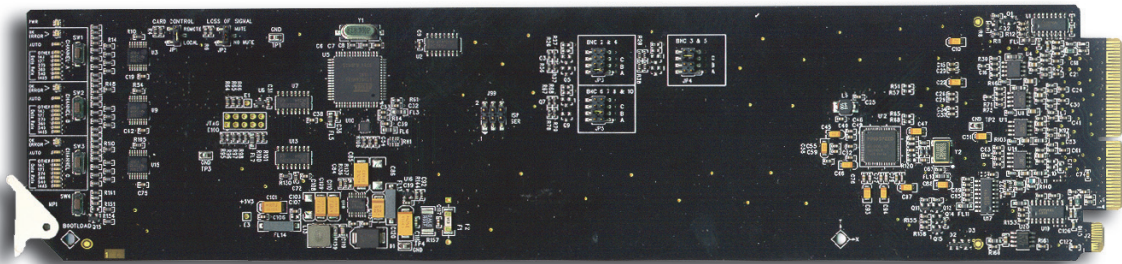


TRA-8206

Triple HD/SD SDI Reclocking Amplifier User Manual



Thank You for Choosing Ross

You've made a great choice. We expect you will be very happy with your purchase of Ross Technology.

Our mission is to:

1. Provide a Superior Customer Experience
 - offer the best product quality and support
2. Make Cool Practical Technology
 - develop great products that customers love

Ross has become well known for the Ross Video Code of Ethics. It guides our interactions and empowers our employees. I hope you enjoy reading it below.

If anything at all with your Ross experience does not live up to your expectations be sure to reach out to us at solutions@rossvideo.com.



David Ross
CEO, Ross Video
dross@rossvideo.com

Ross Video Code of Ethics

Any company is the sum total of the people that make things happen. At Ross, our employees are a special group. Our employees truly care about doing a great job and delivering a high quality customer experience every day. This code of ethics hangs on the wall of all Ross Video locations to guide our behavior:

1. We will always act in our customers' best interest.
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.)*

TRA-8206 · User Manual

- Ross Part Number: 8206DR-004-06
- Release Date: January 26, 2018.

The information contained in this Guide is subject to change without notice or obligation.

Copyright

©2018 Ross Video Limited, Ross®, and any related marks are trademarks or registered trademarks of Ross Video Limited. All other trademarks are the property of their respective companies. PATENTS ISSUED and PENDING. All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, mechanical, photocopying, recording or otherwise, without the prior written permission of Ross Video. While every precaution has been taken in the preparation of this document, Ross Video assumes no responsibility for errors or omissions. Neither is any liability assumed for damages resulting from the use of the information contained herein.

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.

Notice

The material in this manual is furnished for informational use only. It is subject to change without notice and should not be construed as commitment by Ross Video Limited. Ross Video Limited assumes no responsibility or liability for errors or inaccuracies that may appear in this manual.

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 numérique de la classe “A” est conforme à 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.

Company Address



Ross Video Limited

8 John Street
Iroquois, Ontario, K0E 1K0
Canada

Ross Video Incorporated

P.O. Box 880
Ogdensburg, New York
USA 13669-0880

General Business Office: (+1) 613 • 652 • 4886

Fax: (+1) 613 • 652 • 4425

Technical Support: (+1) 613 • 652 • 4886

After Hours Emergency: (+1) 613 • 349 • 0006

E-mail (Technical Support): techsupport@rossvideo.com

E-mail (General Information): solutions@rossvideo.com

Website: <http://www.rossvideo.com>

Contents

Introduction	1
Overview.....	1-2
Features.....	1-2
Functional Block Diagram.....	1-3
User Interfaces	1-4
DashBoard Control System	1-4
Card-edge Controls.....	1-4
SNMP Monitoring and Control.....	1-4
Documentation Terms and Conventions.....	1-5
 Installation	 2
Before You Begin	2-2
Static Discharge.....	2-2
Unpacking.....	2-2
Installing the TRA-8206	2-3
Rear Modules for the TRA-8206.....	2-3
Installing a Rear Module	2-3
Installing the TRA-8206.....	2-4
Cabling for the TRA-8206	2-5
Connections for the DFR-8310 Series Frames.....	2-5
Connections for the DFR-8321 and OG3-FR Series Frames	2-5
 User Controls	 3
Card Overview	3-2
Output Channel Configuration.....	3-4
Channel Rate Selection Buttons and LEDs	3-4
Single, Dual, or Triple Channel Configurations.....	3-4
Control and Monitoring	3-6
Status and Selection LEDs on the TRA-8206	3-6
Factory Default Values.....	3-7
Reclocker Rate Selection	3-8
Reclocker Rate Selection LEDs	3-8
 DashBoard Menus	 4
Status Tabs	4-2
Product Tab	4-2
Hardware Tab	4-2
Setup Tab	4-4
Routing Tab	4-5
Alarms Tab	4-6
 Specifications	 5
Technical Specifications	5-2

Service Information	6
Troubleshooting Checklist	6-2
Bootload Button	6-2
Warranty and Repair Policy	6-3

Introduction

In This Chapter

This chapter contains the following sections:

- Overview
- Functional Block Diagram
- User Interfaces
- Documentation Terms and Conventions

A Word of Thanks

Congratulations on choosing an openGear TRA-8206 Triple HD/SD SDI Reclocking Amplifier. Thank you for joining the group of worldwide satisfied Ross Video customers!

