SFC-6901 SDI to Fiber I/O Converter
FCM-684x and FCD-684x Series CWDM Multiplexers, De-Multiplexers
FSS-680x and FDS-680x Series Passive Optical Splitters
User Guide

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CEO, Ross Video
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2. We will do our best to understand our customers' requirements.
3. We will not ship crap.
4. We will be great to work with.
5. We will do something extra for our customers, as an apology, when something big goes wrong and it's our fault.
6. We will keep our promises.
7. We will treat the competition with respect.
8. We will cooperate with and help other friendly companies.
9. We will go above and beyond in times of crisis. *If there's no one to authorize the required action in times of company or customer crisis - do what you know in your heart is right. (You may rent helicopters if necessary.)*

SFC-6901, FCM-684x and FCD-684x Series, FSS-680x and FDS-680x Series · User Guide

- Ross Part Number: 6901DR-004-02
- Revision: 3
- Release Date: February 3, 2025.
- SFC-6901 Software Version: v2.0

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Patents

Patent numbers US 7,034,886; US 7,508,455; US 7,602,446; US 7,802,802 B2; US 7,834,886; US 7,914,332; US 8,307,284; US 8,407,374 B2; US 8,499,019 B2; US 8,519,949 B2; US 8,743,292 B2; GB 2,419,119 B; GB 2,447,380 B; and other patents pending.

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Safety Notices

Refer to the "**Important Regulatory and Safety Notices**" document that accompanied your product.

Statement of Compliance

This product has been determined to be compliant with the applicable standards, regulations, and directives for the countries where the product is marketed.

Compliance documentation, such as certification or Declaration of Compliance for the product is available upon request by contacting techsupport@rossvideo.com. Please include the product; model number identifiers and serial number and country that compliance information is needed in request.

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 the user will be required to correct the interference at his 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 and part 15 of the FCC Rules.

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

European Union

This equipment is in compliance with the essential requirements and other relevant provisions established under regulation (EC) No 765/2008 and Decision No 768/2008/EC referred to as the "New Legislative Framework".

Warning — *This equipment is compliant with Class A of CISPR 32. In a residential environment this equipment may cause radio interference.*

Australia/New Zealand

This equipment is in compliance with the provisions established under the Radiocommunications Act 1992 and Radiocommunications Labeling (Electromagnetic Compatibility) Notice 2008.

Korea

This equipment is in compliance with the provisions established under the Radio Waves Act.

Class A equipment (Broadcasting and communications service for business use)

This device is a business-use (Class A) EMC-compliant device. The seller and user are advised to be aware of this fact. This device is intended for use in areas outside home.

Type of Equipment	User's Guide
A급 기기 (업무용 방송통신기자재)	이 기기는 업무용(A급) 전자파적합기기로서 판매자 또는 사용자는 이 점을 주의하시기 바라며, 가정외의 지역에서 사용하는 것을 목적으로 합니다.
Class A Equipment (Industrial Broadcasting & Communication Equipment)	This equipment is **Industrial (Class A) electromagnetic wave suitability equipment** and seller or user should take notice of it, and this equipment is to be used in the places except for home.

International

This equipment has been tested under the requirements of CISPR 22:2008 or CISPR 32:2015 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 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. See the "**Warranty and Repair Policy**" section in this manual for details.

Environmental Information

The equipment 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.

Security and Privacy

If you would like more information on how Ross Video security and privacy practices have been applied to the SFC-6901, what you should know about maintaining security of this product, and how we can partner with you to ensure security throughout this product's life-cycle, contact techsupport@rossvideo.com.

Ross Video has implemented reasonable administrative, technical, and physical safeguards to help protect against security incidents and privacy breaches involving a Ross Video product provided those products are used in accordance with Ross Video instructions for use. However, as systems and threats evolve, no system can be protected against all vulnerabilities and we consider our customers the most important partner in maintaining security and privacy safeguards. If you have any concerns, we ask that you bring them to our attention, and we will investigate. Where appropriate, we will address the issue with product changes, technical bulletins and/or responsible disclosures to customers and regulators. Ross Video continuously strives to improve security and privacy throughout the product life-cycle using practices such as:

- Privacy and Security by Design
- Product and Supplier Risk Assessment
- Vulnerability and Patch Management
- Secure Coding Practices and Analysis
- Vulnerability Scanning
- Access Controls appropriate to Customer Data
- Incident Response
- Clear paths for two-way communication between customers and Ross Video

If you would like to report a potential product related privacy or security issue (incident, breach, or vulnerability), contact techsupport@rossvideo.com.

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Contents

Introduction

This guide covers the installation, configuration, and use of the SFC-6901 SDI to Fiber I/O Converter, FCM-684x and FCD-684x CWDM Multiplexers, De-Multiplexers, and FSS-680x and FDS-680x Series Passive Optical Splitters. The following chapters are included:

- **"Introduction"** summarizes the guide and provides important terms, and conventions.
- "**Workflow Examples**" provides a brief summary of the possible configurations available when using Ross Video openGear Fiber cards.
- "**SFC-6901 Overview**" provides an overview of the features and cabling designations for the SFC-6901.
- "**CWDM Multiplexers and De-Multiplexers Overview**" provides an overview of the features, and cabling designations for the FCM-684x and FCD-684x.
- "**Passive Optical Splitters Overview**" provides an overview of the features and cabling designations of the FSS-6803, FSS-6805, and FDS-6808 Passive Optical Splitters.
- "**Physical Installation**" provides instructions for the physical installation of the card and its rear module.
- "**Getting Started**" provides a general overview of navigating the SFC-6901 interfaces in DashBoard.
- "**Gearbox Setup**" outlines how to specify the SFC-6901 Gearbox mode.
- "**Bypassing the Gearbox**" outlines how to bypass the Gearbox mode and the options for mapping the inputs and outputs via DashBoard.
- "**Failover Auto Return Setup**" outlines how to enable the SFC-6901 Failover Auto Return feature, assign a failover source to an output, and monitor the failover status via DashBoard.
- "**Upgrading the Software**" provides instructions for upgrading the software for your SFC-6901 using DashBoard.
- "**DashBoard Menus**" summarizes the SFC-6901 menus, items, and parameters in DashBoard.
- "**Technical Specifications**" provides the technical specifications for the SFC-6901, CWDM Multiplexers and De-Multiplexers, and Passive Optical Splitters.
- "**Supported SFP Modules**" summarizes the supported SFP modules for the SFC-6901, CWDM Multiplexers and De-Multiplexers, and Passive Optical Splitters.
- "**Service Information**" outlines on the warranty and repair policies for your card.
- "**Software Licenses**" provides the third-party software license information for your SFC-6901.
- "**Glossary**" provides a list of terms used throughout this guide.

Related Publications

It is recommended to consult the following Ross documentation before installing and configuring your card:

- ***DashBoard User Guide***, Ross Part Number: 8351DR-004
- ***MFC-OG3-N and MFC-8322-S User Guide***, Ross Part Number: 8322DR-004
- ***OGX-FR Series Quick Start Guide***, Ross Part Number: 8322DR-202
- ***OGX-FR Series User Guide***, Ross Part Number: 8322DR-204

Documentation Conventions

Special text formats are used in this guide to identify parts of the user interface, text that a user must enter, or a sequence of menus and sub-menus that must be followed to reach a particular command.

Interface Elements

Bold text is used to identify a user interface element such as a dialog box, menu item, or button. For example:

In the **Network** tab, click **Apply**.

User Entered Text

Courier text is used to identify text that a user must enter. For example:

In the **Language** box, enter **`English`**.

Referenced Guides

Text set in bold and italic represent the titles of referenced guides, manuals, or documents. For example:

For more information, refer to the ***DashBoard User Manual***.

Menu Sequences

Menu arrows are used in procedures to identify a sequence of menu items that you must follow. For example, if a step reads "**File** > **Save As**," you would click the **File** menu and then click **Save As**.

Important Instructions

Star icons are used to identify important instructions or features. For example:

✶ Contact your IT department before connecting to your facility network to ensure that there are no conflicts. They will provide you with an appropriate value for the IP Address, Subnet Mask, and Gateway for your device.

Contacting Technical Support

At Ross Video, we take pride in the quality of our products, but if problems occur, help is as close as the nearest telephone.

Our 24-hour Hot Line service ensures you have access to technical expertise around the clock. After-sales service and technical support is provided directly by Ross Video personnel. During business hours (Eastern Time), technical support personnel are available by telephone. After hours and on weekends, a direct emergency technical support phone line is available. If the technical support person who is on call does not answer this line immediately, a voice message can be left and the call will be returned shortly. This team of highly trained staff is available to react to any problem and to do whatever is necessary to ensure customer satisfaction.

- **Technical Support**: (+1) 613-652-4886
- **After Hours Emergency**: (+1) 613-349-0006
- **E-mail**: techsupport@rossvideo.com
- **Website**: http://www.rossvideo.com

Workflow Examples

This chapter provides a brief summary of the possible configurations available when using Ross Video openGear Fiber cards. Note that other configurations are possible.

Five-Channel CWDM Link

If you have an existing non-CWDM transmitter or none at all, you can use one FCM-6844, one FCD-6845, and the required number of SFC-6901 to build a five-channel CWDM link. The fifth channel uses a standard, non-CWDM FP laser.

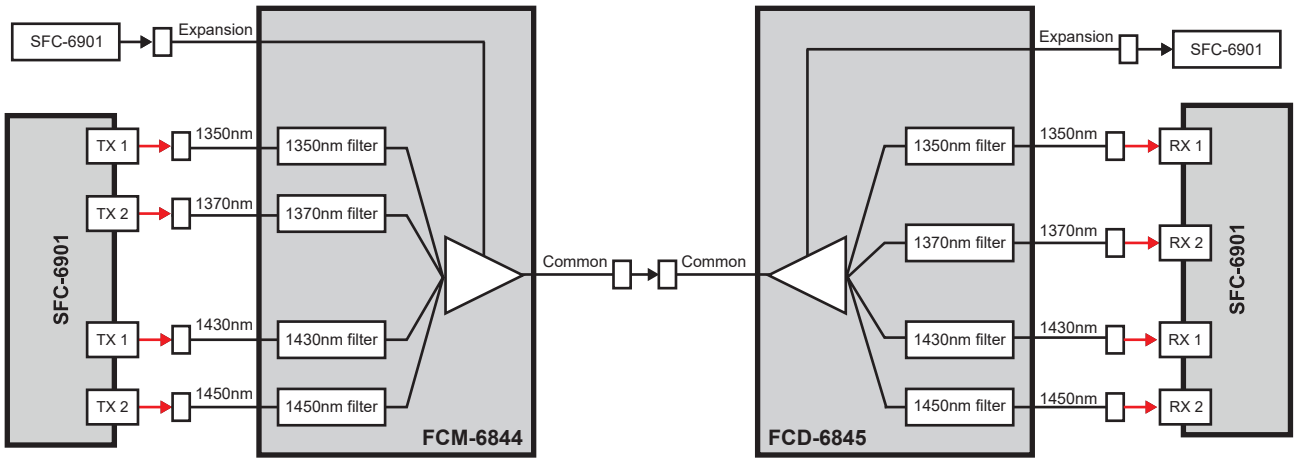


Figure 1 Workflow Diagram — Five-Channel CWDM Link

Eight-Channel CWDM Link

You can use one FCM-6846, one FCD-6847, and four SFC-6901 to build an eight-channel CWDM link.

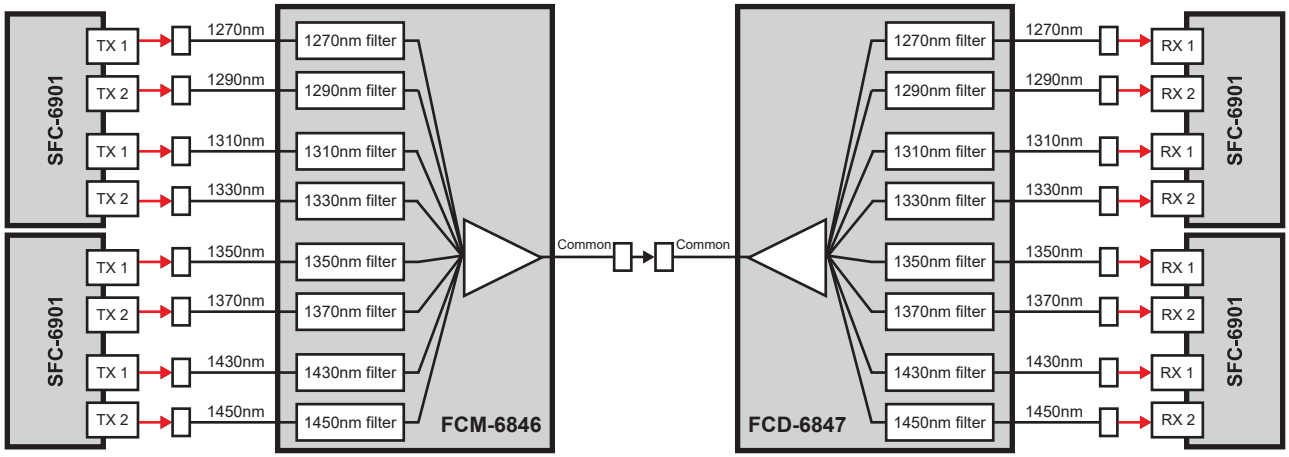


Figure 2 Workflow Diagram — Eight-Channel CWDM Link

Nine-Channel CWDM Link

You can use one FCM-6848, one FCD-6849, and the required number of transmitters and receivers to build a nine-channel CWDM link. The ninth channel uses a standard, non-CWDM FP laser.

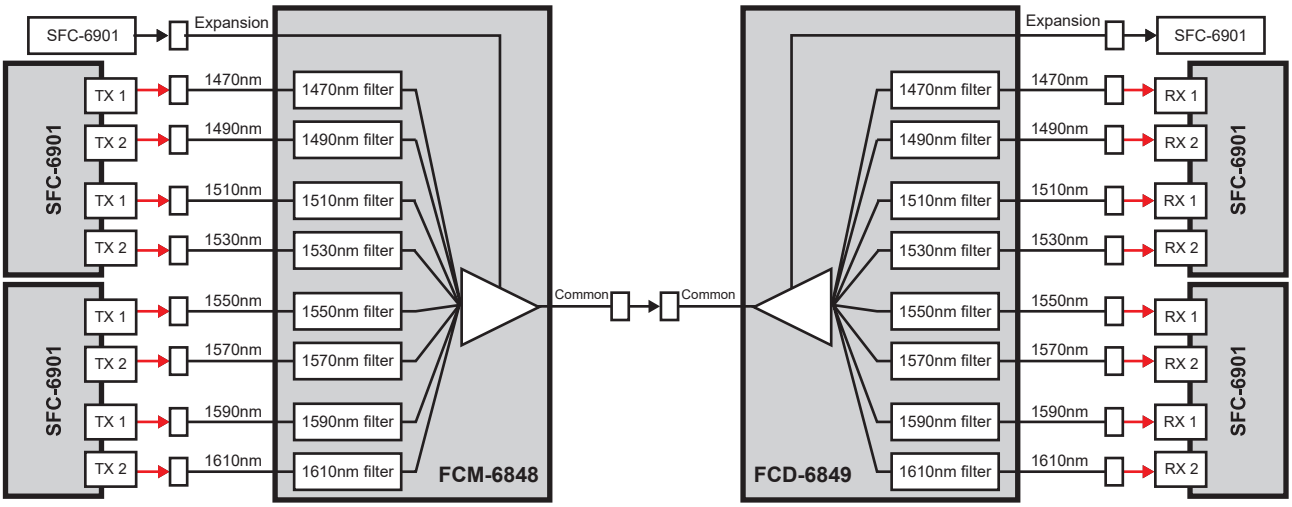


Figure 3 Workflow Diagram — Nine-Channel CWDM Link

Thirteen-Channel CWDM Link

Use a FCM-6844, a FCD-6845, a FCM-6848, a FCD-6849, and the required number of SFC-6901 to build a thirteen-channel CWDM link. The thirteenth channel uses a standard, non-CWDM FP laser.

