

GE  
Security

Fiber Optic Transmission System  
Current Loop Bi-Directional Data  
Models S717D and S7717D

# installation instructions



imagination at work

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## BEFORE YOU BEGIN

Read these instructions before installing or operating this product.

**Note:** This installation should be made by a qualified service person and should conform to local codes.

This manual provides installation and operation information. To use this document, you must have the following minimum qualifications:

- A basic knowledge of CCTV systems and components
- A basic knowledge of electrical wiring and low-voltage electrical hookups

## Intended use

Use this product only for the purpose for which it was designed; refer to the product specification and user documentation.

## 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 and Sales:

### GE Security

Call: 888 437-3287 (US, including Alaska and Hawaii; Puerto Rico; Canada)

Outside the toll-free area: 503 885-5700

[www.gesecurity.com](http://www.gesecurity.com)

**Note:** You should be at the equipment and ready with details before calling Technical Support.

## Conventions Used in this Manual

**Boldface** or button icons highlight command entries. The following **WARNING**, **CAUTION**, and **Note** statements identify potential hazards that can occur if the equipment is handled improperly:



**\* WARNING:**

Improper use of this equipment can cause severe bodily injury or equipment damage.

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**\*\* CAUTION:**

Improper use of this equipment can cause equipment damage.

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**Note:** Notes contain important information about a product or procedure.

\* This symbol indicates electrical warnings and cautions.

\*\* This symbol indicates general warnings and cautions.

## 1 INTRODUCTION

This is a guide to the installation and operation of the S717D and S7717D series fiber optic current loop transmission system. Please read the entire manual before installing the equipment.

**NOTE:** The series numbers S717DT and S717DR are used to describe all models of transmitters and receivers unless noted otherwise.

The Series S717D and S7717D transmission systems provide bidirectional data transmission of the 20 mA standard used in communication and monitoring systems. The S717D and S7717D series links can be interfaced with active or passive data transmission systems.

The S717D system operates over one or two multimode fibers and the S7717D uses one or two single-mode fibers. A complete system consists of an S717DT transmitter and an S717DR receiver, or a pair of S717D transceivers. Units are designed for installation in the 515R1 or 517R1 Card Cages or in the 501R rack card enclosure. Figure 1 shows a basic system diagram.

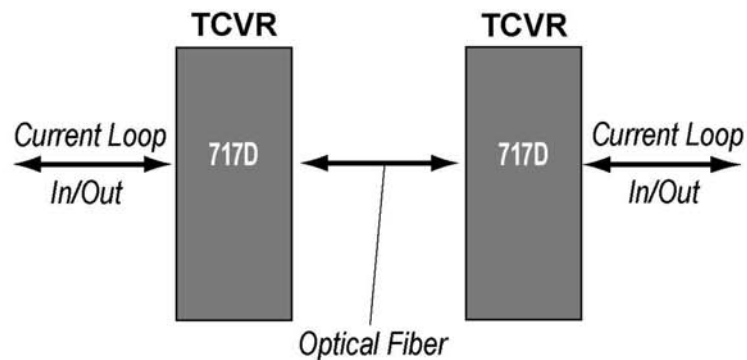


Figure 1. S717D System Diagram

## 2 MODULE SETUP

### 2.1 UNPACKING THE UNIT

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

- S717DT (S7717DT) Transmitter, S717DR (S7717DR) Receiver, or S717D (S7717D) Transceiver
- User Manual

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



**CAUTION:**

Take all necessary precautions to protect the unit from static electricity during the following procedures. Equipment damage may result.

### 2.2 OPTICAL ALARM

Rack cards are supplied with an alarm function that activates if the optical signal input to the module fails. This alarm can be output to the rack power supply, where an audible alarm and alarm output contact closure can be activated. The optical alarm is controlled using jumper JP4. To set the optical alarm, see Figure 2 and Figure 4 and perform the following.