Should you have a question pertaining to the installation or operation of your TRA-8206, please contact us at the numbers listed on the back cover of this manual. Our technical support staff is always available for consultation, training, or service.

Overview

The TRA-8206 is a three channel HD/SD SDI distribution amplifier, capable of equalizing and reclocking all common serial digital signals. Support for both standard-definition and high-definition signals makes the TRA-8206 a universal SDI distribution amplifier.

Each channel of the TRA-8206 equalizes the incoming SDI signal, compensating for up to 300m of cable at 270Mbps and over 120m of cable at 1.485Gbps. The signal is then reclocked, with automatic rate detection for all popular data rates. Each channel is fully independent and can run at different data rates. LED indicators at the front of the card identify the presence of incoming video and the identified signal data rate for each channel independently.

A special feature of the TRA-8206 is the ability to operate in a number of different channel configurations. The triple channel mode is ideal for applications requiring only 1 or 2 outputs, such as mid-cable signal boosters, router expansion, or signal cleanup. Up to 30 SDI distribution channels can be housed in a 2RU space.

Special attention has been taken to ensure the SDI outputs faithfully reproduce the incoming signals, with excellent jitter and return loss specifications.

LED indicators at the front of the card identify the presence of incoming video, simplifying system troubleshooting.

Features

The following features are available:

- Three independent channels of SDI distribution
- Flexible channel configurations:
 - › Single channel 1:7 amplifier
 - › Dual channel 1:4 + 1:3 amplifier
 - › Dual channel 1:5 + 1:2 amplifier
 - › Triple channel 1:3 + 1:2 + 1:2 amplifier
- Equalizes and reclocks all popular SDI signals from 143Mbps to 1.485Gbps
- Equalizes up to 300m of Belden 1694A cable at 270Mbps, or over 120m of cable at 1.485Gbps
- Automatic detection of incoming data rate
- LED indicators for signal presence and data rate for each channel
- Excellent input and output return loss exceeds SMPTE specifications
- Fits openGear frames
- 5 year transferable warranty

Functional Block Diagram

This section provides a functional block diagram that outlines the workflow of the TRA-8206.

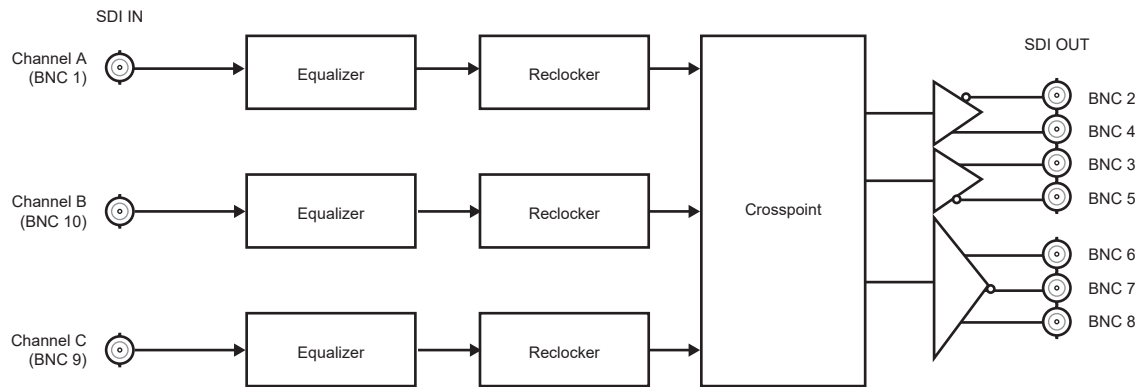


Figure 1.1 TRA-8206 — Simplified Block Diagram

User Interfaces

The TRA-8206 includes the following interfaces.

DashBoard Control System

DashBoard enables you to monitor and control openGear frames and cards from a computer. DashBoard communicates with other cards in the openGear frame through the Network Controller Card. The DashBoard software and user manual are available for download from the Ross Video website.

For More Information on...

- using DashBoard, refer to the *DashBoard User Manual*.
- the available menus in DashBoard for the TRA-8206, refer to the chapter “**DashBoard Menus**” on page 4-1.

Card-edge Controls

The TRA-8206 provides jumpers for specifying the channel rate, and configuring the output. LEDs on the card-edge provide monitoring of the channel rate, and the input signal.

For More Information on...

- the available jumpers, refer to the section “**Card Overview**” on page 3-2.
- configuring the output using the jumpers, refer to the section “**Output Channel Configuration**” on page 3-4.
- the card-edge LEDs, refer to the section “**Status and Selection LEDs on the TRA-8206**” on page 3-6 and the section “**Reclocker Rate Selection LEDs**” on page 3-8.