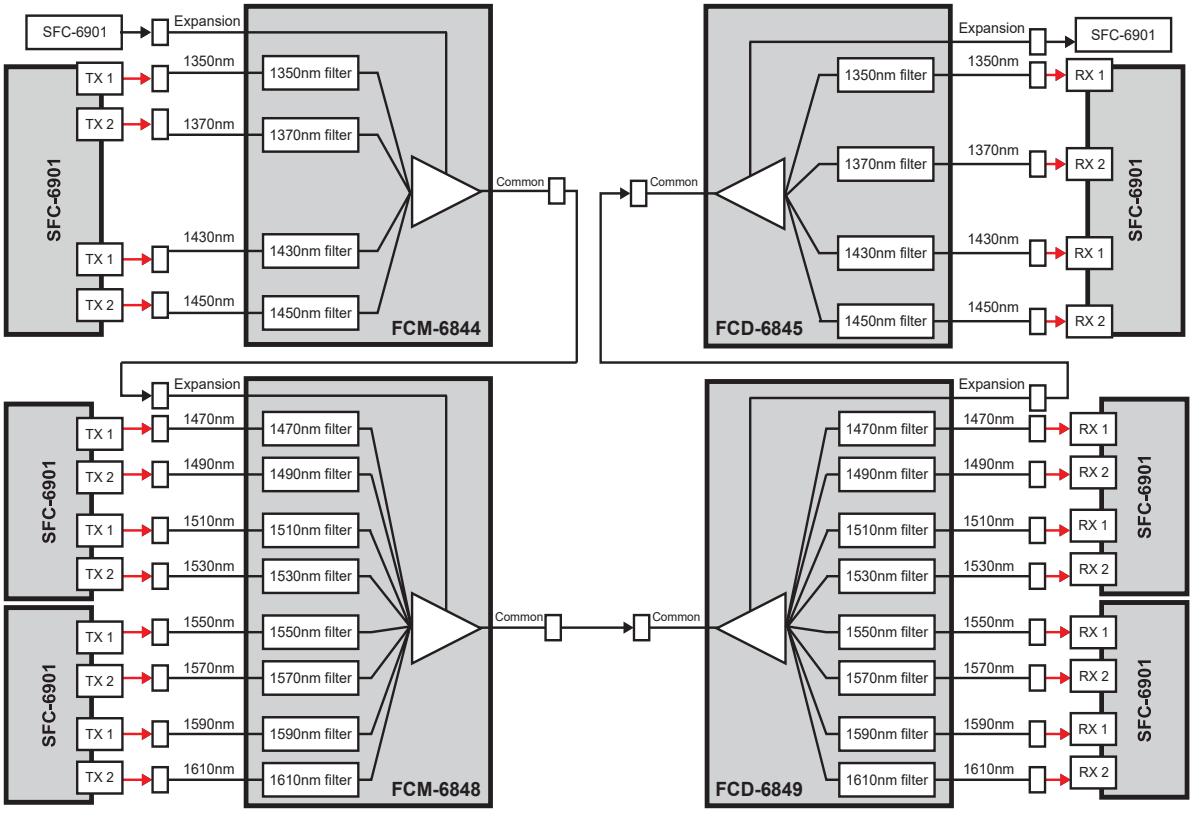


Figure 4 Workflow Diagram — Thirteen-Channel CWDM Link

Sixteen-Channel CWDM Link

You can use one FCM-6846, one FCD-6847, one FCM-6848, one FCD-6849, and the appropriate number of SFC-6901 to build a sixteen-channel CWDM link.

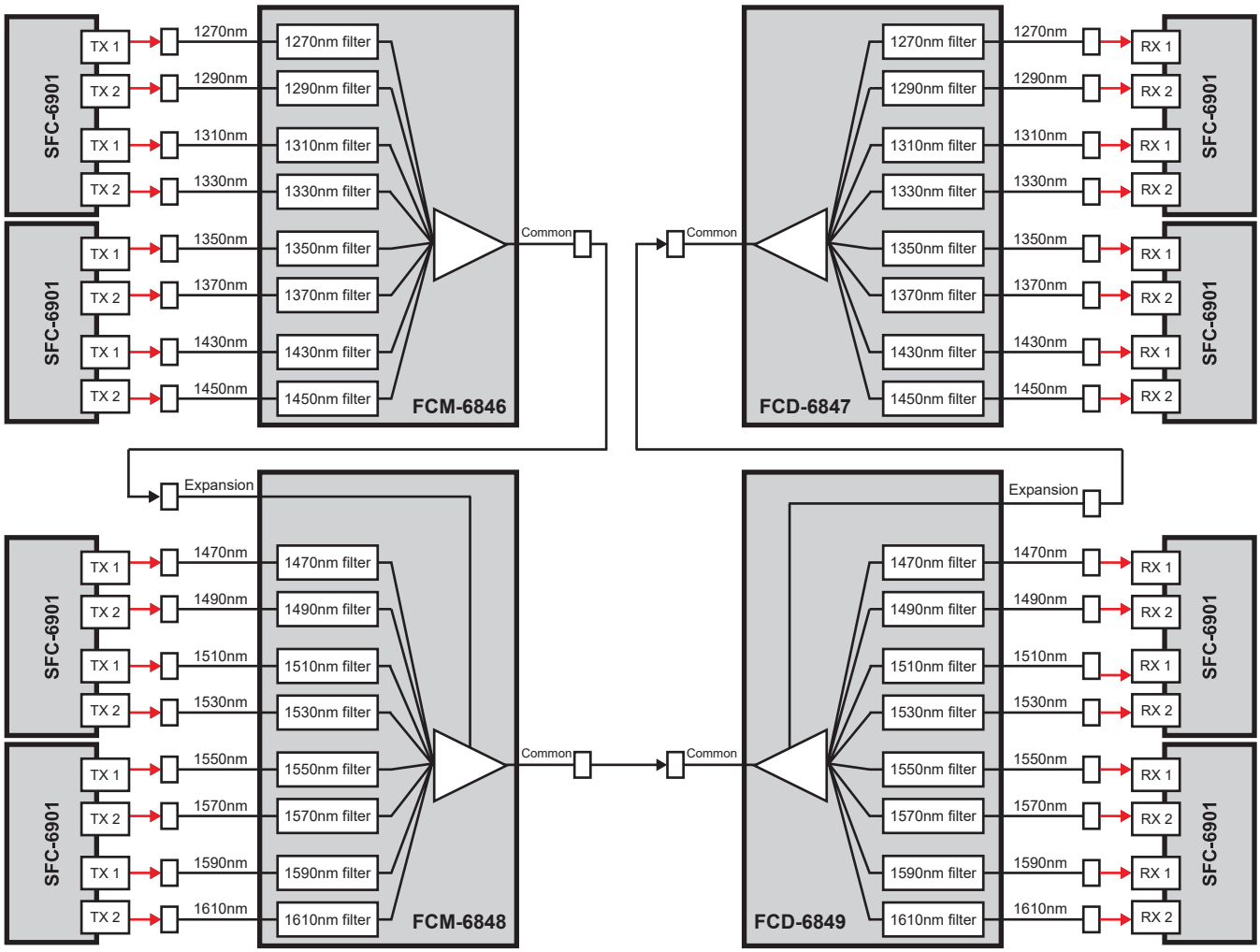


Figure 5 Workflow Diagram — Sixteen-Channel CWDM Link

Figure 6 is an example where eight SFC-6901 are used in conjunction with other Ross Video openGear Fiber cards to build a multi-channel CWDM link.

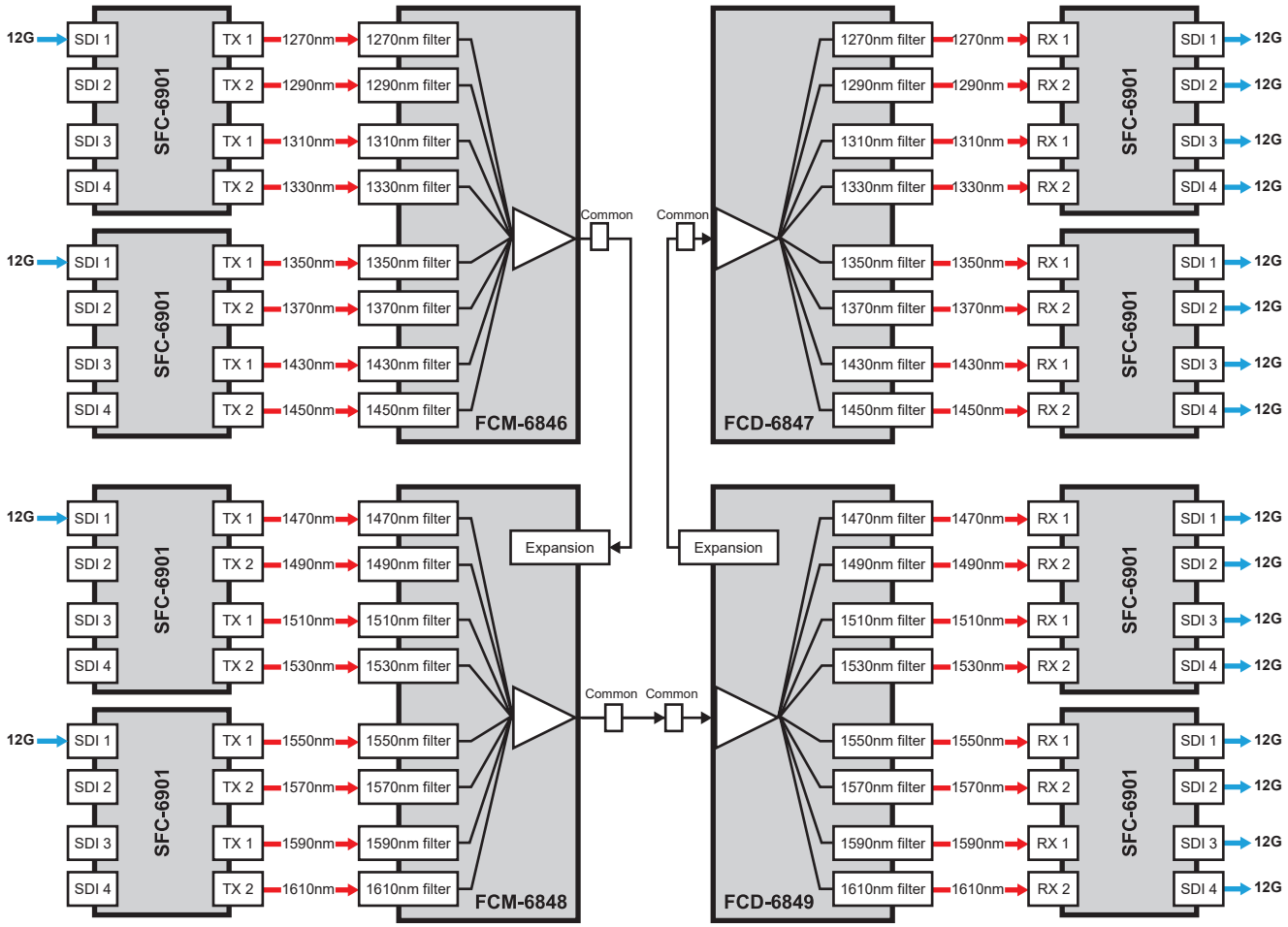


Figure 6 Workflow Diagram — Multi-channel CWDM Link

Multiple Channels of Bi-directional Links

Multiple channels of bi-directional links can be achieved by selecting the appropriate combination of products. **Figure 7** illustrates an eight-channel, four in each direction configuration.

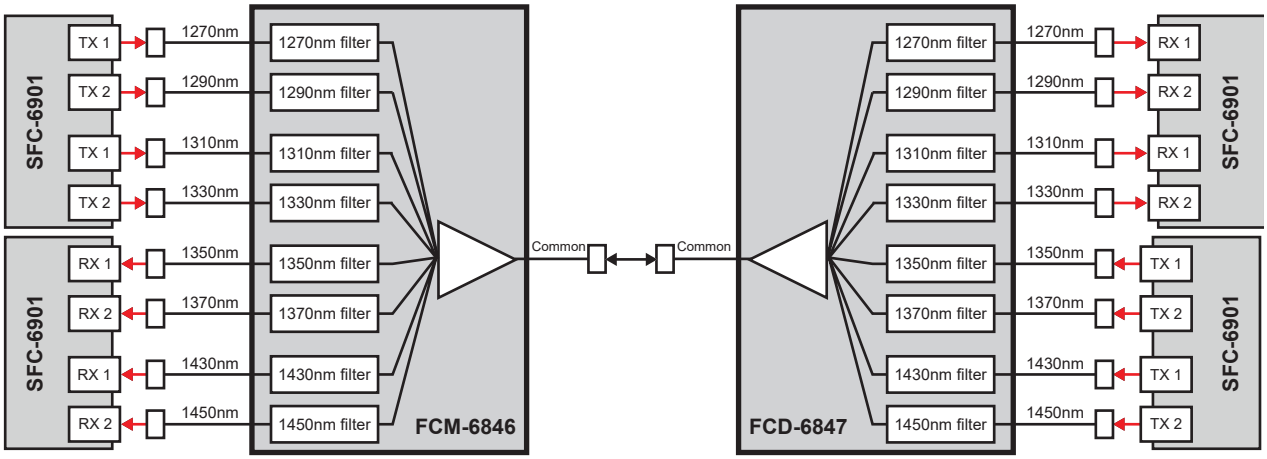


Figure 7 Workflow Diagram — Eight-Channel Bi-directional CWDM Link

SFC-6901 Overview

The SFC-6901 is a high-quality multi-channel UHD SDI conversion solution within the openGear family. The SFC-6901 includes a gearbox feature that enables the multiplex and demultiplex of up to 4, co-timed and same format HD/3G signals into a 6G or 12G signal to reduce fiber cabling requirements. Each individual muxed signal preserves all of the VANC/HANC space and all full recovery of the audio and metadata.

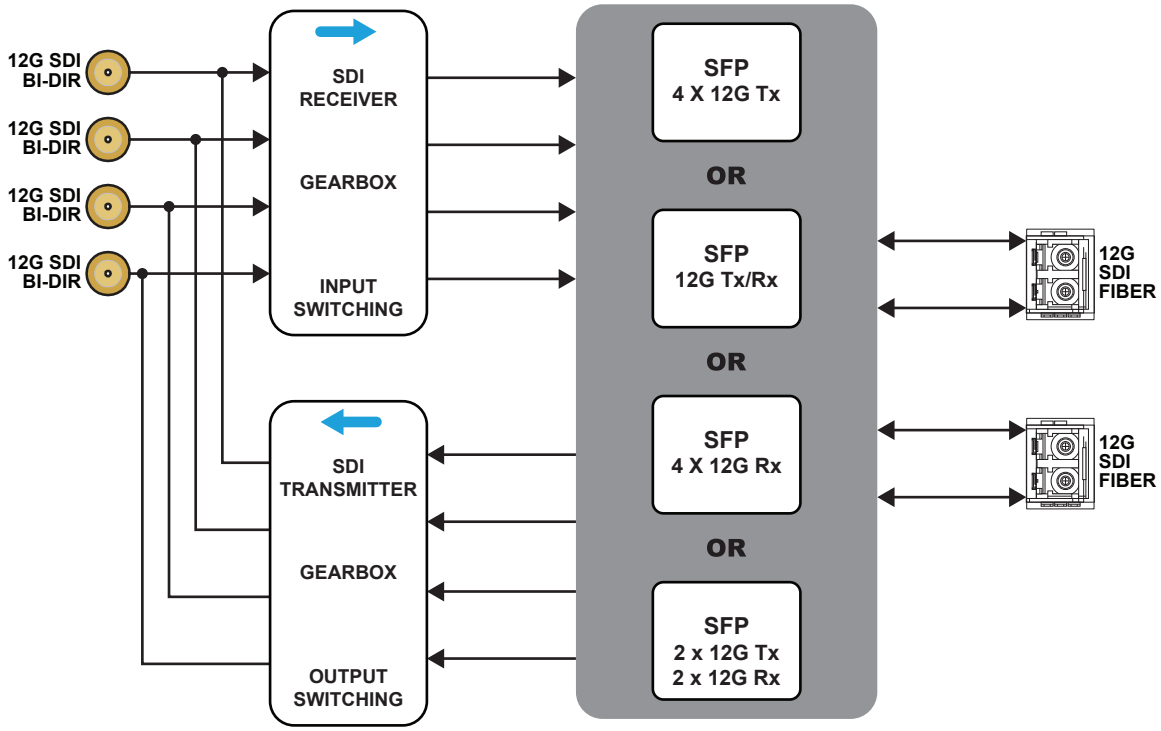


Figure 8 SFC-6901 — Simplified Block Diagram

Features

The following features are standard for the SFC-6901:

- SD/HD/3G/UHD SDI support
- CWDM support
- Fail-over support
- 4 x UHD Fiber in/out and 4x UHD SDI in/out on a single rear module
- 2SI gearbox allowing MUX/DMX of up to 4 genlocked SDI signals over a single fiber
- Reports status and configuration remotely via the DashBoard Control System
- 5-year transferable warranty

CWDM Overview

Some Fiber Ethernet Switch Transceivers are equipped with Coarse Wavelength Division Multiplexing (CWDM) lasers. This enables you to expand your current fiber infrastructure from one wavelength to up to 16 wavelengths on a fiber. Refer to "**Supported SFP Modules**" for a list of available SFP modules for the SFC-6901.

