FS85011A Fiber Transmitter

Single-Channel Digitally Encoded Video with Bidirectional Data

C2606M-A (6/09)
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Important Safety Instructions

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer’s instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the points where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
14. Apparatus shall not be exposed to dripping or splashing and that no objects filled with liquids, such as vases shall be placed on the apparatus.
15. **WARNING:** To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.
16. Installation should be done only by qualified personnel and conform to all local codes.
17. Unless the unit is specifically marked as a NEMA Type 3, 3R, 3S, 4, 4X, 6, or 6P enclosure, it is designed for indoor use only and it must not be installed where exposed to rain and moisture.
18. Use only installation methods and materials capable of supporting four times the maximum specified load.
19. A CCC-approved power cord must be used to power this equipment when used in China.
20. **CAUTION:** These servicing instructions are for use by qualified service personnel only. To reduce the risk of electric shock do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so.

The product and/or manual may bear the following marks:

⚠️ This symbol indicates that dangerous voltage constituting a risk of electric shock is present within this unit.

⚠️ This symbol indicates that there are important operating and maintenance instructions in the literature accompanying this unit.
Regulatory Notices

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Radio And Television Interference

This equipment has been tested and found to comply with the limits of a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Changes and Modifications not expressly approved by the manufacturer or registrant of this equipment can void your authority to operate this equipment under Federal Communications Commission’s rules.

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.
DESCRIPTION

The FS85011A fiber transmitter is designed for quick and easy installation into the back box of Spectra III™ and Spectra® IV domes.

**NOTE:** The FS85011A transmitter can also be included as part of an ExSite™ explosionproof positioning system at the factory.

Compatible with the FR85011A/FR85011 receiver, the FS85011A transmitter provides the ability to send one unidirectional composite video channel and one bidirectional RS-422 data channel over one optical fiber (refer to Figure 1). In addition, patent-pending technology provides the solution for allowing Coaxitron® pan/tilt/zoom (PTZ) control data to be transmitted the full distance of the fiber (refer to Figure 2).

![Figure 1. Single-Channel Video and RS-422 Application](image1)

![Figure 2. Single-Channel Video and Coaxitron Data Application](image2)
Features of the FS85011A fiber optic transmission system include the following:

- Eight-bit digitally encoded video for high-quality video transmission over a single fiber
- Bidirectional RS-422 data channel or Coaxitron communication
- Integrated wavelength division multiplexing (WDM), allowing video and data channels to be transmitted in the same optical fiber using different wavelengths
- Multimode fiber support for distances up to 6 km (3.7 mi)
- Single-mode fiber support for distances up to 46 km (28.6 mi)
- Laser diode for transmission of optical signals
- Exceeds all requirements for the RS-250C Medium-Haul Transmission specification
- Compatible with NTSC, PAL, and SECAM video standards
- No performance adjustments required
- LED indicator for monitoring of signal status

In addition, note the following information:

- For optical power budget and maximum transmission distance specifications of the FS85011A transmitter when used with the FR85011A/FR85011 receiver, refer to Specifications on page 17. For additional information about the FR85011A/FR85011 receiver, refer to the manual supplied with the receiver.

**MODELS**

The FS85011A transmitter consists of the following series of models:

**Multimode Models:**

- FS85011AMST: Single-channel fiber optic video transmitter/data transceiver; multimode, ST connector; 6 inch (15.24 cm) cable; compatible with FR85011AMSTR and FR85011MSTR receivers
- FS85011AMSTEX: Single-channel fiber optic video transmitter/data transceiver; multimode, ST connector; 6 ft (1.83 m) cable; compatible with FR85011AMSTR and FR85011MSTR receivers

**Single-Mode Models:**

- FS85011ASST: Single-channel fiber optic video transmitter/data transceiver; single-mode, ST connector; 6 inch (15.24 cm) cable; compatible with FR85011ASSTR and FR85011SSTR receivers
- FS85011ASSTEX: Single-channel fiber optic video transmitter/data transceiver; single-mode, ST connector; 6 ft (1.83 m) cable; compatible with FR85011ASSTR and FR85011SSTR receivers
- FS85011ASFC: Single-channel fiber optic video transmitter/data transceiver; single-mode, FC connector; 6 inch (15.24 cm) cable; compatible with FR85011ASFCR and FR85011SFCR receivers
TOP VIEW

Figure 3 illustrates the top of the FS85011A transmitter.