SNMP Monitoring and Control

The Network Controller Card in the openGear frame provides optional support for remote monitoring of your frame and the using Simple Network Management Protocol (SNMP), which is compatible with many third-party monitoring and control tools.

For More Information on...

- SNMP controls on this card, refer to your TRA-8206 Management Information Base (MIB) file.
- SNMP Monitoring and Control, refer to the *MFC-8300 Series* or *MFC-OG3 Series User Manual*.

Documentation Terms and Conventions

The following terms and conventions are used throughout this manual.

Terms

The following terms are used:

- **“Board”** and **“Card”** both refer to the TRA-8206 card itself, including all components and switches.
- **“DashBoard”** refers to the DashBoard Control System.
- **“DFR-8300 series frame”** refers to the DFR-8310 frames, the DFR-8321 frames, and all available options unless otherwise noted.
- **“Frame”** refers to the openGear frame that houses the TRA-8206.
- **“OG3-FR”** refers to the OG3-FR series frames and all available options unless otherwise noted.
- **“Operator”** and **“User”** both refer to the person who uses the TRA-8206.
- **“openGear frame”** refers to the DFR-8300 series and OG3-FR series frames unless otherwise noted.
- **“System”** and **“Video system”** both refer to the mix of interconnected production and terminal equipment in which the TRA-8206 operates.

Conventions

The following conventions are used:

- The **“Operating Tip”** and **“Note”** boxes are used to provide additional user information.

Installation

In This Chapter

This chapter provides instructions for installing the rear module(s) for the TRA-8206, installing the card into the openGear frame, and cabling details.

The following topics are discussed:

- Before You Begin
- Installing the TRA-8206
- Cabling for the TRA-8206

Before You Begin

Before proceeding with the instructions in this chapter, ensure that your openGear frame is properly installed according to the instructions in its manual.

Static Discharge

Whenever handling the TRA-8206 and other related equipment, please observe all static discharge precautions as described in the following 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.*

Unpacking

Unpack each TRA-8206 you received from the shipping container and ensure that all items are included. If any items are missing or damaged, contact your sales representative or Ross Video directly.

Installing the TRA-8206

The TRA-8206 is compatible with the openGear frames. The procedure for installing the rear module in your openGear frame is the same regardless of the frame, module, or card used.

Rear Modules for the TRA-8206

The rear module for the TRA-8206 depends on the openGear frame you are installing the card into.

- **DFR-8310 series frames** — The **8310AR-030** Rear Module is required. The TRA-8206 is also compatible with the DFR-8310-BNC frames.
- **DFR-8321 series frames and OG3-FR series frames** — The **8320AR-030** Full Rear Module is required.

Installing a Rear Module

If you are installing the TRA-8206 in a DFR-8310-BNC frame, or if the rear module is already present, skip this section.

To install the rear module in an openGear frame

1. Refer to the *DFR-8300 and OG3-FR Series User Manual* to ensure that the frame is properly installed according to instructions.
2. Locate the card frame slot on the rear of the frame.
3. Remove the Blank Plate from the rear of the slot you have chosen for card installation.
4. As shown in **Figure 2.1**, seat the bottom of the rear module in the seating slot at the base of the frame's back plane.

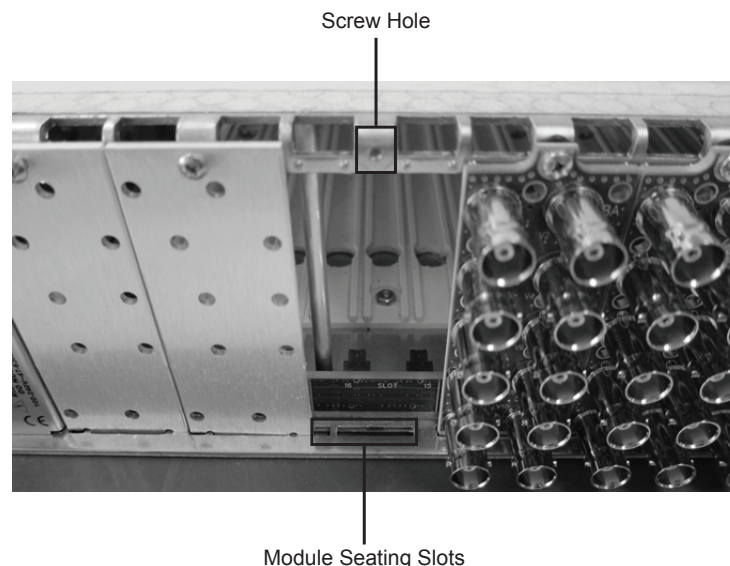


Figure 2.1 Rear Module Installation in an openGear Frame (TRA-8206 not shown)

5. Align the top hole of the rear module with the screw hole on the top edge of the frame back plane.
6. Using a Phillips screwdriver and the supplied screw, fasten the rear module to the frame back plane. Do not over tighten.
7. Ensure proper frame cooling and ventilation by having all rear frame slots covered with rear modules or blank metal plates.

