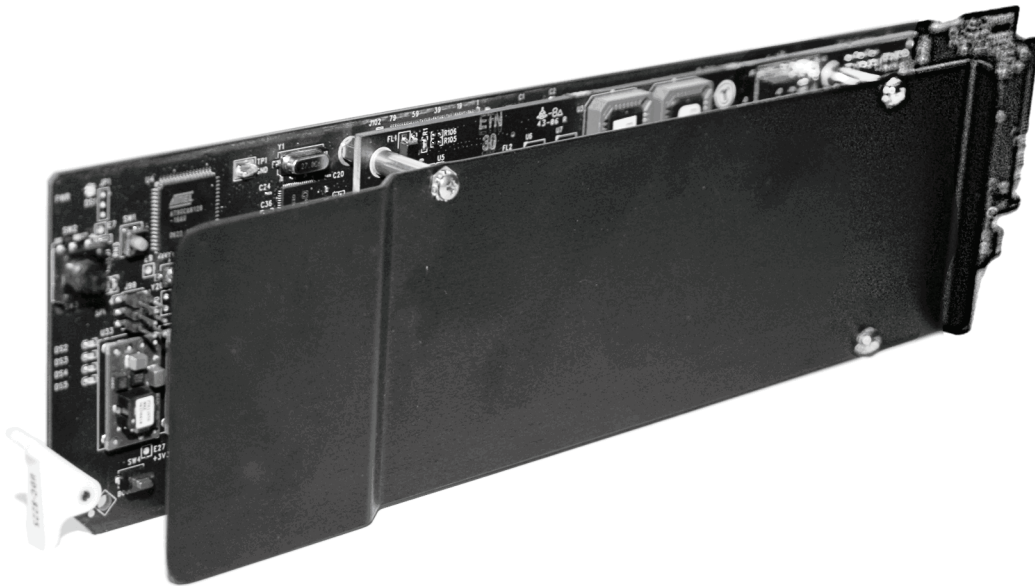


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Ross Video Limited

**UDC-8225A(-W)**  
**MD-SDI Up/Down/Cross Converter**  
**User Manual**



 **ROSS**  
Live Production Technology™

**openGear**

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## UDC-8225A(-W) • MD-SDI Up/Down/Cross Converter User Manual

- Ross Part Number: **8225ADR-004-03**
- Release Date: May 7, 2010. Printed in Canada.

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

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# Important Regulatory and Safety Notices

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

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

## Symbol Meanings



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

---



---

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

---



---

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

---



---

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

---



---

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

---

## Important Safety Instructions



---

**Caution** — This product is intended to be a component product of the DFR-8300 series frame. Refer to the DFR-8300 series frame User Manual for important safety instructions regarding the proper installation and safe operation of the frame as well as its component products.

---



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

---



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**Warning** — Service barriers within this product are intended to protect the operator and service personnel from hazardous voltages. For continued safety, replace all barriers after any servicing.  
This product contains safety critical parts, which if incorrectly replaced may present a risk of fire or electrical shock. Components contained with the product’s power supplies and power supply area, are not intended to be customer serviced and should be returned to the factory for repair. To reduce the risk of fire, replacement fuses must be the same time and rating. Only use attachments/accessories specified by the manufacturer.

---

## EMC Notices

### ***United States of America 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 Limited could void the user's authority to operate this equipment.*

---

### **CANADA**

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

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

### **EUROPE**

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

### **INTERNATIONAL**

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



---

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

---

## Maintenance/User Serviceable Parts

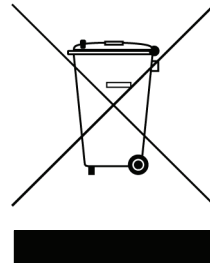
Routine maintenance to this openGear product is not required. This product contains no user serviceable parts. If the module does not appear to be working properly, please contact Technical Support using the numbers listed under the "Contact Us" section on the last page of this manual. All openGear products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

## Environmental Information

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

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

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



If you need more information on the collection, reuse, and recycling systems, please contact your local or regional waste administration. You can also contact Ross Video for more information on the environmental performances of our products.

---

## Company Address



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

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

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



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# Introduction

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## In This Chapter

This chapter contains the following sections:

- Overview
- Functional Block Diagram
- Documentation Terms and Conventions

## A Word of Thanks

Congratulations on choosing an openGear **UDC-8225A MD-SDI Up/Down/Cross Converter**. Your UDC-8225A is part of a full line of Digital Products within the openGear Terminal Equipment family of products, backed by Ross Video's experience in engineering and design expertise since 1974.

You will be pleased at how easily your new UDC-8225A fits into your overall working environment. Equally pleasing is the product quality, reliability and functionality. Thank you for joining the group of worldwide satisfied Ross Video customers!

Should you have a question pertaining to the installation or operation of your UDC-8225A, 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 UDC-8225A is a universal cross-converter designed for broadcast use. It can provide SD to HD up-conversion, HD to SD down-conversion, as well as HD to HD cross-conversion.

The UDC-8225A supports all popular standard definition and high definition video formats, with or without four groups (16 channels) of embedded 48kHz synchronous audio, including 480i, 576i, 720p, and 1080i. The format of incoming video is automatically detected, simplifying system setup.

A licensed software option for the UDC-8225A includes an additional input which is used to insert additional content in the blank areas of the converted output (Letter Box and Pillar Box). This is accomplished through implementing a Box Mask, which matches the active area on the converted output, and enabling the insertion of the input on a signal that has been converted by our aspect ratio converter.

The UDC-8225A converts the incoming SDI video, on the main SDI In, to any supported video format. Using advanced video de-interlacing algorithms, dynamic edge detection, adaptive noise reduction circuitry and full 10-bit processing, format conversion is performed with the highest possible picture quality. As part of the format conversion process, a flexible aspect ratio converter allows the video to be re-sized to a number of standard aspect ratios.

The UDC-8225A incorporates a video frame synchronizer, allowing the output video to be timed to an external video reference.

Any openGear DFR-8300 series frame supports a distributed frame reference, allowing incoming reference sync signals to feed timing information to all modules in a frame. Thus, a single composite or tri-level sync signal can be used for multiple cross-converters. Alternatively, each card accepts an additional reference signal providing additional system timing flexibility.

To make configuration easier, the cross-converter offers a unique Heads-Up Display (HUD) on a separate composite monitoring output. When activated, card status and parameters can be viewed and adjusted using the card-mounted finger joystick and an easy to use menu system. Alternately, you can configure the UDC-8225A using the DashBoard Control System which also enables you to install licensed software features such as the Wings Input option.

The UDC-8225A is fully compliant with all openGear technical specifications and supports remote monitoring via the DashBoard Control System.

