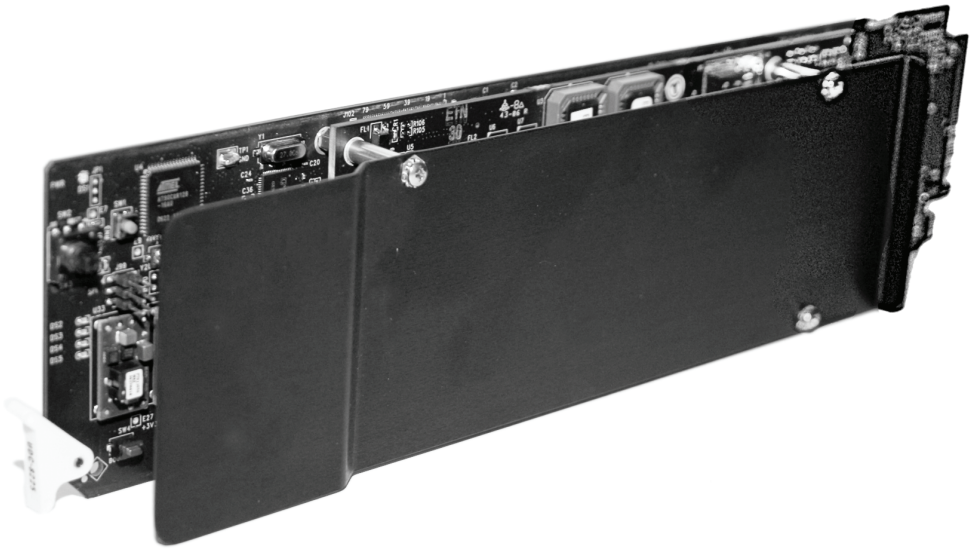
Ross Video Limited

UDC-8225(-W)

MD-SDI Up/Down/Cross Converter

User Manual



Live Production Technology™

openGear

Ross Part Number: 8225DR-004
Issue: 02A

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

- Ross Part Number: **8225DR-004**
- Document Issue: **02A**
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Trademarks

Important Regulatory and Safety Notices

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

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

Symbol Meanings

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

Warning

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

Caution

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

Notice

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

ESD Susceptibility

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

Important Safety Instructions

Caution

This product is intended to be a component product of the openGear 8000 series frame. Refer to the openGear 8000 series frame User Manual for important safety instructions regarding the proper installation and safe operation of the frame as well as it's component products.

Warning

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

Warning

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

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

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

Only use attachments/accessories specified by the manufacturer.

EMC Notices

US FCC Part 15

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

Notice

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

CANADA

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

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

EUROPE

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

INTERNATIONAL

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

Notice

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

Maintenance/User Serviceable Parts

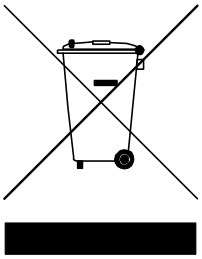
Routine maintenance to this openGear product is not required. This product contains no user serviceable parts. If the module does not appear to be working properly, please contact Technical Support using the numbers listed under the "Contact Us" section on the last page of this manual. All RossGear products 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.

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Introduction

In This Chapter

This chapter contains the following sections:

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

A Word of Thanks

Congratulations on choosing the openGear **UDC-8225 MD-SDI Up/Down/Cross Converter**. The UDC-8225 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-8225 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-8225, 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-8225 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-8225 supports all popular standard definition and high definition video formats, with or without four groups (16 channels) of embedded 48 KHz 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-8225 includes an additional input which is used to insert additional content into 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-8225 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 resized to a number of standard aspect ratios.

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

Any openGear 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 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-8225 using the DashBoard Control System Software which also enables you to install licensed software features such as the Wings Input option.