Installing the TRA-8206

Use the following procedure to install the TRA-8206 in an openGear frame:

1. Refer to the *DFR-8300 and OG3-FR Series User Manual* to ensure that the frame is properly installed according to instructions.



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

2. After selecting the desired frame installation slot, hold the TRA-8206 card by the edges and carefully align the card edges with the slots in the frame.
3. Fully insert the card into the frame until the rear connection plugs are properly seated on the midplane and rear modules.
4. Affix the supplied BNC label to the BNC area on the rear module.

For More Information on...

- the assignment of input channels to output BNCs via jumper selection, refer to the section “**Output Channel Configuration**” on page 3-4.

Cabling for the TRA-8206

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

For More Information on...

- the assignment of Input Channels to Output BNCs, refer to the section “**Output Channel Configuration**” on page 3-4.

Connections for the DFR-8310 Series Frames

In the DFR-8310 series frame, the 8310AR-030 accommodates one card and occupies one slot. This rear module provides seven SDI outputs and three SDI inputs. Connect the input and output cables according to **Figure 2.2**.

Connections for the DFR-8321 and OG3-FR Series Frames

When installing the card in the DFR-8321 series or OG3-FR series frames, the 8320AR-030 is required. This rear module occupies two slots and accommodates one card. This rear module provides seven SDI outputs and three SDI inputs. Connect the input and output cables according to **Figure 2.2**.

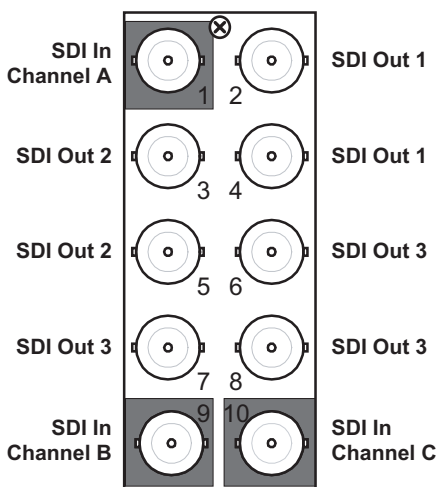


Figure 2.2 Cable Connections for the TRA-8206

User Controls

In This Chapter

This chapter provides a general overview of the user controls available on the TRA-8206.

The following topics are discussed:

- Card Overview
- Output Channel Configuration
- Control and Monitoring
- Reclocker Rate Selection

Card Overview

The following figure and discussions describe the jumpers and controls on the TRA-8206.

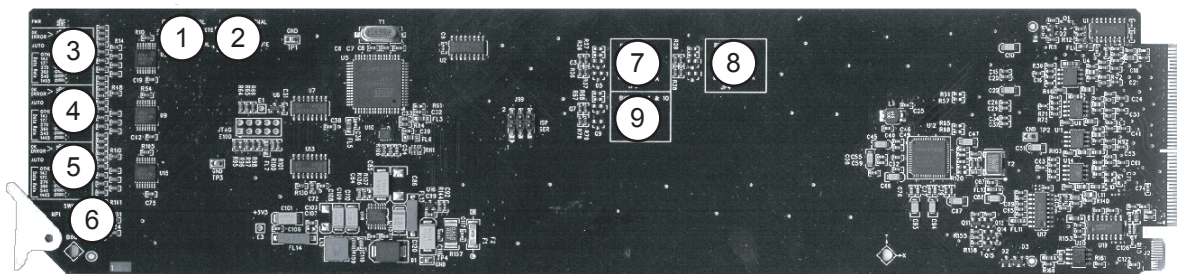


Figure 3.1 Card-edge Controls

1) Card Control (JP1)	4) Channel B Rate Selection (SW2)	7) BNC 2 and 4 Output Configuration (JP3)
2) Loss of Signal (JP2)	5) Channel C Rate Selection (SW3)	8) BNC 3 and 5 Output Configuration (JP4)
3) Channel A Rate Selection (SW1)	6) Bootload Button (SW4)	9) BNC 6, 7, 8 Output Configuration (JP5)

1. Card Control (JP1)

Use **JP1** to select whether the Output Mute and Output Channel Configuration jumper settings are respected or ignored by remote control settings. Select one of the following options:

- **REMOTE** — the local jumper settings are ignored and the card is configured remotely.
- **LOCAL** — the local jumper settings are respected and card is controlled locally. The card controls and status can be read remotely but not changed (default setting).



Note — This setting applies to control of the jumpers only. Card-edge buttons and switch settings can be configured remotely or locally in either setting.

2. Loss of Signal (JP2)

Use **JP2** to enable or disable the **Loss of Signal** option as follows:

- **MUTE** — a channel's outputs will be muted if the input signal degrades to the point that the input EQ can no longer guarantee error-free performance. When the red ERROR LED is lit, the outputs will be muted. If you have input channels set to any rate other than Auto mode, we recommend this jumper position. The output of the card would then mute if an incorrect data rate is applied to the input, or if the input signal became too weak for the input equalizer to compensate.
- **NO MUTE** — a channel's outputs will work to the limits of the input stage (default setting).