## Features

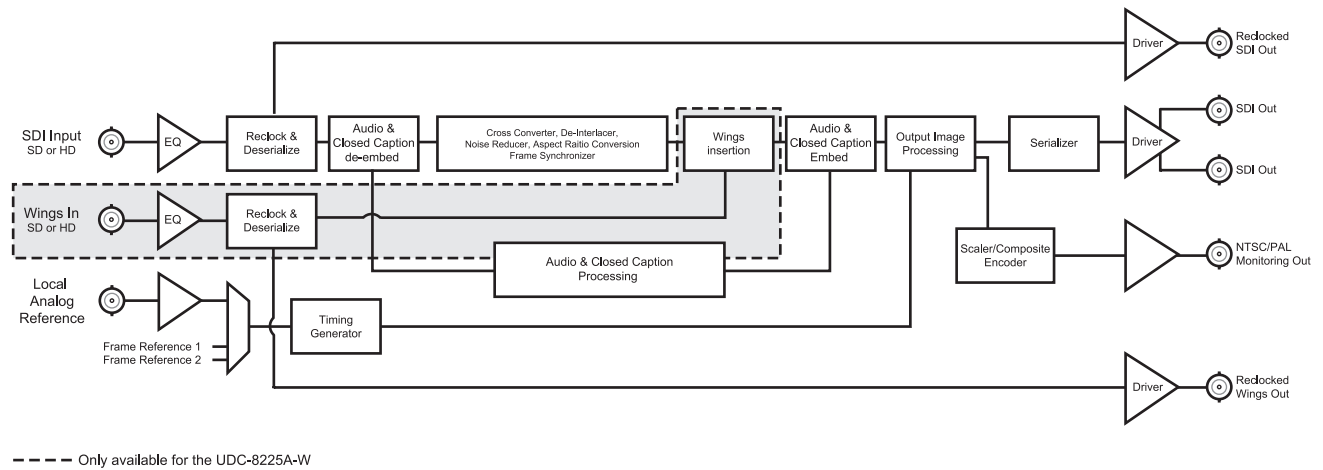
The following features make the UDC-8225A the best solution for SD to HD up-conversion, HD to SD down-conversion, SD to SD aspect ratio conversion, as well as HD to HD cross-conversion:

- Converts between any of the following SD (270Mbps) and HD (1.485Gbps) formats:
  - › 480i 59.94Hz
  - › 720p 59.94Hz
  - › 1080i 59.94Hz
  - › 576i 50Hz
  - › 720p 50Hz
  - › 1080i 50Hz
- Automatically detects the incoming video format, and converts to the assigned output format
- Advanced video processing algorithms provide the highest quality conversion

- Additional input for inserting content into the unused portion of the raster of the Letter Boxed and/or Pillar Boxed image (Wings Input licensed feature only)
- Flexible aspect ratio control
- Provides DTVCC caption pass-through
- Performs DTVCC frame rate conversion
- Provides NTSC caption ancillary pass through
- Handles 4 groups (16 channels) of synchronous embedded audio on the incoming video stream:
  - › 20-bit 48KHz synchronous on SD video formats
  - › 24-bit 48KHz synchronous on HD video formats
- Compliance with SMPTE 272M-A 48kHz 24-bit
- Compliance with SMPTE 299M-2004 48kHz 24-bit
- Compliance with AES-3id 2001, and AES3-2003
- Built-in Frame Synchronizer times output to a local or frame-wide reference
- Composite monitoring output with Heads-Up Display menu system
- Includes the following inputs and outputs:
  - › 1 reclocked copy of the input
  - › 1 reclocked copy of the Wings input (Wings Input licensed feature only)
  - › 2 processed SDI outputs
- Reports status and configuration remotely via the DashBoard Control System™
- Fits DFR-8300 series frames
- Fully compliant with openGear specifications
- 5-year transferable warranty

# Functional Block Diagram

This section provides a functional block diagram that outlines the workflow of the UDC-8225A.



**Figure 1.1** UDC-8225A — Simplified Block Diagram

---

# Documentation Terms and Conventions

The following terms and conventions are used throughout this manual:

- “**Frame**” refers to DFR-8300 series frame that houses the UDC-8225A card, as well as any openGear frames.
- All references to the **DFR-8300 series frame** also includes all version of the 10-slot (DFR-8310 series) and 20-slot (DFR-8321 series) frames and any available options unless otherwise noted.
- All references to the **UDC-8225A** also includes all versions unless otherwise indicated.
- “**Operator**” and “**User**” refer to the person who uses UDC-8225A.
- “**Board**”, and “**Card**” refer to openGear terminal devices within openGear frames, including all components and switches.
- “**System**” and “**Video system**” refer to the mix of interconnected production and terminal equipment in your environment.
- “**525-line mode**” refers to broadcast situations using **NTSC** or **PAL-M** composite (analog) signal reference inputs.
- “**625-line mode**” refers to broadcast situations using **PAL-B** or **PAL-N** composite (analog) signal reference inputs.
- “**DTVCC captions**” refer to CEA-708 captions.
- “**NTSC captions**” refer to CEA-608-D: Line 21 Data Services captions.
- “**PAL**” refers to PAL-B, PAL-M, and PAL-N unless otherwise stated.
- The “**Operating Tips**” and “**Note**” boxes are used throughout this manual to provide additional user information.



# Installation

---

## In This Chapter

This chapter provides instructions for installing the Rear Module(s) for the UDC-8225A, installing the card into the frame, cabling details, and updating the card software.

The following topics are discussed:

- Before You Begin
- Installing the UDC-8225A
- Cabling for the UDC-8225A
- Software Upgrades for the UDC-8225A

---

## Before You Begin

Before proceeding with the instructions in this chapter, ensure that your DFR-8300 series frame is properly installed according to the instructions in the *DFR-8300 Series User Manual*.

### 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.*

---

### Unpacking

Unpack each UDC-8225A 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 UDC-8225A

This section outlines how to install a Rear Module in a DFR-8300 series frame. The same procedure applies regardless of the frame or card type. However, the specific Rear Module you need to install depends on the frame you are using.

## Rear Modules for the UDC-8225A

The Rear Module for the UDC-8225A depends on the openGear frame you are installing the card into.

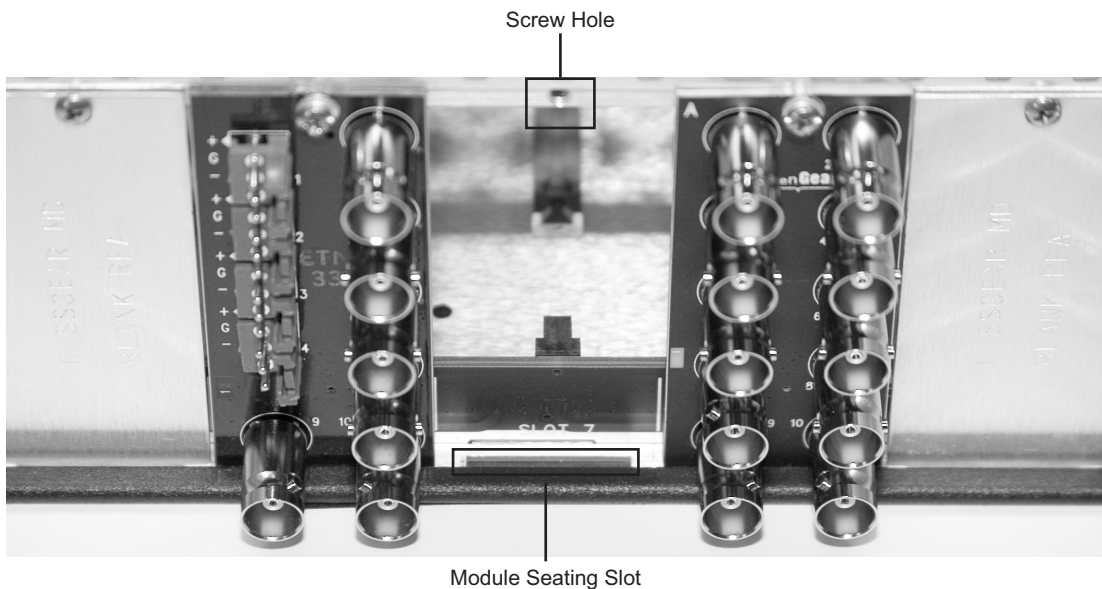
- **DFR-8310 series frame** — When installing the UDC-8225A in the DFR-8310 series frames, the **8310AR-030** (R1-8225) Rear Module is required.
- **DFR-8321 series frames** — When installing the UDC-8225A in the DFR-8321 series frames, a Full Rear Module **8320AR-030** (R2-8225) is required.