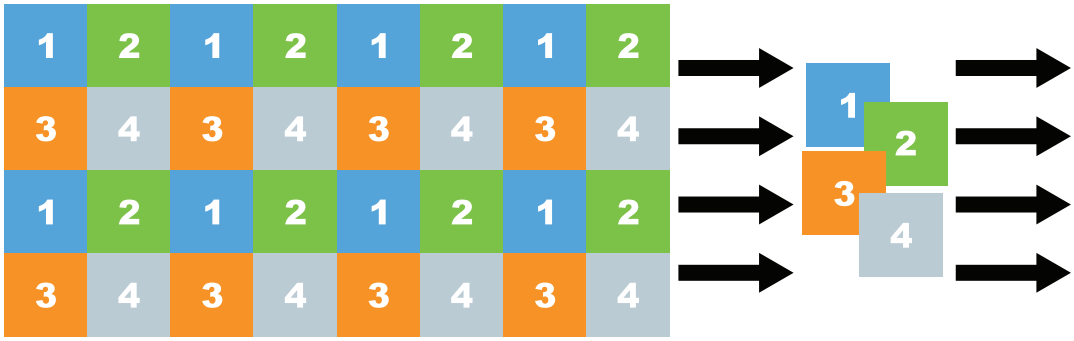
Gearbox Overview

A Gearbox is a group of consecutive inputs or consecutive outputs that are automatically grouped together by the SFC-6901. For example:

- When you set the Gearbox Mode to DEMUX SL 6G -> QL 1.5G, the SFC-6901 processes a single-link 5.94Gbps signal into four 1.485Gbps signals. Each 1.485Gbps signal is automatically assigned to an output on the SFC-6901.
- When you set the Gearbox Mode to MUX QL 1.5G -> SL 6G, four 1.485Gbps input signals are muxed into a single-link 5.94Gbps output signal, the SFC-6901 multiplexes the signals of four 1.485Gbps signals into a 5.94Gbps signal. This 5.94Gbps signal is automatically assigned to an output on the SFC-6901.

What is 2SI Sampling?

The SFC-6901 supports the 2 Sample Interleave (2SI) method where four sub-images (1-4) are used to alternate sampling every 2 pixels and every line. This method is defined in all UHDTV specifications.



Image

Figure 9 Representation of 2SI Sampling

Hardware Overview

This section presents information on the SFC-6901 hardware components and features.

Notice — *Installing the SFC-6901 in a frame other than the OG3-FR or OGX-FR could damage the card, the rear module, or both.*

The SFC-6901 is an openGear modular system composed of two sub-systems.

- a main PCB which connects to the rear module and the openGear frame midplane
- a daughter card which connects to the main PCB and the rear module
- a rear module (P/N 8322AR-335) that provides physical connectors

Notice — *Ensure the main PCB and the daughter card are correctly installed and fully connected to the rear module.*

Main PCB

The main PCB is a typical openGear card. An ejector on one end secures the card to the slot inside the openGear frame, and the other end inserts into a connector on the back of the rear module. The rear module daughter card (on the rear module) inserts into a connector on the main PCB.

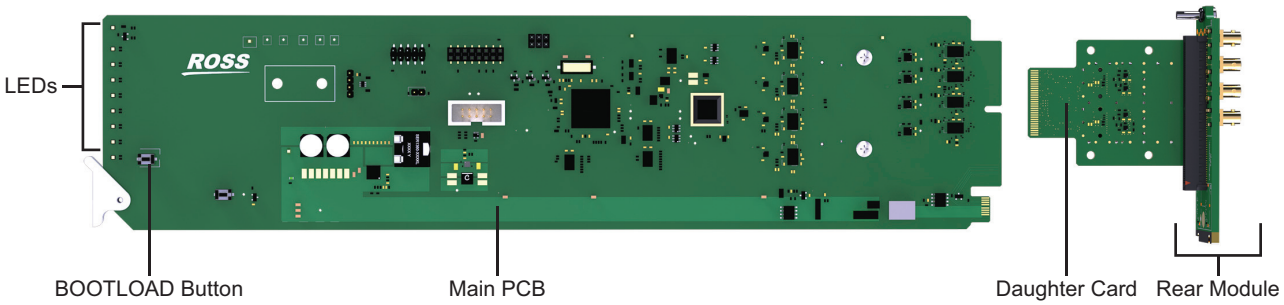


Figure 10 SFC-6901 Card with Rear Module

BOOTLOAD Button

This button is used for factory service in the unlikely event of a complete card failure. Do not use this button unless advised by Ross Video Technical Support.

LEDs

The front card-edge has LED indicators to indicate alarms, and communication activity. (**Figure 11**)

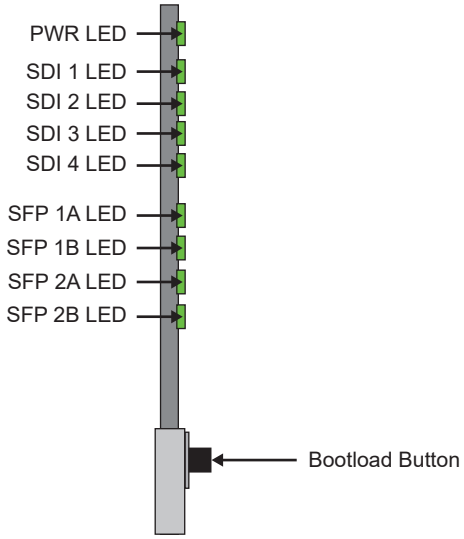


Figure 11 Card-edge LEDs

Table 1 provides information on the LEDs.

Table 1 SFC-6901 PWR LED Description

LED	Color	Description
PWR	Green	The card is powered on and is operating correctly
	Flashing	The card software is updating
	Red	When lit red, this LED indicates: • the card is booting, or • a major alarm condition is occurring on the card
	Off	The card is not powered on

Table 1 SFC-6901 PWR LED Description

LED	Color	Description
SDI #	Green	A signal of a supported format is detected on the specified BNC; the signal is locked
	Red	The signal connected to the specified SDI BNC is not valid. Indicates one of the following issues is occurring: • the input signal is not detected • the system frame rate does not match the input frame rate
	Off	The specified SDI BNC is not in use
SFP #	Green	The video signal on the specific SFP channel is a supported format and locked
	Red	The signal connected to the specified SFP port is not valid. Indicates one of the following issues is occurring: • the SFP channel is not detected • the system frame rate does not match the input frame rate
	Off	The specified SFP port is not in use

Connections on the Rear Module

The SFC-6901 requires the 8322AR-335 rear module. Each rear module occupies two slots in the openGear frame and accommodates one SFC-6901 card. **Figure 12** represents the implemented cabling designations.

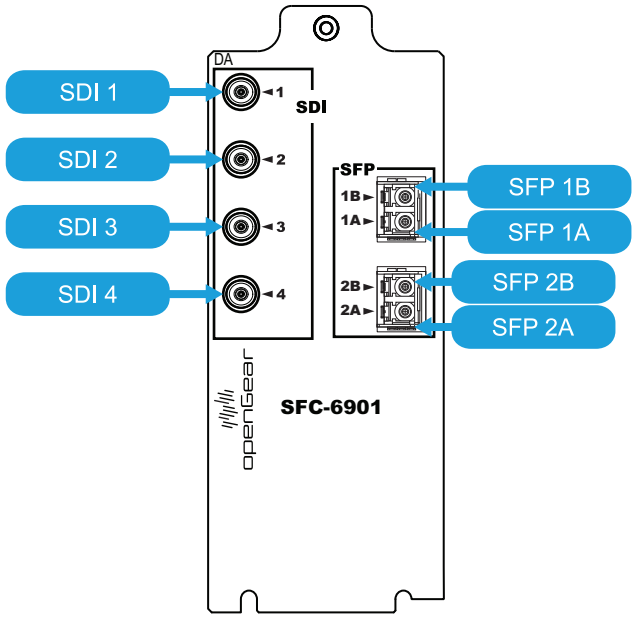


***Figure 12** Cabling Designations*

✶ The signal direction is set in DashBoard set by the Gearbox Mode. Refer to "**Gearbox Setup**" for details.

SFC-6901 Gearbox Cabling

This chapter outlines how to cable the SFC-6901 for using the default input and output mapping.

✶ The I/O designation of each SFP port is automatically detected when the port is populated. The designation cannot be edited (and is read-only).

✶ Only SFP 1 can be used for a Gearbox setup.

For More Information on...

- configuring the SFC-6901 in DashBoard, refer to "**Gearbox Setup**".
- customizing the inputs and outputs for your Gearbox setup, refer to "**Bypassing the Gearbox**".

Cabling the SFC-6901 for a De-multiplexing Mode

Table 2 outlines the default input and outputs when selecting a DEMUX mode in DashBoard.

Table 2 Gearbox DEMUX Modes — Default I/O Mapping

Mode	Input	Output 1	Output 2	Output 3	Output 4
SL 6G -> QL 1.5G	SFP 1A	SDI 1	SDI 2	SDI 3	SDI 4
SL 12G -> QL 3G	SFP 1A	SDI 1	SDI 2	SDI 3	SDI 4

Physical Cabling

✶ All SDI input sources should be genlocked to a common reference when in Gearbox mode.

1. Set up a connection between the SFC-6901 and the external device that will transmit the signal to be de-multiplexed by the SFC-6901.
2. Make a note of the physical **INPUT** port on the SFC-6901 rear module that will receive the SDI signal. Refer to **Table 2** for default I/O mapping.
3. Setup a connection between the SFC-6901 and the external device(s) that will receive the de-multiplexed signals.
4. Make a note of the physical **OUTPUT** ports on the rear module that will send the signals to the device in step 3. Refer to **Table 2** for the default I/O mapping.

Cabling the SFC-6901 for a Multiplexing Mode

Table 3 outlines the default SDI input and outputs when selecting a MUX mode in DashBoard.

Table 3 Gearbox MUX Modes — Default I/O Mapping

Mode	Output	Input 1	Input 2	Input 3	Input 4
QL 1.5G -> SL 6G	SFP 1B	SDI 1	SDI 2	SDI 3	SDI 4
QL 3G -> SL 12G	SFP 1B	SDI 1	SDI 2	SDI 3	SDI 4

Physical Cabling

1. Set up a connection between the external device that will provide the multiple input signals and the SFC-6901.
2. Make a note of the physical **INPUT** ports on the SFC-6901 rear module that will receive the SDI signals if it differs from **Table 3**.
3. Set up a connection between the SFC-6901 and the external device that will receive the multiplexed signal.
4. Make a note of the physical **OUTPUT** port on the SFC-6901 rear module that will transmit the multiplexed signal to the external device in step 3.

CWDM Multiplexers and De-Multiplexers Overview

This chapter provides an overview of the FCM-684x and FCD-684x series cards.

✶ The CWDM Multiplexers and De-Multiplexers are passive products that fit into a openGear frame while drawing no power. The cards cannot be detected by DashBoard or SNMP as there is nothing to control or monitor.

Overview

The FCM-684x and FCD-684x series are used with CWDM transmitters to expand your current fiber infrastructure from one wavelength to up to 16 wavelengths on a fiber. All devices operate bi-directional as both a wavelength MUX and DMX.

There are six types of filters:

- **FCM-6844** — Four channel MUX with an expansion port
- **FCD-6845** — Four channel DMX with an expansion port
- **FCM-6846** — Eight channel MUX, low wavelengths, no expansion port
- **FCD-6847** — Eight channel DMX, low wavelengths, no expansion port
- **FCM-6848** — Eight channel MUX, high wavelengths, with an expansion port
- **FCD-6849** — Eight channel MUX, high wavelengths, with an expansion port

The FCM-6844, FCD-6845, FCM-6848, and FCD-6849 include expansions ports which allow for cascading for filters. This provides the capability to add additional wavelengths to an existing configuration. The filter wavelengths for each port are as follows:

Table 4 Filter Wavelengths

Model	Filter Wavelengths
FCM-6844, FCD-6845	1350nm, 1370nm, 1430nm, 1450nm
FCM-6846, FCD-6847	1270nm, 1290nm, 1310nm, 1330nm, 1350nm, 1370nm, 1430nm, 1450nm
FCM-6848, FCD-6849	1470nm, 1490nm, 1510nm, 1530nm, 1550nm, 1570nm, 1590nm, 1610nm

Features

The following features are standard for the FCM-684x and FCD-684x:

- Supports up to 16 CWDM wavelengths (ITU-T G.694.2)
- Bi-directional operation
- Modular design allows expansion from 4 to 16 wavelengths
- Supports any protocol and bit rate including 3G/HD/SD SDI, ASI, Ethernet
- Fully passive design, requiring no power
- Supports single-mode fiber
- LC/UPC optical connections
- Fits DFR-8321 series and OG3-FR series frames
- Fully compliant with openGear specifications
- 5-year transferable warranty

FCM-6844 and FCD-6845 Block Diagrams

This section outlines the workflow of the FCM-6844 and FCD-6845.

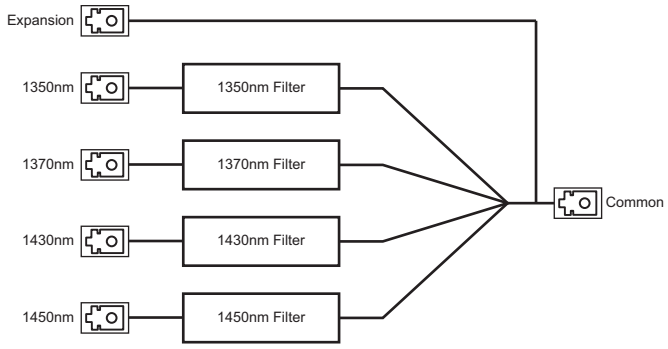


Figure 13 FCM-6844 — Simplified Block Diagram

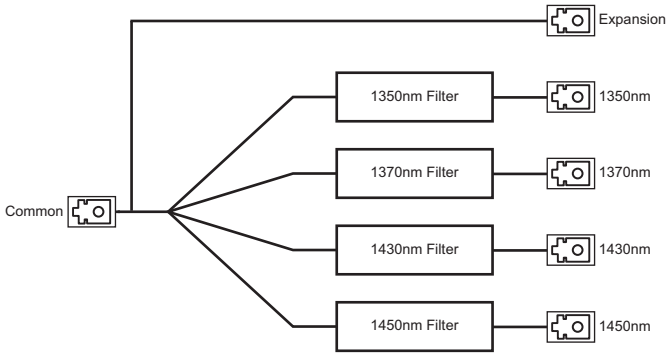


Figure 14 FCD-6845 — Simplified Block Diagram

FCM-6846 and FCD-6847 Block Diagrams

This section outlines the workflow of the FCM-6846 and FCD-6847.

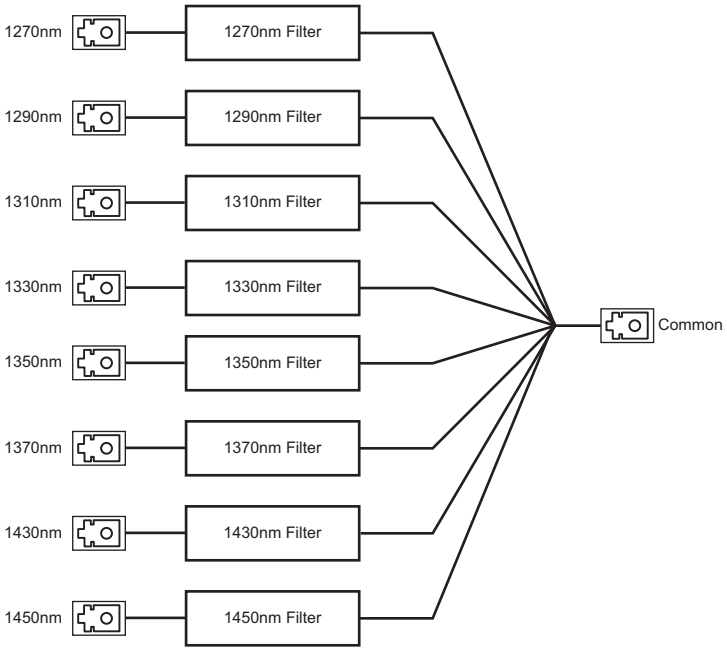


Figure 15 FCM-6846 — Simplified Block Diagram

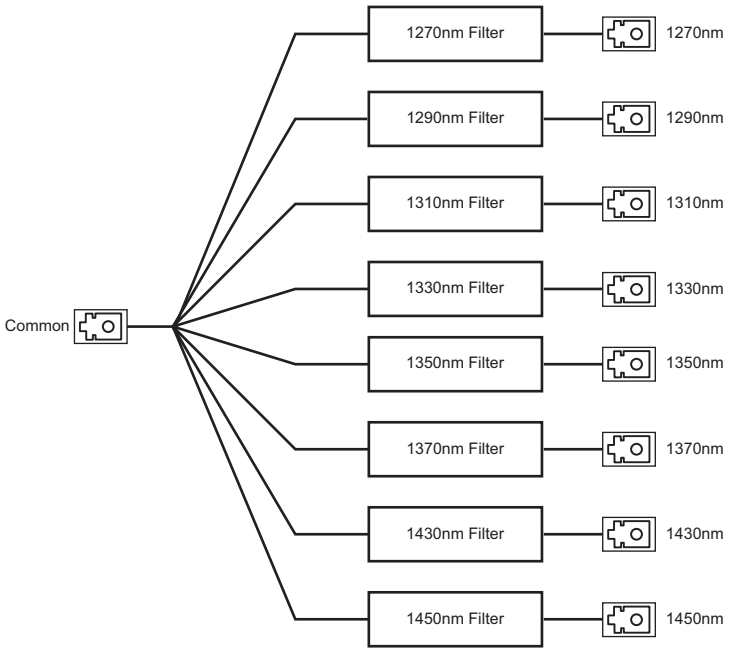


Figure 16 FCD-6847 — Simplified Block Diagram

FCM-6848 and FCD-6849 Block Diagrams

This section outlines the workflow of the FCM-6848 and FCD-6849.