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

Functional Block Diagram

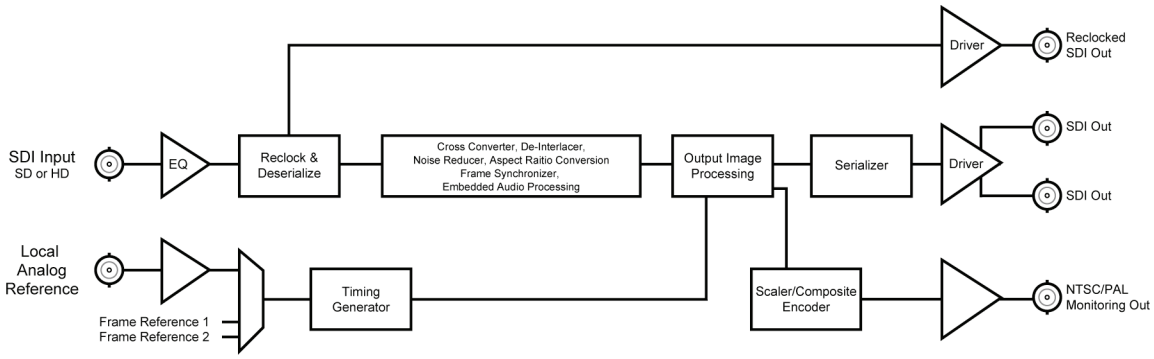

Figure 1. Simplified Block Diagram of UDC-8225 Functions

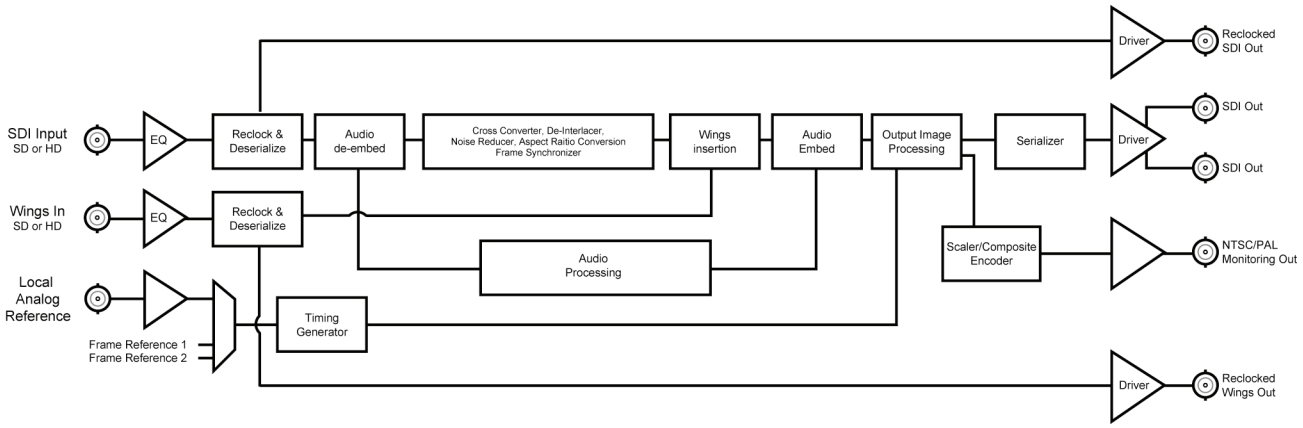

Figure 2. Simplified Block Diagram of UDC-8225 Functions with Wings Input

Features

The following features make the UDC-8225 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 (270Mb/s) and HD (1.485Gb/s) formats:
  - 480i/59.94
  - 720p/59.94
  - 1080i/59.94
  - 576i/50
  - 720p/50
  - 1080i/50
- 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
- Handles 4 groups (16 channels) of synchronous embedded audio on the incoming video stream:
  - 20-bit 48 KHz synchronous on SD video formats
  - 24-bit 48 KHz synchronous on HD video formats
- Compliance with SMPTE 272M-A 48kHz 24-bit
- Compliance with SMPTE 299M-2004 48 kHz 24-bit
- Compliance to AES-3id 2001, and AES-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
- 5 year transferable warranty
- Fully compliant with openGear specifications

Documentation Terms

The following terms are used throughout this guide:

- "**Frame**" refers to the DFR-8300 series frame that houses the **UDC-8225** card, both cooling and non-cooling versions, as well as any openGear frames.
- All references to the **DFR-8310** also include the **DFR-8310-C** versions with the cooling fan option. See the respective User Manuals for details.
- "**Operator**" and "**User**" refer to the person who uses the **UDC-8225**.
- "**Board**", and "**Card**" refer to the **UDC-8225** card itself, including all components and switches.
- "**System**" and "**Video system**" refer to the mix of interconnected production and terminal equipment in which the **UDC-8225** operates.

Installation and Setup

In This Chapter

This chapter contains the following sections:

- Static Discharge
- Unpacking
- Local Reference Termination Jumper
- Rear Module Installation (Optional)
- Board Installation
- BNC Labels
- Cable Connections
- Installing Licensed Software Keys

Static Discharge

Whenever handling the UDC-8225 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 wearing synthetic fiber clothing. Always exercise proper grounding precautions when working on circuit boards and related equipment.

Unpacking

Unpack each UDC-8225 you received from the shipping container, and check the contents against the packing list to ensure that all items are included. If any items are missing or damaged, contact your sales representative or Ross Video directly.

Local Reference Termination Jumper

If you have elected to use a local reference signal, it must be terminated on the card with jumper **J20**. To terminate the local reference on the card, see **Figure 3**:

Figure 3. Reference Termination Jumper

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.

Rear Module Installation (Optional)

The UDC-8225 requires a 10-BNC rear module, and is also compatible with the 100-BNC rear module on the DFR-8310-BNC frame. If you are installing the UDC-8225 in an openGear DFR-8310-BNC frame, or the 10-BNC rear module is already present, skip this section.

If you received an RM-8300-B Rear I/O Module with your UDC-8225, you will need to install the I/O module in your DFR-8300 series frame before you can install the UDC-8225 in the frame, or connect cables to the card frame slot you have chosen for the UDC-8225.

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

1. Refer to the DFR-8300 series frame User Manual to ensure that the frame is properly installed according to instructions.
2. On the rear of the frame, locate the card frame slot.
3. Remove the Blank Plate from the rear of the selected card frame slot. If there is no Blank Plate installed, proceed to the next step.
4. As shown in **Figure 4**, seat the bottom of the rear module in the seating slot at the base of the back plane of the frame.

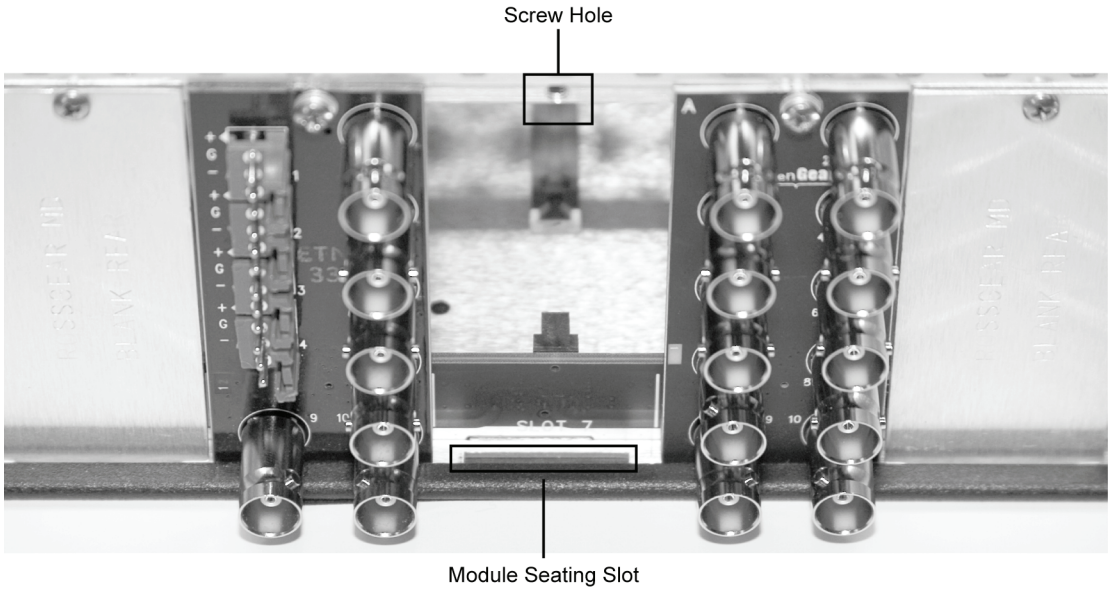

Figure 4. Rear Module Installation (UDC-8225 not shown)