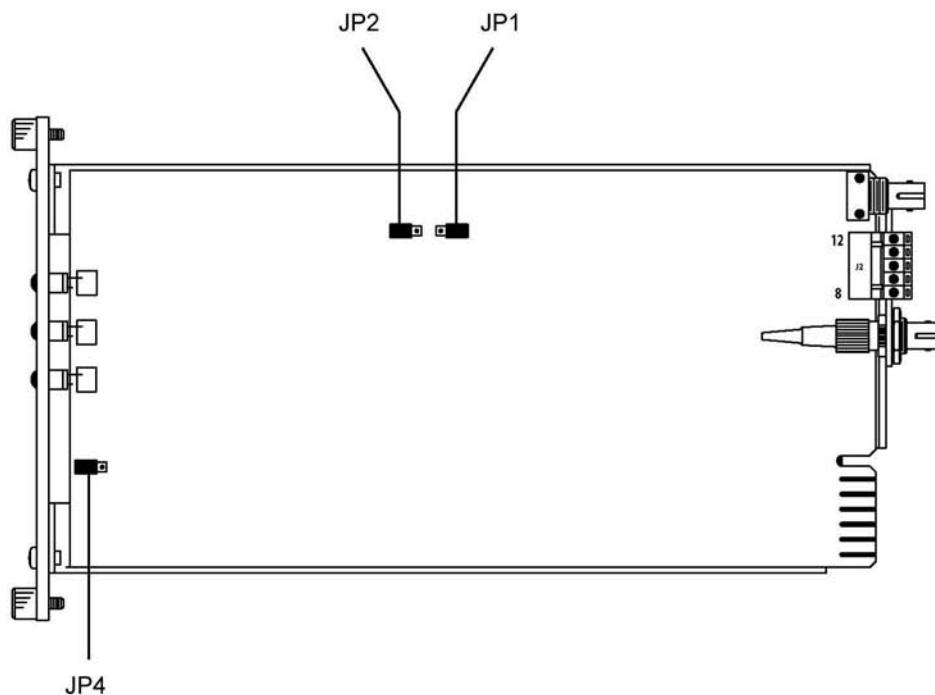


Figure 2. S717D Location of Jumpers

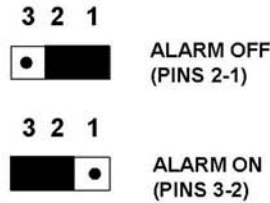


Figure 3. ALARM Jumper JP4

- 1) Connect jumper JP4 between pins 3-2 to enable the optical alarm.
- 2) If the optical alarm output is not desired, connect jumper JP4 between pins 2-1.

**NOTE:** Disabling the ALARM does not affect the operation of the LEVEL/LOSS LED. A red LED always indicates signal loss.

### 2.3 ACTIVE/PASSIVE JUMPERS

The S717D links can interface with passive or active data transmitters and data receivers. Depending on the requirements of the data equipment connected to each link, the S717D units can operate in the any of the following configurations:

- Active Transmitter and Active Receiver (non-isolated driver and non-isolated receiver)
- Active Transmitter and Passive Receiver (non-isolated driver and isolated receiver)
- Passive Transmitter and Active Receiver (isolated driver and non-isolated receiver)
- Passive Transmitter and Passive Receiver (isolated driver and isolated receiver)

Figure 4 shows a typical S717D application.

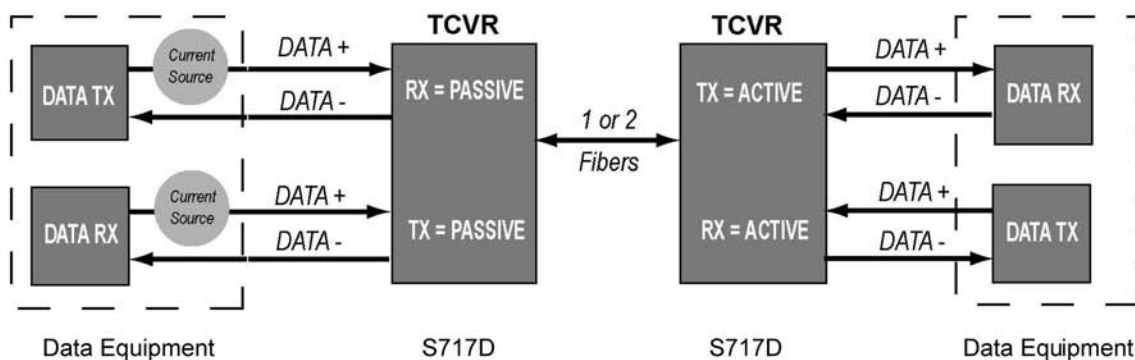


Figure 4. Typical S717D Application

Jumpers JP1 and JP2 enable you to set the data transmit and receive function on each link accordingly. To set the active and passive jumpers, see Figure 2 and Figure 5 and perform the following.

