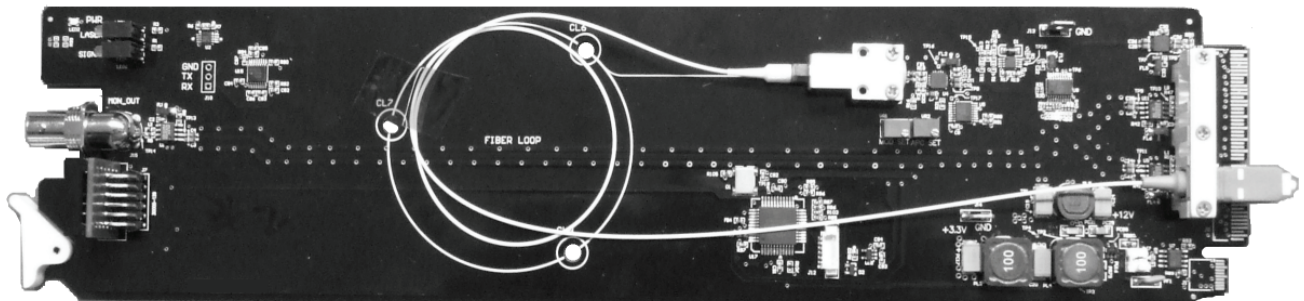


FSR-6201, FST-6202

Single Channel HD/SD-SDI Fiber Modules

User Manual



Live Production Technology™

Ross Part Number: 6201DR-004

Issue: 01



FSR-6201, FST-6202 • Single Channel HD/SD-SDI Fiber Modules User Manual

- Ross Part Number: **6201DR-004**
- Document Issue: **01**
- Printed in Canada.

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Important Regulatory and Safety Notices

Before using this product and any associated equipment, refer to the “Important Safety Instructions” listed below so as to avoid personnel injury and to prevent product damage.

Products may require specific equipment, and /or installation procedures be carried out to satisfy certain regulatory compliance requirements. Notices have been included in this publication to call attention to these Specific requirements.

Symbol Meanings



This symbol on the equipment refers you to important operating and maintenance (servicing) instructions within the Product Manual Documentation. Failure to heed this information may present a major risk of damage or injury to persons or equipment.



Warning

The symbol with the word “**Warning**” within the equipment manual indicates a potentially hazardous situation, which if not avoided, could result in death or serious injury.



Caution

The symbol with the word “**Caution**” within the equipment manual indicates a potentially hazardous situation, which if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.



Notice

The symbol with the word “**Notice**” within the equipment manual indicates a situation, which if not avoided, may result in major or minor equipment damage or a situation which could place the equipment in a non-compliant operating state.



ESD

Susceptibility

This symbol is used to alert the user that an electrical or electronic device or assembly is susceptible to damage from an ESD event.

Important Safety Instructions



Caution

This product is intended to be a component product of the openGear 8300 series frame. Refer to the openGear 8300 series frame User Manual for important safety instructions regarding the proper installation and safe operation of the frame as well as it's component products.



Warning

Certain parts of this equipment namely the power supply area still present a safety hazard, with the power switch in the OFF position. To avoid electrical shock, disconnect all A/C power cords from the chassis' rear appliance connectors before servicing this area.



Warning

Service barriers within this product are intended to protect the operator and service personnel from hazardous voltages. For continued safety, replace all barriers after any servicing.

This product contains safety critical parts, which if incorrectly replaced may present a risk of fire or electrical shock. Components contained within the product's power supplies and power supply area, are not intended to be customer serviced and should be returned to the factory for repair.

To reduce the risk of fire, replacement fuses must be the same type and rating.

Only use attachments/accessories specified by the manufacturer.

EMC Notices

US FCC Part 15

This equipment has been tested and found to comply with the limits for 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 users will be required to correct the interference at their own expense.



Notice

Changes or modifications to this equipment not expressly approved by Ross Video Ltd. could void the user's authority to operate this equipment.

CANADA

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

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

EUROPE

This equipment is in compliance with the essential requirements and other relevant provisions of **CE Directive 93/68/EEC**.

INTERNATIONAL

This equipment has been tested to **CISPR 22:1997** along with amendments **A1:2000** and **A2:2002** and found to comply with the limits for a Class A Digital device.



Notice

This is a Class A product. In domestic environments this product may cause radio interference in which case the user may have to take adequate measures.

Maintenance/User Serviceable Parts

Routine maintenance to this openGear product is not required. This product contains no user serviceable parts. If the module does not appear to be working properly, please contact Technical Support using the numbers listed under the "Contact Us" section on the last page of this manual. All openGear products are covered by a generous 5-year warranty and will be repaired without charge for materials or labor within this period. Refer to the "Warranty and Repair Policy" section in this manual for details.

Important Laser Safety Measures and Notices

Before using this product and any associated equipment, refer to the sections below so as to avoid personnel injury and to prevent product damage. For further safety information when using fiber products, consult the following publications:

- **IEC-60825- 2, Safety of Laser Products – Part 2: Safety of Optical Fiber Communication Systems (OFCS)** (for use outside of the U.S.A.)
- **ANSI Z136.2, Safe Use of Optical Fiber Communication Systems Utilizing Laser Diode and LED Sources** (for use in the U.S.A.)

Products may require specific equipment, and /or installation procedures be carried out to satisfy certain regulatory compliance requirements.



Caution

Before operating or servicing this product, all personnel must successfully complete a recognized laser safety and operation training course.