5. Align the top hole of the rear module with the screw hole on the top edge of the back plane of the frame.
6. Using a Phillips driver, and the supplied screw, fasten the rear module to the DFR-8300 series back plane. Do not over tighten.
7. Ensure proper frame cooling and ventilation by having all rear frame slots covered with rear I/O modules or Blank (metal) Plates. If you need Blank Plates, refer to the chapter, "**Ordering Information**" in your frame User Manual, and contact your Ross Video sales representative.

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

Board Installation

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

Notice

Due to power consumption and heat dissipation requirements, the UDC-8225 *must only* be installed in a frame with the cooling fan option installed.

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

   Due to slot space requirements, a maximum of five UDC-8225 modules can be installed in a DFR-8300 series frame. Ross Video recommends locating the UDC-8225 modules in Slots 1, 3, 5, 7 and 9. Note that Slot 1 is the left most slot as you look into the frame from the front.

   The blocker plate mounted on the UDC daughter card is designed to prevent the accidental installation of any other cards in right-hand adjacent card slots.

2. After selecting the desired card frame slot, hold the UDC-8225 card by the edges and carefully align the card edges with the slots in the frame. Then fully insert the card into the frame until the rear connection plugs are properly seated on the midplane and rear modules.

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

BNC Labels

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

Cable Connections

This section provides information for connecting cables to the installed BNC rear modules of the UDC-8225 card on the DFR-8300 series frame backplane. Connect the input and output cables according to the following diagram. The inputs are internally terminated in 75 ohms. It is not necessary to terminate unused outputs.

Refer to **Figure 1** and **Figure 2**, for representations of signal flow through the rear module connector.

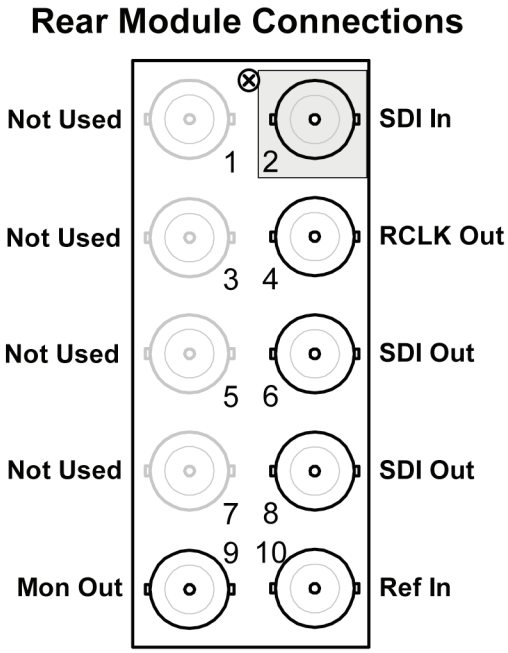

Figure 5. BNC Designations for the UDC-8225 Rear Module

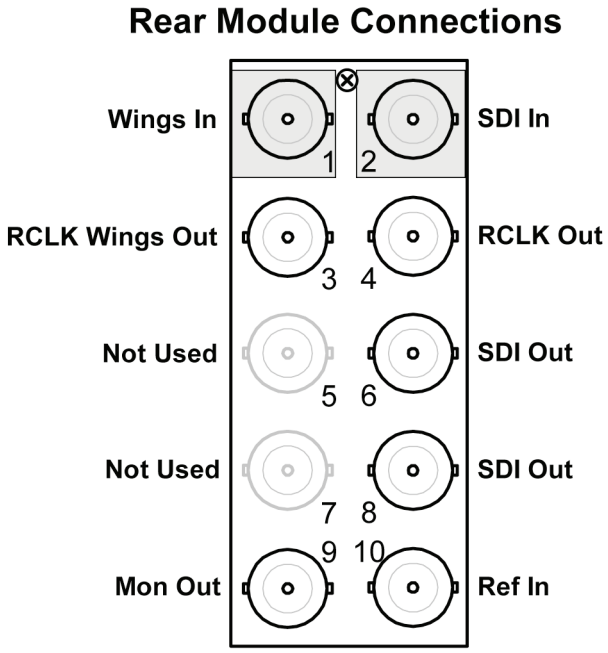

Figure 6. BNC Designations for the UDC-8225 with Wings Input Rear Module

Installing Licensed Software Keys

This section provides information on installing licensed software keys for the UDC-8225 card, such as the Wings Input licensed feature, using the DashBoard Control System Software.

Note

Ensure your UDC-8225 card is of a hardware **Issue G**, or higher, before installing software keys.

When installing a software key on the UDC-8225 card using the DashBoard Control System Software:

- You must have the DashBoard Control System Software installed and communicating with the openGear frame that houses the UDC-8225 card you wish to install the licensed software key for. The DashBoard Control System software and manual are available from the Ross Video website.
- Ensure that you are using version 2.0, or higher, of the Dashboard Control System Software. This information is available by selecting **Help ⇨ About DashBoard** from the DashBoard main toolbar.
- Refer to the ***DashBoard User Manual*** for details on using the DashBoard menus.

