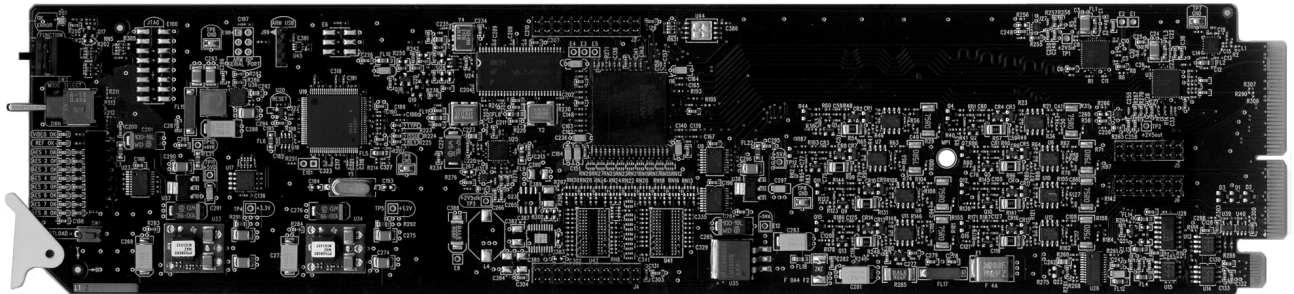


# 9275-4C 9275-8C

## HD/SD-SDI Analog Audio De-Embedders User Manual



9275-4C8C-OM  
Version: 1.2



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## 9275-4C / 9275-8C • Analog Audio De-Embedder User Manual

- Cobalt Digital Inc. Part Number: **9275-4C8C-OM**
- Document Version: **1.2**
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- Last Author: CGG
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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

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**Caution** — *This product is intended to be a component product of the 8300 series frame. Refer to the 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.*

---



**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 AC 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 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 time and rating. Only use attachments/accessories specified by the manufacturer.*

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**Warning** — *This product includes an "Ethernet Port" which allows this product to be connected to a local area network (LAN). Only connect to networks that remain inside the building. Do not connect to networks that go outside the building.*

---

## 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 Cobalt Digital Inc. 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.



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**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

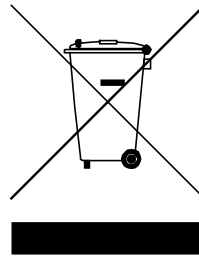
Routine maintenance to this Cobalt Digital Inc. product is not required. This product contains no user serviceable parts. If the frame does not appear to be working properly, please contact Technical Support using the numbers listed under the “Contact Us” section on the last page of this manual. All Cobalt Digital Inc. 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, Cobalt Digital Inc. 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 Cobalt Digital Inc. for more information on the environmental performances of our products.

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# Introduction

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## In This Chapter

This chapter contains the following sections:

- Overview
- Functional Block Diagrams
- Documentation Terms and Conventions

### A Word of Thanks

Congratulations on choosing a **9275 HD/SD-SDI Analog Audio De-Embedder**. The Cobalt Digital Inc. line includes video decoders and encoders, audio embedders and de-embedders, distribution amplifiers, format converters, and much more. Cobalt Digital Inc. modular conversion gear will meet your signal conversion needs now, and well into the future.

Should you have a question pertaining to the installation or operation of your 9275, 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 9275-4C and 9275-8C HD/SD-SDI Analog Audio De-Embedders offer various configuration options, including internally generated patterns and tones, are available for audio and video output scenarios should a loss of input occur.

## 9275-4C / 9275-8C Overviews

The 9275-4C and 9275-8C de-embed up to either four or eight analog audio channels (respectively) from an HD/SD-SDI signal.

The 9275-4C and 9275-8C include audio proc control on each channel that allows for audio processing with gain of +/- 10dB, audio delay up to 1 second, and channel invert. The 9275-4C and 9275-8C support any channel assignment to the discrete inputs and can re-map any of the existing embedded channels.