Safety Measures for Operation

During normal operation of this product, heed the following safety measures:

- Do not stare at, or into, broken, or damaged, fibers.
- Do not stare at, or into, optical connectors.
- Only properly trained and authorized personnel shall be permitted to perform laser/fiber optic operations.
- Viewing laser emissions directly in excess of Class I/1 limits with an optical instrument greatly increases the risk of eye damage.
- Ensure that appropriate labels are displayed in plain view and in close proximity to the optical port on the protective housing/access panel of the terminal equipment.

Safety Measures for Maintenance and Servicing



Warning

Do not use optical equipment, such as a microscope or an eye loupe, to stare at the energized fiber end. Doing so may damage your eyes.

During maintenance and servicing of this product, heed the following safety measures:

- Only properly trained and authorized personnel shall be allowed to use optical test or diagnostic equipment.
- All unauthorized personnel shall be prohibited from the immediate area of the product during setup and maintenance.
- Protective eyewear with appropriate filtering optics for the type of laser used with this product must be worn when servicing this product.
- All laser sources on the fiber communication system must be powered down before scanning the fiber with optical test equipment.

Product Label



CLASS 1 LASER PRODUCT
IEC 60825-1:2007

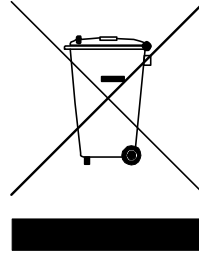
CAUTION: INVISIBLE LASER RADIATION WHEN OPEN. AVOID EXPOSURE TO THE BEAM.

Environmental Information

The equipment that you purchased required the extraction and use of natural resources for its production. It may contain hazardous substances that could impact health and the environment.

To avoid the potential release of those substances into the environment and to diminish the need for the extraction of natural resources, Ross Video encourages you to use the appropriate take-back systems. These systems will reuse or recycle most of the materials from your end-of-life equipment in an environmentally friendly and health conscious manner.

The crossed-out wheeled bin symbol invites you to use these systems.



If you need more information on the collection, reuse, and recycling systems, please contact your local or regional waste administration.

You can also contact Ross Video for more information on the environmental performances of our products.

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Introduction

In This Chapter

This chapter contains the following sections:

- A Word of Thanks
- Overview
- Functional Block Diagram
- Features
- Documentation Terms

A Word of Thanks

Congratulations on choosing the openGear **FSR-6201** and **FST-6202 Single Channel HD/SD-SDI Fiber Modules**. The FSR-6201 and FST-6202 are part of a full line of openGear Terminal Equipment family of products, backed by Ross Video's experience in engineering and design expertise since 1974.

You will be pleased at how easily your new FSR-6201 and FST-6202 fit into your overall working environment. Equally pleasing is the product quality, reliability and functionality. Thank you for joining the group of worldwide satisfied Ross Video customers!

Should you have a question pertaining to the installation or operation of your FSR-6201 and FST-6202, please contact us at the numbers listed on the back cover of this manual. Our technical support staff is always available for consultation, training, or service.

Overview

The FSR-6201 and FST-6202 set offers the industry's broadest range of digital transmission rates while maintaining the quality of transmission that broadcasters demand. No matter what your format, this set allows you to implement a wide range of formats including DVB/ASI*.

FSR-6201 Overview

The FSR-6201 Fiber Receiver is a high quality optical solution to extend transmission distances up to 20km. A wide range of formats are supported, 19.4Mbps, 143Mbps, 270Mbps, 540Mbps and 1.5Gbps. The FSR-6201 supports an input optical ST connection with 4 serial digital BNC outputs. An additional BNC connection is available at the card-edge for easy access to the SDI signal. Monitoring of signal presence is available via the DashBoard Control System™.

FST-6202 Overview

The FST-6202 Fiber Transmitter is a high quality optical solution to extend transmission distances up to 20km. A wide range of formats are supported, 19.4Mbps, 143Mbps, 270Mbps, 540Mbps and 1.5Gbps. The FST-6202 provides equalization of up to 100m in HD SDI on the input before conversion to the output ST optical fiber connection. Monitoring of signal presence and optical power is available via the DashBoard Control System™.

Functional Block Diagrams

This section includes simplified block diagrams for the FSR-6201 and FST-6202 functions.