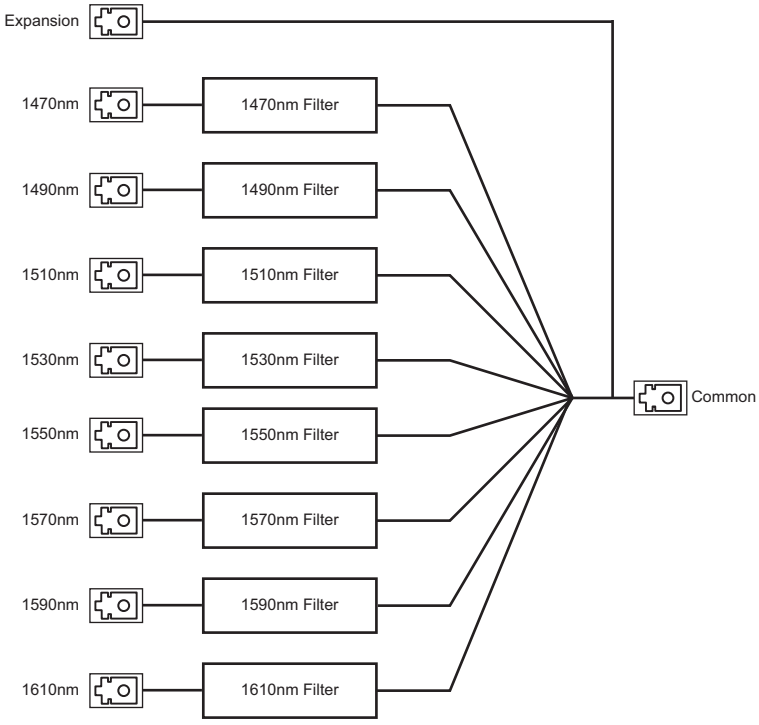


Figure 17 FCM-6848 — Simplified Block Diagram

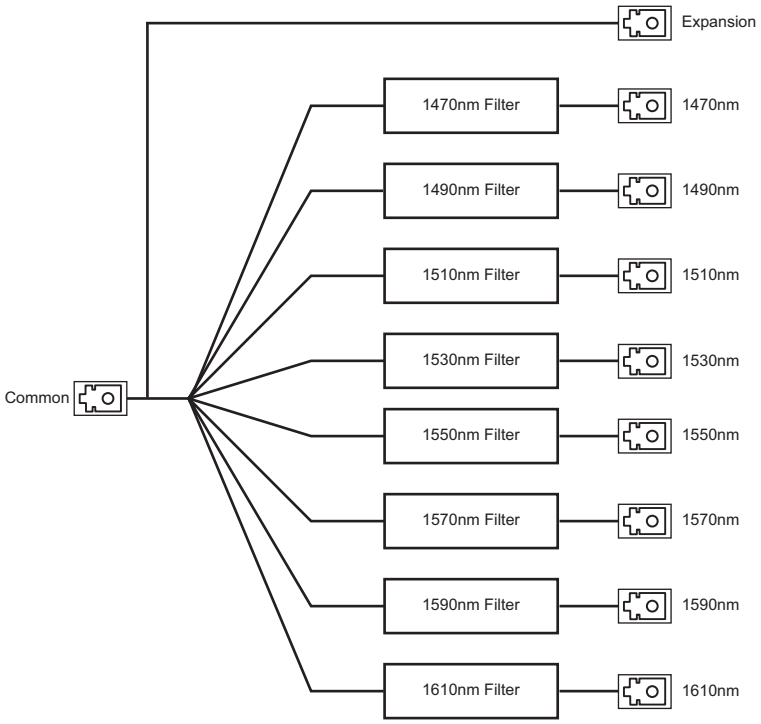


Figure 18 FCD-6849 — Simplified Block Diagram

Cabling the CWDM Multiplexers and De-Multiplexers

This section outlines the cabling designations for the CWDM Multiplexers and De-Multiplexers.

Notice — *Every time you are required to insert a connector into a device or mating sleeve, you must clean the connector. All exposed surfaces of the ceramic ferrule must be clean. Follow your facility practices of cleaning fiber optic connectors.*

Connectors must always be inserted into a device or have a dust cap on.

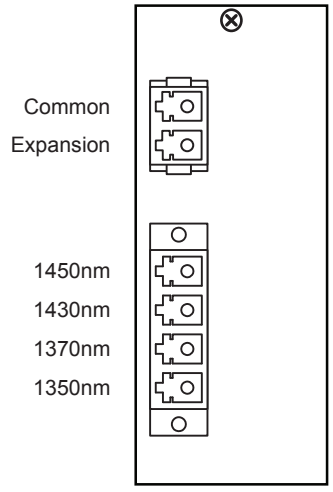


Figure 19 FCM-6844 and FCD-6845

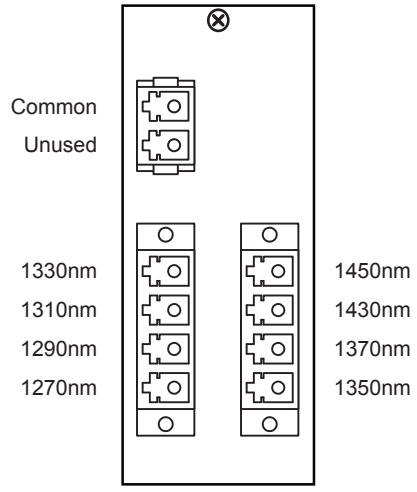


Figure 20 FCM-6846 and FCD-6847

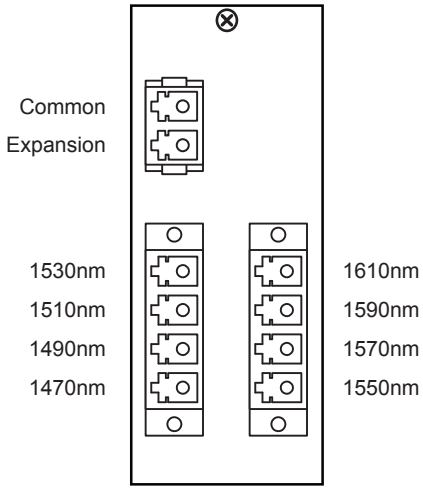


Figure 21 FCM-6848 and FCD-6849

For More Information on...

- the available SFP modules for your card, refer to "**Supported SFP Modules**".
- how to cable an SFP port, refer to "**Installing and Removing Fiber Optic Cables**".

Passive Optical Splitters Overview

This chapter provides an overview of the FSS-6803, FSS-6805, and FDS-6808 Passive Optical Splitters.

✶ The FSS-6803, FSS-6805, and FDS-6808 are passive products that fit into the openGear frame while drawing no power. The cards cannot be detected by DashBoard or SNMP as there is nothing to control or monitor.

Overview

The Passive Optical Splitters use Planar Light-wave Circuit (PLC) technology, that takes in an input signal and splits it into several output signals. Each card is an implementation of CWDM takes an optical signal and splits it to two or more outputs but while using no electrical power. It separates the wavelengths using passive optical components. The card functions like a distribution amplifier on optical signals. All splitters pass all wavelengths from 1260nm to 1650nm.

The Passive Optical Splitters offer a low cost method of distributing an optical signal from one source to many destinations. This is achieved at the expense of optical power, where a 1:2 splitter will split the input signal power by 50% to each output. The cost savings are achieved without the need to return to the electrical domain. The cost savings are even higher if there are multiple wavelengths on the fiber.

There are three types of splitters: 1x2, 1x4, and 1x8. The optical power at the inputs is split to the outputs according to the ratio as follows:

- **FDS-6803** — This is a dual 1x2 splitter with a 50% split and a maximum IL of 4dB.
- **FDS-6805** — This is a dual 1x4 splitter with a 25% split and a maximum IL of 8dB.
- **FSS-6808** — This is a single 1x8 splitter with a 12.5% split and a maximum IL of 11dB.

Features

The following features are standard for the Passive Optical Splitters:

- Available in Dual 1x2, Dual 1x4, and Single 1x8 configurations
- Optical power split evenly across all outputs (50%, 25%, and 12.5%)
- Maximum input loss of 4dB on 1x2 splitters, 8dB on 1x4 splitters, and 11dB on 1x8 splitters
- Latching rear module to prevent accidental removal
- Works across a wide operating wavelength range from 1260nm to 1650nm
- Compatible with 1310nm, 1550nm, CWDM, and DWDM wavelengths
- Supports protocols and bit rates including 3G/HD/SD SDI, ASI, Ethernet
- Fully passive design, requiring no power
- Supports single-mode fiber
- LC/UPC optical connections
- Fully compliant with openGear specifications
- 5-year transferable warranty

Functional Block Diagrams

This section provides the workflow diagrams for the Passive Optical Splitters.

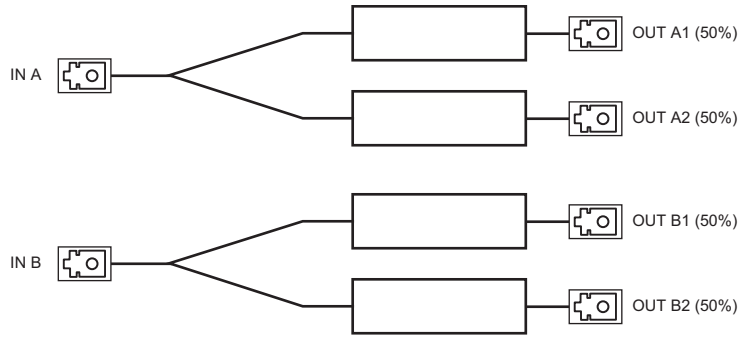


Figure 22 FDS-6803 — Simplified Block Diagram

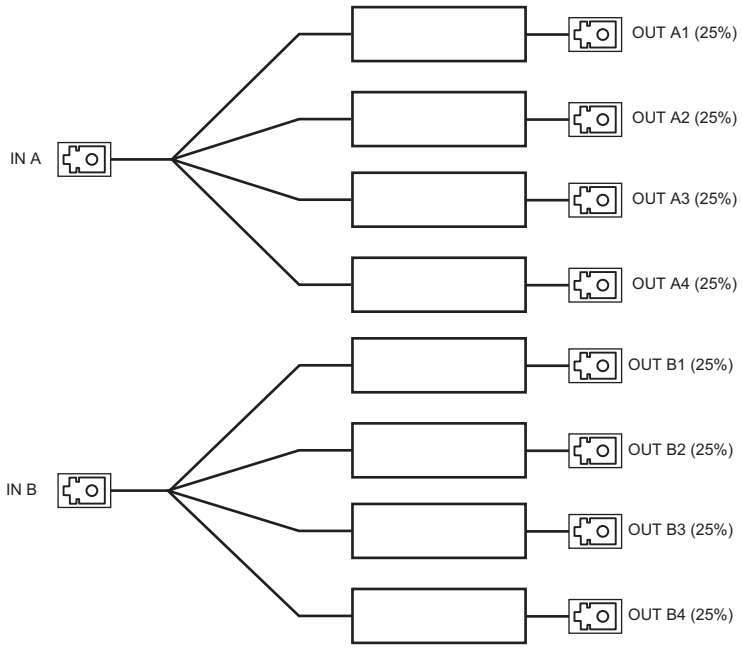


Figure 23 FDS-6805 — Simplified Block Diagram

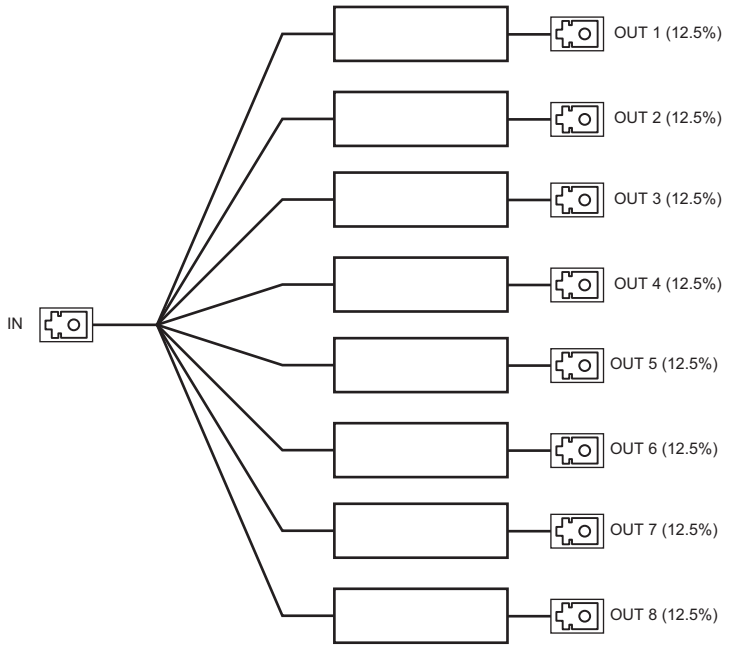


Figure 24 FSS-6808 — Simplified Block Diagram

Cabling the Passive Optical Splitters

Notice — *Every time you are required to insert a connector into a device or mating sleeve, you must clean the connector. All exposed surfaces of the ceramic ferrule must be clean. Follow your facility practices of cleaning fiber optic connectors.*

Connectors must always be inserted into a device or have a dust cap on.

The following diagrams provide a cabling overview for the Passive Optical Splitters.

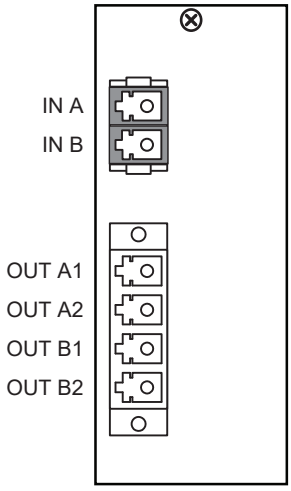


Figure 25 FDS-6803

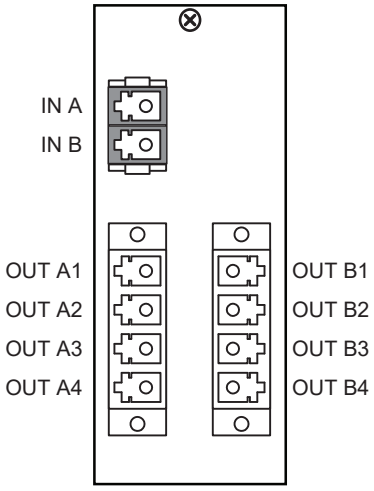


Figure 26 FDS-6805

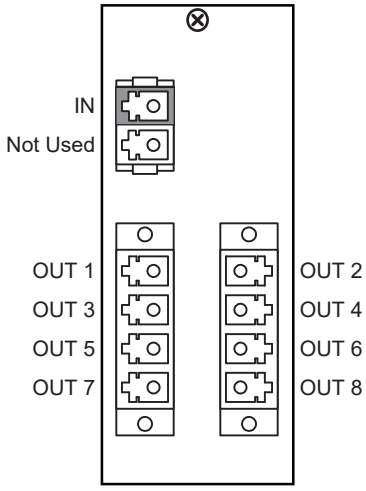


Figure 27 FSS-6808

For More Information on...

- the available SFP modules for your card, refer to "**Supported SFP Modules**".
- how to cable an SFP port, refer to "**Installing and Removing Fiber Optic Cables**".

Physical Installation

Installing an openGear card into an OG3-FR or OGX-FR series frame requires you to remove the blank plates in the designation frame slots, install the required rear module into the frame rear panel, and then install the card into the required frame slot.

If you have questions pertaining to the installation of your card, contact us at the numbers listed in "**Contacting Technical Support**". Our technical staff is always available for consultation, training, or service.

Notice — *Do not install the CWDM Multiplexer or De-Multiplexer, or Passive Optical Splitter in a DFR-8310 series frame or in a DFR-8320 series frame.*

Before You Begin

These installation guidelines assume the openGear frame is properly installed. Refer to the ***User Guide*** for your frame.

Static Discharge

Throughout this chapter, please heed the following cautionary note:

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

Working with Fiber Optic Connectors

Caution — *Every time you are required to insert a connector into a device or mating sleeve, you must clean the connector. All exposed surfaces of the ceramic ferrule must be clean. Follow your facility practices of cleaning fiber optic connectors. Connectors must always be inserted into a device or have a dust cap on.*

Caution — *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 may cause permanent eye damage. Turn off all laser sources before disconnecting devices.*

Each card supports optical Small Form-factor Pluggable (SFP) modules. Keep the following in mind when working with fiber optic connectors:

- These instructions are for use by qualified service personnel only. Do not perform any servicing other than that contained in the following instructions unless you are qualified to do so.
- Connectors must always be inserted into a device or have a dust cap on.
- A poor optical connection is often similar to a poor electrical connection. Try removing the connector, cleaning, and re-inserting the connector. A bad connection can result in experiencing instability of signal, high loss, or a noisy signal.
- The SFP modules are hot-swappable.

Removing the Blank Plates from the Rear Panel

When a frame slot is not populated with an openGear card, a blank plate must be installed to ensure proper frame cooling and ventilation. Before installing the rear module, you must remove the blank plate covering the required slots.

✶ This section applies to all card models.