3. Channel A Rate Selection (SW1)

Channel A has a rate selection button and corresponding SD and HD LEDs. Use the rate selection button and LEDs to set the input signal rate type that Channel A will process. Pressing the button cycles between the HD and SD options. You can choose between the following signal rate types:

- **HD** — Select this option when using 1.485Gbps rate.
- **SD** — Select this option when using 143, 177, 270, 360, and 540Mbps rates.

4. Channel B Rate Selection (SW2)

Channel B has a rate selection button and corresponding SD and HD LEDs. Use the rate selection button and LEDs to set the input signal rate type that Channel B will process. Pressing the button cycles between the HD and SD options. You can choose between the following signal rate types:

- **HD** — Select this option when using 1.485Gbps rate.
- **SD** — Select this option when using 143, 177, 270, 360, and 540Mbps rates.

5. Channel C Rate Selection (SW3)

Channel C has a rate selection button and corresponding SD and HD LEDs. Use the rate selection button and LEDs to set the input signal rate type that Channel C will process. Pressing the button cycles between the HD and SD options. You can choose between the following signal rate types:

- **HD** — Select this option when using 1.485Gbps rate.
- **SD** — Select this option when using 143, 177, 270, 360, and 540Mbps rates.

6. Bootload Button (SW4)

This button is used for factory service in the unlikely event of a complete card failure. The Bootload process is further described in the “**Bootload Button**” on page 6-2.

7. BNC 2 and 4 Output Configuration (JP3)

Use **JP3** to select one of the following input channels to output on BNC 2 and BNC 4:

- **A** — BNC 2 and BNC 4 will output the signal input on Channel A.
- **B** — BNC 2 and BNC 4 will output the signal input on Channel B (default setting).
- **C** — Position C is not used on the TRA-8206 and should not be selected.
- **Blank** — The top blank position for these jumpers is for factory use, and should not be selected for normal operation. If selected, the BNCs output the signal input on Channel A.
- **None** — If the jumper is removed, the BNCs will output the signal input on Channel A.

8. BNC 3 and 5 Output Configuration (JP4)

Use **JP4** to select one of the following input channels to output on BNC 3 and BNC 5:

- **A** — BNC 3 and BNC 5 will output the signal input on Channel A.
- **B** — BNC 3 and BNC 5 will output the signal input on Channel B (default setting).
- **C** — Position C is not used on the TRA-8206 and should not be selected.
- **Blank** — The top blank position for these jumpers is for factory use, and should not be selected for normal operation. If you select this position, the BNCs will output the signal input on Channel A.
- **None** — If the jumper is removed, the BNCs will output the signal input on Channel A.

9. BNC 6, 7, 8 Output Configuration (JP5)

Use **JP5** to select one of the following input channels to output on BNC 6, 7, and 8:

- **A** — BNC 6, 7, and 8 will output the signal input on Channel A.
- **B** — BNC 6, 7, and 8 will output the signal input on Channel B (default setting).
- **C** — Position C is not used on the TRA-8206 and should not be selected.
- **Blank** — The top blank position for these jumpers is for factory use, and should not be selected for normal operation. If you select this position, the BNCs will output the signal input on Channel A.
- **None** — If the jumper is removed, the BNCs will output the signal input on Channel A.

Output Channel Configuration

A special feature of the TRA-8206 is the ability to operate in a number of different channel configurations. By simply changing channel jumpers, the TRA-8206 can be configured in the following ways:

- **Single channel** — 1:7
- **Dual channel** — 1:4 + 1:3
- **Dual channel** — 1:5 + 1:2
- **Triple channel** — 1:3 + 1:2 + 1:2 (default)

Channel Rate Selection Buttons and LEDs

Each channel has a **Channel Rate Selection** button and rate LEDs to set the input signal rate that the channel will process. Pressing the button illuminates a corresponding LED. Repeated presses will cycle through the selections.

For most applications, setting the Channel Rate to **AUTO** (default setting) will allow the TRA-8206 to automatically detect the incoming data rate. In the **AUTO** mode, the Data Rate LEDs will display the data rate detected from the incoming SDI signal.

For applications where only one specific data rate will be used, and the fastest possible lock times are desired, the TRA-8206 can be set and locked to a specific data rate. Press the **Channel Rate Selection** button until the **AUTO** LED is off, and the specific data rate LED is illuminated. Only SDI signals matching the selected data rate will be reclocked and passed through the TRA-8206.

For More Information on...

- the LEDs on the card-edge, refer to the section “**Status and Selection LEDs on the TRA-8206**” on page 3-6.

Single, Dual, or Triple Channel Configurations

Table 3.1 outlines how to configure your channel for single, dual, or triple channel operation using **JP3**, **JP4**, and **JP5**.