## Installing a Rear Module

If you are installing the UDC-8225A in a DFR-8310-BNC frame, or the Rear Module is already installed, proceed to the section “**Installing the UDC-8225A**” on page 2-4.

Use the following procedure to install a Rear Module in your DFR-8300 series frame:

1. Locate the card frame slots on the rear of the frame. Ross Video recommends:
  - using Slots 1, 3, 5, 7 and 9 in the DFR-8310 series frames.
  - using Slots 2, 6, 10, 14, and 18 in the DFR-8321 series frames.
2. Remove the Blank Plate from the slot you have chosen for the UDC-8225A installation.
3. Install the bottom of the Rear Module in the **Module Seating Slot** at the base of the frame’s back plane. (**Figure 2.1**)



**Figure 2.1** Rear Module Installation in a DFR-8310 Series Frame (UDC-8225A not shown)

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.

This completes the procedure for installing a Rear Module in your DFR-8300 series frame.

## Installing the UDC-8225A

This section outlines how to install the UDC-8225A in a DFR-8300 series frame.

Use the following procedure to install the UDC-8225A in a DFR-8300 series frame:

1. Locate the Rear Module you installed in the procedure “**Installing a Rear Module**” on page 2-3.



---

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

---

- Due to slot space requirements, a maximum of five UDC-8225A modules can be installed in a DFR-8300 series frame.
  - The blocker plate mounted on the daughter card is designed to prevent the accidental installation of any other cards in right-hand adjacent card slots.
2. Ross Video recommends locating the UDC-8225A as follows:
    - **DFR-8310 series frames** — use slots 1, 3, 5, 7, or 9.
    - **DFR-8321 series frames** — use slots 2, 6, 10, 14, or 18.
  3. Hold the card by the edges and carefully align the card-edges with the slots in the frame.
  4. Fully insert the card into the frame until the rear connection plus is properly seated in the Rear Module.
  5. Affix the supplied **Rear Module Label** to the BNC area of the Rear Module.

This completes the procedure for installing the UDC-8225A in a DFR-8300 series frame.

# Cabling for the UDC-8225A

This section provides information for connecting cables to the installed Rear Modules on the DFR-8300 series frames. Connect the input and output cables according to the following sections. The inputs are internally terminated in 75 ohms. It is not necessary to terminate unused outputs.

## DFR-8310 Series Frame Cabling Overview

In the DFR-8310 series frames, the UDC-8225A is used with the following Rear Modules:

- **8310AR-030** Rear Module — Each card occupies two slots and provides two SDI outputs, one Monitoring output and one reclocked output. (**Figure 2.2**). If the Wings Input licensed feature is installed, each card occupies two slots and provides two SDI outputs, a reclocked output, a Wings input and a reclocked Wings output. (**Figure 2.3**)

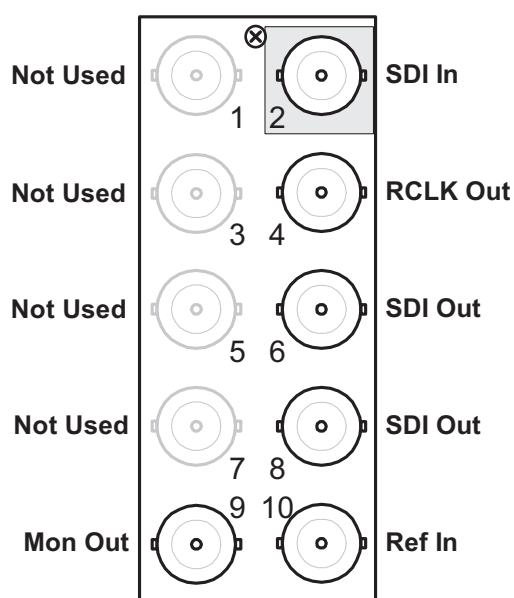


Figure 2.2 Cable Connections for the UDC-8225A

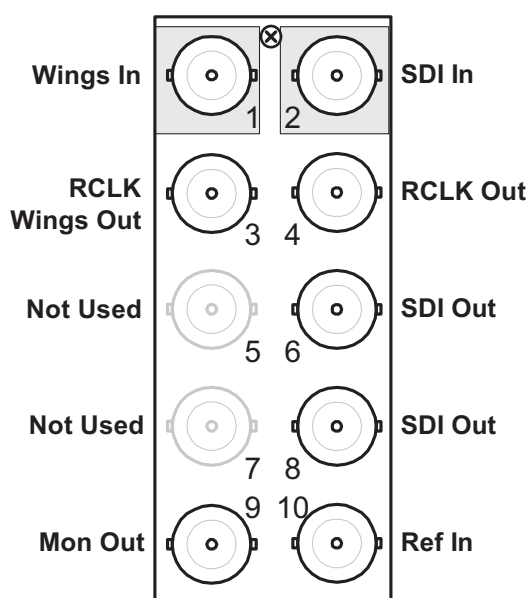


Figure 2.3 Cable Connections for the UDC-8225A-W

## DFR-8321 Series Frame Cabling Overview

In the DFR-8321 series frames, the UDC-8225A is used with the following Rear Modules:

- **8320AR-030** Full Rear Module — Each card occupies two slots and provides two SDI outputs, one Monitoring output and one reclocked output. (**Figure 2.2**) If the Wings Input licensed feature is installed, each card occupies two slots and provides two SDI outputs, a reclocked output. (**Figure 2.3**)

---

# Software Upgrades for the UDC-8225A

This section provides instructions for installing a license key, such as the one required for the Wings Input option, and upgrading the software for your UDC-8225A using the DashBoard Control System™.

## Installing a License Key

When installing a license key on the UDC-8225A:

- You must have DashBoard installed and communicating with the DFR-8300 series frame that houses the card you wish to install the key for.
- Ensure that you are using **version 2.1** or higher of DashBoard. This information is available by selecting **Help > About DashBoard** from the DashBoard main toolbar.
- The DashBoard software and manual are available from the Ross Video website.

## Installing a License Key

Use the following procedure to install a license key for the UDC-8225A using DashBoard:

1. Open DashBoard on your computer.
2. Open a tab in the **Device View** of DashBoard for the setup information.
3. Select the **Setup** tab in the **Device View** to display the setup information.
4. Make a note of the **Request Code** in the **License Key** field.
5. Contact Ross Video Technical Support using the information found in the section “**Contact Us**”.
  - When you speak to the Technical Support representative, tell them your name, your facility name, and the **Request Code** from the **Setup** tab.
  - You will be given a License Key that must be entered in the **License** box of the **Setup** tab.
6. Enter the **License Key** in the **License** box of the **Setup** tab.
7. When the installation is complete, verify that the following has occurred:
  - The **Setup** tab displays “**Licensed**” in the **License** field.
  - The **License** box displays a green background.

This completes the procedure for installing a license key for the UDC-8225A using DashBoard.

## Performing Software Upgrades

DashBoard enables you to upload software updates to the UDC-8225A.