To remove a blank plate from the openGear frame

1. Locate the slots in the openGear frame you wish to install the card into. It is recommended to use the following slot combinations:

   - Slots 1, 2
   - Slots 3, 4
   - Slots 5, 6
   - Slots 7, 8
   - Slots 9, 10
   - Slots 11, 12
   - Slots 13, 14
   - Slots 15, 16
   - Slots 17, 18
   - Slots 19, 20

2. Use a Phillips screwdriver to unfasten each blank plate from the openGear frame backplane.
3. Remove each blank plate from the chassis and set aside.

Installing the SFC-6901 into the openGear Frame

The slot that the SFC-6901 installs into depends on the slot combination you installed the rear module in. This allows adequate spacing to avoid damaging the card, the cards installed in the neighboring slots, or both. Refer to **Table 5** for valid slot combinations.

Table 5 Card Slot Combinations

Rear Module is Installed in	Card Installs into Slot
Slots 1, 2	2
Slots 3, 4	4
Slots 5, 6	6
Slots 7, 8	8
Slots 9, 10	10
Slots 11, 12	12
Slots 13, 14	14
Slots 15, 16	16
Slots 17, 18	18
Slots 19, 20	20

To install a rear module into the openGear frame

1. For each retaining screw on the rear module, push the o-ring to the end of the screw (but not off the screw). This will help to align the rear module to the frame backplane in step 3.
2. Seat the bottom of the rear module in the seating slots at the base of the openGear frame's backplane.
3. Align the top holes of the rear module with the screw holes on the top-edge of the frame backplane.
4. Using a Phillips screwdriver and the provided screw, fasten the rear module to the backplane.

✶ Do not fully tighten the screws until after installing the card and you have verified that the SFC-6901 card aligns with the rear module.

To install the card into the openGear frame

1. Locate the slot the SFC-6901 card will slide into.
2. Verify that the SFC-6901 card aligns with the rear module.
3. Hold the card by the edges and carefully align the card edges with the slot rails in the frame.
4. Fully insert the card into the frame until the card is fully seated in the rear module.

✶ Verify that the main card is seated correctly in its frame slot and is fully mated to its rear module.

Installing the CWDM Multiplexer or De-Multiplexer

An installed CWDM Multiplexer or De-Multiplexer blocks the card slots in the frame so that the modules are not damaged if a user attempts to slide a card into the slot occupied by the CWDM Multiplexer or De-Multiplexer.

This section outlines how to install a CWDM Multiplexer or De-Multiplexer in an openGear frame.

Notice — *Installing the CWDM Multiplexer or De-Multiplexer in a DFR-8310 or DFR-8320 could damage the card, the rear module, or both.*

Installing the Rear Module

If the rear module is already installed, proceed to "**Installing the CWDM Multiplexer or De-Multiplexer Card**".

To install a rear module in your openGear frame

1. Locate the card frame slots on the rear of the frame you wish to install the rear module for.
2. Remove the Blank Plate from the slot you have chosen for the installation.
3. Install the bottom of the rear module in the Module Seating Slot at the base of the frame's back plane.
4. Align the top hole of the rear module with the screw on the top-edge of the frame back-plane.
5. Using a Phillips screwdriver and the supplied screw, fasten the rear module to the back plane of the frame. Do not over tighten.
6. Ensure proper frame cooling and ventilation by having all rear frame slots covered with rear modules or Blank Plates.

Installing the CWDM Multiplexer or De-Multiplexer Card

All the components are enclosed in a metal box that fits into the frame card guides. The CWDM Multiplexer or De-Multiplexer latch to the rear module to prevent accidental removal when the fiber optic cables are installed.

✶ Before handling fiber optic components, refer to the ***Important Regulatory and Safety Notices*** document that shipped with your card.

To install a CWDM Multiplexer or De-Multiplexer in an openGear frame

1. Open the frame door.
2. Insert the CWDM Multiplexer or De-Multiplexer from the front of the frame until you hear a click from the latch on the rear module.

3. Ensure that the latch is locked by gently pulling the CWDM Multiplexer or De-Multiplexer towards you.
4. Verify whether your rear module label is self-adhesive by checking the back of the label for a thin wax sheet. You will need to remove this wax sheet before applying the label in order that the label can be affixed to the rear module surface.
5. Affix the supplied rear module label to the port area of the rear module.
6. Remove the dust cap(s) from the LC fiber optic port connectors on the unit end as needed when attaching the fiber cable(s).
7. Ensure that the exposed surface of the ceramic ferrules of the connectors is clean. Refer to "**Working with Fiber Optic Connectors**" for cleaning tips.
8. Cable your card as outlined in "**Cabling the CWDM Multiplexers and De-Multiplexers**".

To remove the FCM-6800 or FCD-6800 Series from the frame

1. Remove all the fiber optic cables from the rear of the frame.
2. Open the frame door.
3. Disengage the FCM-6800 or FCD-6800 from the rear module as follows:
   a. From the back of the frame, squeeze the latch on the top of the rear module.
   b. Push on the LC connectors to disengage the card from the rear module.
   c. Remove the FCM-6800 or FCD-6800 from the front of the frame.
4. Close the frame door.

Installing a Passive Optical Splitter

An installed Passive Optical Splitter blocks the card slots in the frame so that the modules are not damaged if a user attempts to slide a card into the slot occupied by the Passive Optical Splitter.

Notice — *Installing a Passive Optical Splitter in a DFR-8310 or DFR-8320 could damage the card, the rear module, or both.*

Installing a Rear Module

If the rear module is already installed, proceed to "**Installing a Passive Optical Splitter**".

To install a rear module in your openGear frame

1. Locate the card frame slots on the rear of the frame you wish to install the rear module for.
2. Remove the Blank Plate from the slot you have chosen for the installation.
3. Install the bottom of the rear module in the Module Seating Slot at the base of the frame's back plane.
4. Align the top hole of the rear module with the screw on the top-edge of the frame back-plane.
5. Using a Phillips screwdriver and the supplied screw, fasten the rear module to the back plane of the frame. Do not over tighten.
6. Ensure proper frame cooling and ventilation by having all rear frame slots covered with rear modules or Blank Plates.

Installing the Passive Optical Splitter

All the components are enclosed in a metal box that fits into the frame card guides. The Passive Optical Splitter latches to the rear module to prevent accidental removal when the fiber optic cables are installed. This section outlines how to install a Passive Optical Splitter in an openGear frame.

✶ Before handling fiber optic components, refer to the ***Important Regulatory and Safety Notices*** document that shipped with your card.

To install a Passive Optical Splitter card in an openGear frame

1. Open the frame door.
2. Insert the Passive Optical Splitter from the front of the frame until you hear a click from the latch on the rear module.
3. Ensure that the latch is locked by gently pulling the Passive Optical Splitter towards you.
4. Verify whether your rear module label is self-adhesive by checking the back of the label for a thin wax sheet. You will need to remove this wax sheet before applying the label in order that the label can be affixed to the rear module surface.
5. Affix the supplied rear module label to the connector area of the rear module.
6. Remove the dust cap(s) from the LC fiber optic port connectors on the unit end as needed when attaching the fiber cable(s).
7. Ensure that the exposed surface of the ceramic ferrule of the connectors are clean. Refer to "**Working with Fiber Optic Connectors**" for cleaning tips.
8. Cable your rear module as outlined in "**Cabling the Passive Optical Splitters**".

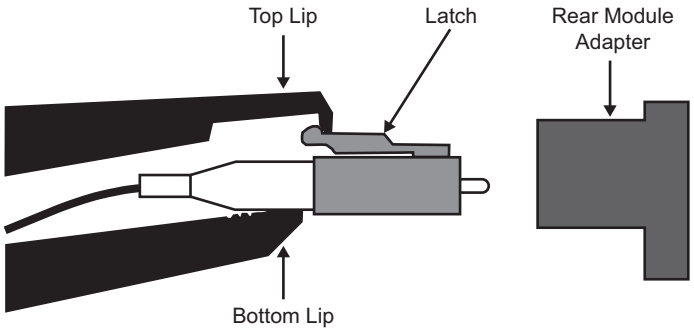
Installing and Removing Fiber Optic Cables

The limited space between connectors and the accumulated fiber optic cables around the rear modules makes it difficult to gain access to individual connectors. Ross Video recommends an Optic Cable Tool to assist in the installing and removal of individual fiber optic LC connectors. This section provides general instructions for using the Optic Cable Tool to install and remove fiber optic cables from any card model in an openGear frame.

Notice — *Every time you are required to insert a connector into a device or mating sleeve, you must clean the connector. All exposed surfaces of the ceramic ferrule must be clean. Follow your facility practices of cleaning fiber optic connectors. Connectors must always be inserted into a device or have a dust cap on.*

To install a fiber optic cable

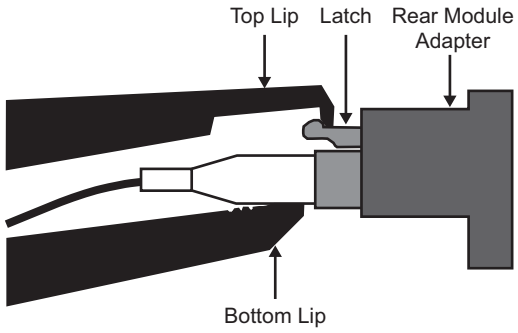
1. Ensure the dust caps are removed from the cable connectors and the rear module adapter.
2. Position the bottom lip of the Optic Cable Tool on the connector boot, ensuring that the top lip makes contact just behind the notch at the end of the latch.



3. Gently squeeze the handles of the Optic Cable Tool to compress the latch.

Caution — *Do not apply excess pressure when installing or removing the connector. Doing so may damage the latch, the connector, or both.*

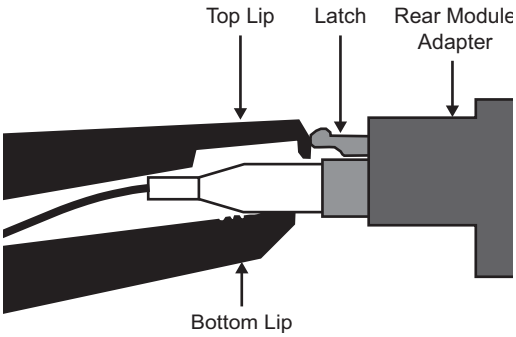
4. Insert the connector into the rear module adapter by gently pushing the connector as far forward, towards the rear module adapter, as possible.
5. Release the latch.
6. Re-position the Optic Cable Tool so that top lip sits behind the latch.



7. Gently push the connector to lock the connector into the rear module adapter.

To remove a fiber optic cable

1. Position the bottom lip of the Optic Cable Tool on the connector boot, ensuring that the top lip makes contact just behind the notch at the end of the latch.



2. Gently squeeze the handles of the Optic Cable Tool to compress the latch.

Caution — *Do not apply excess pressure when installing or removing the connector. Doing so may damage the latch, the connector, or both.*

3. Remove the connector from the rear module adapter by slowly pulling the Optic Cable Tool towards you.

Getting Started

The DashBoard Control System enables you to monitor and control openGear frames and cards from a computer. DashBoard communicates with other cards in the frame through the Network Controller Card. The DashBoard Control System software and manual are available for download from our website. This chapter provides instructions for launching DashBoard, and accessing the SFC-6901 interfaces.

✶ The Passive Optical Splitters, CWDM Multiplexers and De-Multiplexers are passive products that fit into a openGear frame while drawing no power. The cards cannot be detected by DashBoard or SNMP as there is nothing to control or monitor.

For More Information on...

- on the SFC-6901 interfaces in DashBoard, refer to "**DashBoard Menus**".
- using DashBoard, refer to the ***DashBoard User Manual***.

Launching DashBoard

DashBoard must run on a computer that has a physical wired Ethernet connection. Wireless connections do not allow device discovery.

To launch DashBoard

1. Ensure that you are running DashBoard software version 9.5.0 or higher.
2. Launch DashBoard by double-clicking its icon on your computer desktop.

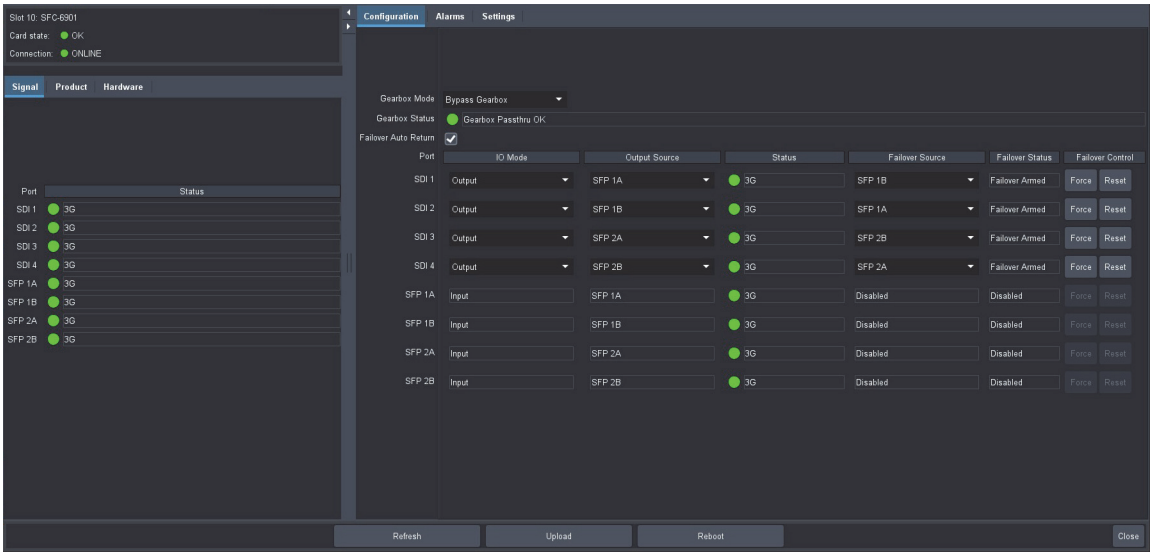
Accessing the SFC-6901 Interfaces in DashBoard

The interfaces are accessed by double-clicking the SFC-6901 node in the DashBoard Tree View.

To access the SFC-6901 interfaces in DashBoard

1. In the Basic Tree View of DashBoard, locate the openGear frame the SFC-6901 is installed in.
2. Expand the openGear frame node to display a list of sub-nodes.

   Each sub-node represents a slot in the frame that is populated with an openGear card.
3. Double-click the **SFC-6901** sub-node to display its interface in the DashBoard window.



Gearbox Setup

This chapter outlines how to specify the SFC-6901 Gearbox mode.

For More Information on...

- bypassing the Gearbox feature, refer to "**Bypassing the Gearbox**".
- the default I/O mapping when selecting a Gearbox DEMUX mode, refer to **Table 3**.
- the default I/O mapping when selecting a Gearbox MUX mode, refer to **Table 4**.

Before You Begin

✶ Keep the following in mind:

› All signals must be at the same rate and format.

› All signals must be synchronized to one another (genlocked).

› Each signal must be within 237 samples of link 1.

Configuring the SFC-6901 for De-multiplexing

Configure the SFC-6901 using one of the provided DEMUX modes. Selecting a mode automatically sets the signal types for the Gearbox and maps the I/O for the rear module.

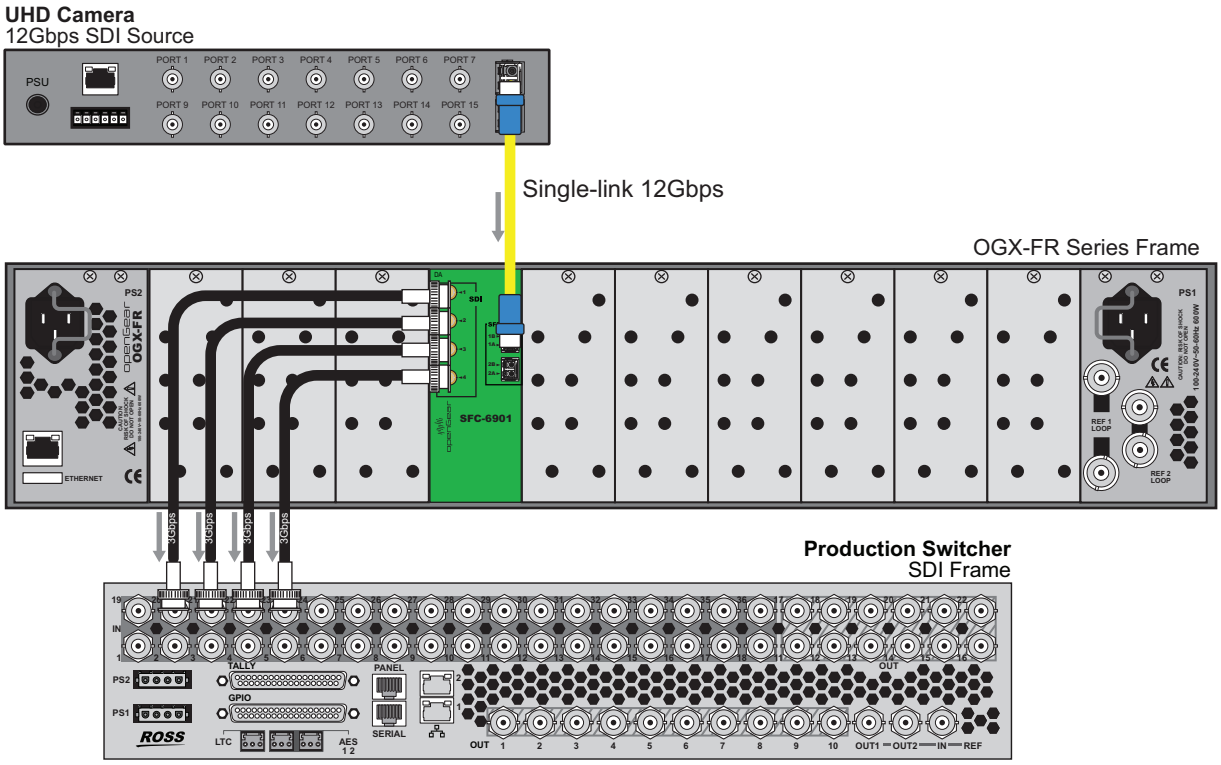


Figure 28 Example of De-multiplexing Setup

To assign the SFC-6901 to a Gearbox DEMUX mode

1. Display the SFC-6901 interface as outlined in "**To access the SFC-6901 interfaces in DashBoard**".
2. Select the **Configuration** tab.