Installing the Wings Input Software Key

Use the following procedure to install the software key for the Wings Input licensed feature:

1. Open DashBoard on your computer.
2. Open a tab in the Device View of DashBoard for the UDC-8225 card you wish to install the software key for.
3. Select the **Setup** tab in the Device View to display the setup information.
4. Make a note of the Request Code in the Wings License Adapter box.
5. Contact Ross Video Technical Support using the information found in the "**Contact Us**" section of this manual.
    - When you speak to your 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 Wings License Adapter box of the **Setup** tab.
6. Enter the **License Key** in the Wings License Adapter box of the **Setup** tab.
7. When the installation is complete, verify that the following has occured:
    - the **Setup** tab displays "**Licensed**" in the Wings License Adapter field
    - the Wings License Adapter box displays a green background
    - the **Output** tab displays the **Wings Enable** and **Wings Crop** parameters
    - the read-only **Wings Format** field displays in the **Signal** tab.
    - the device status indicator now displays "**UDC-8225-W**" as the name

This completes the procedure for installing the software key for the Wings Input licensed feature. For information on setting up and using the Wings Input feature, refer to the section "**Wings Input Setup**".

User Controls

In This Chapter

This chapter contains a description of the UDC-8225 user controls:

- Card-edge User Controls
- LEDs

Card-edge User Controls

The following are general descriptions of the user controls identified in the figure below.

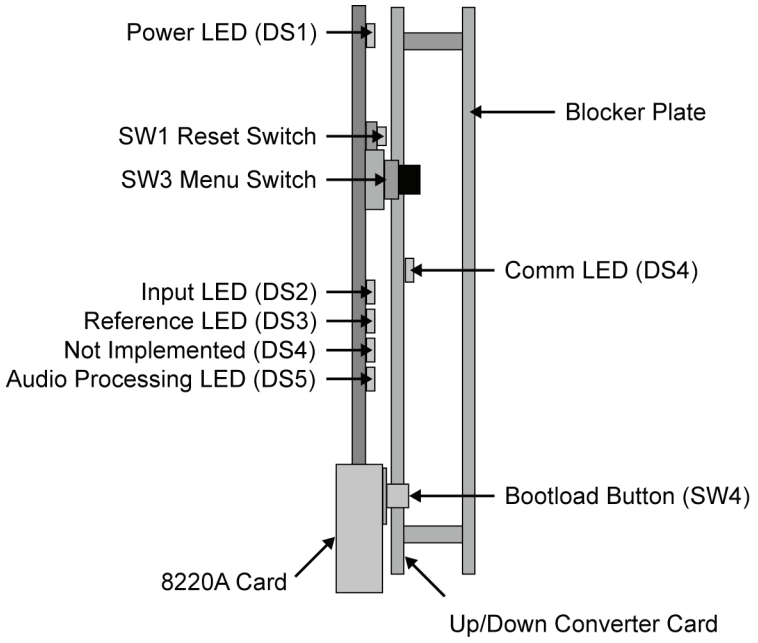

Figure 7. Card-edge User Controls

SW1 — Reset Switch

This button is used for rebooting the card.

SW3 — Menu Switch

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

Refer to Chapter 4, "**Control and Monitoring**" for instructions on using the Menu Switch with the Heads-Up Display.

SW4 — Bootload Button

This button 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. The Bootload process is further described in the "**Service Information**" chapter of this manual.

LEDs

The front-edge of the card features LEDs that display the status of the input signals.

As selections are made in the menus, the LEDs display the status of the input signals. Descriptions are provided in the following table:

Table 1. Selection and Status LED Descriptions

LED	Color	Location	Display and Description
Power	Red/Green/ Orange	DS1 on the 8220A Card	When off, there is no power. When lit and orange, the card is starting up. When lit and green, the card is running with valid input and reference. When flashing green, the boot loader is waiting for software upload. When lit green with flashing orange, there is a signal error (e.g. missing or invalid input or reference. When lit red, the card is not operational.
Video Input OK	Green	DS2 on the 8220A Card	When lit, both the main and Wings video input are valid. When flashing, video is present, but the input format is unsupported. When off, there is no input signal.
Reference Input OK	Green	DS3 on the 8220A Card	When lit, the reference signal is valid. When flashing, the reference is present, but one of the following has occurred: • the format on the main video input is not supported; or • there is a mismatch in formats between the output format selected and the Wings video input. When off, the selected reference is not present.
	N/A	DS4 on the 8220A Card	Not implemented at this time.
Audio Processing OK/Error	Green	DS5 on the 8220A Card	When lit, embedded audio processing is present and valid. When flashing, embedded audio processing is present but contains errors, or has been selected to be passed but is not present.
Comm OK	Green	DS4 on the 8220A Up/Down Converter Daughter Card	When lit, indicates that the daughter card is running and communicating with the main card.

Control and Monitoring

In This Chapter

This chapter provides a detailed explanation of controlling and monitoring your UDC-8225. The following topics are discussed:

- Aspect Ratio Conversion
- Output Format Reference Compatibility
- Wings Input Setup
- Heads-Up Display
- DashBoard Control System Software
- The Menu System
- SNMP Monitoring and Control

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 ratio, refer to **Table 3**.

Aspect Ratio

Input and Output Aspect Ratio conversion on the UDC-8225 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.

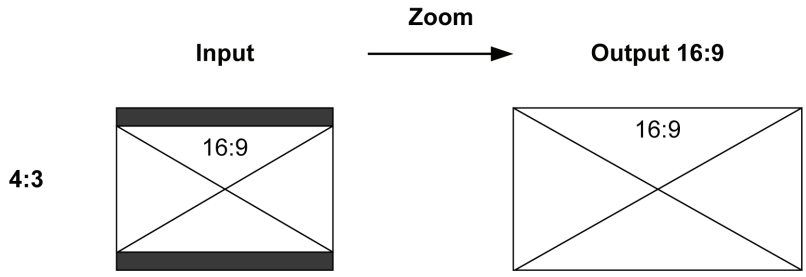

Figure 8. Example of Zoom Aspect Ratio Conversion

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**" for more information.