Use the following procedure to upload software to the UDC-8225A:

1. Contact Ross Technical Support for the latest software version file.
2. In DashBoard, display the **Device** tab of the UDC-8225A by double-clicking its status indicator in the **Basic Tree View**.
3. From the **Device** tab, click **Upload** to display the **Select File for upload** dialog box.
4. Navigate to the \*.bin upload file you wish to upload. DashBoard automatically selects the last directory that you loaded from.

5. Click **Open** to display a confirmation dialog box. This dialog box displays the selected upload file name, type, size, and the file creation date.
6. From the **Confirmation** dialog box, select one of the following:
  - **Cancel** — Select this option to cancel the upload of the file and return to the **Device View**.
  - **Continue** — Select this option to upload the file. While uploading, an **Uploading Progress** dialog box opens.



---

**Important** — *Clicking the **Cancel** button while uploading will leave the card in an invalid state. Do not click **Cancel** unless the uploading progress has stopped completely for 60 seconds or more.*

---

7. Monitor the upgrade progress bar displayed in DashBoard while the software is upgraded on your UDC-8225A.
8. To complete the upgrade process, you must reboot the card as follows:
  - From the **Device** tab, click **Reboot** to reboot UDC-8225A. The reboot process takes up to 30 seconds.



---

**Note** — *The communications processor of the UDC-8225A requires approximately 30 seconds to re-start and re-establish network communications.*

---

- The UDC-8225A automatically saves all your settings before starting the reboot process.
- The status of all the cards in the frame are grayed out until the reboot process is complete.

This completes the procedure to upload software to the UDC-8225A.



# User Controls

---

## In This Chapter

This chapter provides a general overview of the user controls available on the UDC-8225A.

The following topics are discussed:

- Local Reference Jumper
- Control and Monitoring Features
- Aspect Ratio Conversion
- Closed Caption Support

---

# Local Reference Jumper

This section provides a general overview of the UDC-8225A components. For information on the LEDs available on the card-edge, refer to the section “**Control and Monitoring Features**” on page 3-3.



*Figure 3.1 UDC-8225A — Components*

## Local Reference Jumper (J20)

If you have elected to use a local reference signal, it must be terminated on the card with jumper **J20**.

Set jumper **J20** local reference options as follows:

- Install the jumper in the **TERM** position to terminate the reference on this card (the rightmost two pins). This is the factory default setting.
- Install the jumper on the leftmost two pins to leave the reference unterminated. For example, configure this setting if you wish to use a looping reference.

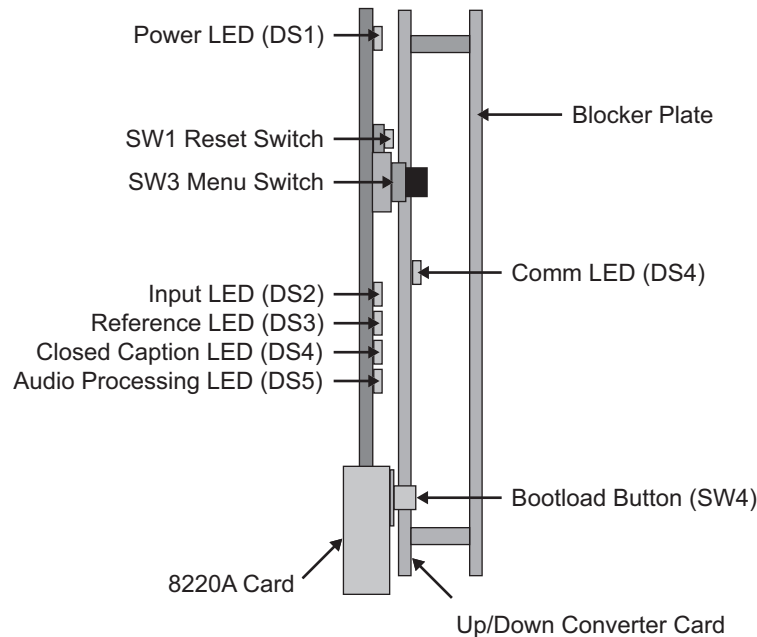
### *For More Information...*

- on connecting a reference source to the UDC-8225A, refer to the section “**Cabling for the UDC-8225A**” on page 2-5.
- on using the **Menu Switch** with the Heads-Up Display, refer to the section “**SNMP Monitoring and Control**” on page 4-2.
- on the Bootload process, refer to the section “**Bootload Button**” on page 6-2.
- on the LEDs available on the card-edge, refer to the section “**Control and Monitoring Features**” on page 3-3.

---

## Control and Monitoring Features

This section provides information on the buttons and LEDs for the UDC-8225A. Refer to **Figure 3.2** for the location of the LEDs and controls.



**Figure 3.2** UDC-8225A Card-edge Controls

### Card-edge Controls

This section provides a general overview of the UDC-8225A card-edge controls.

- **Reset Switch (SW1)** — Use **SW1** to reboot the card.
- **Menu Switch (SW3)** — Use **SW3** to navigate the UDC-8225A menu system and configure item parameters. The **Menu Switch** is a five-direction, square, finger joystick.
- **Bootload Button (SW4)** — **SW4** is used for factory service in the unlikely event of a complete card failure. Do not press this button unless instructed to do so by Technical Support personnel.

## Status and Selection LEDs on the UDC-8225A

The front-edge of the UDC-8225A has LED indicators for the power, video input status, and communication activity. Basic LED displays and descriptions are provided in **Table 3.1**.

**Table 3.1 LEDs on the UDC-8225A**

LED	Color	Display and Description
<b>Power</b>	Green	When lit, this LED indicates that the card is functioning normal and that no anomalies have been detected. The following conditions must be satisfied: <ul style="list-style-type: none"> <li>• a valid input signal is present</li> <li>• a valid reference signal is present when a reference is required, and that the reference standard matches the input standard</li> </ul>
	Flashing Green	When flashing green, this LED indicates the bootloader is waiting for software upload.
	Flashing Green and Orange	When flashing green and orange, this LED indicates there is a signal error such as a missing or invalid input or reference.
	Orange	When lit orange, this LED indicates the card is booting up.
	Red	When lit red, this LED indicates the card is not operational.
	Off	When off, this LED indicates that the card has no power.
<b>Video Input OK</b>	Green	When lit green, this LED confirms that both the main and Wings video inputs are valid.
	Flashing Green	When flashing green, this LED indicates that video is present, but the input format is unsupported.
	Off	When off, this LED indicates there is no input signal.
<b>Reference Input OK</b>	Green	When lit green, this LED indicates the reference signal is valid.
	Flashing Green	When flashing, this LED indicates that the reference is present, but one of the following has occurred: <ul style="list-style-type: none"> <li>• the format on the main video input is not supported</li> <li>• there is a mismatch in formats between the output format selected and the Wings video input</li> </ul>
	Off	When off, this LED indicates that the selected reference is not present.
<b>Closed Caption</b>	Green	The Closed Captioning feature is enabled and is embedded on the output.
	Flashing Green	The Closed Captioning feature is enabled, but is not embedded on the output. The input signal does not contain the required data.
	Off	The Closed Captioning feature is disabled.
<b>Audio Processing OK/Error</b>	Green	When lit green, this LED indicates that embedded audio processing is present and valid.
	Flashing	When flashing, this LED indicates the embedded audio processing is present but contains errors, or has been selected to be passed but is not present.
<b>Comm OK</b>	Green	When lit, indicates that the daughter card is running and communicating with the main card.

