and one optical connector on both the transmitter and the receiver.

### Video Cable Connections

**CAUTION:** Make sure all peripheral equipment to be connected to the fiber units is turned OFF during installation.

**NOTE:** Fiber Options suggests that Belden number 9259 or equivalent coaxial cable should be used. Consult the cable manufacturer's specifications for the maximum distance between the video equipment and the fiber equipment.

**NOTE:** Coaxial cable must be terminated with female BNC connectors to properly couple with the Fiber Options equipment.

1. Connect the four video sources, such as cameras, to the input BNC connectors on the S707VT transmitter using terminated coaxial cable. See Figures 3 and 4.

2. Connect the monitoring equipment to the output BNC connectors on the S707VR receiver using terminated coaxial cable. See Figures 3 and 4.

## Fiber Optic Cable Connection

Most cable manufacturers identify the individual fibers in the cable. Select appropriately terminated fiber and mark both ends with unique identification label (e.g. for cable no. 03, fiber no. 08) to ensure that the fiber connected to the near end is the same one that is connected to the far end.

The proper optical connection will link the transmitter's TRANSMIT (OUT) port to the receiver's RECEIVE (IN) port. See Figures 3 and 4.

1. Wipe the inside of the port's sleeve with a lint-free pipe cleaner moistened with reagent-grade isopropyl alcohol. Blow dry with dry air.

2. Clean the connector using a lint-free cloth dampened with alcohol to thoroughly wipe the side and end of the ferrule. Blow the ferrule dry with dry air. Visually inspect the ferrule for lint.

## Power Connections

### Standalone Modules

Standalone units may be powered either by 24 VAC or by 13.5 VDC. Connect input power according to the label on the module. See Figure 4.

### Rack Modules

**CAUTION:** The rack card can only be powered by 13.5 VDC. AC power must not be used.

Power connections are made automatically when the card is installed. To supply power to the rack, connect the rack power supply to an AC outlet and set the power switch to ON.

Power up the peripheral equipment and verify the operation by observing video on the monitor at the receiver end for each channel.

### *SMARTS*™ DIAGNOSTICS

The S707V has built in Status Monitoring And Reliability Test System (*SMARTS*™) diagnostic capabilities. This includes LED indicators for monitoring optical status as well as video test pattern generators for verifying unit functionality. They are described in the following sections.

## Video Test Patterns

The S707V includes an internal video test pattern generator that can ease installation and troubleshooting. The test patterns generated can notify the user of a fiber failure or a video source failure by outputting specific test patterns on the user's monitor.

This will verify proper functionality of the digital decoding process as well as troubleshooting fiber optic interconnections.

Follow the procedures described in VIDEO FORMAT/TEST PATTERN GENERATOR on page 4 to enable the test pattern generator.

Table 1 provides a summary of the on-screen diagnostics displays that are available.

Disabling the test pattern generator causes no signal output during failure conditions.

## LED Operation

Refer to the Table 2 for an explanation of how to diagnose system faults using the LEDs built into the Fiber Options units.

The S707V has 3 LED indicators that are very useful in describing the current state of operation, as well as the current video status and fiber optic signal strength. See Figure 5. These indicators are LEVEL/LOSS™, VIDEO IN (or OUT), and LASER. They function as follows:

### LEVEL/LOSS™ Indicator
This LED is useful for indicating the relative optical signal strength at the fiber optic receiver. When sufficient optical power is being received, the LED is green. If no or insufficient optical power is received, the LED will be red. If test patterns are enabled a grey screen with two white vertical bars will be output. If test patterns are disabled the screen will be black.

### VIDEO IN (or OUT) Indicator
This LED indicates the presence of a video signal. The VIDEO IN LED on the transmitter remains green as long as an adequate video signal is being input to the transmitter. The LED will be off when no video signal is present.

NOTE: To provide earth ground reference, Stand Alone (Enclosure) modules need to be connected to a good earth ground. This can be accomplished by connecting a copper-based conductor from the modules *DC Common/Ground* pin to an approved earth ground.

The VIDEO OUT LED on the receiver performs a similar function, except that it refers to the video that is output from the receiver.

If test patterns are enabled a grey screen with a single white vertical bar pattern will be output when no video is present. If disabled, the screen will be black.

**NOTE:** The S707V monitors the video sync signals to determine the presence of the signal. It does not monitor the picture brightness signal. Thus, if the scene in front of a camera is totally dark, producing a blank monitor screen, the VIDEO IN/OUT LEDs will still be green.

### LASER Indicator

The S707VT transmitter has LASER LEDs that indicate the status of the laser. A green LASER LED indicates the laser is operating normally. A red LASER LED indicates the laser is malfunctioning.