1 Data Selection Connector (P3): A 2-pin header; removable mating plug (not shown).
2 Optic Fault LED (CR1): Refer to Troubleshooting on page 15 for detailed information.
3 Fiber Optic Connector: ST or FC (model dependent).

Figure 3. Top View of FS85011A Transmitter
Figure 4 illustrates the bottom of the FS85011A transmitter.

**Figure 4.** Bottom View of FS85011A Transmitter

1. **Power, Video, and Data Connector (P1):** A 16-pin header.
Installation

PACKAGE CONTENTS

The following items are supplied:

1 FS85011A transmitter
1 Fiber optic adapter (depending on model):
   - ST to ST adapter for FS85011AMST transmitter
   - FC to ST adapter for FS85011ASST transmitter
   - FC to FC adapter for FS85011ASFCC transmitter
1 Screw with lock washer, 4-40 x 0.250-inch, Phillips pan head
1 FS85011A Fiber Transmitter Installation manual

DATA COMMUNICATION SETUP

The FS85011A transmitter supports RS-422 and Coaxitron data communication. The default setting is RS-422.

**NOTE:** Determine the required data communication and, if necessary, change the data communication setting of the FS85011A transmitter **before** installing the transmitter into the Spectra III/Spectra IV back box.

⚠️ **WARNING:** When setting data communication on the FS85011A transmitter, prevent electrostatic discharge (ESD) damage to the transmitter by wearing a grounding wrist strap that is connected to an approved grounding source.

The Data Selection connector (2-pin header), which is located on the top of the FS85011A transmitter (refer to Figure 3 on page 9), allows you to set the data communication required for the transfer of data.

Set data communication to either of the following types:
- **RS-422:** Enabled when the 2-pin header plug is connected to the header (default setting).
- **Coaxitron:** Enabled when the 2-pin header plug is not connected to the header. If Coaxitron is required, remove the plug from the 2-pin header.

MOUNTING

The FS85011A transmitter mounts to the circuit board inside the Spectra III/Spectra IV back box.

**NOTE:** Before mounting the FS85011A transmitter, determine the required data communication and, if necessary, change the setting of the transmitter (refer to Data Communication Setup for information).

⚠️ **WARNING:** When mounting the FS85011A transmitter, prevent electrostatic discharge (ESD) damage to the transmitter by wearing a grounding wrist strap that is connected to an approved grounding source.
To mount the transmitter into an existing or new Spectra III/Spectra IV installation:

1. (Existing Spectra III/Spectra IV installation only) Perform the following steps:
   a. Turn off power to the dome.
   b. Remove the lower dome (refer to Figure 5A).
   c. Remove the dome drive from the back box (refer to Figure 5B).

![Figure 5. Removing the Spectra III/Spectra IV Lower Dome and Dome Drive](image)

2. Open the hinged door of the back box by pushing the tab lock toward the wall of the back box and then pulling the door open (refer to Figure 6).

![Figure 6. Opening the Door of the Spectra III/Spectra IV Back Box](image)

3. (New Spectra III/Spectra IV installation only) Route the BNC connector and coaxial cable through the wiring entrance at the rear of the back box to provide clearance for mounting the FS85011A transmitter to the Spectra III/Spectra IV circuit board (refer to Figure 7 on page 13).

   **NOTE:** The BNC connector is enclosed in an insulating boot. When routing the BNC connector, ensure that the connector remains enclosed in the boot.
4. If necessary, reposition power wiring of the Spectra III/Spectra IV circuit board to provide clearance for mounting the FS85011A transmitter to the circuit board.

**WARNING:** Improper handling of the power wiring can damage the wiring. Care should be taken when repositioning the wiring.