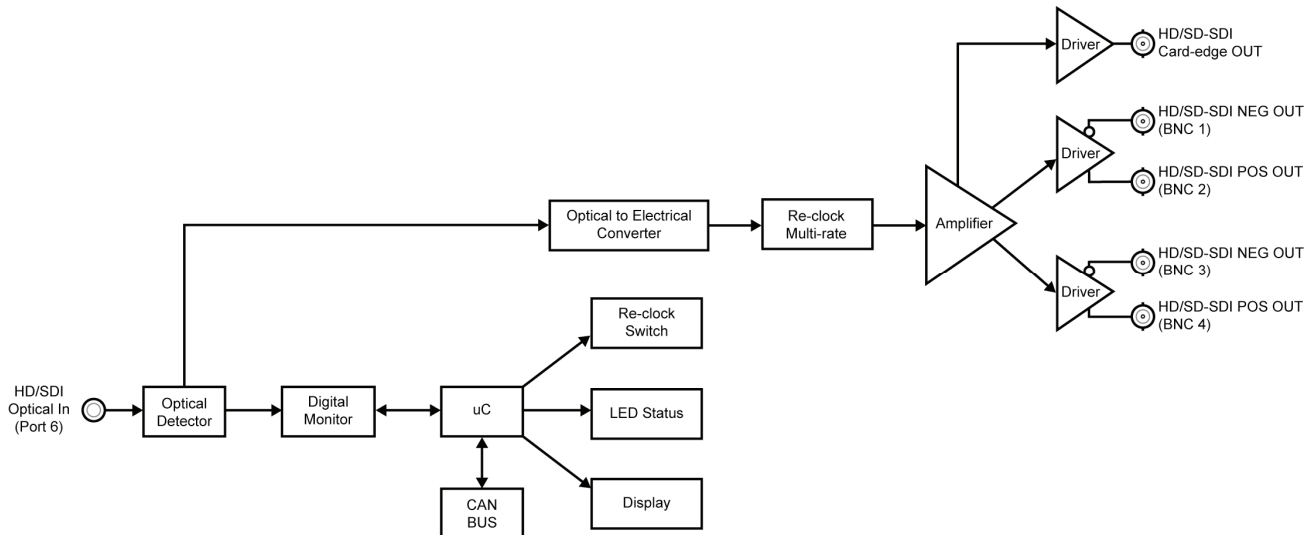


Figure 1. Simplified Block Diagram of FSR-6201 Functions

* DVB/ASI is not available on the negative BNC outputs (BNC 1 and BNC 3 on the FSR-6201; BNC 2 and 4 on the FST-6202).

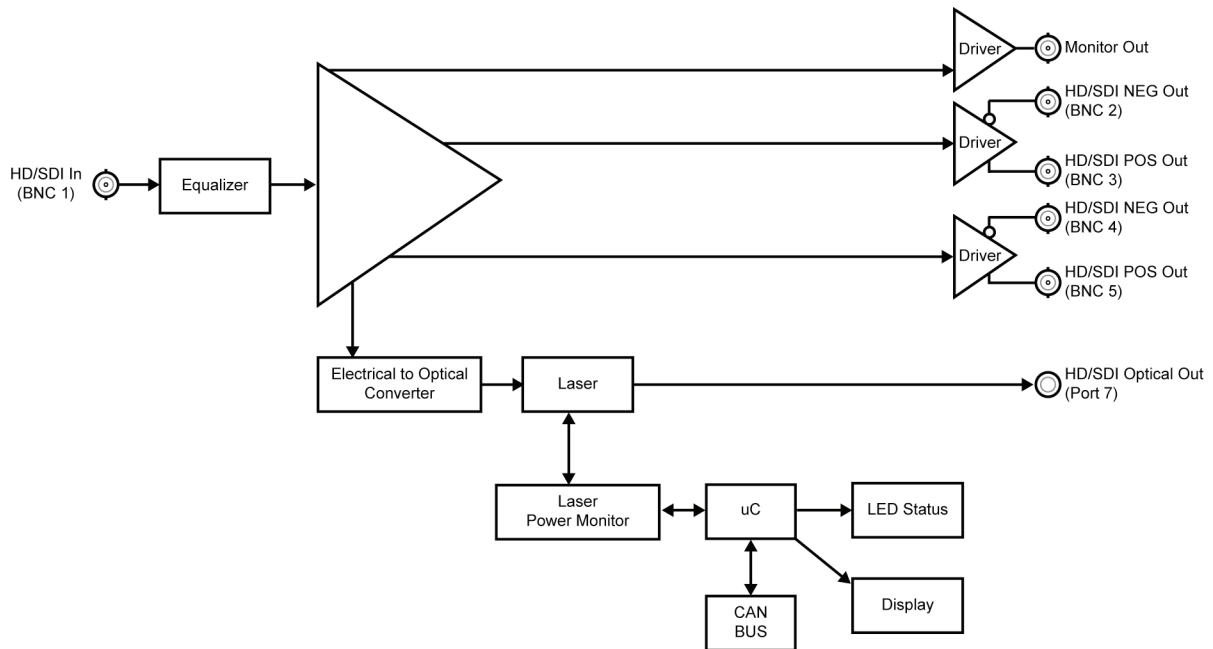


Figure 2. Simplified Block Diagram of FST-6202 Functions

Features

The following features make the FSR-6201 and FST-6202 the best solution for transporting all of your digital video signals over fiber (up to 1.5Gbps):

- Compatible with SMPTE 292M, 259M and 244M
- 19.4 Mbps to 1.5Gbps transport including DVB/ASI[†]
- Passes pathological signals
- Front Panel monitoring
- Up to 15dB optical link budget for HD
- Input equalization up to 100m
- LEDs on-board for monitoring
- Dashboard control and monitoring
- Fully compliant with openGear specifications
- 5 year transferable warranty

[†] DVB/ASI is not available on the negative BNC outputs (BNC 1 and BNC 3 on the FSR-6201; BNC 2 and 4 on the FST-6202).

FSR-6201 Features

The following features are specific to the FSR-6201 Fiber Receiver:

- 4 copies of the HD/SD-SDI output available at the rear of the card-edge
- 1 copy of the HD/SD-SDI output available at the front card-edge
- 1 fiber input through an ST connector

FST-6202 Features

The following features are specific to the FST-6202 Fiber Transmitter:

- 4 copies of the HD/SD-SDI output available at the rear of the card-edge
- 1 copy of the HD/SD-SDI output available at the front card-edge
- 1 fiber output through an ST connector

Documentation Terms

The following terms are used throughout this guide:

- “**Frame**” refers to the DFR-8300 series frame that houses the cards, as well as any openGear frames.
- All references to the DFR-8300 series frame also includes all versions of the 10-slot (DFR-8310) and any available options.
- “**FSR-6201**” and “**FST-6202**” refers to the specified card only and not the rear module unless otherwise stated.
- “**Operator**” and “**User**” both refer to the person who uses the FSR-6201 or the FST-6202.
- “**Board**” and “**Card**” both refer to the FSR-6201 and the FST-6202 modules, including all components and switches.
- “**System**” and “**Video system**” both refer to the mix of interconnected production and terminal equipment in which the FSR-6201 and FST-6202 operate.