3. Use the **Gearbox Mode** menu to assign a de-multiplexing (DEMUX) mode to the card. Choose from the following:
   - **DEMUX SL 6G -> QL 1.5G** — a single-link 5.94Gbps SDI input signal is demuxed into four 1.485Gbps output signals.
   - **DEMUX SL 12G -> QL 3G** — a single-link 11.88Gbps SDI input signal is demuxed into four 2.97Gbps output signals.

Configuring the SFC-6901 for Multiplexing

Configure the SFC-6901 using one of the provided MUX modes. Selecting a mode automatically maps the I/O for the rear module.

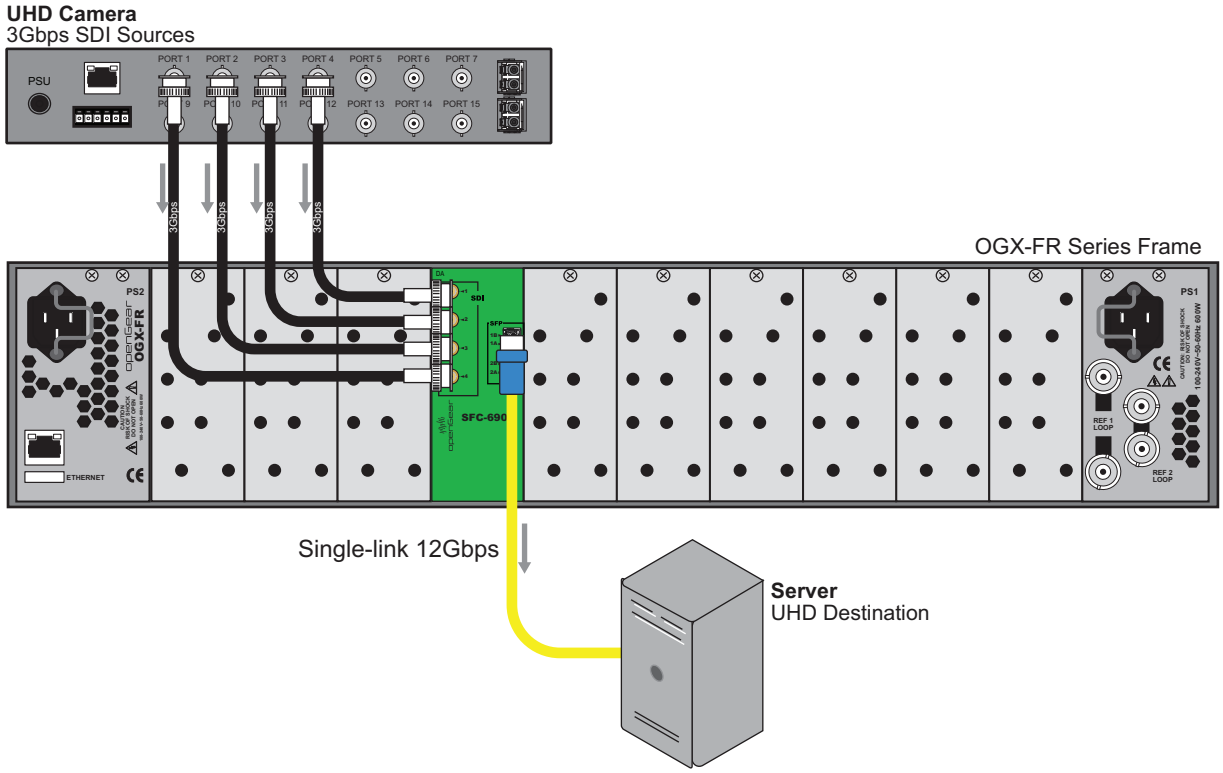


Figure 29 Example of Multiplexing Setup

To assign the SFC-6901 to a Gearbox MUX mode

1. Display the SFC-6901 interface as outlined in "**To access the SFC-6901 interfaces in DashBoard**".
2. Select the **Configuration** tab.
3. Use the **Gearbox Mode** menu to assign a multiplexing (MUX) mode to the card. Choose from the following:
   - **MUX QL 1.5G -> SL 6G** — four 1.485Gbps input signals are muxed into a single-link 5.94Gbps output signal.
   - **MUX QL 3G -> SL 12G** — four 2.98Gbps input signals are muxed into a single-link 11.88Gbps output signal.

Bypassing the Gearbox

This chapter is applicable if you choose to bypass the SFC-6901 Gearbox feature and wish to map the I/O ports to suit your setup.

For More Information on...

- the port locations on the rear module, refer to "**Connections on the Rear Module**".

Overview

The default I/O mapping when the SFC-6901 is set to **Bypass Gearbox** mode depends on the type of SFP modules installed in the rear module.The SDI ports can be mapped as required, only the SFP ports are read-only.

✶ The I/O designation of each SFP port is automatically detected when the port is populated. The designation cannot be edited (and is read-only).

Dual Rx

Table 6 outlines the default input and outputs when the SFC-6901 is set to Bypass Gearbox mode in DashBoard and the SFP modules are **Dual Rx**.

Table 6 Bypass Gearbox Mode — Dual Rx Default I/O Mapping

Inputs	Outputs
SFP 1A	SDI 1
SFP 1B	SDI 2
SFP 2A	SDI 3
SFP 2B	SDI 4

Dual Tx

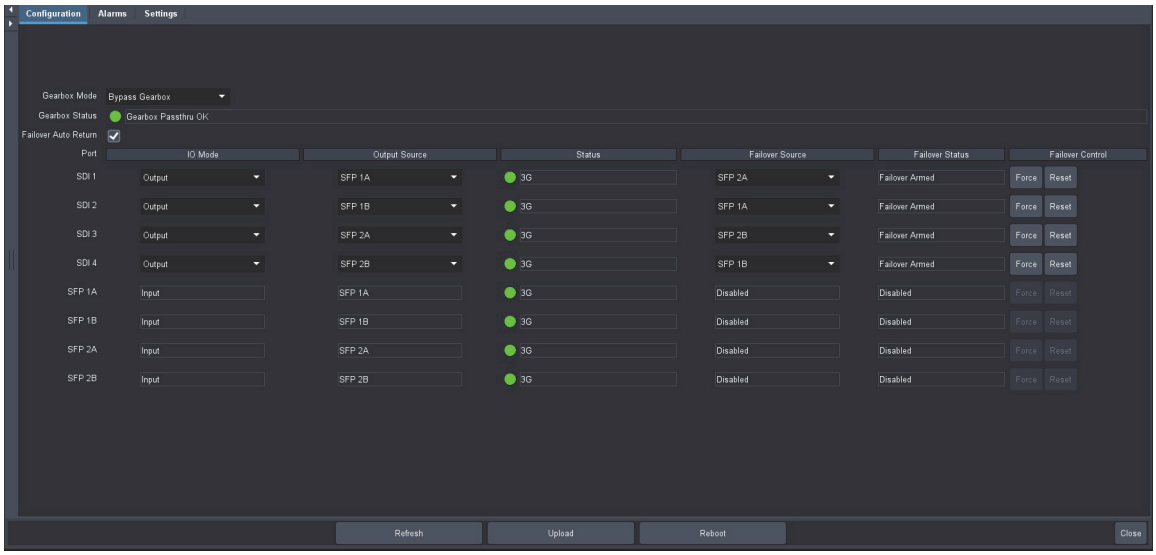
Table 7 outlines the default input and outputs when the SFC-6901 is set to Bypass Gearbox mode in DashBoard and the SFP modules are **Dual Tx**.

Table 7 Bypass Gearbox Mode — Dual Tx Default I/O Mapping

Inputs	Outputs
SDI 1	SFP 1A
SDI 2	SFP 1B
SDI 3	SFP 2A
SDI 4	SFP 2B

To bypass the gearbox

1. Display the **SFC-6901** interface as outlined in "**To access the SFC-6901 interfaces in DashBoard**".
2. Select the **Configuration** tab.
3. Set the **Gearbox Mode** menu to **Bypass Gearbox**.



To configure an SDI BNC

1. Verify that the **Configuration** > **Gearbox mode** is set to **Bypass Gearbox**.
2. To configure an SDI BNC as an input:
   a. Locate the column for the SDI BNC you wish to configure as an input.
   b. Use the **SDI Direction** menu to select **Input**.
3. To configure an SDI BNC as an output:
   a. Locate the column for the SDI BNC you wish to configure as an output.
   b. Use the **SDI Direction** menu to select **Output**.
4. To configure a signal path:
   a. Locate the SDI BNC you assigned as an Input in step 2.
   b. Use the **SDI Output Source** menu to assign an SDI output.

Failover Auto Return Setup

The Failover Auto Return feature enables the SFC-6901 to use a failover (backup) source when the primary source is lost and a valid backup source is detected. Once the SFC-6901 determines that the primary source is stable again (valid and locked), it automatically switches back to that primary source. You also have the option to force the changeover using the Failover Control buttons.

This chapter outlines how to enable the SFC-6901 Failover Auto Return feature, assign a failover source to an output, and monitor the failover status.

Before You Begin

Ensure the IO Mode for each port is configured as required. Refer to "**Gearbox Setup**".

Enabling the Failover Auto Return Feature

You must first enable the Failover Auto Return feature for the SFC-6901.

To enable the failover feature

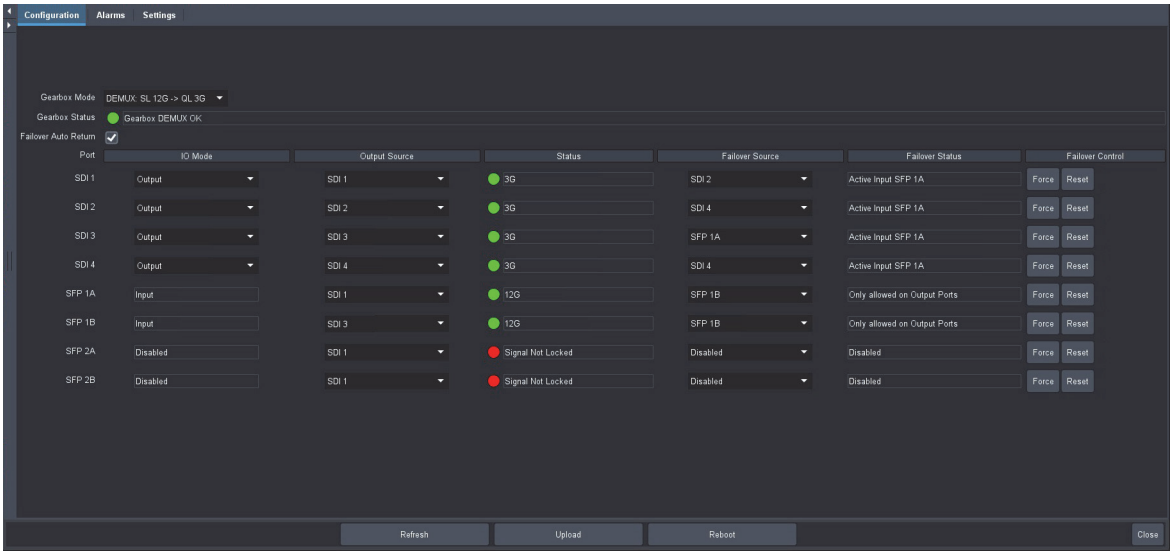
1. Display the SFC-6901 interface as outlined in "**To access the SFC-6901 interfaces in DashBoard**".
2. Select the **Configuration** tab.
3. Select the **Failover Auto Return** box.

Assigning a Failover Source for an Output

This section outlines how to specify the failover source that the card automatically switches to during a loss of the primary source for an output.

To assign the failover source for an output

1. Display the SFC-6901 interface as outlined in "**To access the SFC-6901 interfaces in DashBoard**".
2. Select the **Configuration** tab.



3. Locate the row for the first output port you wish to configure.
4. Use the **Failover Source** menu to specify the backup source to switch to during a loss of input.
5. Repeat steps 3 and 4 for each output as required.

Forcing the Failover

The **Force** button enables you to force the specified port to use the failover source when the primary source of the port is lost. Note that the card returns to the primary source once the primary signal is stable.

The failover source assignments are determined using the procedure "**To assign the failover source for an output**".

To immediately force a failover switch

1. Display the SFC-6901 interface as outlined in "**To access the SFC-6901 interfaces in DashBoard**".
2. Locate the row for the port.
3. Click **Force**.

To immediately switch from the failover source to the primary

1. Display the SFC-6901 interface as outlined in "**To access the SFC-6901 interfaces in DashBoard**".
2. Locate the row for the port.
3. Click **Reset**.

Monitoring the Failover Status

Table 8 summarizes the possible messages that the Failover Status field reports.

Table 8 Configuration > Failover Status

Message	Description
Active Input SDI #	Indicates that the specified SDI signal is the primary signal for the card
Active Input SFP #	Indicates that the specified SFP channel is the primary signal for the card
Only Allowed on Output Ports	Indicates that the IO Mode is set to Input for the specified port
Disabled	The IO Mode is not configured for the port
Failover Input is Invalid	There is an issue with the Failover source. Ensure that: • the input signal is detected and valid • the input signal is locked

Table 8 Configuration > Failover Status

Message	Description
Failover Armed	• The **Failover Auto Return** box is selected. • The Failover source is a valid signal. • The Failover Auto Return feature will be triggered during a loss of the primary signal.
Failover Source is Invalid	One or more of these may be occurring: • The IO Mode for the assigned Failover source is set to Input. • The failover source is assigned as an output in its IO Mode menu. • The SDI BNC is not cabled correctly; • The SFP module is not installed correctly in the rear module.

Upgrading the Software

The SFC-6901 can be upgraded in the field via DashBoard.

To upgrade the software on a card

1. Contact Ross Technical Support for the latest software version file.
2. Ensure the Ethernet cable is connected to the **Ethernet** port on the openGear frame.
3. From the **Tree View**, expand the node for the SFC-6901 you want to access.
4. Double-click the **Global** sub-node to display the interface in the right-half of DashBoard.
5. Select **Upload**, located near the bottom of the interface, to display the **Select file Upload** dialog.
6. Navigate to the ***.bin** file you want to upload.
7. Click **Open**.
8. If you are upgrading a single card:
   a. Click **Finish** to start the upgrade.
   b. Proceed to step 10.
9. If you are upgrading multiple cards:
   a. Click **Next >** to display the **Select Destination** menu. This menu provides a list of the compatible cards.
   b. Specify the card(s) to upload the file to by selecting the check box(es) for the cards you want to upload the file to.
   c. Verify the card(s) you want to upload the file to. The **Error/Warning** fields indicate any errors, such as incompatible software or card type mismatch.
   d. Click **Finish**.
10. Monitor the upgrade.
    - An **Upload Status** dialog enables you to monitor the upgrade process.
    - Notice that each card is listed in the dialog with a button. This button is replaced with a **Reboot** button once the software file is loaded to that card.

✶ Avoid clicking the individual Reboot buttons until all cards have successfully completed the file upload process and the OK button, located in the bottom right corner of the dialog, is enabled.

- Click **OK** to reboot all the cards listed in the **Uploading to Selected Devices** dialog.
- The **Reboot Confirm** dialog displays, indicating the number of cards that will reboot. Click **Yes** to continue the upgrade process. Note that clicking **Cancel** or **No** returns you to the **Uploading to Selected Devices** dialog without rebooting the card(s).
- The card(s) are temporarily taken off-line during the reboot process. The process is complete once the status indicators for the **Card State** and **Connection** return to their previous status.

DashBoard Menus

This chapter briefly summarize the menus, items, and parameters available in the DashBoard Control System for the SFC-6901. Parameters marked with an asterisk (*) are the factory default values.

✶ The Passive Optical Splitters, CWDM Multiplexers and De-Multiplexers are passive products that fit into a openGear frame while drawing no power. The cards cannot be detected by DashBoard or SNMP as there is nothing to control or monitor.