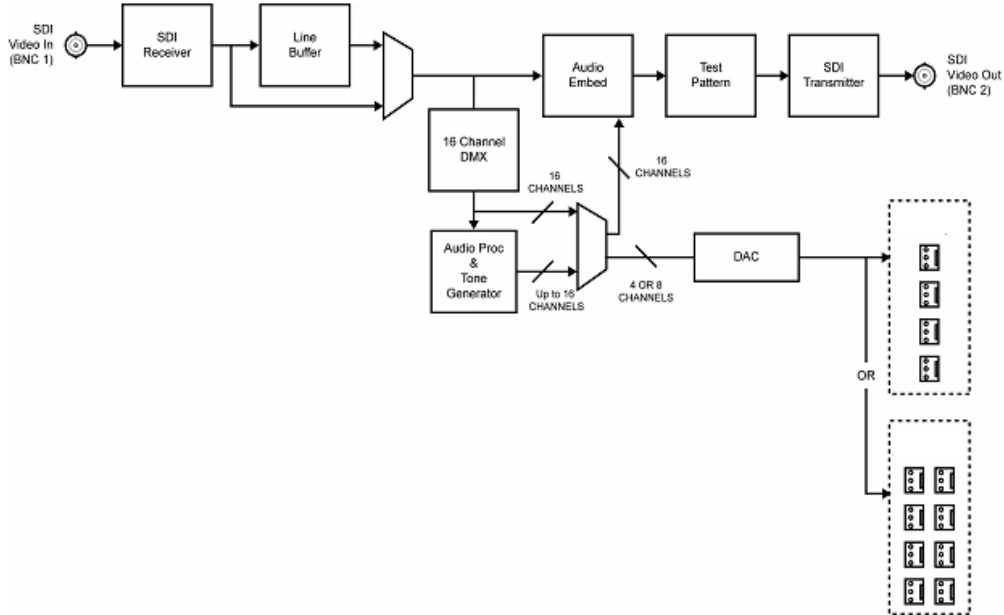
## Features

The following features make the 9275-4C and 9275-8C ideal solutions for de-embedding four or eight analog audio sources from an HD/SD-SDI signal:

- Supports HD-SD SDI SMPTE 292M, 1.5Gbps and SMPTE 259M, 270Mbps
- Audio de-embedding for all popular formats 480i, 576i, 720p, and 1080i
- 9275-4C provides four analog outputs
- 9275-8C provides eight analog outputs
- Audio controls such as gain, invert, and delay
- Analog gain control done entirely in the analog domain
- Assign any embedded channel to any discrete audio output
- Ability to re-map channels in embedded video stream
- Programmable video output on SDI input loss
- Silence output on loss of audio input
- Programmable silence detection and timeout thresholds
- No audio breakout cable required
- Reports status and configuration remotely via the DashBoard Control System™
- Fits 8300 series frames
- Fully compliant with openGear specifications 5-year transferable warranty

# Functional Block Diagram

This section provides functional block diagram for the 9275-4C and 9275-8C.



**Figure 1.2** 9275-4C and 9275-8C — Simplified Block Diagram

---

# Documentation Terms and Conventions

The following terms and conventions are used throughout this manual:

- “**Frame**” refers to 8300 series frame that houses the 9275-4C or 9275-8C, as well as any openGear frames.
- All references to the **8300 series frame** also includes all version of the 10-slot and 20-slot frames and any available options unless otherwise noted.
- “**Operator**” and “**User**” refer to the person who uses the 9275-4C and 9275-8C.
- “**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.
- “**-line mode**” refers to broadcast situations using **NTSC** composite (analog) signal reference inputs.
- “**-line mode**” refers to broadcast situations using **PAL-B** composite (analog) signal reference inputs.
- “**PAL**” refers to PAL-B, or PAL-G unless otherwise stated.
- “**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 Modules for the 9275-4C or 9275-8C, installing the card into the frame, cabling details, and updating the card software.

The following topics are discussed:

- Before You Begin
- Installing the 9275-4C or 9275-8C
- Cabling for the 9275-4C or 9275-8C

---

# Before You Begin

## Static Discharge

Whenever handling the 9275-4C or 9275-8C and other related equipment, please observe all static discharge precautions as described in the following note:



---

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

---

## Unpacking

Unpack each 9275-4C or 9275-8C 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 Cobalt Digital Inc. directly.

**Note:** In this section, “9275” refers to either the 9275-4C or 9275-8C.

---

## Installing the 9275-4C or 9275-8C

This section outlines how to install a Rear Module in a 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 your application and the openGear frame you are using.

### Rear Modules for the 9275-4C

When installing the 9275-4C:

- **20-slot frame** — The **RM20-9275-4C-B** Full Rear Module (R2C-8259) is required.