Installation and Setup

In This Chapter

This chapter contains the following sections:

- Static Discharge
- Unpacking
- Rear Module Installation (Optional)
- Board Installation
- BNC Labels
- Cable Connections

Static Discharge

Whenever handling the FSR-6201 or FST-6202 and other related equipment, please observe all static discharge precautions as described in the following note:



Static discharge can cause serious damage to sensitive semiconductor devices. Avoid handling circuit boards in high static environments such as carpeted areas, and when wearing synthetic fiber clothing. Always exercise proper grounding precautions when working on circuit boards and related equipment.

Unpacking

Unpack each FSR-6201 and FST-6202 you received from the shipping container, and check the contents. If any items are missing or damaged, contact your openGear sales representative or Ross Video directly.

Rear Module Installation (Optional)

The FSR-6201 and FST-6202 are compatible with the DFR-8310 series frames. The procedure for installing the Rear Module in your openGear frame is the same regardless of the module used. Note that the FSR-6201 and FST-6202 are not compatible with the DFR-8310-BNC frames.

The FSR-6201 and FST-6202 require the following rear modules:

- **FSR-6201-R1ST** — This includes the FSR-6201 card and the required Rear Module for the DFR-8310 series frames. Each FSR-6201 occupies one slot and provides four SDI outputs. The Rear Module comes standard with the card and cannot be ordered separately.
- **FST-6202-R1ST** — This includes the FST-6202 card and the required Rear Module for the DFR-8310 series frames. Each FST-6202 occupies one slot to provide four SDI outputs and one SDI input. The Rear Module comes standard with the card and cannot be ordered separately.

Installing the Rear Modules

If the Rear Modules are already installed, skip this section.

Use the following procedure to install the rear module in an DFR-8310 series frame:

1. Refer to the DFR-8310 series frame User Manual, to ensure that the frame is properly installed according to instructions.
2. On the rear of the frame, locate the card frame slot.
3. Remove the Blank Plate from the rear of the slot you have chosen for the rear module installation. If there is no Blank Plate installed, proceed to the next step.
4. As shown in **Figure 3**, seat the bottom of the rear module in the seating slot at the base of the frame's back plane.

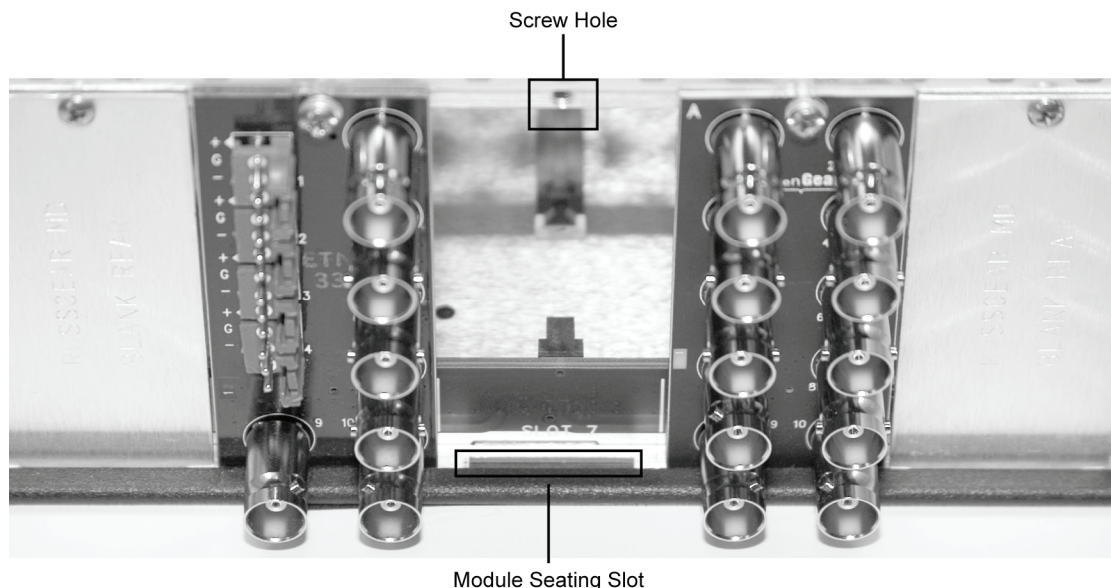


Figure 3. Rear Module Installation in a DFR-8310 Series Frame (FSR-6201 and FST-6202 not shown)

5. Align the top hole of the rear module with the screw hole on the top edge of the frame back plane.
6. Using a Phillips driver and the supplied screw, fasten the rear module to the back plane. Do not over tighten.
7. Ensure proper frame cooling and ventilation by having all rear frame slots covered with Rear Modules or blank metal plates. If you need blanks, refer to the chapter, “**Ordering Information**” in your DFR-8310 series frame User Manual, and contact your Ross Video sales representative.

This completes the procedure for installing the rear module in a DFR-8310 series frame.