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

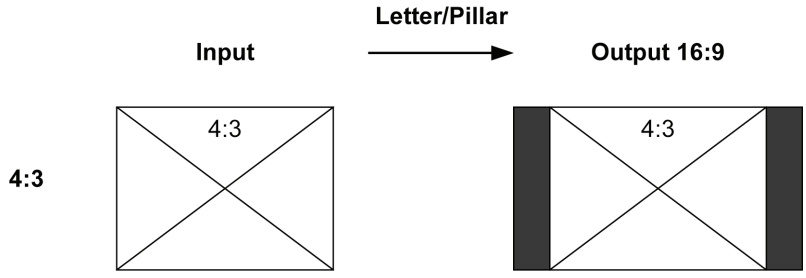

Figure . Example of Pillar Box Aspect Conversion

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

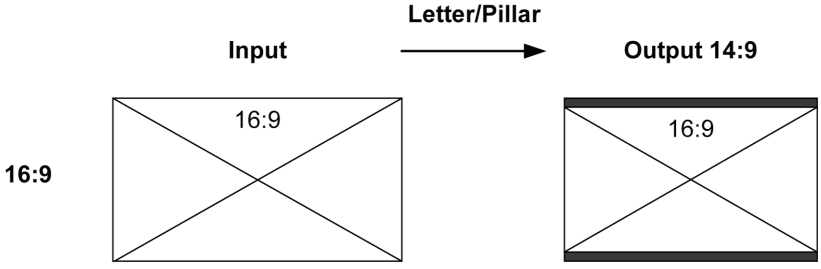

Figure 10. Example of Letter Box Aspect Conversion

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-8225 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 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 **Table 3**.

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 "**Configuration Menus**" of this chapter.

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 Licensed Software Options**" for details.

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-8225 when the Aspect Ratio of the card output is in the Letter/Pillar mode. Refer to the section "**Letter/Pillar Mode**" for information on using these modes.
- the video format of the Wings video input must match the output format selected on the UDC-8225 card. For information on selecting an output format, refer to **Table 3**.

- 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-8225 card. For information on the LEDs status displays, refer to **Table 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, as illustrated in **Figure 11**. Regardless of the mode selected, the Aspect Ratio of the foreground image remains unchanged.

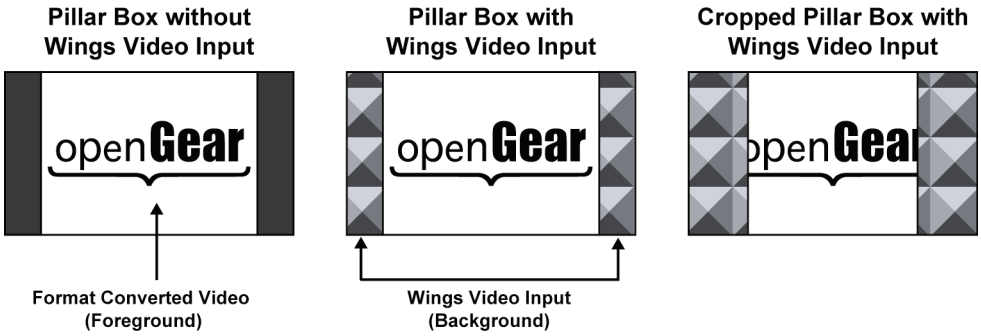

Figure 11. Wings Video Input – Pillar Box Mode

Output

The output of the UDC-8225 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-8225 card. If it is not, a horizontal shift in the inserted Wings video input will occur.

Heads-Up Display

The Heads-Up Display is displayed on a separate composite monitoring output. When activated, card status and parameters can be viewed and adjusted using the card-mounted menu switch and an easy to use menu system.

The following sections describe how to access and navigate through the menus in the Heads-Up Display.

SW3 — Menu Switch

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

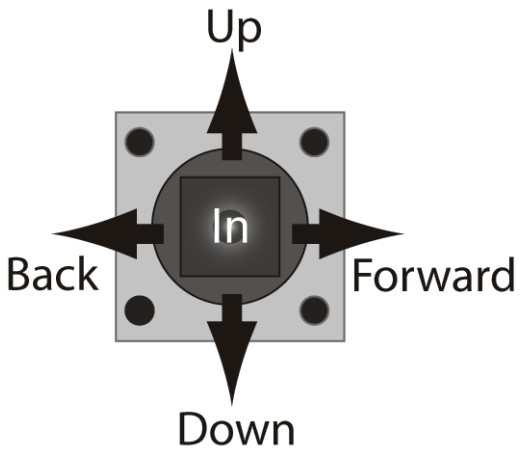

Figure 12. Menu Switch

With the card edge facing you, use the following menu switch actions to navigate the menu and configure 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/parameters.
- **Up** — pressing once selects the menu, item, or value above the current selection, holding scrolls to the top of available selections.
- **Down** — pressing once selects the menu, item, or value below the current selection, holding scrolls to the bottom of 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

Pressing the Menu Switch **In** will display the menu as it was last viewed.

- 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, item, or parameter is reverse highlighted. As you navigate through the items and parameters, the parent menu and item text becomes yellow, indicating which menu and item are active.
- 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 input, output, reference format, and reference source details. This information is continuously updated.

Using the Heads-Up Display

Use the following procedure to configure a menu item parameter using the Heads-Up Display:

1. Press the Menu Switch **In** to bring up the display. The Heads-Up Display is automatically displayed upon initial power up.

   The display appears with the currently selected menu highlighted. Active, changeable parameters appear in yellow. Inactive, read-only parameters appear in gray.

