GE
Security

**Fiber Optic Video Transmission System
Models S701V and S701V2**

installation instructions

GE

imagination at work

GENERAL

This manual is a guide to the installation and operation of the S701V and S701V2 series fiber optic video transmission system. Please read the entire manual before installing the equipment.

NOTE: The series number S701V is used to describe all models unless noted otherwise.

The Series S701V video transmission system offers one-way transmission of video from a camera to a monitoring station over one or two fibers. The S701V is a multimode link using a single fiber, while the S701V2 is a multimode link using two fibers.

A complete system consists of either one or two transmitters and one or two receivers, depending on the model.

Units are designed for standalone operation or for installation in Fiber Options' 503H, 515R1 or 517R1 Card Cages.
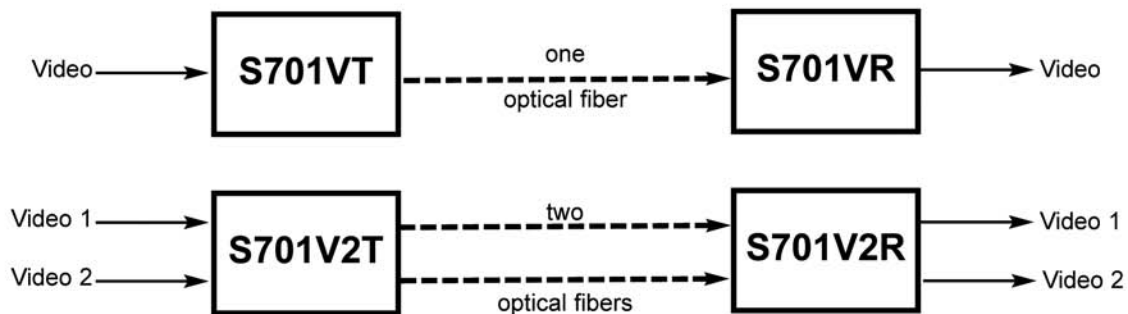
Unpacking the Unit

In the event that anything is missing from the following list, contact your authorized Fiber Options dealer or representative.
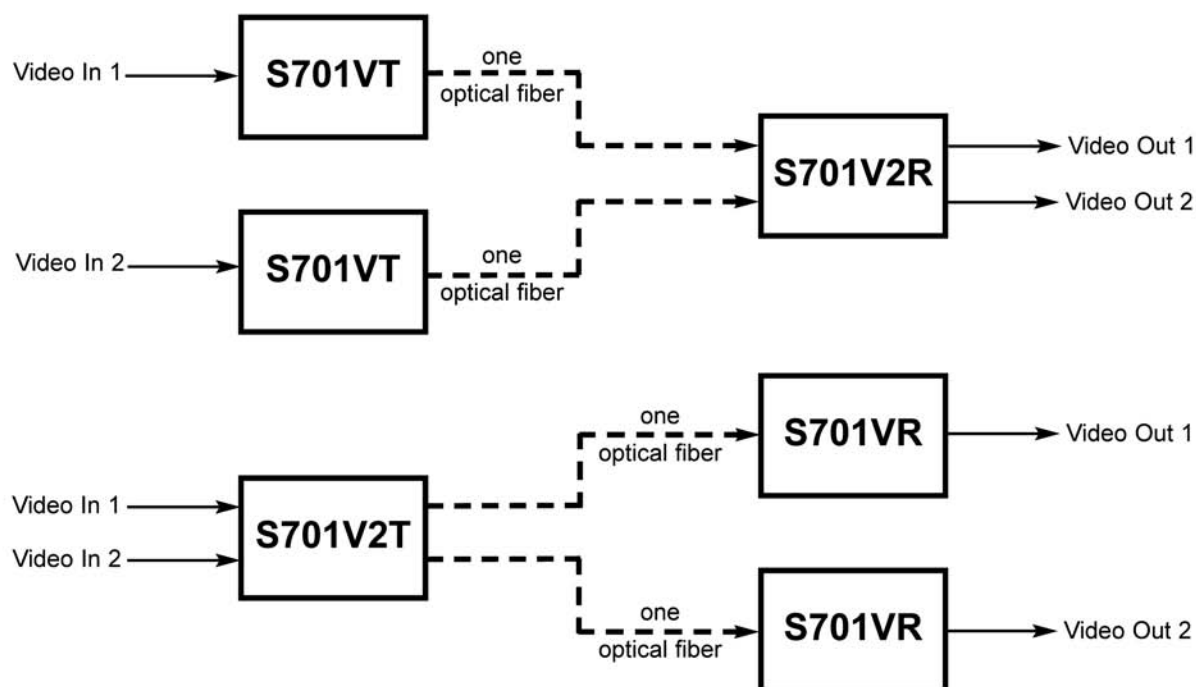   S701VT or S701V2T Transmitter(s) and S701VR or S701V2R Receiver(s)
    Instruction manual
Save the original packing materials in case it becomes necessary to return the unit.