Table 3.1 Output Configuration

Configuration		Required Jumper Settings		
		JP3	JP4	JP5
Single Channel 1:7	Input Channel A: Output BNCs 2 to 8	A	A	A
	Input Channel B: Output BNCs 2 to 8	B	B	B
	Input Channel C: Output BNCs 2 to 8	C	C	C
Dual Channel 1:4 + 1:3	Input Channel A: Output BNCs 2 to 5 Input Channel B: Output BNCs 6, 7, 8	A	A	B
	Input Channel A: Output BNCs 2 to 5 Input Channel C: Output BNCs 6, 7, 8	A	A	C
	Input Channel B: Output BNCs 2 to 5 Input Channel C: Output BNCs 6, 7, 8	B	B	C

Table 3.1 Output Configuration

Configuration		Required Jumper Settings		
		JP3	JP4	JP5
Dual Channel 1:5 + 1:2	Input Channel A: Output BNCs 2, 4, 6, 7, 8	A	B	A
	Input Channel B: Output BNCs 3, 5			
	Input Channel A: Output BNCs 2, 4 Input Channel B: Output BNCs 3, 5, 6, 7, 8	A	B	B
	Input Channel A: Output BNCs 2, 4, 6, 7, 8 Input Channel C: Output BNCs 3, 5	A	C	A
Triple Channel 1:2+1:2+1:3 (default)	Input Channel A: Output BNCs 2, 4 Input Channel B: Output BNCs 3, 5 Input Channel C: Output BNCs 6, 7, 8	A	B	C

Control and Monitoring

This section provides information on the card-edge LEDs of the TRA-8206. Refer to **Figure 3.2** for the location of the LEDs.

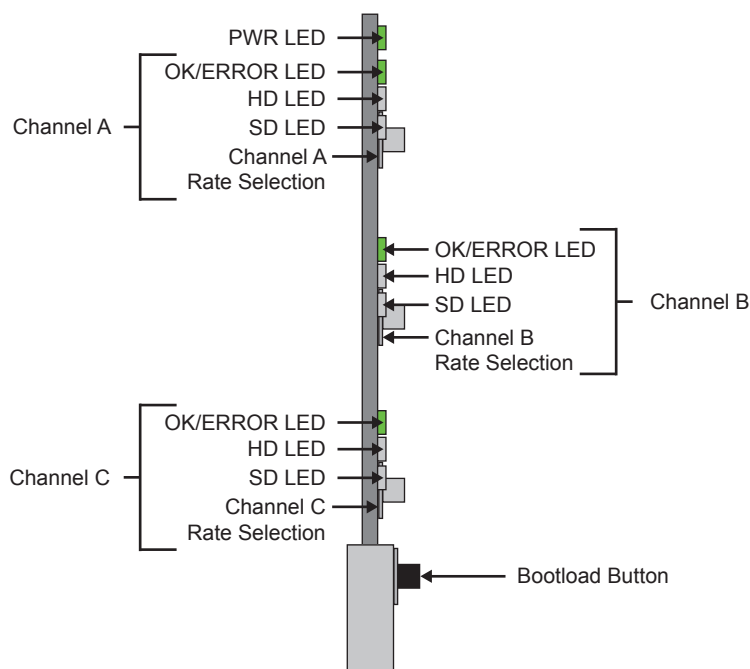


Figure 3.2 LED and Rate Selection Switch Locations

Status and Selection LEDs on the TRA-8206

The front-edge of the TRA-8206 has LED indicators for the power, channel status, and communication activity. Basic LED displays and descriptions are provided in **Table 3.2**.

Table 3.2 LEDs on the TRA-8206

LED	Color	Display and Description
PWR	Green	When lit green, this LED indicates that the card is functioning normal and that no anomalies have been detected. The following conditions must be satisfied: • a valid input signal is present • a valid reference signal is present when a reference is required, and that the reference standard matches the input standard.
	Flashing Green	When flashing green, this LED indicates that the Bootload button was pressed, and the card is receiving a new software load from the frame.
	Flashing Green and Orange	When lit green with flashing orange, this LED indicates a signal or configuration problem. Verify the signal status and settings.
	Amber	When lit amber, this LED indicates the card is running internal diagnostics while powering up.
	Red	When lit red or flashing red, this LED indicates the card is not operational. Re-seat card in frame, check the rear module type and connections, or call Ross Video Technical Support.
	Off	When off, this LED indicates there is no power to the card.

Table 3.2 LEDs on the TRA-8206

LED	Color	Display and Description
Channel # OK/ERROR	Green	When lit, this LED indicates that the specified channel is reclocking a valid signal.
	Red	When red, this LED indicates that the channel cannot reclock due to an invalid signal or rate setting.

Factory Default Values

Any channel can be set back to factory settings, where the data rate is set to **AUTO** and the alarm is enabled on loss of input.

To reset a channel to factory default values

1. Press and hold the **Bootload** button on the card.
2. Press the **Rate Selection** button for the selected channel.
3. The **Signal Status** LED flashes green and red for approximately 2 seconds to confirm the reset values.