---

# Aspect Ratio Conversion

Aspect Ratio Conversion for inputs and outputs can be configured using the Heads-Up Display or the DashBoard Control System menus. For further information on configuring input and output aspect ratios, refer to **Table 3.2**.

## Aspect Ratio

Input and Output Aspect Ratio conversion on the UDC-8225A can be performed using the following values:

- Auto — Based on input/output format (SD 4:3, HD 16:9)
- 4:3
- 16:9
- 14:9

Aspect Ratio Conversion can be configured using the Full Screen mode, Zoom mode, Letter/Pillar mode, or the Panoramic mode. Each mode is outlined in the following sections.

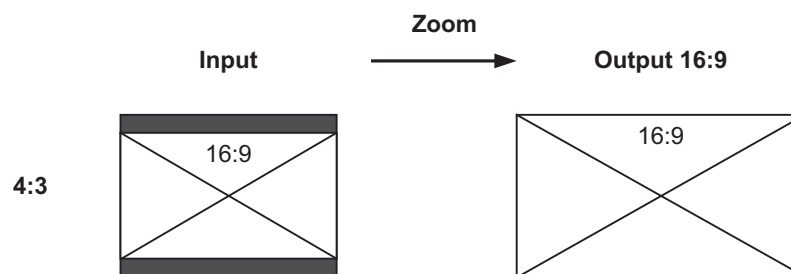
### Full Screen Mode

Conversion stretches the input anamorphically to fill output. This is the default setting.

### Zoom Mode

Conversion preserves proportions and ensures that the entire output is filled. This results in parts of the input image being cropped out. When converting from HD to SD, the sides of the input are cropped; when converting from SD to HD, the top and bottom of the input are cropped.

For example, the following figure demonstrates the result of aspect ratio conversion using the Zoom mode when converting from SD to HD.

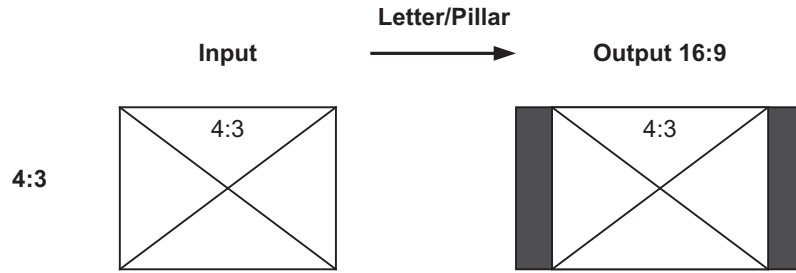


*Figure 3.3 Example of Zoom Aspect Ratio Conversion*

### Letter / Pillar Mode

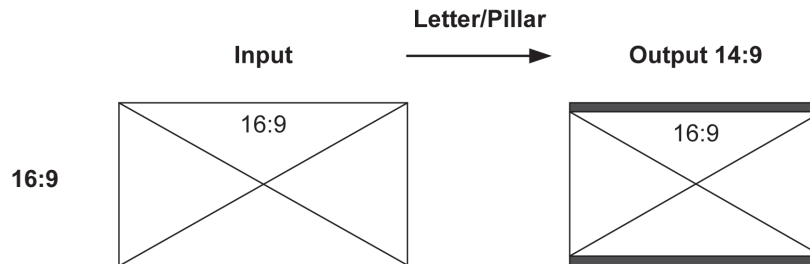
Conversion preserves the proportions and ensures that the entire input image is displayed on the output. The unused portion of the output image can be filled with black in either Letter Box or Pillar Box, depending on the input and output format, or be filled with content using the Wings Input licensed option. Refer to the section “**Wings Input Setup**” on page 3-7 for details.

For example, when converting 4:3 to 16:9 using Letter/Pillar, the video is pillar-boxed on output.



**Figure 3.4** Example of Pillar Box Aspect Conversion

When converting 16:9 to 14:9 using Letter/Pillar, the video is letter-boxed on output.



**Figure 3.5** Example of Letter Box Aspect Conversion

### Panoramic Mode

Conversion maps the full input image onto the full output image. However, the scale factors vary spatially across the image. Proportions are preserved near the center of the image, but there is distortion near the edges of the image.

## Output Format Reference Compatibility

Your UDC-8225A can lock the Output format to a selectable reference source with adjustable offset, and function as a frame synchronizer. It is possible to select from the following sources:

**Table 3.2** Output/Reference Compatibility

Reference	Output					
	480i/59.94	720p/59.94	1080i/59.94	576i/50	1080i/50	720p/50
480i/59.94	✓	✓	✓			
720p/59.94	✓	✓	✓			
1080i/59.94	✓	✓	✓			
576i/50				✓	✓	✓
1080i/50				✓	✓	✓
720p/50				✓	✓	✓

For further information on configuring and locking output references, refer to “**Timing Menus**” on page 4-5.

## Auto Detect Input

The UDC-8225A automatically detects the input video format and provides the requested conversion. When the UDC-8225A detects a change in input video format, it sets the output to black (or blue) for a few frames to allow the conversion hardware to reconfigure and stabilize on the new format. This feature includes the following options:

- **Auto Detect Input Fast** — The output is set to black immediately when the format change is detected. This provides the quickest and cleanest switch. This is the default setting.
- **Auto Detect Input Slow** — The input is set to flywheel for approximately 1 frame before setting the output to black and re-configuring the conversion hardware. This provides greater tolerance for errors in the input video.

## Wings Input Setup

The Wings Input licensed feature allows you to insert content into the unused portion of the raster of the Letter Boxed and/or Pillar Boxed areas of the converted output. This content is referred to as the Wings video input. For information on using the menu systems, refer to the section “**Setup Menus**” on page 4-5



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**Note** — *You must install the Wings Input licensed feature before you can insert the Wings video input or configure the parameters discussed in this section. Refer to the section “**Installing a License Key**” on page 2-6 for details.*

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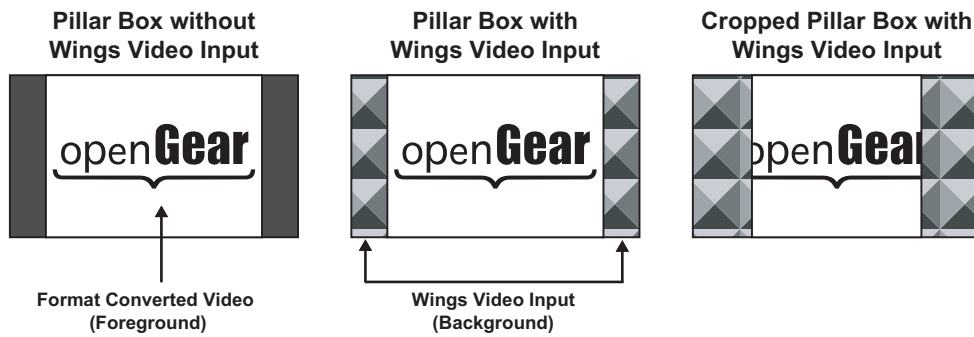
## Selecting Video Formats

When selecting a video format for the Wings video input:

- the Wings Input feature is only available on the output of the UDC-8225A when the Aspect Ratio of the card output is in the Letter/Pillar mode. Refer to the section “**Letter / Pillar Mode**” on page 3-5 for information on using these modes.
- the video format of the Wings video input must match the output format selected on the UDC-8225A card. For information on selecting an output format, refer to **Table 3.2**.
- if there is a mismatch between the video format of the Wings video input and the selected output format, an error is indicated on the UDC-8225A card. For information on the LEDs status displays, refer to **Table 3.1**.