Board Installation

Use the following procedure to install the FSR-6201 or FST-6202 in a DFR-8310 series frame:

1. Refer to the User Manual of your DFR-8310 series frame to ensure that the frame is properly installed according to instructions.



Heat and power distribution requirements within a frame may dictate specific slot placement of cards. Cards with many heat-producing components should be arranged to avoid areas of excess heat build-up, particularly in frames using convectional cooling.

2. After selecting the desired frame installation slot, hold the FSR-6201 or FST-6202 card by the edges and carefully align the card edges with the slots in the frame.
3. Fully insert the card into the frame until the rear connection plugs are properly seated on the midplane and rear modules.

This completes the procedure for installing the FSR-6201 or FST-6202 in a DFR-8310 series frame.

BNC Labels

Affix the supplied BNC labels, as per the included instructions, to the BNC area on the rear of the rack frame.

Cable Connections

This section provides instructions for connecting cables to the installed rear modules on your DFR-8300 series frame backplane. The inputs are internally terminated in 75ohms. It is not necessary to terminate unused outputs.



Never attempt to look down the barrel of a connected fiber or device transmitting an optical signal. The transmitted light is not in the visible spectrum and can cause permanent eye damage; always wear suitable eye protection when working with lasers. Turn off all laser sources before disconnecting devices.

Cable Connections for the DFR-8310 Series Frames

This section provides illustrations of the rear modules and the required cable connections. Refer to **Figure 4** for **FSR-6201** cable connections and **Figure 5** for **FST-6202** cable details.

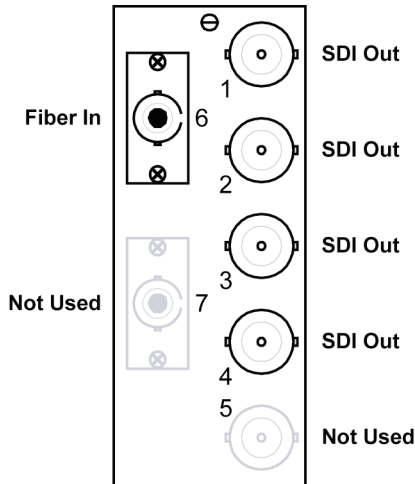


Figure 4. Cable Connections for the FSR-6201 Rear Module

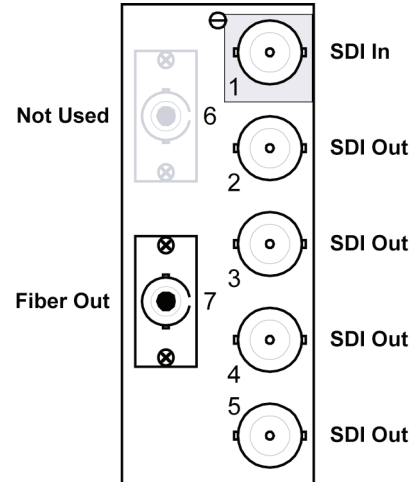


Figure 5. Cable Connections for the FST-6202 Rear Module

Connections for the DFR-8310 Series Frames

This section briefly describes how to cable the FSR-6201 and FST-6202 in the DFR-8310 series frames.



Notice

Ensure that every fiber connector is inspected and cleaned before each use. Any contamination in the fiber connection can cause damage to a component in the system. Ensure that you follow industry-standard cleaning methods for your equipment.

Use the following procedure to cable the FSR-6201 and FST-6202:

1. Ensure you have eliminated contaminants from the fiber components and inspected any fiber-optic connections.



Notice

Keep the fibers end face clean and use caps to protect fiber from scratching and collecting dust. Never pinch the fiber especially when using a 999um jacket.

2. Connect the Input SDI signal to **BNC 1** on the **R1-6202** Rear Module.
3. Downstream SD-SDI devices connect to BNCs **2** through **4** on the **R1-6201** and BNCs **2** through **5** on the **R1-6202**.
4. Connect the FSR-6201 to the FST-6202 as follows:
 - Connect one end of a ST-to-ST Single Mode jumper cable to **Port 6** (Fiber In) on the **R1-6201** Rear Module.
 - Connect the other end of the cable to **Port 7** (Fiber Out) on the **R2-6202** Rear Module.

This completes the procedure to cable the FSR-6201 and FST-6202 in a DFR-8310 series frame.

User Controls

In This Chapter

This chapter includes the following sections:

- FSR-6201 Card-edge Controls
- FST-6202 Card-edge Controls

FSR-6201 Card-edge Controls

This section briefly summarizes the controls, such as Status LEDs and the four-character display, located on the front card-edge of the FSR-6201.

FSR-6201 LEDs and Buttons

The following sections describes the LEDs and buttons found on the front card-edge of the FSR-6201. Refer to **Figure 6** for locations.

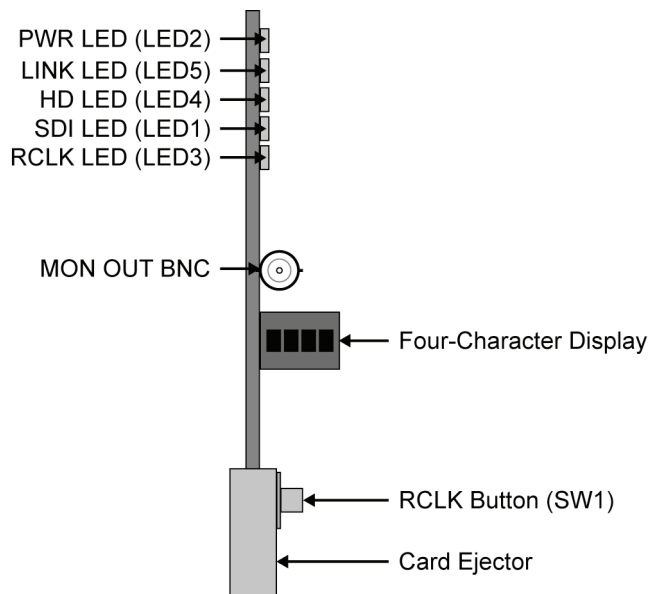


Figure 6. LED Locations — FSR-6201 Front Card-edge

PWR (Power) LED

The **PWR** LED indicates the overall operating status of the FSR-6201.