### Rear Modules for the 9275-8C

When installing the 9275-8C:

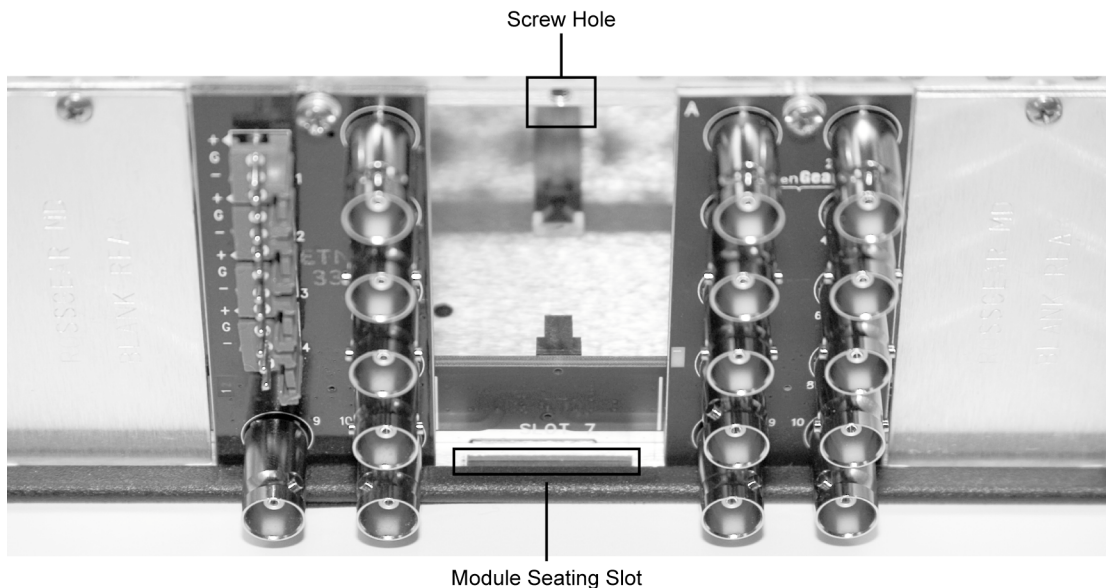
- **20-slot frame** — The **RM20-9275-8C-B** Full Rear Module (R2C-8259) is required.

### Installing a Rear Module

If the Rear Module is already installed, proceed to the section “**Installing the 9275**”.

Use the following procedure to install the rear module in an 8300 series frame:

1. Locate the card frame slots on the rear of the frame.
2. Remove the Blank Plate from the slot you have chosen for the 9275 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 8300 Series Frame (9275 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 8300 series frame.

## Installing the 9275-4C or 9275-8C

This section outlines how to install the 9275 in a 8300 series frame. Use the following procedure to install the 9275 in a 8300 series frame:

1. Locate the Rear Module you installed in the procedure “**Installing a Rear Module**”.
2. Hold the 9275 by the edges and carefully align the card-edges with the slots in the frame.
3. Fully insert the card into the frame until the rear connection plus is properly seated in the Rear Module.
4. Affix the supplied **Rear Module Label** to the BNC area of the Rear Module.

This completes the procedure for installing the 9275 in a 8300 series frame.

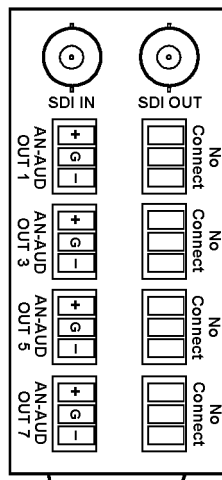
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## Cabling for the 9275

### 9275-4C Cabling Overview

The 9275-4C is used with the following Rear Modules:

- **RM20-9275-4C-B** Rear Module — Each card occupies one slot and provides one SDI input, one SDI output, and four analog outputs. (**Figure 2.3**)



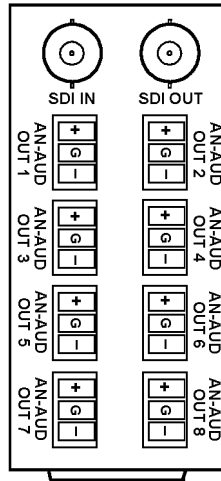
**Figure 2.3** Cable Connections for the 9275-4C



## 9275-8C Cabling Overview

In the 20-slot frames, the 9275-8C is used with the following Rear Modules:

- **RM20-9275-8C-B** Rear Module— Each card occupies one slot and provides one SDI input, one SDI output, and eight analog outputs. (**Figure 2.4**)



**Figure 2.3** Cable Connections for the 9275-8C



# User Controls

---

## In This Chapter

This section provides a general overview of the user controls available on the 9275.

The following topics are discussed:

- Card Overview
- Control and Monitoring Features
- Reference Compatibility
- Operation Notes

**Note:** In this section, “9275” refers to either the 9275-4C or 9275-8C.

---

## Card Overview

This section provides a general overview of the 9275 components. The configurations outlined in this section should be performed before installing the card in the frame, but may be repeated as required. For information on the LEDs available on the card-edge, refer to the section “**Control and Monitoring Features**”.