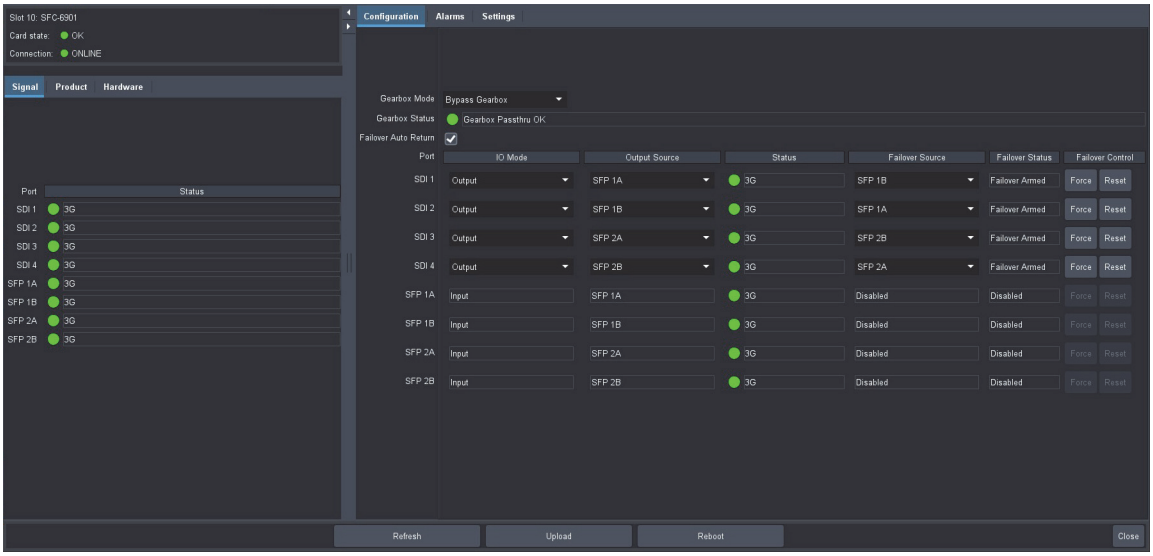


Figure 30 Example of the SFC-6901 in DashBoard

Signal Tab

Table 9 summarizes the read-only fields displayed in the **Signal** tab.

Table 9 Signal Tab

Item	Parameters	Description
Status > Port		
SDI #	# (Green)	A signal of a supported format is detected on the specified port; the signal is locked
	Alarm Suppressed (Green)	The card is not monitoring the signal
	Unsupported Format (Yellow)	An input signal is detected but the format is not supported by the card
	Not time to Ref (Yellow)	An input signal is detected on the specific SDI BNC but the detected reference signal is incompatible with this input signal
	Signal Not Locked (Red)	A signal is detected but the system frame rate does not match the input frame rate

Table 9 Signal Tab

Item	Parameters	Description
SDI #	No Signal (Red)	Indicates one of the following issues is occurring: • the supported input signal is not detected • the system frame rate does not match the input frame rate
SFP # (read-only)	OK (Green)	The video signal on the specific SFP channel is a supported format and locked
	Alarm suppressed (Green)	The card is not monitoring the SFP channel
	Unsupported Format (Yellow)	A signal is detected on the specific SFP channel but the video is not supported by the card
	Incompatible Video (Yellow)	A signal is detected on the specific SFP channel but its format is not compatible with the output video format
	Not time to Ref (Yellow)	A signal is detected on the specific SFP channel but the detected reference signal is incompatible with this input signal
	Signal Not Locked (Red)	A signal is detected but the system frame rate does not match the input frame rate
	No Signal (Red)	Indicates one of the following issues is occurring: • the SFP channel is not detected • the system frame rate does not match the input frame rate

Product Tab

Table 10 summarizes the read-only information displayed in the Product tab.

Table 10 Product Tab

Item	Parameters	Description
Product	SFC-6901	
Supplier	Ross Video Ltd.	
Board Rev	#	Indicates the hardware version
Rear Module	#	Reports the rear module installed with the card
Board S/N	#	Indicates the serial number of the card
Software Rev	#.#-#	Indicates the software version running on the card

Hardware Tab

Table 11 summarizes the read-only information displayed in the **Hardware** tab.

Table 11 Hardware Tab

Item	Parameters	Description
Voltage (mV)	#	Measured input millivolts
Current (mA)	#	Current consumption in milliamperes
CPU Headroom	#	Displays the CPU Load average
RAM Available	# / # MB	CPU Memory Used / Total CPU Memory
Configuration Bank	#	Storage count
Uptime (h)	#	Reports the number of hours since the last reboot of the card
SFP #		
SFP # Vendor	#	Reports the vendor details of the module installed in the specified SFP port
SFP # P/N	#[a]	
SFP # Status	OK (Green)	A supported SFP module is in the specified SFP port and a valid signal is detected
	Not Present (Yellow)	No SFP Module is detected in the specified SFP port
	Unsupported (Red)	The SFP Module is unsupported
Temperature	#C	Internal temperature (in Celsius) as reported by the specified SFP port
Rx Power #	#dBm	Indicates the power at the optical input. This value is accurate to ±3dBm.
	Not Applicable	A signal is not present on the SFP port
Tx Power #	#dBm	Indicates the power at the optical output
	Not Applicable	A signal is not present on the SFP port
Wavelength #	#nm	Indicates the wavelength of the signal
	Not Applicable	The SFP module installed in the port is not a CWDM type

a. Refer to **Table 23** for a complete list.

Configuration Tab

Table 12 summarizes the options displayed in the Configuration tab.

Table 12 Configuration

Item	Parameters	Description
Gearbox Mode	Bypass Gearbox	The Gearbox settings are ignored. Refer to **Table 6** and **Table 7** for I/O mapping.
	DEMUX SL 6G -> QL 1.5G	The SFC-6901 de-muxes a single-link 5.94Gbps input signal to four 1.485Gbps output signals. Refer to **Table 3** for I/O mapping.
	DEMUX SL 12G -> QL 3G	The SFC-6901 de-muxes a single-link 11.88Gbps input signal to four 2.97Gbps output signals. Refer to **Table 3** for I/O mapping.
	MUX QL 1.5G -> SL 6G	The SFC-6901 muxes four 1.485Gbps input signals into a single-link 5.94Gbps output signal. Refer to **Table 4** for I/O mapping.
	MUX QL 3G -> SL 12G	The SFC-6901 muxes four 2.97Gbps input signals into a single-link 11.88Gbps output signal. Refer to **Table 4** for I/O mapping.
Gearbox Status (read-only)	Gearbox DEMUX OK (Green)	The card is correctly operating in a DEMUX mode with valid input and output signals
	Gearbox MUX OK (Green)	The card is correctly operating in a MUX mode with valid input and output signals
	Gearbox Pass-through OK (Green)	The card is operating in Bypass mode with valid input and output signals
Failover Auto Return	Selected	Enables the SFC-6901 to use a failover (backup) source when the primary source is lost and a valid backup is detected
	Cleared	Disables this feature
Port #		
IO Mode[a]	Input	Assigns the port on the rear module as an input
	Output	Assigns the port on the rear module as an output
	Disabled (read-only)	Indicates that the SFP port is not populated
Output Source	SDI #	Assigns an input signal when the IO Mode is set to Output for the specified port
	SFP #	

Table 12 Configuration

Item	Parameters	Description
Status (read-only)	# (Green)	Reports the video format detected on the specified port is present and supported
	Incompatible Video (Yellow)	An SDI signal is detected but it is in an unsupported format or an error has occurred
	Signal Not Locked (Red)	An SDI signal is detected but the system frame rate does not match the input frame rate
	No Signal (Red)	Indicates the absence of a valid SDI signal on the specified port
Failover Source	SDI #	Assigns the specified SDI BNC as the failover (backup) input signal when a loss of the primary source occurs
	SFP #	Assigns the specified SFP channel as the primary input signal when a loss of the primary source occurs
Failover Status (read-only)	Active Input SDI #	Indicates that the specified SDI signal is the primary signal for the card
	Active Input SFP #	Indicates that the specified SFP channel is the primary signal for the card
	Only Allowed on Output Ports	Indicates that this port has its IO Mode set to Input
	Disabled	The specific port is not configured
	Failover Armed	The Failover Auto Return box is selected and the signals are valid
	Failover Source is Invalid	The signal assigned via the Failover Source menu is not detected or is an unsupported format
	Alarm Suppressed	A Failover Status error could be occurring but the Alarms > Port box for this port is not selected
Failover Control	Force	Click this button to force the specified output to use the failover source when the primary source of the output is lost. Note that the card returns to the primary source once that signal is stable.
	Reset	Click this button to return the output to the primary source

a. This field is read-only when the SFP port is populated. The field automatically detects and reports the function of the SFP module inserted into the specified port.

Alarms Tab

Table 13 summarizes the options and read-only fields displayed in the Alarms tab.

Table 13 Alarms Tab

Item	Parameters	Description
SFP # Hardware Alarm Enable	Selected*	The card reports a loss of the specified input or if the format is incompatible for the specified input
	Cleared	Disables this alarm
Gearbox Alarm Enable	Selected*	The card reports when the Gearbox mode is set to Bypass
	Cleared	Disables this alarm
Alarm > Port		
SDI #	Selected*	The card reports a loss of the specified signal or if the format is incompatible for the specified port
	Cleared	Disables this alarm
SFP #	Selected*	The card reports a loss of the specified signal or if the format is incompatible for the specified port
	Cleared	Disables this alarm

Settings Tab

Table 14 summarizes the options displayed in the Settings tab.

Table 14 Settings Tab

Item	Parameters	Description
Edit Permission	Unlocked	All editable parameters in DashBoard can be modified by a user
	Locked	The DashBoard interface is locked. The editable parameters in DashBoard can no longer be modified by the user. To unlock the interface, select the box again
Factory Defaults	Reset	All editable parameters in DashBoard are reset to the factory default values. A factory default will reset Dashboard according to the SFP(s) installed in the rear module. This means a reset of the I/O settings will be SFP dependent.

Technical Specifications

This chapter provides the technical specifications for the SFC-6901, CWDM Multiplexers and De-Multiplexers, and Passive Optical Splitters.

SFC-6901 Specifications

This chapter provides technical information for the SFC-6901.

✶ Specifications are subject to change without notice.

Supported Video Formats

Table 15 Technical Specifications — Supported Video Formats

Video Format
SD Formats
480i 59.94Hz
576i 50Hz
HD Formats
720p 50Hz
720p 59.94Hz
1080i 50Hz
1080i 59.94Hz
1080p 23.98Hz
1080p 24Hz
1080p 25Hz
1080p 29.97Hz
1080p 30Hz
1080p 50Hz
1080p 59.94Hz
1080p 60Hz
UHD Formats
2160p 23.98Hz
2160p 24Hz
2160p 25Hz
2160p 29.97Hz
2160p 30Hz
2160p 50Hz
2160p 59.94Hz
2160p 60Hz

SDI Inputs Specifications

Table 16 Technical Specifications — SDI Inputs

Item	Specifications
Number of Inputs	4 bi-directional
Connector Type	HD-BNC
Standards Accommodated	1.485Gbps Component, SMPTE 292M
	2.97Gbps Component, SMPTE 424M
	5.94Gbps Component, SMPTE 2081
	11.88Gbps Component, SMPTE 2082
Impedance	75ohm
Return Loss	>15dB to 1.5GHz
	>10dB to 3GHz
	>7dB to 6GHz
	>4dB to 12GHz
Equalization (Belden 1694A cable)	>200m (656ft) @ 1.485Gbps
	>125m (410ft) @ 2.97Gbps
	>70m (229ft) @ 5.94Gbps
	>50m (164ft) @ 11.88Gbps

SDI Outputs Specifications

Table 17 Technical Specifications — SDI Outputs

Item	Specifications
Number of Outputs	4 bi-directional
Connector Type	HD-BNC
Impedance	75ohm
Return Loss	>15dB to 1.5GHz
	>10dB to 3GHz
	>7dB to 6GHz
	>4dB to 12GHz
Signal Level	± 800mV 10%
DC Offset	0V +/- 50mV
Rise and Fall Time (20-80%)	1.485Gbps: <270ps, <100ps difference
	2.97Gbps: <135ps, <50ps difference
	5.94Gbps: <80ps, <30ps difference
	11.88Gbps: <45ps, <18ps difference

Table 17 Technical Specifications — SDI Outputs

Item	Specifications	
Jitter	1.485Gbps:	<1.0UI 10Hz-100kHz, <0.2UI above 100kHz
	2.97Gbps:	<2.0UI 10Hz-100kHz, <0.3UI above 100kHz
	5.94Gbps:	<2.0UI 10Hz-100kHz, <0.3UI above 100kHz
	11.88Gbps:	<2.0UI 10Hz-100kHz, <0.3UI above 100kHz, band limit @1188MHz
Overshoot	<10%	

Environment

Table 18 Technical Specifications — Environment

Item	Specifications
Maximum Ambient Temperature	40°C (104°F)

Power

Table 19 Technical Specifications — Power

Item	Specifications
Maximum Power Consumption	10W

CWDM Multiplexers and De-Multiplexers Specifications

This section includes the technical specifications for the FCM-6800 and FCD-6800 series. Note that specifications are subject to change without notice.

Table 20 FCM-6800 and FCD-6800 Series Technical Specifications

Item	Specification
Filter Wavelengths (for each port)	**FCM-6844, FCD-6845**: 1350nm, 1370nm, 1430nm, 1450nm
	FCM-6846, FCD-6847: 1270nm, 1290nm, 1310nm, 1330nm, 1350nm, 1370nm, 1430nm, 1450nm
	FCM-6848, FCD-6849: 1470nm, 1490nm, 1510nm, 1530nm, 1550nm, 1570nm, 1590nm, 1610nm
Maximum Insertion Loss	**FCM-6844, FCD-6845**[a]: 2dB channel, 2dB expansion port
	FCM-6846, FCD-6847[b]: 3.1dB channel
	FCM-6848, FCD-6849[c]: 3.1dB channel, 3dB expansion port
Adjacent Channel Isolation	minimum 30dB
Non-adjacent Channel Isolation	minimum 40dB
Channel Spacing	20nm
Passband Ripple	0.3dB

Table 20 FCM-6800 and FCD-6800 Series Technical Specifications

Item	Specification
Channel Passband	+/- 6.5nm
Return Loss	minimum 50dB
Number of slots required	2
Connector Type	Single Mode, LC/UPC

a. When used as a pair, the FCM-6844 and FCD-6845 have a maximum of 2.9dB combined insertion loss, excluding the expansion port.
b. When used as a pair, the FCM-6846 and FCD-6847 have a maximum of 4.1dB combined insertion loss.
c. When used as a pair, the FCM-6848 and FCD-6849 have a maximum of 4.1dB combined insertion loss, excluding the expansion port.

Passive Optical Splitters Technical Specifications

This chapter includes the technical specifications for the Passive Optical Splitters. Note that specifications are subject to change without notice

FDS-6803 and FDS-6805

This section provides the technical specifications for the FDS-6803 and FDS-6805.

Table 21 FDS-6803 and FDS-6805 Technical Specifications

Parameter	Specification
Supported Wavelengths	1260nm to 1650nm
Return Loss	minimum 50dB
Maximum Insertion Loss	FDS-6803: 4dB FDS-6805: 8dB
Uniformity	FDS-6803: 0.4dB FDS-6805: 0.6dB
Directivity	55dB
Number of slots	2
Connector Type	Single Mode, LC/UPC

FSS-6808

This section provides the technical specifications for the FSS-6808.

Table 22 FSS-6808 Technical Specifications

Parameter	Specification
Supported Wavelengths	1260nm to 1650nm
Return Loss	minimum 50dB
Maximum Insertion Loss	11dB
Uniformity	0.8dB
Directivity	55dB
Number of slots	2
Connector Type	Single Mode, LC/UPC

Supported SFP Modules

This chapter summarizes the supported SFP modules for the SFC-6901.

✶ Note that specifications are subject to change without notice.

Overview

Table 23 lists the SFP modules and their part numbers that the SFC-6901 supports.

Table 23 Supported SFP Modules

Ross Video Part Number	Description	Reported in DashBoard as...
3G		
SFP-FIBER-3G-2T	Dual TX, 3G, SDI Optical, 1310nm	GTT-31313G-L2CD or EOLS-1330DT-10DN-R2 or EOLS1330DT10DNR
SFP-FIBER-3G-2R	Dual RX, 3G, standard sensitivity	GRR-3G-L2CD or EOLS-30DR-DN
12G		
SFP-FIBER-12G	Single TX, 12G, SDI Optical, 1310nm	GHP-3112G-L2CDM or EB12LCRT-MM-P13D-PA
SFP-FIBER-12G-2T	Dual TX, 12G, SDI Optical, 1310nm	GTT-313112G-L2CD or EB12LC2T-SN-13D
SFP-FIBER-12G-2T-27/29	Dual TX, 12G, CWDM, 1270/1290nm	GTTC-272912G-L1CD
SFP-FIBER-12G-2T-31/33	Dual TX, 12G, CWDM, 1310/1330nm	GTTC-313312G-L1CD
SFP-FIBER-12G-2T-35/37	Dual TX, 12G, CWDM, 1350/1370nm	GTTC-353712G-L1CD
SFP-FIBER-12G-2T-43/45	Dual TX, 12G, CWDM, 1430/1450nm	GTTC-434512G-L1CD
SFP-FIBER-12G-2T-47/49	Dual TX, 12G, CWDM, 1470/1490nm	VPC-S2-4153K-F6
SFP-FIBER-12G-2T-51/53	Dual TX, 12G, CWDM, 1510/1530nm	VPC-S2-4153K-F7
SFP-FIBER-12G-2T-55/57	Dual TX, 12G, CWDM, 1550/1570nm	VPC-S2-4153K-F8
SFP-FIBER-12G-2T-59/61	Dual TX, 12G, CWDM, 1590/1610nm	VPC-S2-4153K-F9
SFP-FIBER-12G-2R	Dual RX, 12G, standard sensitivity	GRR-12G-L2CD or EB12LC2R-MN-P-PA
SFP-FIBER-12G-2R-H	Dual RX, 12G, high sensitivity	RMC-S2-4803K-G

SFP-FIBER-3G-2R

The SFP-FIBER-3G-2R is a dual optical receiver module that supports data rates up to 3Gbps for single fiber communications.