This LED displays the following conditions:

- **Green** — The card is operating normally.
- **Flashing Green** — The card requires a software upgrade.
- **Red** — The card is not operational. Refer to the chapter, “**Service Information**” for details on this condition.

LINK LED

The **LINK** LED indicates the status of the SDI input.

This LED displays the following conditions:

- **Green** — A valid signal SDI input signal is present.
- **Red** — The invalid signal is not present or invalid.

HD-SDI or SD-SDI LED

These LEDs indicate the following conditions:

- **HD-SDI** — When lit, this LED indicates that the input signal is a valid HD format.
- **SD-SDI** — When lit, this LED indicates that the input signal is a valid SDI format.

RCLK LED

The **RCLK** LED on the FSR-6201 that when lit, indicates the reclocker state as follows:

- **On** — If this LED is lit, the reclocker is enabled. The actual data rate is displayed in the **Active Video** tab of DashBoard.
- **Off** — If this LED is not lit, the reclocker is disabled.

MON OUT BNC

The **MON OUT** BNC provides an analog composite output for monitoring purposes.

Four-Character Display

The four-character display of the FSR-6201 displays operational information.

The following messages may be displayed:

- **TEMP** — This message indicates the card has overheated.
- **OPT** — This message indicates the optical power value.

Reclocker Button

The **Reclocker** button (**SW1**) enables or disables the Reclocker feature.

Pressing **SW1** cycles through the following options:

- **On** — This option enables the Reclocker feature of the FSR-6201. Verify that the **RCLK** LED on the card-edge is lit.
- **Off** — This option disables the Reclocker feature of the FSR-6201. The **RCLK** LED will not be lit on the card-edge.

FST-6202 Card-edge Controls

This section briefly summarizes the controls, such as Status LEDs and the four-character display, located on the front card-edge of the FST-6202.

FST-6202 LEDs

The following sections describes the LEDs found on the front card-edge of the FST-6202. Refer to **Figure 7** for locations.

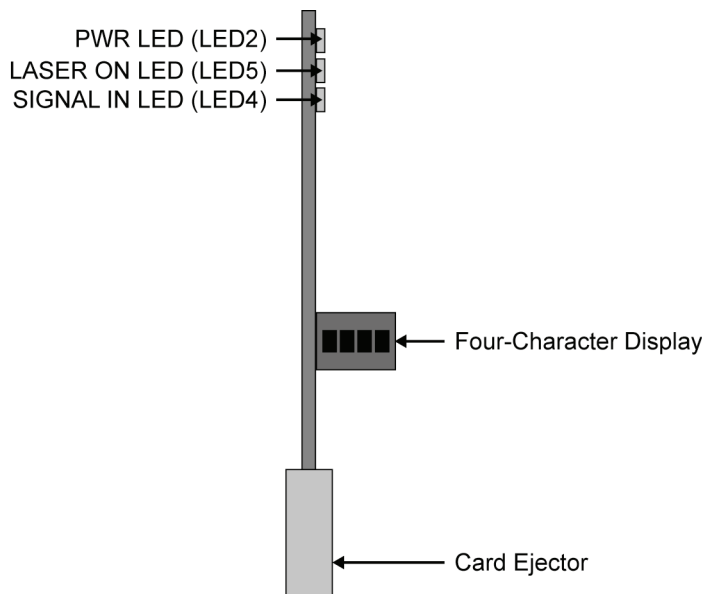


Figure 7. LED Locations — FST-6202 Front Card-edge

PWR (Power) LED

The **PWR** LED indicates the overall operating status of the FST-6202.

This LED displays the following conditions:

- **Green** — The card is operating normally.
- **Flashing Green** — The card requires a software upgrade.
- **Red** — The card is not operational. Refer to the chapter, “**Service Information**” for details on this condition.

LASER ON LED

The **LASER ON** LED indicates the status of laser operation for the FST-6202.

This LED displays the following conditions:

- **Green** — The laser is operating normally.
- **Red** — The laser is not operational.

SIGNAL IN LED

The **SIGNAL IN** LED indicates the status of the input signal.

This LED displays the following conditions:

- **Green** — A valid input signal is present.
- **Red** — The input signal is missing or invalid.

Four-Character Display

The four-character display of the FSR-6201 can display the following messages:

- **TEMP** — This message indicates the card has overheated.
- **BIAS** — This message indicates an error condition is occurring.
- **OK** — This message indicates that the FST-6202 is communicating with DashBoard.

Control and Monitoring

In This Chapter

This section provides a detailed explanation on using remote control functions with your FSR-6201 and FST-6202.

The following topics are discussed:

- DashBoard Control System
- SNMP Monitoring and Control

DashBoard Control System

The DashBoard Control System™ enables you to monitor and control openGear frames and controller cards from a computer. DashBoard communicates with other cards in the DFR-8300 series frame through the MFC-8310-N Network controller card. This card is required in order to use DashBoard to configure the FSR-6201 and FST-6202.