Reclocker Rate Selection

This section describes the Reclocker Rate Selection LEDs. Refer to **Figure 3.2** for button and LED locations.

Reclocker Rate Selection LEDs

Table 3.3 provides status information on the Rate Selection button and LED functions. For example, if the **AUTO** and **143** LEDs are both lit, the card is in Auto mode and the channel detects and reclocks at 143Mbps.

Table 3.3 Rate Selection and LED Functions

Date Rate LED Displays								Description
AUTO	OTHER	143	177	270	360	540	1485	
○		○ Cycling through LEDs						Channel searching incoming signal for a valid data rate (default)
○		○						Auto mode, channel detects and reclocks 143Mbps
○				○				Auto mode, channel detects and reclocks 270Mbps
○					○			Auto mode, channel detects and reclocks 360Mbps
○						○		Auto mode, channel detects and reclocks 540Mbps
○							○	Auto mode, channel detects and reclocks 1.485Gbps
		○						Channel set to reclock 143Mbps
			○					Channel set to reclock 177Mbps
				○				Channel set to reclock 270Mbps
					○			Channel set to reclock 360Mbps
						○		Channel set to reclock 540Mbps
							○	Channel set to reclock 1.485Gbps
	○							Channel equalizes, but does not reclock, any SDI signal from 143Mbps to 1.485Gbps

○ = Illuminated LED

DashBoard Menus

In This Chapter

This section briefly summarizes the menus, items, and parameters available from DashBoard for the TRA-8206. Parameters marked with an asterisk (*) are the factory default values.

The following topics are discussed:

- Status Tabs
- Setup Tab
- Routing Tab
- Alarms Tab



Operating Tip — *Wait 30 seconds after the last setting change to ensure all changes are saved to the non-volatile memory of the card.*

Status Tabs

This section summarizes the read-only information displayed in the **Status** tabs. The fields in these tabs vary in severity from green (valid), yellow (caution), to red (alarm). DashBoard reports the most severe alarm for a single field. Alarm colors are noted within the tables as text set in brackets next to the menu parameter name.

Product Tab

Table 4.1 summarizes the read-only information displayed in the **Product** tab.

Table 4.1 Product Tab Items

Tab Title	Item	Parameters	Description
Product	Product	TRA-8206	
	Supplier	Ross Video Ltd.	
	Board Rev	##	Indicates the board version of your card
	Serial Number	#####	Indicates the serial number of your card
	Software Rev	##.##	Indicates the software version

Hardware Tab

Table 4.2 summarizes the read-only information displayed in the **Hardware** tab.

Table 4.2 Hardware Tab Items

Tab Title	Item	Parameters	Description
Hardware	Voltage (mV)	#	Supply Voltage
	Current (mA)	#	Current consumption in milliamperes
	Rear Module	#	Type of rear module in the slot
	CPU Headroom	#	CPU Memory Used / Total CPU Memory
	RAM Available	###	On-board processing memory available
	EE Bank	#	Storage count

Signal Tab

Table 4.3 summarizes the read-only information displayed in the **Signal** tab.

Table 4.3 Signal Tab Items

Tab Title	Item	Parameters	Description
Signal	Signal Status	OK (Green)	All channels are passing a valid signal
		Input Unlocked (#) (Red)	The indicated channel(s) cannot reclock due to an invalid signal or rate setting
	Input # Status	Locked - # MHz	Input is valid with the specified bit rate
		Bypass	Signal is present, channel configured to Bypass Mode and is not reclocked
		Not routed	Input is not routed to any output BNCs
		No signal	No signal present
		No signal - muted	No signal present and the output is muted
		Unlocked	Input is present, PLL is unlocked
		Unlocked - muted	Input is present, PLL is unlocked, and the output is muted

Setup Tab

Table 4.4 summarizes the **Setup** options available in DashBoard for the TRA-8206.

Table 4.4 Setup Menu Items

Tab Title	Item	Parameters	Description
Setup	Channel # Input Rate ^a	Auto*	The card automatically detects the incoming data rate for the specified channel
		Bypass	The card does not reclock the input rate for the specified channel
		# MHz	
	Low Signal	Mute ^b	The channel outputs are muted if the input signal degrades to the point that the input EQ can no longer guarantee error-free performance
		Pass*	The channel outputs work to the limits of the input stage
	Edit Permission (JP1 is set to Remote)	Unlocked*	All editable menu options are editable
		Locked	All editable menu options, except this one, are locked and are read-only
	Edit Permission (JP1 is set to Local)	Local Only*	All editable menu options are locked and are read-only
	Factory Defaults	Reset	Resets all parameters to factory defaults

a. When **Auto** is selected as an input rate, the data rate of 177MHz is not detected.

b. The Mute option is recommended if you have input channels set to any rate other than Auto Mode. The output of the card would then mute if an incorrect data rate is applied to the input, or if the input signal became too weak for the input equalizer to compensate.

Routing Tab

Table 4.5 summarizes the **Routing** options available in DashBoard for the TRA-8206. Note that if the associated jumper for the BNCs is set to **INT** or is removed, the BNCs will output the signal input on Channel A.