5. Remove the plug from the 16-pin connector on the Spectra III/Spectra IV circuit board (refer to Figure 8).

6. Ensure that the fiber optic cable on the FS85011A transmitter is positioned to the left of the Data Selection connector (refer to Top View on page 9).

7. Align the 16-pin header located on the bottom of the FS85011A transmitter with the 16-pin connector on the Spectra III/Spectra IV circuit board, and then plug the header into the connector.

8. Secure the FS85011A transmitter to the mounting standoff on the Spectra III/Spectra IV circuit board (refer to Figure 8) using the Phillips pan head screw with lock washer (supplied).

9. Connect the fiber optic connector on the FS85011A transmitter to the fiber optic adapter (supplied).

10. Connect the fiber optic adapter to the fiber optic cable at the rear of the Spectra III/Spectra IV back box.
11. Carefully close the door of the back box.

⚠️ **WARNING:** When closing the door of the back box, be careful not to pinch or kink the fiber.

12. *(Existing Spectra III/Spectra IV installation only)* Perform the following steps:
   a. Reinstall the dome drive into the back box.
   b. Reinstall the lower dome.
   c. Turn on power to the dome.

13. *(New Spectra III/Spectra IV installation only)* Refer to the Spectra III/Spectra IV installation documentation for dome installation instructions.

   **NOTE:** Power to the FS85011A transmitter is supplied from the Spectra III/Spectra IV dome.
The Optic Fault (CR1) LED indicator on the top of the FS85011A transmitter allows you to monitor signal status. Table A provides information about the indicator and associated troubleshooting guidelines.

If the following instructions fail to solve your problem, contact Pelco Product Support at 1-800-289-9100 (USA and Canada) or +1-559-292-1981 (International) for assistance. You should have the product serial number available when calling.

Do not try to repair the unit yourself. Leave all maintenance and repairs to qualified technical personnel.

### Table A. Troubleshooting with the Optic Fault Indicator (1 of 2)

<table>
<thead>
<tr>
<th>Indicator Color</th>
<th>Meaning</th>
<th>Possible Cause</th>
<th>Corrective Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green</td>
<td>The optical signal is being received and laser is operating properly.</td>
<td>—</td>
<td>No action required.</td>
</tr>
<tr>
<td>Red</td>
<td>The optical signal is not being received.</td>
<td>Remote fiber module is not powered on.</td>
<td>Check power connections. Replace power supply, if necessary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fiber optic cable is not connected.</td>
<td>Check fiber optic connections.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fiber optic cable connectors are dirty or are damaged.</td>
<td>Clean, polish, or replace fiber optic cable connectors as necessary.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fiber optic cable is defective.</td>
<td>Replace cable.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Optical dB losses in the fiber optic installation exceed the optical power budget specification stated in Specifications on page 17.</td>
<td>Check for problems with the fiber optic installation, for example, excessive dB losses in connectors, splices, patch panels, cables, and so forth.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Optical dB losses in the fiber optic installation meet the optical power budget specification stated in Specifications on page 17; however, a fiber module is defective.</td>
<td>Contact Product Support at 1-800-289-9100.</td>
</tr>
</tbody>
</table>
Flashing red Laser has shut down. Fiber module is operating in extreme environmental conditions; for example, operating temperature is below or above recommended range as stated in Specifications on page 17. Ensure that fiber module operates according to operating conditions stated in Specifications, and then cycle the power.

Laser has reached end of life. Cycle the power.

Not lit Power is not being applied to the transmitter. Power connection is faulty. Check power connections to the Spectra III/Spectra IV dome.