The DashBoard software and manual can be downloaded from the Ross Video website.

Using the Menus

You must first install the DashBoard Control System on your computer. Refer to the *DashBoard User Manual* for software installation procedures and using the DashBoard interface.

The Menu System

The following tables and sections describe the menus, items, and parameters available from the DashBoard Control System for the FSR-6201 and FST-6202.

FSR-6201 Menus

The following table summarizes the tabs and menu options available in DashBoard for the FSR-6201.

Table 2. FSR-6201 Tabs and Menu Options

Menu	Item	Parameters	Description
Product (Read-only)	Supplier	Ross Video Ltd.	
	Product	FSR-6201	
	Revision	###	
Environmental (Read-only)	Temperature (deg C)	###	
	Input Voltage (V)	###	Supply Voltage
	Input Current (mA)	###	
	Power Consumption (W)	###	Current consumption
	Internal 3.3V Rail (V)	###	
	Internal 1.8V Rail (V)	###	
Active Video (Read-only)	Link Status	Missing	No optical link
		Present	Optical link established
	RX Signal Type	---	No video due to lack of an optical link
		HD	Video is HD-SDI
		SDI	Video is SD-SDI
	Data Reclock	OFF	Reclock feature is disabled. Video is not reclocked
		ON	Reclock feature is enabled. Video is regenerated from a local clock.
	RX Optical Power (dBm)	#	Reports the optical power of the card
Configuration	Data Reclock	Checkbox selected*	Enables this feature
		Checkbox unselected	Disables this feature
	Temperature Alarm	Checkbox selected*	Enables this feature
		Checkbox unselected	Disables this feature
	Minimum Temperature Alarm	-10°C*	Sets the minimum temperature the card can reach before an alarm is indicated
	Maximum Temperature Alarm	55°C*	Sets the maximum temperature the card can reach before an alarm is indicated

* This is the default setting.

FST-6202 Menus

The following table summarizes the tabs and menu options available in DashBoard for the FST-6202.

Table 3. FST-6202 Tabs and Menu Options

Menu	Item	Parameters	Description
Product (Read-only)	Supplier	Ross Video Ltd.	
	Product	FST-6202	
	Revision	##.##	
Environmental (Read-only)	Temperature (deg C)	##.##	
	Input Voltage (V)	###	Supply Voltage
	Input Current (mA)	##.##	
	Power Consumption (W)	##.##	Current consumption
	Internal 3.3V Rail (V)	##.##	
Active Video (Read-only)	SDI Input	Missing	No optical link
		Present	Optical link established
	Laser Bias Current	Pulsing	Card is trying to identify missing input
		# mA	The measured current being provided to the laser in milliamps (mA)
Configuration	Temperature Alarm	Checkbox selected*	Enables this feature
		Checkbox unselected	Disables this feature
	Minimum Temperature Alarm	-10°C*	Sets the minimum temperature that the card can reach before an alarm is indicated
	Maximum Temperature Alarm	55°C*	Sets the maximum temperature that the card can reach before an alarm is indicated

* This is the default setting.

SNMP Monitoring and Control

The MFC-8310-N Network Controller card in the DFR-8300 series frame provides optional support for remote monitoring and control of your frame and FSR-6201 or FST-6202 using Simple Network Management Protocol (SNMP), which is compatible with many third-party monitoring and control tools.

Refer to your FSR-6201 or FST-6202 Management Information Base (MIB) file for a breakdown of SNMP controls on this card.

Refer to your DFR-8300 series frame user manual for additional information on SNMP Monitoring and Control.

Specifications

In This Chapter

This chapter includes the Technical Specifications for the FSR-6201 and FST-6202.

Table 4. FSR-6201 and FST-6202 Technical Specifications

Category	Parameter	Specification
Optical	Operating Wavelength	1310nm
	Transmitter Output	-7dBm
	Receiver Input Range	-2 to -22dBm
	Optical Source/Detector Type	Laser diode/PIN
	Fiber Type <540 Mbps	Single mode or multimode
	Fiber Type HDTV	Single mode
Video	Transmission Method	Digital
	Input Level	800mV (peak to peak)
	Input Impedance	75Ω
	Output Impedance	75Ω
	Bit-Error Rate (@ -22dBm)	10 ⁻¹²
	Jitter (pathological Test Pattern)	<0.2 UI
	Rise/Fall Times	<270ps
	Input Coax EQ (1505 or better)	100m
Mechanical or Environmental	Weight (per stand alone module)	6oz
	Video connectors	BNC
	Power Requirements (type., per module)	5W @ 10 to 18VDC
	Temperature Range	-25° to +55°C
	Humidity Range	0 to 95% RH, Noncond.

Specifications are subject to change without notice

Service Information

In This Chapter

This chapter contains the following sections:

- Troubleshooting Checklist
- Power LED Conditions
- Warranty and Repair Policy

Troubleshooting Checklist

Routine maintenance to this openGear product is not required. In the event of problems with your FSR-6201 or FST-6202, the following basic troubleshooting checklist may help identify the source of the problem. If the card still does not appear to be working properly after checking all possible causes, please contact your openGear products distributor, or the Technical Support department at the numbers listed under the “**Contact Us**” section at the end of this manual.



Never attempt to look down the barrel of a connected fiber or device transmitting an optical signal. The transmitted light is not in the visible spectrum and can cause permanent eye damage; always wear suitable eye protection when working with lasers. Turn off all laser sources before disconnecting devices.