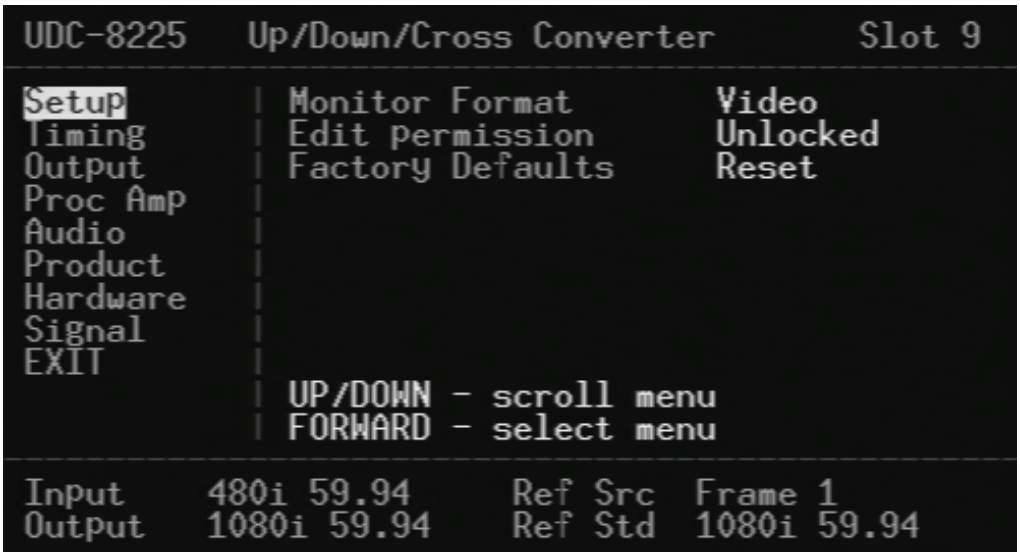

Figure 13. Menu Selected

2. Press **Up** or **Down** on the Menu Switch to scroll to a menu.
3. Press **Forward** on the Menu Switch to select a menu item. The selected menu becomes yellow and the top item is highlighted.

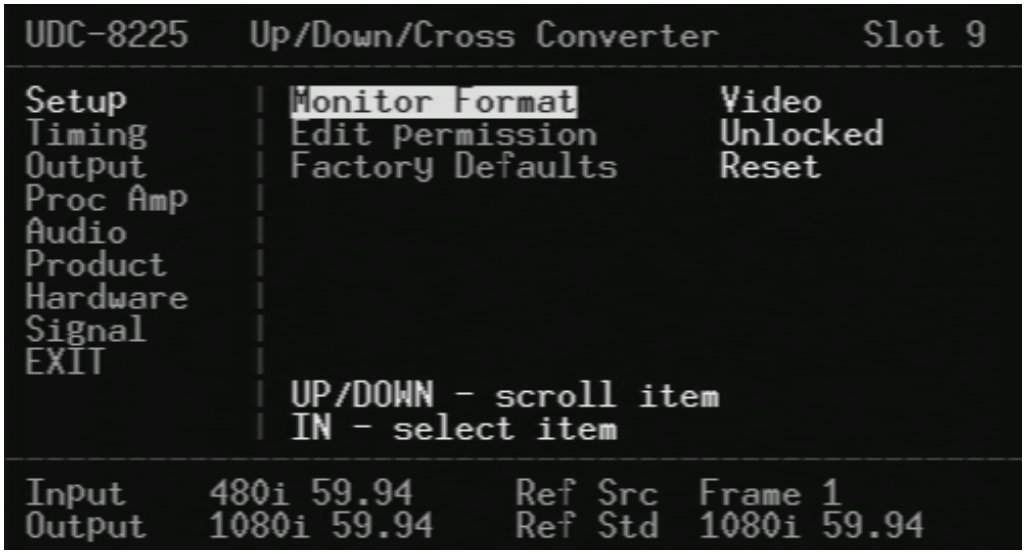

Figure 14. Item Selected

4. Press **Up** or **Down** on the Menu Switch to scroll to a menu item.
5. Press **In** on the Menu Switch to edit a menu parameter. The menu item becomes yellow and the parameter is highlighted.

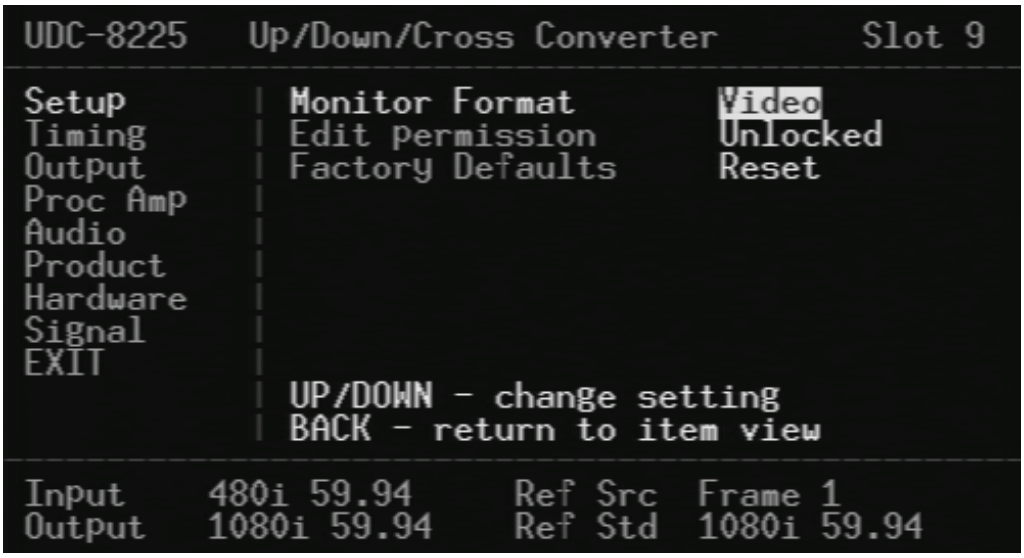

Figure 15. Parameter Selected

6. Press **Up** or **Down** on the Menu Switch to change the parameter.

Figure 16. Parameter Changed

Changes are apparent immediately upon selection and saved to the card memory within 10 seconds after selection. An asterisk (*) appears in the bottom right corner of the menu to indicate a parameter has changed, and the new value has not been saved.

Note

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

7. Press **Back** to exit from the editing mode and to return to the item.
8. Press **Back** on the Menu Switch to return to the menu.
9. To turn off the menu display, do one of the following:
    - From anywhere in the display, press **In** on the Menu Switch and hold for 2 seconds.
    - Select the Exit menu item and press **Forward**.

This completes the procedure to configure a menu item parameter using the Heads-Up Display.

DashBoard Control System Software

The DashBoard Control System enables you to monitor and control openGear frames and controller cards from a computer. DashBoard communicates with other cards in the DFR-8310 series frame through the MFC-8310-N Network controller card. This card is required in order to use the DashBoard Control System to configure the UDC-8225.