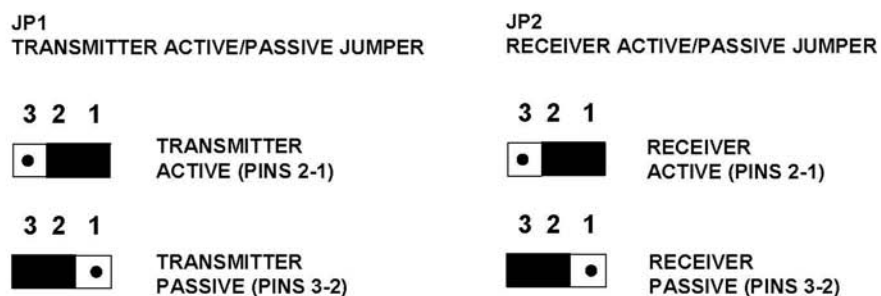


Figure 5. ACTIVE/PASSIVE Jumpers JP1 and JP2

- 1) Set JP1 and JP2 on the transmitter to ACTIVE or PASSIVE depending on the requirements of the data system connected to the link.
- 2) Set JP1 and JP2 on the receiver to ACTIVE or PASSIVE depending on the requirements of the data system connected to the link.

### 3 INSTALLATION

This fiber-optic link is supplied as a rack card. The rack cards can also be used in a standalone configuration if placed in a 501R rack card enclosure.

Units should be installed in dry locations protected from extremes of temperature and humidity.

#### 3.1 RACK CARDS

Rack cards are installed in a 19-inch (483-mm), EIA standard card-cage rack, either the 515R1 or the 517R1. Follow these guidelines to install rack cards.



**CAUTION:**

Although rack cards are hot-swappable and can be installed without turning off power to the rack, the power switch on the rack power supply should be turned off and the rack power supply disconnected from any power source before installing rack cards.

- 
- 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:**

Do not press on any of the LEDs when installing cards into the rack. Equipment damage may result.

- 
- 2) Tighten the two thumbscrews on the card until the front panel of the card is seated against the front of the rack.

#### 3.2 501R RACK CARD ENCLOSURES

Follow these guidelines to install rack cards in the 501R rack card enclosure.



**CAUTION:**

The rack card module can be powered only by 13.5 - 16 VDC. AC power must not be used. It is recommended that the 613P power adapter be used to supply power to the module. Damage to the equipment may result if AC power is used.



**CAUTION:**

Complete all instruction steps before supplying power to the unit.

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- 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:**

Do not to press on any of the LEDs when installing cards into the enclosure. Equipment damage may result.

- 2) Tighten the two thumbscrews on the card until the front panel of the card is seated against the front of the enclosure.
- 3) Determine where the module will be installed, and ensure that there is adequate space for making the various cable connections and for reading the diagnostic LEDs. See Figure 6.

**NOTE:** The type of screws chosen must be suitable for the surface on which the module is to be mounted.

- 4) Standalone modules can be attached to suitable flat surfaces with four No. 6 (3 mm) screws. After the enclosure is securely attached to a flat surface, the cable connections can be made.