Table 4.5 Routing Menu Items

Tab Title	Item	Parameters	Description
Routing	Output BNC 2 & 4	Input A*	BNC 2 and BNC 4 will output the signal input on Channel A
		Input B	BNC 2 and BNC 4 will output the signal input on Channel B
		Input C	BNC 2 and BNC 4 will output the signal input on Channel C
	Output BNC 3 & 5	Same as above	
	Output BNC 6,7,8,10	Same as above	

Alarms Tab

Table 4.6 summarizes the **Alarms** options available in DashBoard for the TRA-8206. Note that if an input channel is not routed to any outputs, the **Input Status** field ignores any loss of input, and the status is not displayed in DashBoard.

Table 4.6 Alarms Menu Items

Tab Title	Item	Parameters	Description
Alarms	Loss of Input A	Ignore	The Input Status field ignores the status of the specified input
		Alarm*	The Input Status field reports the status of the specified input
	Loss of Input B	Same as above	
	Loss of Input C	Same as above	

Specifications

In This Chapter

This chapter provides technical specifications on the TRA-8206. Note that specifications are subject to change without notice.

The following topics are discussed:

- Technical Specifications

Technical Specifications

This section provides the technical specifications for the TRA-8206.

Table 5.1 TRA-8206 Technical Specifications

Category	Parameter	Specification
SDI Inputs	Number of Inputs	3
	Data Rates and SMPTE Standards Accommodated	143Mbps, NTSC Composite, SMPTE 259M 177Mbps, PAL Composite, SMPTE 259M 270Mbps, 525/625 Component, SMPTE 259M 360Mbps, 525/625 Component (wide screen), SMPTE 259M 540Mbps, 525/625 Component (wide screen), SMPTE 344M 1.485 or 1.4835Gbps Component, SMPTE 292M
	Input Impedance	75ohm terminating
	Equalization	>120m of Belden 1694A cable @ 1.485Gbps <300m of Belden 1694A cable @ 270Mbps
	Return Loss	>15dB to 1.485GHz
SDI Outputs	Number of Outputs	7
	Impedance	75ohm
	Return Loss	>15dB to 1.485GHz
	Signal Level	800mV $\pm$ 10%
	DC Offset	0V $\pm$ 50mV
	Rise & Fall Time (20-80%)	700ps typical (270Mbps) 120ps typical (1.485Gbps)
	Overshoot	<8%
Power	Total Power Consumption	3.5W

Service Information

In This Chapter

This chapter contains the following sections:

- Troubleshooting Checklist
- Warranty and Repair Policy

Troubleshooting Checklist

Routine maintenance to this openGear product is not required. In the event of problems with your TRA-8206, 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 under the “**Contact Us**” section.

1. **Visual Review** — Performing a quick visual check may reveal many problems, such as connectors not properly seated or loose cables. Check the nodule, the frame, and any associated peripheral equipment for signs of trouble.
2. **Power Check** — Check the power indicator LED on the distribution frame front panel for the presence of power. If the power LED is not illuminated, verify that the power cable is connected to a power source and that power is available at the power main. Confirm that the power supplies are fully seated in their slots. If the power LED is still not illuminated, replace the power supply with one that is verified to work.
3. **Re-seat the Card in the Frame** — Eject the card and re-insert it in the frame.
4. **Check Control Settings** — Verify all user-adjustable component settings.
5. **Input Signal Status** — Verify that source equipment is operating correctly and that a valid signal is being supplied.
6. **Output Signal Path** — Verify that destination equipment is operating correctly and receiving a valid signal.
7. **Card Exchange** — Exchanging a suspect card with a card that is known to be working correctly is an efficient method for localizing problems to individual cards.

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 card.

To perform a software reload

1. Eject the card from the frame.
2. Press and hold the **Bootload** button, while re-inserting the card into the frame.
3. Release the **Bootload** button.
 - The **PWR** LED will flash 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 card will attempt to restart with its last operational software load.
 - Software loads can be sent to the card using the Network Controller Card, or via connection on the rear of the frame.

Warranty and Repair Policy

The TRA-8206 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 TRA-8206 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 TRA-8206 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 TRA-8206 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 TRA-8206 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 TRA-8206, please contact the Ross Video Technical Support Department. (Contact information is supplied at the end of this publication.)

A Return Material Authorization number (RMA) will be issued to you, as well as specific shipping instructions, should you wish our factory to repair your TRA-8206. 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.

Contact Us

Contact our friendly and professional support representatives for the following:

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

Technical Support

Telephone: +1 613 • 652 • 4886
After Hours Emergency: +1 613 • 349 • 0006
Email: techsupport@rossvideo.com

General Information

Telephone: +1 613 • 652 • 4886
Fax: +1 613 • 652 • 4425
Email: solutions@rossvideo.com
Website: <http://www.rossvideo.com>

Visit Us

Visit our website for:

- Company information and news
- Related products and full product lines
- Online catalog
- Testimonials