BASIC SYSTEM DIAGRAMS

See Figure 1 for additional system configurations.

FIGURE 1: ADDITIONAL SYSTEM CONFIGURATIONS

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. The type of screws used for mounting must be suitable for the surface where a module will be mounted

Standalone Modules

Standalone modules are provided with a mounting plate with holes for two No. 6 flat head screws (3-mm or 3.5-mm). The type of screws must be suitable for the surface where a module will be mounted. See Figure 2.

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

2. Attach the mounting plate to a flat surface using two mountiung screws. Once the plate is securely attached, align the tabs in the plate with the holes in the rear of the module and apply downward pressure until the module snaps in place.

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. They may also be installed in one of the 501R, 502R, or 503R standalone rack card enclosures. Follow these guidelines to install rack cards.

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.

FIGURE 2: STANDALONE MOUNTING BRACKET
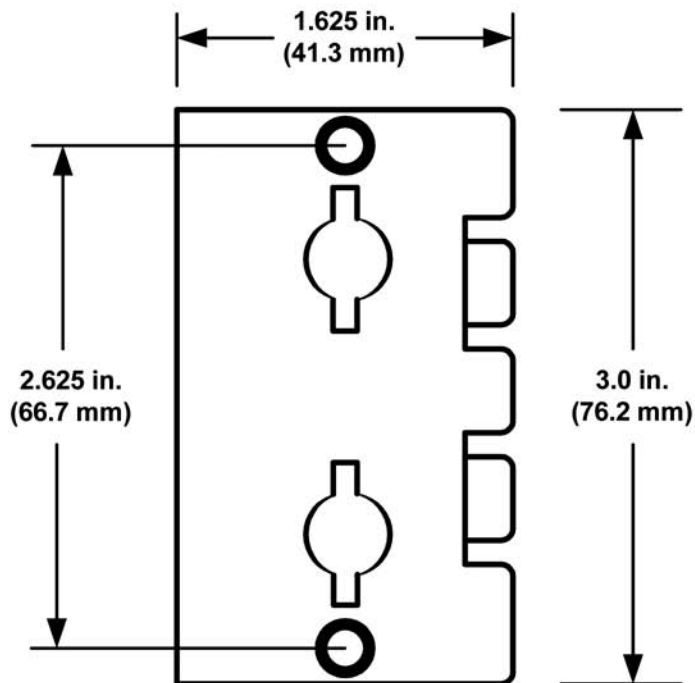
503H Horizontal Card Cage

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, 502R and 503R Rack Card Enclosures

CAUTION: The rack card module can only be powered by 13.5 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.