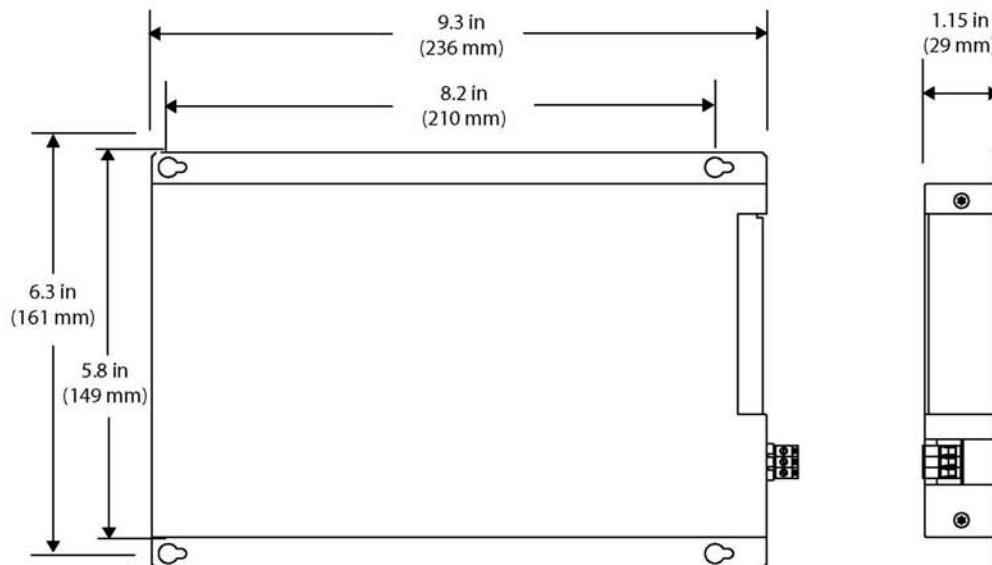
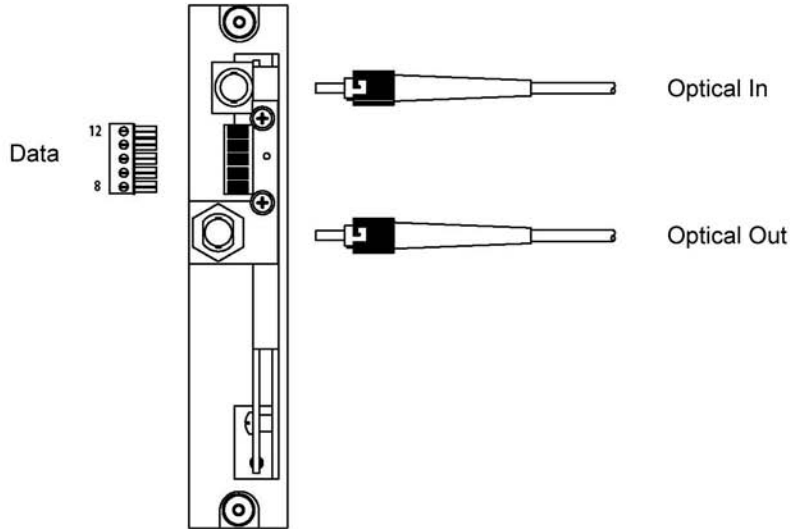


Figure 6. 501R Rack Card Enclosure Mounting Data

### 3.3 CONNECTIONS

All data and fiber connections are made to the back panel of the S717D module. When connecting data signals, always wire the signal OUT pins on the data equipment to the signal IN pins on the fiber links, and the signal IN pins on the data equipment to the signal OUT pins on the fiber links. See Figure 7.



**Note:** Only one connector is present on 1-Fiber models.

Figure 7. S717D 2-Fiber Module Back Panel Connections

### 3.3.1 DATA CONNECTIONS

Data signals are connected directly to the unit by wiring the 5-pin screw terminal connector (supplied with the unit) and attaching it to data connector J2 on the back panel of the unit. See Figure 2 and Figure 7. Refer to Table 1 through Table 4 for signal and pin information for each configuration.

Table 1. J2 Connections for ActiveTX/Active RX

JP1 – Active TX (2 – 1) JP2 – Active RX (2 – 1)	
Pin	Signal
12	DATA IN +
11	NO CONNECTION
10	DATA OUT +
9	NO CONNECTION
8	DATA IN/DATA OUT - (GROUND)

Table 2. 2 Connections for Active TX/Passive RX

JP1 – Active TX (2 – 1) JP2 – Passive RX (3 – 2)	
Pin	Signal
12	DATA IN -
11	DATA IN +
10	DATA OUT +
9	NO CONNECTION
8	DATA OUT -

Table 3. J2 Connections for Passive TX/Active RX

JP1 – Passive TX (3 – 2) JP2 – Active RX (2 – 1)	
Pin	Signal
12	DATA IN +
11	NO CONNECTION
10	DATA OUT -
9	DATA OUT +
8	DATA IN – (GROUND)

Table 4. J2 Connections for Passive TX/Passive RX

JP1 – Passive TX (3 – 2) JP2 – Passive RX (3 – 2)	
Pin	Signal
12	DATA IN -
11	DATA IN +
10	DATA OUT -
9	DATA OUT +
8	NO CONNECTION

### 3.3.2 FIBER OPTIC CABLE CONNECTIONS

Most cable manufacturers identify the individual fibers in the cable. Select appropriately terminated fiber and mark both ends with a 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 as the one 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 Figure 7.