Features

- Compatible with SMPTE 297-2006
- Supports video pathological patterns for SD-SDI, HD-SDI, and 3G-SDI
- PIN photo-detector
- Digital Diagnostic functions available through the I2C interface
- Single +3.3V power supply
- Operating case temperature (standard): 0°C to +70°C

Receiver Optical Specifications

✶ Note that specifications are subject to change without notice.

Table 24 Optical Specifications — Receiver

Parameter	Min.	Max.	Notes
Input Sensitivity		-14dBm	
Maximum Input Power		0dBm	
Optical Center Wavelength	1260nm	1580nm	

SFP-FIBER-3G-2T

The SFP-FIBER-3G-2T is a dual optical transmitter module that supports data rates up to 3Gbps for single fiber communications.

Features

- Compatible with SMPTE 297-2006
- Supports video pathological patterns for SD-SDI, HD-SDI, and 3G-SDI
- 1310nm DFB laser
- Digital Diagnostic functions available through the I2C interface
- Single +3.3V power supply
- Operating case temperature (standard): 0°C to +70°C

Transmitter Optical Specifications

✶ Note that specifications are subject to change without notice.

Table 25 Optical Specifications — Transmitter

Parameter	Min.	Max.	Notes
Maximum Output Power	-4dBm	3dBm	
Optical Center Wavelength	1260nm	1360nm	

SFP-FIBER-12G

The SFP-FIBER-12G is a single optical transceiver module that supports data rates up to 12Gbps for single fiber communications.

Features

- SMPTE 297-2006 compatible for SD-SDI, HD-SDI, 3G-SDI, and 12G-SDI
- Compliant with SFP MSA (Small Form-Factor Pluggable Multi-Source Agreement) and SFS-8472
- Compliant with SMPTE 297, SMPTE 259, SMPTE 292, SMPTE 424, SMPTE 2081, and SMPTE 2082
- 1310 DFB laser diode with CML logic interface
- Duplex LC receptacle
- Up to 10km on 9/125µm SMF
- Single 3.3V power supply
- Operating temperature range: 0°C to 70°C
- SFP package size: 56.5mm x 13.4mm x 8.6mm

Simplified Block Diagram

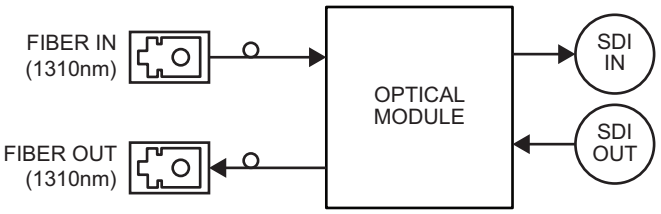


Figure 31 SFP-FIBER-12G — High Level Block Diagram

Technical Specifications

Note that specifications are subject to change without notice.

Absolute Maximum Ratings

Exceeding any of these ratings may permanently damage the module. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

Table 26 Absolute Maximum Ratings

Parameter	Min.	Max.
Supply Voltage	0V	+3.6V
Storage Temperature	-40°C	+85°C
Relative Humidity	5%	95%

Recommended Operating Environment and Electrical Ratings

Table 27 Recommended Ratings

Parameter	Min.	Typical	Max.
Supply Voltage	+3.2V	+3.3V	+3.4V
Supply Current	-	-	450mA

Table 27 Recommended Ratings

Parameter	Min.	Typical	Max.
Operating Case Temperature	0°C		+70°C
Data Rate	-	11.88Gbps	-

Receiver Optical Specifications

Table 28 Optical Specifications — Receiver

Parameter	Min.	Max.	Notes
Input Sensitivity		-11dBm	
Maximum Input Power	0dBm		
Operation Center Wavelength	1260nm	1580nm	

Transmitter Optical Specifications

Table 29 Optical Specifications — Transmitter

Parameter	Min.	Max.	Notes
Maximum Output Power	-5dBm	1dBm	
Wavelength	1290nm	1330nm	

Physical Channel Position

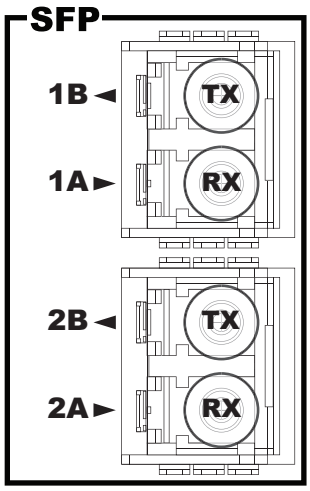


Figure 32 SFP-FIBER-12G Package Outline, Front View — Channel Position

SFP-FIBER-12G-2R

The SFP-FIBER-12G-2R is a dual optical receiver module that supports data rates up to 12Gbps for single fiber communications.

✶ The SFP-FIBER-12G-2R is non-MSA compliant.

Features

- SMPTE 297-2006 compatible for SD-SDI, HD-SDI, 3G-SDI, and 12G-SDI
- Compliant with SFS-8472
- Compliant with SMPTE 297, SMPTE 259, SMPTE 292, SMPTE 424, SMPTE 2081, and SMPTE 2082
- 1310 DFB laser diode with CML logic interface
- Duplex LC receptacle
- Up to 10km on 9/125µm SMF
- Single 3.3V power supply
- Operating temperature range: 0°C to 70°C
- SFP package size: 56.5mm x 13.4mm x 8.6mm

Simplified Block Diagram

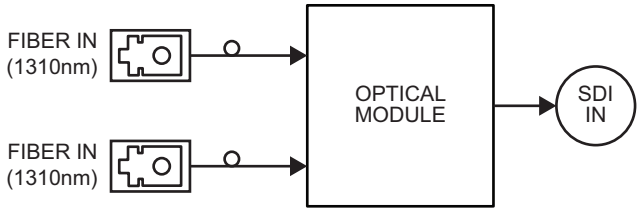


Figure 33 SFP-FIBER-12G-2R — High Level Block Diagram

Technical Specifications

Note that specifications are subject to change without notice.

Absolute Maximum Ratings

Exceeding any of these ratings may permanently damage the module. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

Table 30 Absolute Maximum Ratings

Parameter	Min.	Max.
Supply Voltage	0V	+3.6V
Storage Temperature	-40°C	+85°C
Relative Humidity	5%	95%

Recommended Operating Environment and Electrical Ratings

Table 31 Recommended Ratings

Parameter	Min.	Typical	Max.
Supply Voltage	+3.2V	+3.3V	+3.4V
Supply Current	-	-	300mA

Table 31 Recommended Ratings

Parameter	Min.	Typical	Max.
Operating Case Temperature	0°C		+70°C
Data Rate	-	11.88Gbps	-

Optical Specifications

Table 32 Optical Specifications — Receiver

Parameter	Min.	Max.	Notes
Input Sensitivity		-11dBm	
Maximum Input Power	0dBm		
Operation Center Wavelength	1260nm	1580nm	

Physical Channel Position

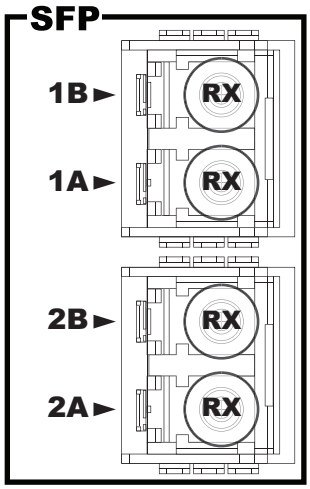


Figure 34 SFP-FIBER-12G-2R Package Outline, Front View — Channel Position

SFP-FIBER-12G-2T

The SFP-FIBER-12G-2T is a dual optical transmitter module that supports data rates up to 12Gbps for single fiber communications.

✶ The SFP-FIBER-12G-2T is non-MSA compliant.

Features

- SMPTE 297-2006 compatible for SD-SDI, HD-SDI, 3G-SDI, and 12G-SDI
- Compliant with SFS-8472
- Compliant with SMPTE 297, SMPTE 259, SMPTE 292, SMPTE 424, SMPTE 2081, and SMPTE 2082
- 1310 DFB laser diode with CML logic interface
- Duplex LC receptacle

- Up to 10km on 9/125µm SMF
- Single 3.3V power supply
- Operating temperature range: 0°C to 70°C
- SFP package size: 56.5mm x 13.4mm x 8.6mm

Simplified Block Diagram

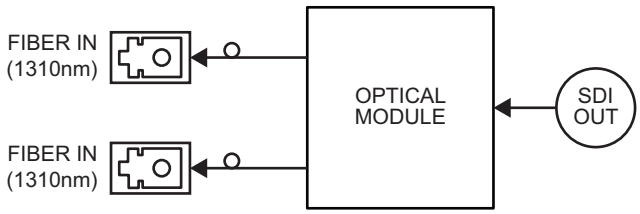


Figure 35 SFP-FIBER-12G-2T — High Level Block Diagram

Technical Specifications

✶ Note that specifications are subject to change without notice.

Absolute Maximum Ratings

Exceeding any of these ratings may permanently damage the module. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

Table 33 Absolute Maximum Ratings

Parameter	Min.	Max.
Supply Voltage	0V	+3.6V
Storage Temperature	-40°C	+85°C
Relative Humidity	5%	95%

Recommended Operating Environment and Electrical Ratings

Table 34 Recommended Ratings

Parameter	Min.	Typical	Max.
Supply Voltage	+3.2V	+3.3V	+3.4V
Supply Current	-	-	300mA
Operating Case Temperature	0°C		+70°C
Data Rate	-	11.88Gbps	-

Optical Specifications

Table 35 Optical Specifications — Transmitter

Parameter	Min.	Max.	Notes
Maximum Output Power	-5dBm	1dBm	
Wavelength	1290nm	1330nm	

Physical Channel Position

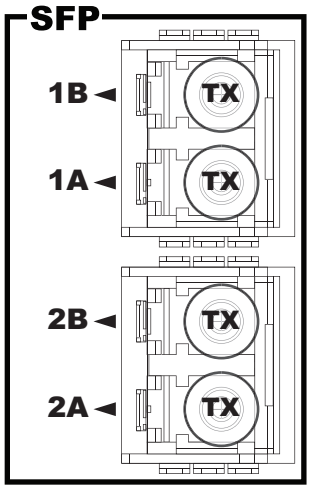


Figure 36 SFP-FIBER-12G-2T Package Outline, Front View — Channel Position

SFP-FIBER-12G-2R-H

The SFP-FIBER-12G-2R-H is a dual optical receiver high sensitivity module that supports data rates up to 12Gbps for single fiber communications.

Features

- Supports 2-channel transmission of SMPTE 2082, SMPTE 424M, SMPTE 292M
- Handles pathological patterns for HD-SDI, 3G-SDI, 6G-SDI, 12G-SDI
- Digital diagnostics function to measure temperature, supply voltage, received optical power and to show flag status
- LC connector
- Integrated reclocker
- Single +3.3V power supply
- Operating temperature: 0°C to 70°C

Optical Specifications

✶ Note that specifications are subject to change without notice.

Table 36 Optical Specifications — Receivers

Parameter	Min.	Max.	Notes
Input Sensitivity		-18dBm	
Maximum Input Power	-3dBm		
Optical Center Wavelength	1260nm	1620nm	

SFP-FIBER-12G-2T-1270,1290,1310,1330,1350,1370,1430,1450nm

Each SFP-FIBER-12G-2T is a SD/HD/3G/6G/12G-SDI SFP Dual Transmitter for CWDM fiber communications.

✶ The suffix on each part number represents the supported wavelengths. For example, the SFP-FIBER-12G-2T-43/45 is a dual CWDM transmitter that supports 1430nm and 1450nm.

Features

- Compatible with SMPTE 259, SMPTE 292-1, SMPTE 424, SMPTE 2081, SMPTE 2082
- Supports SDI pathological patterns for SD-SDI, HD-SDI, 3G-SDI, 6G-SDI, 12G-SDI
- DFB laser transmitter
- 8-Wavelength (4 pairs) CWDM dual transmitters
- LC connector
- Single 3.3V power supply
- Operating case temperature range: 0°C to +70°C

Optical Transmitter Specifications

✶ Note that specifications are subject to change without notice.

Table 37 Optical Specifications — Transmitter

Parameter	Min.	Max.	Notes
Maximum Output Power	-3dBm	1dBm	
Wavelength	nominal		

SFP-FIBER-12G-2T-1470,1490,1510,1530,1550,1570,1590,1610nm

Each SFP-FIBER-12G-2T is a SD/HD/3G/6G/12G-SDI SFP Dual Transmitter for CWDM fiber communications.

✶ The suffix on each part number represents the supported wavelengths. For example, the SFP-FIBER-12G-2T-59/61 is a dual CWDM transmitter that supports 1590nm and 1610nm.

Features

- Supports 2-channel transmission of SMPTE 2082, SMPTE 424M, SMPTE 292M, SMPTE 259M, DVB-ASI
- Handles pathological patterns for SD-SDI, HD-SDI, 3G-SDI, 6G-SDI, 12G-SDI
- 8-Wavelength (4 pairs) CWDM dual transmitters
- Digital diagnostics function to measure temperature, supply voltage, TX bias current, TX output power and to show flag status
- LC connector
- Single +3.3V power supply
- Operating temperature: 0°C to 70°C

Optical Transmitter Specifications

✶ Note that specifications are subject to change without notice.

Table 38 Optical Specifications — Transmitter

Parameter	Min.	Max.	Notes
Maximum Output Power	-3dBm	3dBm	
Wavelength	nominal		

Service Information

This chapter provides information on the warranty and repair policy for your card.

Troubleshooting Checklist

Routine maintenance to this openGear product is not required. In the event of problems with your card, the following basic troubleshooting checklist may help identify the source of the problem. If the frame 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 in "**Contacting Technical Support**".

1. **Visual Review** — Performing a quick visual check may reveal many problems, such as connectors not properly seated or loose cables. Check the card, the frame, and any associated peripheral equipment for signs of trouble.
2. **Card Check** — Verify that the main card is seated correctly in its frame slot and is fully mated to its rear module.
3. **Power Check** — Verify 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.
4. **Input Signal Status** — Verify that source equipment is operating correctly and that a valid signal is being supplied.
5. **Output Signal Path** — Verify that destination equipment is operating correctly and receiving a valid signal.
6. **Unit Exchange** — Exchanging a suspect unit with a unit that is known to be working correctly is an efficient method for localizing problems to individual units.

Bootload Button

In the unlikely event of a complete card failure, you may be instructed by a Ross Technical Support specialist to perform a complete software reload on the SFC-6901.

To reload the software on a SFC-6901

1. Eject the SFC-6901 from the frame.
2. Press and hold the **Bootload** button, while re-inserting the SFC-6901 into the frame.
3. Release the button.
   - The **OK/ERROR** LED flashes green while the card is waiting for a new software load.
   - If a new software load is not sent to the card within 60 seconds, the SFC-6901 will attempt to re-start with its last operational software load.
   - Software loads can be sent to the SFC-6901 via the connection on the rear of the frame.

Warranty and Repair Policy

The openGear card 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 openGear card 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 openGear card 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 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 openGear card 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 openGear card, please contact the Ross Video Technical Support Department. (See "**Contacting Technical Support**".)

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 openGear card. If required, a temporary replacement frame 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.

Software Licenses

This chapter provides third-party software license information for your SFC-6901. This product includes multiple software components which are individually licensed under one or more of the following licenses included in this chapter.

BSD

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zlib

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The data format used by the zlib library is described by RFCs (Request for Comments) 1950 to 1952 in the files ftp://ds.internic.net/rfc/rfc1950.txt (zlib format), rfc1951.txt (deflate format) and rfc1952.txt (gzip format).

Glossary

The following terms are used throughout this guide:

DashBoard — the DashBoard Control System.

Frame — the openGear frame that houses the openGear card unless otherwise noted.

Network Controller Card — the MFC-OG3-N, MFC-OGX-N, MFC-8322-S, and any available options unless otherwise noted.

openGear Frame — refers to the OG3-FR and OGX-FR series frames unless otherwise noted.

SFP module — Small Form-factor Pluggable module.

System— the mix of interconnected production and terminal equipment in your environment.

User — the person who uses the openGear card.