## Cropping

The **Wings Crop** menu option allows you to reduce the foreground (format converted) image by removing parts of the image, depending on the mode selected. When in Letter Box mode, a percentage of the top and bottom edges of the foreground image are cropped. When in Pillar Box mode, a percentage of the foreground sides are cropped. (**Figure 3.6**) Regardless of the mode selected, the Aspect Ratio of the foreground image remains unchanged.



**Figure 3.6** Wings Video Input — Pillar Box Mode

## Output

The output of the UDC-8225A is timed to the selected reference but allows timing adjustments. Timing adjustments are made using the timing adjustment controls, and only affect the video on the SDI input. However, the Wings video input cannot have its timing adjusted in this manner, and so it must be synchronous to the output of the UDC-8225A. If it is not, a horizontal shift in the inserted Wings video input will occur.

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# Closed Caption Support

The **VANC** tab in DashBoard allows you to select which line the Closed Caption data is inserted on, and which VANC line will pass through. Note that all other VANC information is stripped. Field and frame line numbers depend on the video format the switcher is operating in.

## Overview

This section briefly summarizes the closed caption data support features of the UDC-8225A.

### CEA-708 Data

When using CEA-708 data:

- the UDC-8225A decodes any CEA-708 caption distribution packets (CDPs) from the input video and embeds the same data in the output video. This function is provided for all supported input and output video formats.
- the CDP is reformatted as required based on frame rate to maintain the correct CEA-708 transport channel data rate (9600 bps) as specified by SMPTE 334-2. The UDC-8225A removes any time code information in the CDP.

### VANC Pass Support

The UDC-8225A passes VANC when the input format equals the output format. Specific format behaviors are as follows:

- When using SD formats, the luma and chroma for the specified line is passed.
- When using 720p formats, the luma for the specified line is passed.
- When using 1080i formats, the luma for the specified line is passed as well as for the corresponding line in the second field (chosen line +563).

### 480i 59.94 Input Formats

When using an 480i 59.94 input format:

- the UDC-8225A decodes the CEA-608 data from the digitized Line 21 and Line 284 video.
- if there is no input 708 packets, the CEA-608 byte pairs decoded from Line 21 are translated to native 708 DTVCC format, and embedded along with the original 608 data in the output CDPs.
  - › CC1 is translated and encoded as DTVCC Service #1.
  - › CC3 is translated and encoded as DTVCC Service #2.
  - › CC2 and CC4 are not translated.
  - › Such translation follows CEA-708-C section 8.11 and supports the standard character sets described in CEA-608-D section 6.4.1.

### 480i 59.94 Output Formats

When using an 480i 59.94 output format, the UDC-8225A encodes CEA-608 byte pairs into the Line 21 (and 284) digital video, to ensure that Closed Caption information is available when the signal is encoded as NTSC for a downstream DAC.

The source of the CEA-608 data, in order of preference is as follows:

1. Line 21 of input video (480i 59.94 input only).
2. CEA-608 byte pairs contained within the CEA-708 CDP.

## Using with Frame Sync (DTVCC Pass Through)

The UDC-8225A ensures continuity of CEA-608 data and/or DTVCC data during the frame drop or repeat.

## Using when Switching (CEA-608 Captions)

When switching, the UDC-8225A:

- monitors the CDP sequence number of incoming CEA-708 data to detect discontinuities in the DTVCC transport stream.
- propagates any sequence-number discontinuity to the outgoing DTVCC data, to alert downstream equipment of the change.

## VANC Setup

This section briefly outlines how to configure the closed caption support and pass through features of the UDC-8225A using the **VANC** tab in DashBoard.

- **Closed Caption Support** feature — DashBoard enables you to embed the closed caption data from the input into the output stream. You can select which line, depending on the video format, to embed the data on.
- **Pass Through** feature — DashBoard enables you to select which line in the vertical blanking area can be passed. This allows you to protect and pass VANC information with the video signal when the input format matches the output format.
- **Enabling both features** — If you enable both features,
  - › for the same line, precedence is given to the Closed Caption Support.
  - › and the line passed includes Closed Caption information, this information will be corrupted.

Use the following procedure to configure the closed caption support and pass through features:

1. From the **Tree View** in DashBoard, double-click a device to display its **Device** tab in the **Device View**.
2. Select the **VANC** tab.
3. To configure the **Closed Caption Support**:
  - Ensure the **Enabled** check box is selected in the **Closed Captioning** area.
  - If the output stream is in an SD video format, use the **SD 708 Output Line** field to select the line you want to embed the closed captioning data in.
  - If the output stream is in an HD video format, use the **HD 708 Output Line** field to select the line you want to embed the closed captioning data in.
4. To configure the **Pass Through** feature:
  - Ensure the **Enabled** check box is selected in the **Pass Through** area.
  - Ensure that the input video format matches the output video format. You can verify the formats by selecting the **Signal** tab in the **Device View**.
  - If the output stream is in an SD video format, use the **SD Pass Thu Line** field to select the line, in the output stream, to pass from input to output when the input format matches the output format.

- If the output stream is in an HD video format, use the **HD Pass Thru Line** field to select the line, in the output stream, to pass from input to output when the input format matches the output format.

This completes the procedure for configuring the closed caption support and pass through features.



# Menus

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## In This Chapter

The DashBoard Control System™ enables you to monitor and control openGear frames and cards from a computer. DashBoard communicates with other cards in the DFR-8300 series frame through the Network Controller Card. This chapter provides a summary of the menus available for the UDC-8225A.

The following topics are discussed:

- SNMP Monitoring and Control
- DashBoard Menus for the UDC-8225A
- Heads-up Display

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## SNMP Monitoring and Control

The Network Controller Card in the DFR-8300 series frame provides optional support for remote monitoring of your frame and the UDC-8225A using Simple Network Management Protocol (SNMP), which is compatible with many third-party monitoring and control tools.

Refer to your UDC-8225A Management Information Base (MIB) file for a breakdown of SNMP controls on this card. Refer to the *DFR-8300 Series User Manual* for additional information on SNMP Monitoring and Control.

# DashBoard Menus for the UDC-8225A

This section briefly summarizes the menus, items, and parameters available from the DashBoard Control System™ for the UDC-8225A. Default values are indicated with an asterisk (\*).

## Status Tab

Table 4.1 summarizes the Status tab parameters available in DashBoard for the UDC-8225A.

**Table 4.1 Status Tab Items**

Tab Title	Item	Parameters	Description
<b>Product (Read-only)</b>	Product	UDC-8225A	
	Supplier	Ross Video Ltd.	
	Board Rev	##	
	Serial Number	#####	Indicates the card serial number
	Software Rev	##.##	Indicates the software version
	Firmware Rev	#.###	Indicates the firmware version
	Converter Rev	#.##	
<b>Hardware (Read-only)</b>	HW Status	Green - OK	Normal operation; no hardware errors
		Red	Card is connected to the wrong rear module model or there is an internal error
	Rear Module	#	Type of rear module in the slot
	Voltage (mV)	#	Supply Voltage
	Current (mA)	#	Current consumption of card
	CPU Headroom	#	Processing power available
	RAM Available	#!/##	On-board processing memory available
	EE bank	#	Storage count
<b>Signal (Read-only)</b>	Signal Status	Green	Indicates that the card is functioning normally and no anomalies are detected
		Red	One the following errors has occurred: <ul style="list-style-type: none"> <li>• the reference does not match the input standard or is not available</li> <li>• the reference is unlocked</li> <li>• there is no valid input present</li> </ul>
		Yellow	One of the following errors have occurred: <ul style="list-style-type: none"> <li>• there is an audio error</li> <li>• the Wings Input feature is enabled, but the video format is incorrect</li> </ul>
	Reference	Frame 1	The card is using Frame Reference 1.
		Frame 2	The card is using Frame Reference 2.
		Local	The card is using the reference on BNC 10.