### OPERATION

S707V links operate automatically once installed. Refer to Table 1 for a description of on-screen diagnostic indications. For an explanation of LED color codes, refer to LED OPER-ATION and Table 2.
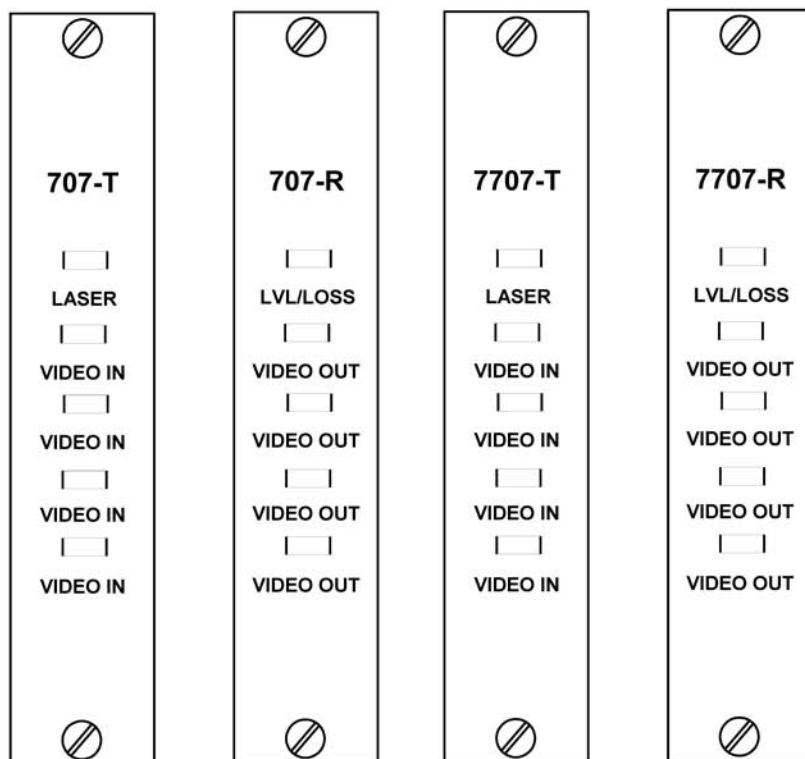
### MAINTENANCE

There is no operator maintenance other than keeping the units clean.

Have the following information available: exact model number and product code of your fiber-optic links, and a listing of the diagnostic indicators and their respective color/condition.

### SHIPPING AND PACKAGING

Before shipping or transporting your Fiber Options unit, pack it securely to prevent damage that could occur in transit. Use care to protect all connectors, LEDs, and corners from possible damage.

**FIGURE 5: S707V RACK-MOUNT TRANSMITTER AND RECEIVER FRONT PANELS**

| 707-T | 707-R | 7707-T | 7707-R |
|---|---|---|---|
| LASER | LVL/LOSS | LASER | LVL/LOSS |
| VIDEO IN | VIDEO OUT | VIDEO IN | VIDEO OUT |
| VIDEO IN | VIDEO OUT | VIDEO IN | VIDEO OUT |
| VIDEO IN | VIDEO OUT | VIDEO IN | VIDEO OUT |
| VIDEO IN | VIDEO OUT | VIDEO IN | VIDEO OUT |

**TABLE 1: ON SCREEN DIAGNOSTICS**

| Monitor Display | Meaning |
|---|---|
| Single white bar | No video input to transmitter on that channel |
| Double white bar | No optical input to receiver |
| Video test pattern | No video input to the transmitter on any channel |

**TABLE 2: LED DIAGNOSTIC INDICATORS**

| LED Name | Color | Indicates/*Corrective Action* |
|---|---|---|
| LEVEL/ LOSS™ | Green | Sufficient optical power received. *No action required.* |
| | Red | Insufficient optical power received. *Verify fiber connected & within optical budget, receiver power on.* |
| VIDEO IN | Green | Adequate video input signal. *No action required.* |
| | Off | Inadequate video input signal. *Check video source and coaxial cable.* |
| VIDEO OUT | Green | Adequate video signal received from transmitter. *No action required.* |
| | Off | Inadequate video signal received from transmitter. *Check video input to transmitter and check LEVEL/LOSS™ for optical signal strength.* |
| LASER | Green | Laser is operating correctly. *No action required.* |
| | Red | Laser is inoperative. *Contact Fiber Options.* |

## Customer Support

For assistance in installing, operating, maintaining, and troubleshooting this product, refer to this document and any other documentation provided. If you still have questions, please contact technical support during normal business hours (Monday through Friday, excluding holidays, between 6 a.m. and 5 p.m. Pacific Time).

### GE Security

Call: 888 437-3287 (US, including Alaska and Hawaii; Puerto Rico; Canada)
Outside the toll-free area: 503 885-5700
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