Table A. Troubleshooting with the Optic Fault Indicator (2 of 2)
## Specifications

### VIDEO
- **Number of Channels**: 1
- **Modulation Type**: Pulse code modulation, 8-bit resolution
- **Video Input**: 1.0 Vp-p, 75 ohms; NTSC, PAL, and SECAM
- **Bandwidth**: 6.5 MHz
- **Gain**: Unity
- **Differential Gain**: <2%
- **Differential Phase**: <1°
- **Tilt**: <1%
- **Signal-to-Noise Ratio**: >60 dB (CCIR weighted)

### DATA
- **Number of Channels**: 1
- **Data Communication**: RS-422, Coaxitron

### GENERAL
- **Operating Temperature**: Refer to the Spectra III, Spectra IV, or ExSite product specifications as appropriate.
- **Input Power Requirements**: 12 VDC, 160 mA
- **LED Indicator**: Optic Fault
- **Dimensions**: 2.9” L x 2.0” W (7.37 x 5.08 cm)
- **Unit Weight**: 0.08 lb (0.04 kg)

### MECHANICAL
- **Connectors**
  - Video/Data/Power: 16-pin header
  - Data Selection: 2-pin header
  - Fiber Optic: ST for multimode fiber, ST or FC for single-mode fiber
## OPTICAL POWER BUDGET, TRANSMISSION DISTANCE, AND LASER CLASS 1 LIMIT

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Compatible Receiver*</th>
<th>Wavelength (Video/Data)</th>
<th>Optical Power Budget</th>
<th>Maximum Transmission Distance</th>
<th>Cable Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>FS85011AMST</td>
<td>FR85011AMSTR</td>
<td>1310/850 nm</td>
<td>26 dB †</td>
<td>6 km (3.7 mi) ‡</td>
<td>6 inches (15.24 cm)</td>
</tr>
<tr>
<td>FS85011AMST</td>
<td>FR85011AMSTR</td>
<td>1310/850 nm</td>
<td>20 dB †</td>
<td>6 km (3.7 mi) ‡</td>
<td>6 inches (15.24 cm)</td>
</tr>
<tr>
<td>FS85011AMSTEX</td>
<td>FR85011AMSTR</td>
<td>1310/850 nm</td>
<td>26 dB †</td>
<td>6 km (3.7 mi) ‡</td>
<td>6 ft (1.83 m)</td>
</tr>
<tr>
<td>FS85011AMSTEX</td>
<td>FR85011AMSTR</td>
<td>1310/850 nm</td>
<td>20 dB †</td>
<td>6 km (3.7 mi) ‡</td>
<td>6 ft (1.83 m)</td>
</tr>
</tbody>
</table>

### Multimode (62.5/125 µm)

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Compatible Receiver*</th>
<th>Wavelength (Video/Data)</th>
<th>Optical Power Budget</th>
<th>Maximum Transmission Distance</th>
<th>Cable Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>FS85011ASST</td>
<td>FR85011ASSTR</td>
<td>1310/1550 nm</td>
<td>28 dB</td>
<td>46 km (28.6 mi) §</td>
<td>6 inches (15.24 cm)</td>
</tr>
<tr>
<td>FS85011ASST</td>
<td>FR85011ASSTR</td>
<td>1310/1550 nm</td>
<td>20 dB</td>
<td>30 km (18.6 mi) §</td>
<td>6 inches (15.24 cm)</td>
</tr>
<tr>
<td>FS85011ASSTEX</td>
<td>FR85011ASSTR</td>
<td>1310/1550 nm</td>
<td>28 dB</td>
<td>46 km (28.6 mi) §</td>
<td>6 ft (1.83 m)</td>
</tr>
<tr>
<td>FS85011ASSTEX</td>
<td>FR85011ASSTR</td>
<td>1310/1550 nm</td>
<td>20 dB</td>
<td>30 km (18.6 mi) §</td>
<td>6 ft (1.83 m)</td>
</tr>
<tr>
<td>FS85011ASFC</td>
<td>FR85011ASFCR</td>
<td>1310/1550 nm</td>
<td>28 dB</td>
<td>46 km (28.6 mi) §</td>
<td>6 inches (15.24 cm)</td>
</tr>
<tr>
<td>FS85011ASFC</td>
<td>FR85011ASFCR</td>
<td>1310/1550 nm</td>
<td>20 dB</td>
<td>30 km (18.6 mi) §</td>
<td>6 inches (15.24 cm)</td>
</tr>
</tbody>
</table>

### Single-Mode (9/125 µm)

*Single-channel fiber optic video receiver/data transceiver.
†When using 50/125 µm multimode fiber, subtract 3 dB from the optical power budget.
‡Maximum transmission distance is limited by fiber bandwidth.
§Maximum transmission distance is based on attenuation of 0.5 dB/km plus a 5 dB buffer for connector and splice losses.