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

CONNECTIONS

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

Video Cable Connection

The S701V has one BNC connector and one fiber connector on the transmitter and receiver. The S701V2 has two BNC connectors and two fiber connectors. See Figures 3 and 4.
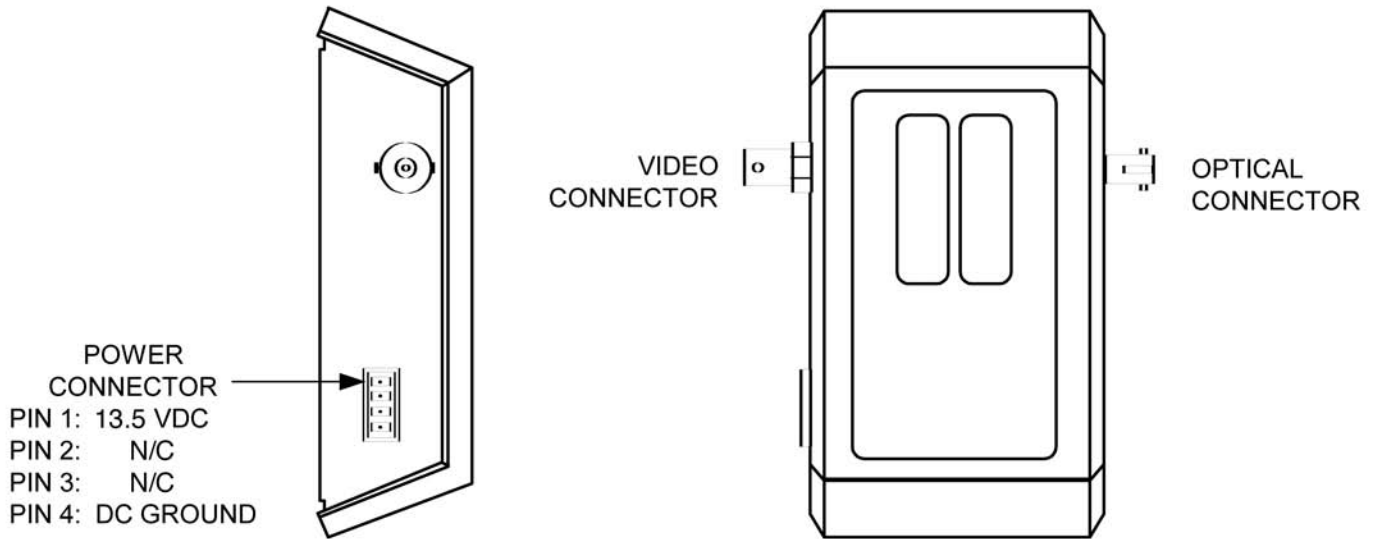
FIGURE 3: STANDALONE MODULE CONNECTIONS