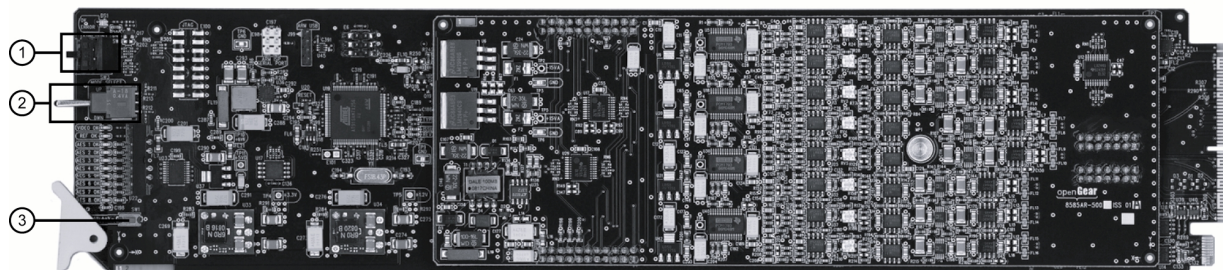


Figure 3.1 9275 —Card-edge Components

1) Function Select Switch (SW2)	2) Mode Select Switch (SW3)	3) Bootload Button (SW1)
---------------------------------	-----------------------------	--------------------------

### 1. Function Select Switch (SW2)

Use **SW2** to select general operation functions and menu items and works in conjunction with the Mode Select Switch (**SW3**).

### 2. Mode Select Switch (SW3)

Use **SW3** to enable, disable, and select specific configurations within the operational function modes menu (selected first with **SW2**).

### 4. Bootload Button (SW1)

**SW1** 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 Cobalt Technical Support personnel.

### ***For More Information...***

- on using the **SW2** and **SW3** switches, refer to the section “**Card-edge Menu System**”.
- on the LEDs located on the card-edge, refer to the section “**Status and Selection LEDs on the 9275**”.

# Control and Monitoring Features

This section provides information on the card-edge LEDs for the 9275.

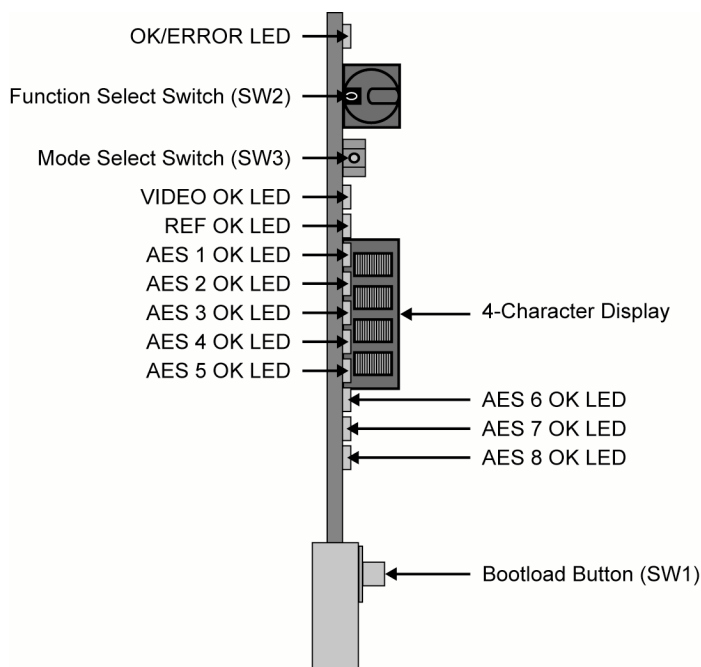


Figure 3.2 9275 Card-edge Controls

## Status and Selection LEDs on the 9275

The front-edge of the 9275 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 9275

LED	Color	Display and Description
OK/ERROR	Green	When lit green, this LED indicates that the card is functioning normal and that no anomalies have been detected. The following conditions must be satisfied: <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 a software upload.
	Flashing Green and Orange	When lit green with flashing 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 powering on.
	Red	When lit red, this LED indicates the card is not operational.
	Off	When off, this LED indicates there is no power to the card.

LED	Color	Display and Description
<b>VIDEO OK</b>	Green	When lit, this LED indicates that the video input is valid.
	Flashing Green	When flashing, this LED indicates that video is present, but the input format is unsupported.
	Off	When unlit, this LED indicates the absence of an input signal.
<b>REF OK</b>	Green	When lit green, this LED indicates a valid reference signal.
	Flashing Green	When flashing, this LED indicates that the reference signal is present but the format is invalid.
	Off	When unlit, this LED indicates that a reference signal is not present, or is not compatible with the input format.
<b>AES 1 OK</b>	Green	When lit, this LED indicates the presence of the embedded audio Group 1 on the video input.
<b>AES 2 OK</b>	Green	When lit, this LED indicates the presence of the embedded audio Group 2 on the video input.
<b>AES 3 OK</b>	Green	When lit, this LED indicates the presence of the embedded audio Group 3 on the video input.
<b>AES 4 OK</b>	Green	When lit, this LED indicates the presence of the embedded audio Group 4 on the video input.
<b>AES 5 OK</b>	Green	This LED is not implemented.
<b>AES 6 OK</b>	Green	This LED is not implemented.
<b>AES 7 OK</b>	Green	This LED is not implemented.
<b>AES 8 OK</b>	Green	This LED is not implemented.