1. **Visual Review** — Before conducting maintenance on the card, observe all laser safety precautions and review the section “**Important Laser Safety Measures and Notices**”. Performing a quick visual check may reveal many problems, such as connectors not properly seated or loose cables. Check the module, the frame, and any associated peripheral equipment for signs of trouble.
2. **Power Check** — Check the power indicator LED on the distribution frame front panel for the presence of power. If the power LED is not illuminated, verify that the power cable is connected to a power source and that power is available at the power main. Confirm that the power supplies are fully seated in their slots. If the power LED is still not illuminated, replace the power supply with one that is verified to work.
3. **Reset the Card in the Frame** — Eject the card and re-insert it in the frame.
4. **Check Control Settings** — Refer to the Installation and Operation sections of the manual and verify all user-adjustable component settings.

5. **Input Signal Status** — Verify that source equipment is operating correctly and that a valid signal is being supplied.
6. **Output Signal Path** — Verify that destination equipment is operating correctly and receiving a valid signal.
7. **Card Exchange** — Exchanging a suspect card with a card that is known to be working correctly is an efficient method for localizing problems to individual cards.

Power LED Conditions

The top front edge of the module has a Power LED which indicates card status. The Power LED displays the following conditions:

- **Off** — no power to the card.
- **Amber** — the card is running internal diagnostics while powering up.
- **Green** — normal operation.
- **Flashing Green** — the card is waiting for a software upgrade.
- **Red** — solid or flashing means the card is not operational. Reseat card in frame, check the Rear Module type and connections, or call Technical Support.

Warranty and Repair Policy

The FSR-6201 and FST-6202 is warranted to be free of any defect with respect to performance, quality, reliability, and workmanship for a period of FIVE (5) years from the date of shipment from our factory. In the event that your FSR-6201 or FST-6202 proves to be defective in any way during this warranty period, Ross Video Limited reserves the right to repair or replace this piece of equipment with a unit of equal or superior performance characteristics.

Should you find that this FSR-6201 or FST-6202 has failed after your warranty period has expired, we will repair your defective product should suitable replacement components be available. You, the owner, will bear any labor and/or part costs incurred in the repair or refurbishment of said equipment beyond the FIVE (5) year warranty period.

In no event shall Ross Video Limited be liable for direct, indirect, special, incidental, or consequential damages (including loss of profits) incurred by the use of this product. Implied warranties are expressly limited to the duration of this warranty.

This FSR-6201 and FST-6202 User Manual provides all pertinent information for the safe installation and operation of your openGear Product. Ross Video policy dictates that all repairs to the FSR-6201 and FST-6202 are to be conducted only by an authorized Ross Video Limited factory representative. Therefore, any unauthorized attempt to repair this product, by anyone other than an authorized Ross Video Limited factory representative, will automatically void the warranty. Please contact Ross Video Technical Support for more information.

In Case of Problems

Should any problem arise with your FSR-6201 or FST-6202, please contact the Ross Video Technical Support Department. (Contact information is supplied at the end of this publication.)

A Return Material Authorization number (RMA) will be issued to you, as well as specific shipping instructions, should you wish our factory to repair your FSR-6201 or FST-6202. If required, a temporary replacement module will be made available at a nominal charge. Any shipping costs incurred will be the responsibility of you, the customer. All products shipped to you from Ross Video Limited will be shipped collect.

The Ross Video Technical Support Department will continue to provide advice on any product manufactured by Ross Video Limited, beyond the warranty period without charge, for the life of the equipment.

Ordering Information

FSR-6201, FST-6202 and Related Products

Your **FSR-6201** and **FST-6202 Single Channel HD/SD-SDI Fiber Modules** are a part of the openGear family of products. Ross Video offers a full line of openGear terminal equipment including distribution, conversion, monitoring, synchronizers, encoders, decoders, keyers, switchers, as well as analog audio and video products.

Standard Equipment

- **FSR-6201-R1ST** Single Channel HD/SD-SDI Fiber Receiver with Rear Module
- **FST-6202-R1ST** Single Channel HD/SD-SDI Fiber Transmitter with Rear Module
- **6201DR-004** Single Channel HD/SD-SDI Fiber Modules User Manual

Optional Equipment

- **6201DR-004** Single Channel HD/SD-SDI Fiber Modules User Manual (additional)
- **FSR-6201-R1ST** openGear Full Rear Module and FSR-6201 card for use in DFR-8310 series frames only
- **FST-6202-R1ST** openGear Full Rear Module and FST-6202 for use in the DFR-8310 series frames only
- **DFR-8310** Digital Products Frame and Power Supply (2RU, holds up to 10 cards)
- **DFR-8310-C** Digital Products Frame and Power Supply with Cooling Fans (2RU, holds up to 10 cards)
- **DFR-8310-N** Digital Products Frame and Power Supply with cooling fans, and MFC-8310-N card (2RU, holds up to 10 cards)
- **MFC-8310-N** Network Controller Card (additional)

Contact Us

Contact our friendly and professional support representatives for the following:

- Name and address of your local dealer
- Product information and pricing
- Technical support
- Upcoming trade show information

PHONE	General Business Office and Technical Support	613 • 652 • 4886
	After-hours Emergency	613 • 349 • 0006
	Fax	613 • 652 • 4425
E-MAIL	General Information	solutions@rossvideo.com
	Technical Support	techsupport@rossvideo.com
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