**Note:** For models with higher optical power budgets, contact the factory.
PRODUCT WARRANTY AND RETURN INFORMATION

WARRANTY

Pelco will repair or replace, without charge, any merchandise proved defective in material or workmanship for a period of one year after the date of shipment.

Exceptions to this warranty are as noted below:

- **Five years:**
  - Fiber optic products
  - TW3000 Series unshielded twisted pair (UTP) transmission products

- **Three years:**
  - Pelco-branded fixed camera models (CCC1390H Series, C10DN Series, C10CH Series, IP3701H Series, and IX Series)
  - EH1500 Series enclosures
  - Spectra® IV products (including Spectra IV IP)
  - Camclosure® Series (IS, ICS, IP) integrated camera systems
  - DX Series digital video recorders, DVR5100 Series digital video recorders, Digital Sentry® Series hardware products, DVX Series digital video recorders, and NVR500 Series network video recorders
  - Endura® Series distributed network-based video products
  - Genex® Series products (multiplexers, server, and keyboard)
  - PMCL200/300/400 Series LCD monitors

- **Two years:**
  - Standard varifocal, fixed focal, and motorized zoom lenses.
  - DF5/DF8 Series fixed dome products
  - Legacy® Series integrated positioning systems
  - Spectra III®, Spectra Mini, Spectra Mini IP, Esprit®, ExSite®, and PS20 scanners, including when used in continuous motion applications.
  - Esprit Ti and TI2500 Series thermal imaging products
  - Esprit and WW5700 Series window wiper (excluding wiper blades).
  - CM6700/CM6800/CM9700 Series matrix
  - Digital Light Processing (DLP®) displays (except lamp and color wheel). The lamp and color wheel will be covered for a period of 90 days.
  - The air filter is not covered under warranty.
  - Intelli-M® eIDC controllers

- **One year:**
  - Video cassette recorders (VCRs), except video heads. Video heads will be covered for a period of six months.

- **Six months:**
  - All pan and tilts, scanners, or preset lenses used in continuous motion applications (preset scan, tour, and auto scan modes).

Pelco will warrant all replacement parts and repairs for 90 days from the date of Pelco shipment. All goods requiring warranty repair shall be sent freight prepaid to a Pelco designated location. Repairs made necessary by reason of misuse, alteration, normal wear, or accident are not covered under this warranty.

Pelco assumes no risk and shall be subject to no liability for damages or loss resulting from the specific use or application made of the Products. Pelco’s liability for any claim, whether based on breach of contract, negligence, infringement of any rights of any party or product liability, relating to the Products shall not exceed the price paid by the Dealer to Pelco for such Products. In no event will Pelco be liable for any special, incidental, or consequential damages (including loss of use, loss of profit, and claims of third parties) however caused, whether by the negligence of Pelco or otherwise.

The above warranty provides the Dealer with specific legal rights. The Dealer may also have additional rights, which are subject to variation from state to state.

If a warranty repair is required, the Dealer must contact Pelco at (800) 289-9100 or (559) 292-1981 to obtain a Repair Authorization number (RA), and provide the following information:

1. Model and serial number
2. Date of shipment, P.O. number, sales order number, or Pelco invoice number
3. Details of the defect or problem

If there is a dispute regarding the warranty of a product that does not fall under the warranty conditions stated above, please include a written explanation with the product when returned.

Method of return shipment shall be the same or equal to the method by which the item was received by Pelco.

RETURNS

To expedite parts returned for repair or credit, please call Pelco at (800) 289-9100 or (559) 292-1981 to obtain an authorization number (CA number if returned for credit, and RA number if returned for repair) and designated return location.

All merchandise returned for credit may be subject to a 20 percent restocking and refurbishing charge.

Goods returned for repair or credit should be clearly identified with the assigned CA or RA number and freight should be prepaid.