---

## Reference Compatibility

It is important to remember that if you are using Frame 1 or Frame 2 as the reference, the input video frame rate must match the reference frame rate.

## Frame Rate Compatibility

Refer to **Table 3.2** for frame rate compatibility.

*Table 3.2 Compatible Video Formats*

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				✓	✓	✓
720p/50				✓	✓	✓
1080i/50				✓	✓	✓

---

## Operation Notes

This section provides brief notes when operating the 9275.

### Audio Proc Amp Controls

The 9275 includes Processing Amplifiers (Proc Amps) for the audio inputs on the card. Note that these features are not available when using the card-edge controls.

Proc Amp adjustments are applied in the following order:

- 1. Delay** — This option enables you to adjust the delay of the audio channel. If you have enabled the Delay Lock feature, changing the delay value for one channel automatically changes the value for the other channel.
- 2. Gain** — This option provides a +/- 20dB gain range in 1dB increments. If you have enabled the Gain Lock feature, changing the gain value for one channel automatically changes the value for the other channel. When using the 9275-C, the gain range is +/- 10dB.
- 3. Invert** — This option enables you to invert the polarity of the audio signal for the selected channel.

### Minimum Delay Overview

The line buffer stores incoming video in relation to the incoming video clock timing. The video data is then read out in relation to the reference timing. This allows the input video to be switched between sources that may not be perfectly timed without timing glitches. Video source timing must remain within the buffer window to properly switch between sources. **Table 3.3** provides information on the buffer window available depending on how the Minimum Delay feature is configured in DashBoard.

**Table 3.3 Minimum Delay**

If the option is...	Format	Minimum Delay	Maximum Delay
<b>Disabled</b>	HD	1/4 line	1/2 line
	SD	1/4 line	1/2 line
<b>Enabled</b>	HD	1/64 line	1/32 line
	SD	1/32 line	1/16 line



# Menus

---

## In This Chapter

This chapter provides a summary of the menus available for the 9275.

The following topics are discussed:

- SNMP Monitoring and Control
- DashBoard Menus for the 9275
- Card-edge Menu System

---

## SNMP Monitoring and Control

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

Refer to your 9275 Management Information Base (MIB) file for a breakdown of SNMP controls on this card. Refer to the *8300 Series User Manual* and the *MFC-8300 Series User Manual* for additional information on SNMP Monitoring and Control.

# DashBoard Menus for the 9275

This section briefly summarizes the menus, items, and parameters available from the DashBoard Control System™ for the 9275. Parameters marked with an asterisk (\*) are the factory default values. The DashBoard Control System™ enables you to monitor and control openGear frames and cards from a computer. DashBoard communicates with other cards in the 8300 series frame through the Network Controller Card.

## Status Tabs

Table 4.1 summarizes the **Status** tab parameters available in DashBoard for the 9275.

**Table 4.1 Status Tab Items**

Menu	Item	Parameters	Description
<b>Product (Read-only)</b>	Product	9275-4C	Analog Audio De-Embedder; 4-Ch
		9275-8C	Analog Audio De-Embedder; 8-Ch
	Supplier	Cobalt Digital Inc.	
	Board Rev	##	
	Rear Module	#	Type of rear module in the slot
	Board S/N	#####	Indicates the card serial number
	Software Rev	##.##	Indicates the software version
	Firmware Rev	#.###	Indicates the firmware version
	Daughter Card Type*	##	Indicates if a daughter card is installed.
<b>Hardware (Read-only)</b>	HW Status	OK	Indicates any problems with the card hardware components
		FPGA load invalid	
		Incomp I/O Module	
		Current out of spec	
		Internal Error	
	Voltage (mV)	#	Supply Voltage
	Current (mA)	#	Current consumption of card
	CPU Headroom	#	Processing power available
	RAM Available	##/###	On-board processing memory available
	Uptime (h)	#	Displays the number of hours since the last reboot of the card
<b>Hardware (Read-only)</b>	Configuration Bank	#	Storage count

\*This field is not available when using a 9275-A.