- 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 reagent-grade isopropyl alcohol. 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.

### 3.3.3 STANDALONE MODULE POWER CONNECTIONS



**CAUTION:**

Standalone modules can be powered only by 13.5 - 16 VDC. AC power must not be used. Damage to the equipment will result.

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The 501R rack card enclosure has a removable screw terminal connector for the electrical input connection. Pin 1 of this connector is the GROUND terminal, pin 2 is not used, and pin 3 is the +DC terminal as marked on the enclosure. Connect the input power as follows.

- 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 inches (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. Confirm the security of the connection with a light pull on the cable.

- 4) Repeat step 3 for the other conductor.
- 5) Seat the connector in its position in the fiber unit.
- 6) Plug the power supply into a suitable outlet.
- 7) Power up the peripheral equipment and verify system operation by observing video on the monitor at the receiver end.

#### **3.3.4 RACK MODULE POWER CONNECTIONS**

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.

## 4 OPERATION

### 4.1 NORMAL OPERATION

S717D fiber links operate automatically after installation. For description of LED color codes, refer to LED Operation below. Refer to section 5, Troubleshooting, for an explanation of how to diagnose system faults using the LEDs built into the units.

### 4.2 LED OPERATION

The S717D modules have built-in Status Monitoring And Reliability Test System (SMARTS™) diagnostic capabilities that include LED indicators for monitoring the current status of the data input and output signals and fiber optic signal strength.

These indicators are LEVEL/LOSS, DATA IN, and DATA OUT. See Figure 8. The operation of the front panel LEDs is described in the following paragraphs.

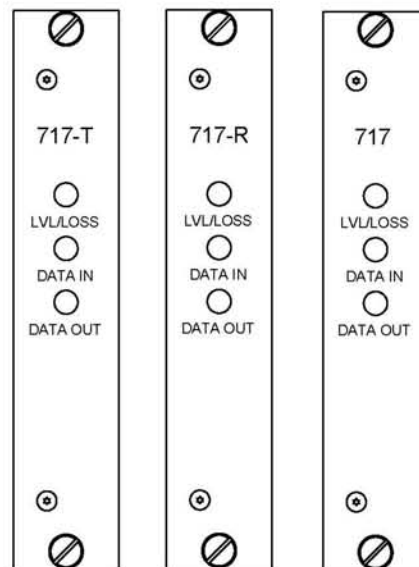


Figure 8. Front Panel LEDs

#### 4.2.1 LEVEL/LOSS INDICATOR

This LED indicates the relative optical signal strength received at the module. When sufficient optical power is being received, the LED is green. As the optical power decreases, as happens through long fiber runs, splices or connections, the LEVEL/LOSS LED stays green until the optical power drops below the minimum level.

The LEVEL/LOSS LED will turn bright red to indicate an insufficient amount of optical power is being received. All data will default to its failure state level to eliminate bus contention.

#### **4.2.2 DATA IN/OUT INDICATORS**

The DATA IN LED indicates the level of the data signal being input to the S717D over copper. A green DATA IN LED indicates a logic HIGH is present on the data inputs. An amber DATA IN LED indicates a logic LOW is present on the copper.

The S717D has special circuitry to capture data transitions and make them visible on the LEDs. High-speed bursts of activity, previously undetectable by standard LED circuits, are easily seen by this special circuitry.

The DATA OUT LED functions identically to the DATA IN LED except that the LED represents data that is being output from the unit. This LED has the same high-speed capture circuitry as the DATA IN LED.

## 5 TROUBLESHOOTING

Table 5 contains troubleshooting information for the S717D units.

Table 5. *Troubleshooting*

<b>Problem</b>	<b>Probable Cause</b>	<b>Solution</b>
Red LEVEL/LOSS LED	Fiber not connected	Connect fiber to receiver and transmitter
	Transmitter/Receiver not powered up	Connect and apply power to module
DATA IN LED does not change state (remains amber or green)	No data activity	Check data source and cabling
	ACTIVE and/or PASSIVE jumpers set incorrectly	Check and reconfigure ACTIVE and/or PASSIVE jumpers
	Incorrect input wiring to module	Check/correct wiring

## 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

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