**Table 4.1 Status Tab Items**

Tab Title	Item	Parameters	Description
<b>Signal (Read-only)</b>	Reference Format	480i/59.94	Indicates the video format of the reference.
		576i/50	
		1080i/59.94	
		1080i/50	
		720p/59.94	
		720p/50	
	Genlock State	No reference	Indicates the state of the card and whether a reference is used
		Incompatible	
		Locking	
		Locked	
		Freeze	
	Input Format	480i/59.94	Indicates the video format of the input signal.
		576i/50	
		1080i/59.94	
		1080i/50	
		720p/59.94	
		720p/50	
	Output Format	480i/59.94	Indicates the video format of the output signal.
		576i/50	
		1080i/59.94	
		1080i/50	
720p/59.94			
720p/50			
Audio Group Status	#X	Audio is not present when the Audio Group is set to Pass.	
	#-	Audio is not present when the Audio Group is set to Mute, Test Tone or Disable.	
	#S	Synchronous audio is present on group.	
	#A	Asynchronous audio is present on group.	
Wings Format <sup>a</sup>	Format must be set to the same format as the output.		
<b>CC (Read-only)</b>	Input Line 21	Signal Present	Indicates if there is VBICC present when using an 480i input format
		No Signal Present	
	Input 708	No Signal	Indicates the status of the VANC closed caption data
		608 Present	
		708 Present	
		608 & 708 Present	

a. This information is display only when the Wings Input licensed option is installed.

## Setup Menu

Table 4.2 summarizes the **Configuration Menu** options available in DashBoard.

**Table 4.2 Configuration Menu Items**

Tab Title	Item	Parameters	Description
Setup	Monitor Format	Reference*	Formatting is determined by the selected video reference: <ul style="list-style-type: none"> <li>• 50Hz — Monitoring format is PAL</li> <li>• 59.94Hz — Monitoring format is NTSC</li> </ul> The monitor displays a green background.
		Video	Format is determined by the output video format setting; the video content is shown behind the menu.
		PAL	Monitoring format is PAL regardless of reference or output; displays a green background.
		NTSC	Monitoring format is NTSC regardless of reference or output; displays a green background.
	Edit Permission	Unlocked*	Menu options are unlocked and editable
		Locked	All menu items, except this one, are locked and read-only.
	Factory Defaults	Reset	Resets all parameters to factory defaults.
	Wings License field		Indicates if the software key for the Wings Input licensable features is installed.

## Timing Menu

Table 4.3 summarizes the **Timing Menu** options available in DashBoard for the UDC-8225A.

**Table 4.3 Timing Menu Items**

Tab Title	Item	Parameters	Description
Timing	Reference	Frame 1*	Card uses the external reference connected to Frame Reference 1.
		Frame 2	Card uses the external reference connected to Frame Reference 2.
		Local	Card uses the source on BNC 10.
	Horizontal Delay <sup>a</sup>	0* to 2639 <sup>b</sup>	Delay set in pixels.
	Vertical Delay	0* to 1124 <sup>c</sup>	Delay set in lines.
	Minimum Delay	Reset	Resets all timing values to 0 lines, 0 pixels.

- The precision of the Horizontal Delay after reset or power-up is +/- 1 pixel.
- The maximum value depends on the number of maximum pixels per line for the selected output format.
- The maximum value depends on the total number of lines per frame for the selected output format.

## Output Menu

Table 4.4 summarizes the **Output Menu** options available in DashBoard for the UDC-8225A.

**Table 4.4 Output Menu Items**

Tab Title	Item	Parameters	Description
<b>Output</b>	Output Format	480i/59.94	Selects the video format of the output signal.
		576i/50	
		1080i/59.94	
		1080i/50	
		720p/59.94	
		720p/50	
	Input Aspect Ratio	Auto*	Card automatically selects 16:9 for HD, 4:3 for SD.
		4:3	Sets the input aspect ratio to the selected value.
		16:9	
		14:9	
	Output Aspect Ratio <sup>a</sup>	Same parameters as above	
	Aspect Conversion	Full Screen*	Input is stretched anamorphically to fill the output.
		Panoramic	Input scaling varies spatially to preserve proportions in the center.
		Letter/Pillar	Input is mapped to output with correct proportions; unused space on output is filled with black. This option must be selected when using the Wings Input feature.
		Zoom	Input is mapped to output with correct proportions; unused space on output is filled with black. This option must be selected when using the Wings Input feature.
	Autodetect Input	Fast*	Output is immediately set to black when a format change is detected.
		Slow	Input is set to flywheel for approximately 1 frame before setting the output to black and re-configuring the conversion hardware.
	Loss of Input	Black*	Sets the output to black when there is a loss of input.
		Blue	Sets the output to blue when there is a loss of input.

**Table 4.4 Output Menu Items**

Tab Title	Item	Parameters	Description
Output	Test Pattern	SMPTE Bars	Output is set to SMPTE color bars.
		75% Bars	Output is set to 75% full field colors.
		Disabled*	The test pattern is not used for the selected output.
	Wings <sup>b</sup>	Enable	Enables the Wings Insertion.
		Disable	Disables the Wings Insertion.
	Wings Crop <sup>c</sup>	0%* to 5%	Crops the format converted image.

- The Input Aspect Ratio and the Output Aspect Ratio must be set to different parameters, or AUTO, in order to use the Wings Input licensed option.
- This option is only available when the Wings Input licensed option is installed.
- This option is only available when the Wings Input licensed option is installed.

## Proc Amp Menus

Table 4.5 summarizes the Proc Amp Menu options available in DashBoard for the UDC-8225A.

**Table 4.5 Proc Amp Menu Items**

Tab Title	Item	Parameters	Description
Proc Amp	Video Gain	0 to 200% <sup>a</sup>	Adjusts the output video gain level.
	Chroma Gain	0 to 200% <sup>a</sup>	Adjusts the card output chroma gain percentage ( $C_b$ and $C_r$ simultaneously).
	CB Gain	0 to 200% <sup>a</sup>	Adjusts the output $C_b$ gain.
	Black Offset	-60 to 160 <sup>b</sup>	Adjusts the output black level of the card.
	Proc Amp	Reset	Resets all Proc Amp controls to the factory default values.
	Black Clip	Disabled	Enables the card to pass Superblack if luminance is less than 40 Hex.
		Enabled*	Enables clipping of the Superblack levels.
Blank # Active Lines (SD Inputs only)	0* to 3 <sup>c</sup>	Selects the number of top lines of the input active video to blank, and not modifying the vertical interval levels.	

- The default value is 100.
- The default value is 0.
- The Blank Number of Active Lines settings should only be enabled when an SD input is present.

## Audio Menus

Table 4.6 summarizes the **Audio Menu** options available in DashBoard for the UDC-8225A.