Menu	Item	Parameters	Description
Signal (Read-only)	Signal Status	OK	Indicates when the channel is functioning normally or if anomalies are detected
		Invalid Format	
		Incompatible	
		Non-Sync Video	
		Group Not Present	
		Group Channel Silent	
	Audio Status	OK	Indicates the status of the audio source
		Source Missing	
		Source Async	
		PCM-Silent	
		Group 4 Reduced to 20bit <sup>†</sup>	
	Reference Status	OK	Indicates that a valid reference source is present
		No Ref - Video	The following conditions are occurring: <ul style="list-style-type: none"> <li>• Card reference is set to Frame 1 or Frame 2</li> <li>• A valid reference signal is not present</li> <li>• Card has gone to Video Timing Mode</li> </ul>
		No Ref - Free Run	The following conditions are occurring: <ul style="list-style-type: none"> <li>• Card reference is set to Frame 1 or Frame 2</li> <li>• A valid reference signal is not present</li> <li>• A valid video signal is not present</li> <li>• Card has gone to Free Run Mode</li> </ul>
Invalid Format - Video		Card has detected an invalid <sup>‡</sup> reference format and has switched to Video Timing Mode	

<sup>†</sup>This parameter indicates that there are more than 3 groups of 24bit SD embedded audio sources.

<sup>‡</sup>Refer to the section “**Reference Compatibility**” for a complete list of supported references.

Menu	Item	Parameters	Description
<b>Signal (Read-only)</b>	Reference Status	Invalid Format - Free Run	The following conditions are occurring: <ul style="list-style-type: none"> <li>• Card has detected an invalid<sup>b</sup> reference format</li> <li>• Input video is missing or invalid</li> <li>• Card has switched to Free Run Mode</li> </ul>
	Input Format	#	Indicates the input video format
	Reference Format	#	Indicates the reference video format
	Output Format	#	Indicates the output video format
	Embedded Audio Status - Group #	PCM	Indicates the presence of input
		No Input	
		PCM-Silent	
Non-PCM			
Async			
Mixed			

## Setup Menus

Table 4.2 summarizes the **Setup Menu** options available in DashBoard for the 9275.

**Table 4.2 Setup Menu Items**

Menu	Item	Parameters	Description
<b>Setup</b>	Reference	Frame 1*	Selects the reference source
		Frame 2	
		Video	
	Minimum Delay	Checkbox selected*	Provides the shortest video delay through the card. When using SD, the delay is 7us. When using HD, the delay is 1.5us.
		Checkbox unselected	The total video delay through the card will be the values above plus half a video line
	Loss of Input	Black	Sets the output to Black in the event of a loss of video input
		Blue	Sets the output to Blue in the event of a loss of video input

Menu	Item	Parameters	Description
Setup	Loss of Input	Custom*	Sets the output to a custom color in the event of a loss of video input. Use the Y, Cr, and Cb sliders to configure the color.
		Y slider	Sets the luminance component of the Loss of Input Custom video signal.
		Cr slider	Sets the Cr component of the Loss of Input Custom video signal.
		Cb slider	Sets the Cb component of the Loss of Input Custom video signal.
	Test Pattern	None	Specifies the type of test pattern to output
		100% Color Bars	Specifies the type of test pattern to output
		Frequency Sweep	
		Black	
		Blue	
		Matrix Pathological	
		Luma Ramp	
		Y/C Ramp	
		75% SMPTE Bars	
	SD Audio	20 Bit*	
		24 Bit	Embeds 24bit audio
		Auto	Embeds 20-24bit audio depending on the source and number of bits
	Silence Threshold (dB)	-96 to 0	Audio below the specified threshold value is considered silent
	Silence Timeout (sec)	1 to 60	Audio silent for longer than the specified value raises an alarm
	Analog Output Input # - De-Emphasis	Off*	Analog de-emphasis is always disabled
		On	Analog de-emphasis is always enabled
Auto		Analog de-emphasis is enabled depending on the channel status emphasis bits	

Menu	Item	Parameters	Description
Setup	Edit Permission	Unlocked	All menu options are unlocked and can be edited.
		Locked	All menu items, except this one, are locked and read-only.
	All Audio	Reset	Resets the parameters in the Embedded Audio Outputs tab to factory defaults
	Factory Defaults	Reset	Resets all parameters to factory defaults.

## Input Status Menus

Table 4.3 summarizes the **Timing Menu** options available in DashBoard for the 9275..