VIDEO
CONNECTOR

OPTICAL
CONNECTOR

POWER
CONNECTOR
PIN 1: 13.5 VDC
PIN 2:   N/C
PIN 3:   N/C
PIN 4: DC GROUND

FIGURE 4: RACK-MOUNT MODULE CONNECTIONS

S701VT-R

FIBER

VIDEO IN

S701VR-R

VIDEO OUT

FIBER

S701V2T-R

FIBER
CHANNEL 2

VIDEO IN
CHANNEL 2

VIDEO IN
CHANNEL 1

FIBER
CHANNEL 1

S701V2R-R

FIBER
CHANNEL 1

VIDEO OUT
CHANNEL 1

VIDEO OUT
CHANNEL 2
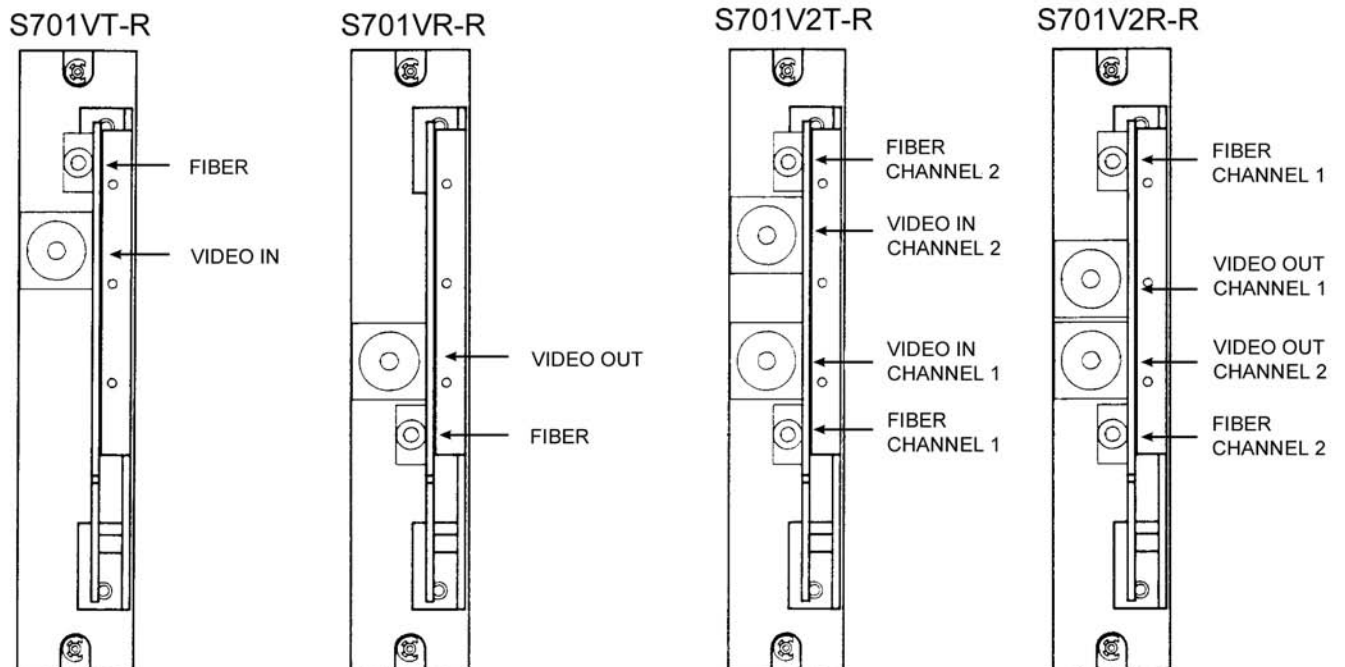
FIBER
CHANNEL 2

CAUTION: Make sure all peripheral equipment that will be connected to the fiber unit is turned OFF during installation.

Fiber Options recommends using Belden number 9259 or equivalent RG59/U coaxial cable between the video equipment and the fiber units. Do not exceed the maximum distance recommended by the manufacturer of the video equipment.

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

Connect the video equipment, such as a camera, to the input BNC jack on the S701VT transmitter using terminated coaxial cable. Connect the monitoring equipment to the output BNC jack on the S701VR receiver with terminated coaxial cable. (The S701V2T and S701V2R units have BNC connectors for two video sources or monitors.)

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.

3. Fasten the fiber optic cable to the port.

Power Connections

Standalone Modules
Standalone modules have a removable screw terminal connector for the electrical input connection.

Refer to Table 1 for 501R and 503H rack card enclosures and Figure 3 for standalone units.

1. Identify the power connector and remove it from the module.

2. Make sure the power supply is not connected to any power source, and strip approximately 0.25-in (6-mm) of insulation from the ends of the cable.

3. Taking care to observe the correct polarization of the cable, insert one lead into one of the screw sockets and tighten the screw. Repeat for the other conductor. Confirm the security of the connection by a light pull on the cable.

4. Seat the connector in its position in the fiber unit.

5. Plug the power supply into a suitable outlet.

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

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

Rack Modules
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.

SMARTS™ DIAGNOSTICS

The S701V has built in Status Monitoring And Reliability Test System (*SMARTS*™) diagnostic capabilities that includes LED indicators for monitoring video and optical status. They are described in the following sections.

LED Operation

The S701V has 2 LED indicators that are very useful in describing the current state of operation, as well as the fiber optic signal strength. These indicators are LEVEL/LOSS™ and VIDEO. See Figure 5. 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.