The DashBoard Control System Software and User Manual can be downloaded from the Ross Video website.

Using the DashBoard Menus

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

The Menu System

The following sections and tables describe the Configuration and Status menus, with items, and parameters available on the UDC-8225, accessed from the Heads-Up Display or the DashBoard Control System Software.

Configuration Menus

Table 3 summarizes the Configuration Menu options available through the DashBoard Control System Software or your Heads-Up Display.

Table 3. Configuration Menu Functions

Menus	Items	Parameters	Description
Setup	Monitor Format	Reference *	Formatting is determined by the selected video reference: • 50 Hz — Monitoring format is **PAL** • 59.94 Hz — Monitoring format is **NTSC** The monitor displays a green background
		Video (display 480i or 576i output)	Format is determined by the output video format setting; the video content is shown behind the menu
	Monitor Format	PAL	Monitoring format is PAL regardless of reference or output, and displays a green background
		NTSC	Monitoring format is NTSC regardless of reference or output, and displays a green background
	Edit Permission	Unlocked*	All menu options are unlocked
		Locked	All menu items, except this one, are locked and read-only
	Factory Defaults	Reset	
	Wings License Adapter		Indicates whether the software key for the Wings Input licensed option is installed
Timing	Reference	Frame 1 *	External reference connected to frame 1
		Frame 2	External reference connected to frame 2
		Local	Reference connected to BNC 10
	Horizontal Delay	0 * - 2639 $^{\pm \eta}$	Delay set in pixels
	Vertical Delay	0 * - 1124 $^{\Phi}$	Delay set in lines

Menus	Items	Parameters	Description
	Minimum Delay	Reset (to 0)	Resets timing to 0 lines, 0 pixels
Output	Output Format	480i 59.94 *	
		720p 59.94	
		1080i 59.94	
		576i 50	
		720p 50	
		1080i 50	
	Input Aspect Ratio†	Auto*	16:9 for HD, 4:3 for SD
		4:3	
		16:9	
		14:9	
	Output Aspect Ratio†	Same parameters as above	
	Aspect Conversion	Full Screen *	Input is stretched anamorphically to fill output
		Zoom	Input is mapped to output with correct proportions. The top or sides of the input is cropped if required, to create a sub-image in the same aspect ratio as the output.
		Letter/Pillar	Input is mapped to output with correct proportions; unused space on output is filled with black. This option must be selected in order to use the Wings Input feature.
		Panoramic	Input scaling varies spatially to preserve proportions in the centre
	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
	Test Pattern	SMPTE Bars	Outputs SMPTE color bars
		75% Bars	Outputs 75% full field colors
		Disabled *	The test pattern is not used for the selected output
	Wings	Enable	Enables the Wing Insertion
		Disable	Disables the Wing Insertion

Menus	Items	Parameters	Description
	Wings Crop	0% – 5%	Crops the format converted image. The default is 0%.
Proc Amp	Video Gain	0 – 200% (100*)	Adjusts the card video gain percentage level
	Chroma Gain	0 – 200% (100*)	Adjusts the card output chroma gain percentage (C_b and C_r simultaneously)
	CB Gain	0 – 200% (100*)	Adjusts the card output C_b gain percentage
	Black Offset	-60 – 160 (0*)	Adjusts the card output black level offset
	Proc Amp	Reset	Resets the Video Gain, Chroma Gain, CB Gain, and Black Offset controls to factory defaults
	Black Clip	Disabled	Enables the card to pass Superblack (if luminance is less than 40 Hex)
		Enabled*	Enables clipping of the Superblack levels
	Blank Number Active Lines (SD Inputs only)	0* – 3 Ψ	Selects the number of top lines of the input active video to blank, and not modifying the vertical interval levels.
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*	Available test tones for output
		2000 Hz	
		3000 Hz	
		4000 Hz	
		5000 Hz	

Menus	Items	Parameters	Description
	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 (ms)	0* – 1000 ms	Sets delay to re-synchronize embedded audio to converted video
	Audio	Reset	

* = Default Setting

$^{\pm}$ = The maximum value depends on the number of maximum pixels per line for the selected output format.

$^{\Phi}$ = The maximum value depends on the total number of lines per frame for the selected output format.

† = 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.

$^{\eta}$ = The precision of the Horizontal Delay after reset or power-up is +/- 1 pixel.

Ψ = The Blank Number of Active Lines setting should only be enabled when an SD input is present.

Status Menus

The following table summarizes the Status Menu options available through the DashBoard Control System or your Heads-Up Display.

Table 4. Status Menu Functions

Menus	Items	Parameters	Description
Product (Read-only)	Product	UDC-8225	
	Manufacturer	Ross Video Ltd.	
	Board Rev	##	
	Serial Number	#########	
	Option Board	4	
	Software Rev	#.##	
	Firmware Rev	##	
	Converter Rev	#.##	
Hardware (Read-only)	HW Status	Green LED Icon	OK
		Red LED Icon	Internal Error
	Rear Module	#	Type of rear I/O module
	Voltage (mV)	#	Supply voltage
	Current (mA)	#	Current consumption of card
	CPU Headroom	#	Processing power available

Menus	Items	Parameters	Description
	RAM Available	#	On-board processing memory available
	EE Bank	#	Storage count
Signal (Read-only)	Signal Status	Green LED Icon	OK
		Red LED Icon (Error State)	No Input
			Invalid Input
			No Reference
			Invalid Ref
			Ref Unlocked
		Yellow LED Icon (Warning State)	Audio Error
			The Wings Input feature is enabled, but the video format is incorrect.
	Reference	Frame 1	
		Local	
		Frame 2	
	Reference Format	480i/59.94	
		576i/50	
		1080i/59.94	
		1080i/50	
		720p/59.94	
		720p/50	
	Genlock	No reference	
		Incompatible	
		Locking	
		Locked	
		Freeze	
		Free run	
	Input Format	480i/59.94	
		576i/50	
		1080i/59.94	
		1080i/50	
		720p/59.94	
		720p/50	
	Output Format	480i/59.94	
		576i/50	
		1080i/59.94	
		1080i/50	

Menus	Items	Parameters	Description
Signal (Read-only)		720p/59.94	
		720p/50	
	Audio Group 1 to 4 Status	#X	Audio not present when audio group set to **Pass** (See **Audio** Tab)
		#-	Audio not present when audio group set to **Mute**, **Test Tone**, or **Disable** (See **Audio** Tab)
		#S	Synchronous audio present on group
		#A	Asynchronous audio present on group
	Wings Format	Same values as output format	Format must be set to the same format as the output.
Exit	Press Menu Switch **Forward** to turn off menu. For Heads-Up Display only.		