*Table 4.3 Input Status Menu Items*

Menu	Item	Parameters	Description
Video Input & Embed	Input Format (read-only)	#	Displays the format of the video input
	CRC Errors (read-only)	#	Displays the count of the CRC errors on the video input. This 14bit counter is reset on loss of video, or by user request. The counter is non-latching, and will roll over from maximum count to zero. <ul style="list-style-type: none"> <li>For SD formats, it displays both active picture and full frame errors.</li> <li>For HD formats, it displays the total count of errors.</li> </ul>
	Error Count	Reset	Resets the CRC Errors field
Embedded Audio – Group # Channel #	Ch # Status (read-only)	PCM	Displays the status of the Channel A input
		No Input	
		PCM-Silent	
		Non-PCM	
		Async	
		Mixed	
	Word Length (read-only)	#bit	Displays the number of bits of audio

## Analog Outputs Menus

**Table 4.5** summarizes the **Analog Outputs Menu** options available in DashBoard for the 9275-4C and 9275-8C.

*Table 4.5 Analog Inputs Menu Items*

Menu	Item	Parameters	Description
<b>Output #</b>	Source	Mute	Selects the source of the analog output.
		Group # Channel #	
		#Hz	
		#kHz	
	Delay (ms)	0* to 1000	Adjusts the audio delay for the specified input
	Gain (dB)	-10 to +10 <sup>§</sup>	Adjusts the audio gain for the specified input
	Invert	Checkbox selected	Inverts the audio signal of the channel
Checkbox unselected*		The audio signal is not inverted	
Input	Reset	Resets the parameters for the selected input to the default values	

## Embedded Outputs Menus

**Table 4.6** summarizes the **Embedded Outputs Menu** options available in DashBoard.

*Table 4.6 Embedded Outputs Menu Items*

Menu	Item	Parameters	Description
<b>Group #</b>	Enable	Checkbox selected*	Determines if the group is inserted in the output or not
		Checkbox unselected	
	Ch # Source	Mute	Configures the Primary Source that is inserted in to the embedded group if present
		Group# Ch#	
		#kHz Tone	
Group #	Reset	Resets the specific group sources to the default values	
All Groups	Reset	Resets all groups to the default values	

<sup>§</sup>The default value is 0.



## Alarm Enables Menus

Table 4.7 summarizes the **Alarms Menu** options available in DashBoard.

Table 4.7 Alarms Menu Items

Menu	Item	Parameters	Description	
<b>Video Input &amp; Reference Alarm</b>	No Input	Checkbox selected*	Signal Status field reports a loss of input	
		Checkbox unselected	Disables the alarm	
	Invalid Input	Checkbox selected*	Input Format field displays an alarm when the input video is a format that is not supported	
		Checkbox unselected	Disables the alarm	
	Incompatible Input	Checkbox selected*	Input Format field reports when the frame rate is not the same as the reference input	
		Checkbox unselected	Disables the alarm	
	Non-Sync Video	Checkbox selected*	Signal Status field reports if the video input is asynchronous to the reference	
		Checkbox unselected	Disables the alarm	
	No Reference	Checkbox selected*	Reference Status field reports loss of input conditions	
		Checkbox unselected	Disables the alarm	
	Invalid Reference	Checkbox selected*	Reference Format field reports when the reference is a format that is not supported	
		Checkbox unselected	Disables the alarm	
	<b>Hardware</b>	Incompat Rear Module	Checkbox selected*	Hardware Status field reports when a rear module is not compatible with the card
			Checkbox unselected	Disables the alarm
Incompat Daughter Card		Checkbox selected	HW Status field reports when using an incompatible daughter card	
		Checkbox unselected	Disables the alarm	
<b>Embedded Input Audio - Group #</b>	Group not present	Checkbox selected*	Signal Status field reports when a group is not present on the input	
		Checkbox unselected	Disables the alarm	

Menu	Item	Parameters	Description
	Channel # Silent	Checkbox selected*	Signal Status field reports when the specified channel is detected as silent
		Checkbox unselected	Disables the alarm
<b>Analog Outputs - Output #</b>	Source Missing	Checkbox selected*	Audio Status field reports when the selected output is not present or is silent
		Checkbox unselected	Disables the alarm
	Source Async	Checkbox selected*	Audio Status field reports when the selected output is asynchronous to the input video
		Checkbox unselected	Disables the alarm
<b>Embedded Outputs - Group #</b>	Source Missing	Checkbox selected*	Embedded Audio Status field reports when the selected source is not present or is silent
		Checkbox unselected	Disables the alarm
	Source Async	Checkbox selected*	Embedded Audio Status field reports when the selected source is asynchronous to the input video
		Checkbox unselected	Disables the alarm
	SD 24Bit	Checkbox selected*	Audio Status field reports when the selected configuration would embed 4 groups of 24bit audio in an SD output. Group 4 is down-sampled to 20bit audio
		Checkbox unselected	Disables the alarm
	All Alarms	Set	Enables all alarms
	All Alarms	Clear	Disables all alarms

# Card-edge Menu System

This section summarizes the Card-edge Menu system of the 9275 and how to navigate the menus and options using the **SW2** and **SW3** switches on the 9275 card-edge. A list of the available menus and parameters is provided in **Table 4.8**.