**Table 4.6 Audio Menu Items**

Tab Title	Item	Parameters	Description
Audio	Audio Group 1	Disable	Disables audio group on output
		Pass*	Passes audio group through to output with set delay
		Mute	Mutes audio group on output
		Test Tone	Audio group provides test tone on output
	Audio Group 2	Same parameters as above	
	Audio Group 3	Same parameters as above	
	Audio Group 4	Same parameters as above	
	Group 1 Test Tone	1000 Hz*	Specifies the test tone for output
		2000 Hz	
		3000 Hz	
		4000 Hz	
		5000 Hz	
	Group 2 Test Tone	Same parameters as above	
	Group 3 Test Tone	Same parameters as above	
	Group 4 Test Tone	Same parameters as above	
Audio Delay	0* to 1000 ms	Selects the amount of additional audio delay to add to the input audio before it is embedded	
Audio	Reset	Resets the audio settings to the factory default values	

## VANC Menus

Table 4.7 summarizes the VANC Menu options available in DashBoard for the UDC-8225A.

**Table 4.7 VANC Menu Items**

Tab Title	Item	Parameters	Description
<b>Closed Captioning</b>	Closed Captioning	Disabled	No closed captioning data is embedded in the output stream.
		Enabled*	The closed captioning data from the input is embedded in the output stream; use in conjunction with the <b>SD 708 Output Line</b> or <b>HD 708 Output Line</b> options.
	SD 708 Output Line	12* to 19	Selects the line that you want to embed the closed captioning data on. Use this setting when the output is in a SD video format.
	HD 708 Output Line	9* to 20	Selects the line that you want to embed the closed captioning data on. Use this setting when the output is in a HD video format.
<b>Pass Through</b>	Pass Through	Disabled*	Information in the selected line is stripped from the video signal.
		Enabled	The information in the selected line remains in with the video signal; use in conjunction with the <b>SD Pass Thu Line</b> or <b>HD Pass Thu Line</b> options. Pass through will only be operational when the output format is the same as the input format.
	SD Pass Thu Line	12* to 19	Selects the line to copy the closed captioning data to the output stream. Use this setting when the output is in a SD video format.
	HD Pass Thu Line	9* to 20	Selects the line to copy the closed captioning data to the output stream. Use this setting when the output is in a HD video format.

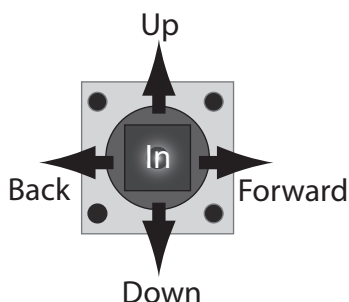
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## Heads-up Display

This section briefly describes how to access and navigate through the menus in the HUD. The Heads-up Display (HUD) feature is displayed on a separate composite monitoring output. When activated, the card status and parameters can be viewed and adjusted using the card-mounted menu switch and an easy to use menu system.

### Menu Switch (SW3) Overview

The **Menu Switch (SW3)** is used to navigate the UDC-8225A menu system and configure item parameters. The **Menu Switch** is a five-direction, square, finger joystick.



**Figure 4.1** Menu Switch (SW3)

With the card-edge facing you, use the following menu switch actions and **Figure 4.1** to navigate the menu parameters:

- **In** — pressing once brings the menu system onto the monitor output, holding for two seconds exits the menu system. This position is also used to enter the menu values and parameters.
- **Up** — pressing once selects the menu, item, or value *above* the current selection, holding scrolls to the top of the available selections.
- **Down** — pressing once selects the menu, item, or value *below* the current selection, holding scrolls to the bottom of the available selections.
- **Forward** — pressing once moves from menu to item, or item to value.
- **Back** — pressing once moves from value to item, or item to menu.

### Layout and Navigation

The Heads-Up Display menu system is organized as follows:

- The top line of the menu display indicates the product number, name, and frame slot location.
- The menus are listed in the left column.
- The items and values, of the selected menu, are listed in the right columns.
- The active selected menu, or parameter is reverse highlighted. As you navigate through the items and parameters, the active menu and item text is set in yellow.
- Below the items are two lines of help text informing you of possible button presses to change the card configuration.
- At the bottom of the display are source details. This information is continuously updated.



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**Note** — Do not power down the card before ensuring that all edited parameters have been saved.

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# Specifications

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## In This Chapter

This chapter provides technical specification details on the UDC-8225A. Note that specifications are subject to change without notice.

The following topics are discussed:

- Technical Specifications

# Technical Specifications

This section includes the technical specifications for the UDC-8225A.

**Table 5.1 UDC-8225A Technical Specifications**

Category	Parameter	Specification
<b>Serial Digital Video Inputs</b>	Number of Inputs	1
	Number of Inputs with Wings Input option installed	2
	Data Rates and SMPTE Standards Accommodated	480i/59.94 (SMPTE 259M) 576i/50 (SMPTE 259M) 1080i/59.94 (SMPTE 259M) 1080i/50 (SMPTE 259M) 720p/59.94 (SMPTE 259M) 720p/50 (SMPTE 259M)
	Impedance	75ohm terminating
	Return Loss	>13dB to 1.485GHz
	Equalization	Over 90m of Belden 1694A cable @ 1.485Gbps or up to 240m @ 270Mbps
	<b>Serial Digital Video Outputs</b>	Number of Outputs
Number of Outputs with Wings Input option installed		1 reclocked copy of the input
		1 reclocked copy of the Wings input
		2 processed SDI outputs
Impedance		75ohm
Return Loss		>15dB to 750MHz, 10dB to 1.485GHz
Signal Level		800mV ±10%
DC Offset		0V ±50mV
Rise and Fall Time (20-80%)	700ps Typical (270Mbps) 120ps Typical (1.485Gbps)	
Overshoot	<8%	
<b>Power</b>	Power Consumption	13.5W

Specifications are subject to change without notice.

# Service Information

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## In This Chapter

This chapter contains the following sections:

- Troubleshooting Checklist
- Warranty and Repair Policy

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# Troubleshooting Checklist

Routine maintenance to this openGear product is not required. In the event of problems with your UDC-8225A, 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 card, 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. **Input Signal Status** — Verify that source equipment is operating correctly and that a valid signal is being supplied.
4. **Output Signal Path** — Verify that destination equipment is operating correctly and receiving a valid signal.
5. **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 UDC-8225A.

Use the following procedure to reload the software on a UDC-8225A:

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 button.
  - The **POWER 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 UDC-8225A via the connection on the rear of the frame.

This completes the procedure for reload the software on a UDC-8225A.

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## Warranty and Repair Policy

The UDC-8225A 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 UDC-8225A 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 UDC-8225A 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 UDC-8225A 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 UDC-8225A 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 UDC-8225A, 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 UDC-8225A. 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.



**Notes:**



# 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

<b>PHONE</b>	<b>General Business Office and Technical Support</b>	613 • 652 • 4886
	<b>After Hours Emergency</b>	613 • 349 • 0006
	<b>Fax</b>	613 • 652 • 4425
<b>E-MAIL</b>	<b>General Information</b>	solutions@rossvideo.com
	<b>Technical Support</b>	techsupport@rossvideo.com
<b>POSTAL SERVICE</b>	<b>Ross Video Limited</b>	8 John Street, Iroquois, Ontario, Canada K0E 1K0
	<b>Ross Video Incorporated</b>	P.O. Box 880, Ogdensburg, New York, USA 13669-0880

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