TABLE 1: STANDALONE ENCLOSURE POWER CONNECTIONS

Pin	Connection
1	Ground
2	Not Used
3	DC +

FIGURE 5: RACK-MOUNT MODULE BEZELS
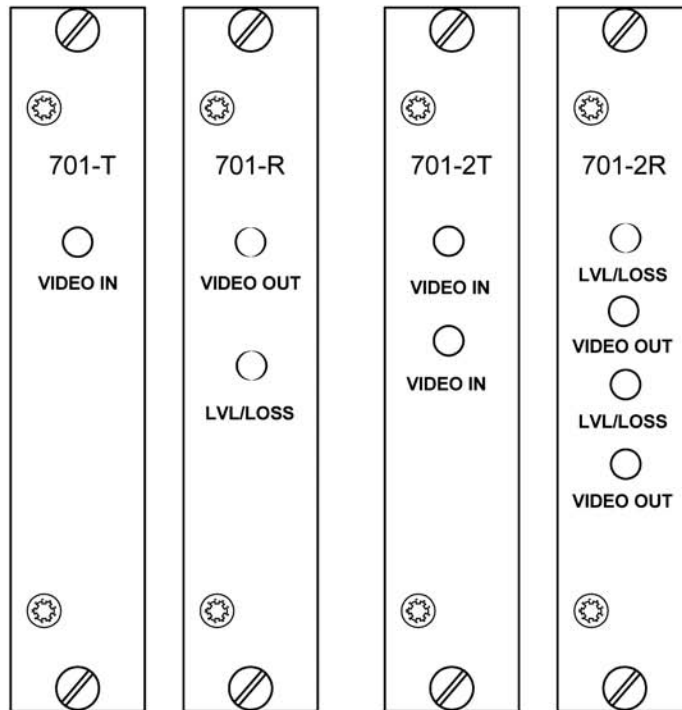
VIDEO Indicator

The VIDEO LED on the transmitter indicates the presence of a video signal. It will remain green as long as an adequate video signal is being input to the transmitter. The LED will be red when no video signal is present.

NOTE: A blank video screen can be a valid video input.

If the S701V fails to operate and the cause of the failure cannot be determined, it may be necessary to contact Fiber Options.

OPERATION

S701V and S701V2 links operate automatically once installed. Refer to the Table 2 for an explanation of how to diagnose system faults using the LEDs built into the Fiber Options units. For an explanation of LED color codes, refer to LED Operation on page 5.

MAINTENANCE

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

Built-In Termination

The S734DV features a built-in termination for RS-485, Manchester and Biphase installations. Simply connect a jumper as described in Tables 7 through 9.

Contact Closure Connections

There are four contact closure channels on this unit. Connecting external equipment to these channels is done using the removable screw terminal connectors on the module. Refer to Figure 6 and 8.

Each channel is indicated by a pair of terminal positions, for example, the two terminals labeled C1. Connect the two wires for the channel 1 relay/contact closure to these two pins. Repeat for channels 2, 3, and 4, using terminal pairs C2, C3, and C4, respectively.

Video Cable Connection

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 S734DVT transmitter using terminated coaxial cable. See Figures 6 and 8.

2. Connect the monitoring equipment to the output BNC connectors on the S734DVR receiver using terminated coaxial cable. See Figures 6 and 8.

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 6 and 8.

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.

3. Fasten the fiber optic cable to the port. As a convenience to the installer, one-fiber units have been fitted with an angled optical connector to permit easy access.

Power Connections

Standalone Modules
Standalone transmitters may be powered either by 24 VAC or by 13.5 VDC. Connect input power according to the label on the module. See Figure 6.

Rack Modules
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.

502R Enclosures
Rack cards installed in the 502R enclosure can only be powered by 13.5 VDC. Connect input power according to the label on the enclosure.

SMARTS™ DIAGNOSTICS

The S734DV has built in Status Monitoring And Reliability Test System (*SMARTS*™) diagnostic capabilities. This includes LED indicators for monitoring data and optical status as well as video and data generators for verifying unit functionality. They are described in the following sections.

Video Test Patterns

The S734DV includes an internal video test pattern generator that can ease installation and troubleshooting. Refer to Table 11. 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.

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.

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, transmitter and receiver power on.*
VIDEO	Green	Valid video signal at unit. *No action required.*
	Red	No video signal at unit. *Verify video connected, video source has power and is transmitting.*

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).

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