SNMP Monitoring and Control

The MFC-8310-N Network Controller card in the DFR-8300 series frame provides optional support for remote monitoring and control of your frame and UDC-8225 using SNMP (Simple Network Management Protocol), which is compatible with many third-party monitoring and control tools.

Refer to your UDC-8225 MIB (Management Information Base) file for a breakdown of SNMP controls on this card. Refer to the manual for your DFR-8300 series frame for additional information on SNMP Monitoring and Control.

Specifications

In This Chapter

This chapter includes the Technical Specifications table for the UDC-8225 card.

Table 5. UDC-8225 - Technical Specifications

Category	Parameter	Specification
Serial Digital Video Inputs	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 292M) 1080i/50 (SMPTE 292M) 720p/59.94 (SMPTE 292M) 720p/50 (SMPTE 292M)
	Impedance	75Ω terminating
	Equalization	Over 90m of Belden 1694Acable @ 1.485Gb/s or up to 240m @ 270Mb/s
	Return Loss	>13dB to 1.485GHz
Serial Digital Video Outputs	Number of Outputs	1 reclocked, 2 processed
	Number of Outputs with Wings Input option installed	1 reclocked copy of the input, 1 reclocked copy of the Wings input, and 2 processed SDI outputs
	Impedance	75Ω
	Return Loss	>15dB to 750MHz, 10dB to 1.485GHz
	Signal Level	800mV ±10%
	DC Offset	0 Volts ±50 mV
	Rise & Fall Time (20-80%)	700ps. Typical (270Mb/s) 120ps. Typical (1.485Gb/s)
	Overshoot	<8%
Other	Maximum Power Consumption	13.5W
	Warranty	5 year transferable

Specifications are subject to change without notice.

Service Information

In This Chapter

This chapter contains the following sections:

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

Troubleshooting Checklist

Routine maintenance to your card is not required. In the event of problems with your UDC-8225, the following basic troubleshooting checklist may help identify the source of the problem. If the module still does not appear to be working properly after checking all possible causes, please contact your openGear products distributor, or the Ross Video Technical Support department at the numbers listed under the "**Contact Us**" section at the end of this manual.

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

Power LED Conditions

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

- **Off** — no power to the card.
- **Orange** — the card is running internal diagnostics while powering up.
- **Green** — normal operation.
- **Flashing Green** — the **Bootload** button is pressed, and the card is receiving a new software load from the frame.
- **Green/Flashing Orange** — signal or configuration problem, check signal status and settings.
- **Red** — solid or flashing means the card is not operational. Reseat card in frame, check the rear I/O module connections, or call Technical Support.

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-8225. To perform this task, perform the following steps:

1. Eject the card
2. Press and hold the **Bootload** button, while re-inserting the card into the frame.
3. Release the 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 the last operational software load.

New software can be uploaded to the UDC-8225 via the DashBoard Control System.

Warranty and Repair Policy

The UDC-8225 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-8225 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-8225 has failed after your warranty period has expired, we will repair your defective product should suitable replacement components be available. You, the owner, will bear any labor and/or part costs incurred in the repair or refurbishment of said equipment beyond the FIVE (5) year warranty period.

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

This User Manual provides all pertinent information for the safe installation and operation of your UDC-8225. Ross Video policy dictates that all repairs to the UDC-8225 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-8225, 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-8225. If required, a temporary replacement module will be made available at a nominal charge. Any shipping costs incurred will be the responsibility of you, the customer. All products shipped to you from Ross Video Limited will be shipped collect.

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

Ordering Information

UDC-8225 and Related Products

Your **UDC-8225** MD-SDI Universal Up/Down/Cross Converter is a part of the openGear family of products. Ross Video offers a full line of openGear terminal equipment including distribution, conversion, monitoring, synchronizers, encoders, decoders, AES, keyers, switches, as well as analog audio and video products.

Standard Equipment

- **UDC-8225** MD-SDI Universal Up/Down/Cross Converter with Wings Input
- **8225DR-004** MD-SDI Cross Converter User Manual

Optional Equipment

- **8225DR-004** MD-SDI Cross Converter User Manual (additional User Manual)
- **UDC-W-UPG** Wings Input licensed software feature
- **UDC-8225-RM** MD-SDI Cross Converter with **RM-8300-B** 10-BNC Rear Panel (for installation into DFR-8310-C frame)
- **RM-8300-B** 10-BNC Rear Panel (for installation into DFR-8310-C frames)
- **DFR-8310-C** Digital Products Frame and Power Supply with Cooling Fans (2RU, holds 10 cards)
- **DFR-8310-BNC** Digital Products Frame and Power Supply with fixed 100-BNC Rear Module. (2RU, holds 10 cards)
- **DFR-8310-C-BNC** Digital Products Frame and Power Supply with fixed 100-BNC Rear Module and Cooling Fans. (2RU, holds 10 cards)
- **DFR-8310-N** Digital Products Frame and Power Supply with cooling fans, and MFC-8310-N card. (2RU, holds 10 cards)
- **DFR-8310-N-BNC** Digital Products Frame and Power Supply with cooling fans, 100-BNC Rear Module, and MFC-8310-N card. (2RU, holds 10 cards)
- **MFC-8310-N** Network Controller Card (additional)

Contact Us

Contact our friendly and professional support representatives for the following:

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

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

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