## Navigation

Use the following procedure to navigate the card-edge menus of the 9275:

1. Rotate **SW2** to the required menu.
2. Toggle **SW3** to select the required parameter.

This completes the procedure for navigating the Bank Menus of the 9275.

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**Note** — Do not power down the card before ensuring that all edited parameters are saved. Saving edited parameters can take up to 10 seconds.

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## Card-edge Menus

**Table 4.8** lists all the menus, and menu items, available using the card-edge controls. To activate some of these parameters, it may be necessary to toggle **SW3** in either direction, or it may require that **SW3** be held in either direction for a few seconds. Default values are indicated with an asterisk (\*). Refer to the section “**Menu Descriptions**” for a brief summary of the menus available on the card-edge.

**Table 4.8 Card-edge Menus and Items**

Menu Select	Card-Edge Menu Label	Menu Name	Card-Edge Item Label	Item Name
0	9275-X slot #	Home		
1	Fact Def	Factory Default	n/a	Factory Default
2	Ref Src	Reference Source	Fr 1*	Frame 1 Reference
			Fr 2	Frame 2 Reference
			Vid	Video
3	LOI	Loss of Input	Black	
			Blue	
			Custom*	
4	Test Patt	Test Pattern	None*	
			75%	SMPTE Bars
			YC Ramp	Y/C Ramp
			L Ramp	Luma Ramp
			Matr Path	Matrix Pathological
			Blue	Flat Field Blue
			Black	Flat Field Black

Menu Select	Card-Edge Menu Label	Menu Name	Card-Edge Item Label	Item Name
			Frq Swp	Frequency Sweep
			100%	100% Full Field Bars
<b>5</b>	Grp Sel	Group Select	Grp 1	Group 1
			Grp 2	Group 2
			Grp 3	Group 3
			Grp 4	Group 4
<b>6</b>	Grp Enbl	Group Enable	Enabled*	
			Disabled	
<b>7</b>	Ch1 Src	Channel 1 Source	Mute	
			T4k	4kHz Tone
			T2k	2kHz Tone
			T1k	1kHz Tone
			T.5k	500Hz Tone
			G1C1 - G4C4	Group 1, Channel 1 to Group 4, Channel 4
<b>8</b>	Ch2 Src	Channel 2 Source	Same as above	
<b>9</b>	Ch3 Src	Channel 3 Source	Same as above	
<b>A</b>	Ch4 Src	Channel 4 Source	Same as above	
<b>B</b>				
	Alg Sel (9275-4C)	Analog Channel Select 1-4	Alg1 - Alg4	Analog 1 to Analog 4
	Alg Sel (9275-8C)	Analog Channel Select 1-8	Alg1 - Alg8	Analog 1 to Analog 8
<b>C</b>				
	Source (9275-4C)	Analog Source	G1C1 - G4C4	Group 1, Channel 1 to Group 4, Channel 4
	Source (9275-8C)	Analog Source	G1C1 - G4C4	Group 1, Channel 1 to Group 4, Channel 4
<b>D</b>	ChB Src (9275-A)	Channel B Source	G1C1 - G4C4	Group 1, Channel 1 to Group 4, Channel 4

## Menu Descriptions

This section briefly summarizes the menu parameters available in the card-edge display.

### **0 — Home**

This read-only menu displays the product name and the slot the card is installed in the frame.

### **1 — Factory Defaults**

This function enables you to return all controls to their factory default values. Use the following procedure to reset the card parameters to factory default values using the card-edge controls:

1. Rotate **SW2** to **1**. The Four Character Display displays “**Fact Def**”.
2. Toggle **SW3** down and hold for 3 seconds.
3. Release **SW3**.

## **2 — Reference Source**

This menu enables you to select where the card will look for a reference. The choices are Frame Reference 1 (**Fr 1**), Frame Reference 2 (**Fr 2**), and Video (**Vid**). Refer to the section “**Reference Compatibility**” for a list of supported formats.

## **3 — Loss of Input**

Use this menu to select what type of video displays at the system’s outputs when the input video signal is lost or invalid.

## **4 — Test Pattern**

This menu enables you to specify the type of test pattern to output. Note that this setting is not retained on power down.

## **5 — Group Select**

This menu enables you to select the embedded group before enabling the group, assigning sources to the channels, and backup sources. This menu is used in conjunction with Menus 6 to E.

## **6 — Group Enable**

Use this menu to determine if the selected group is embedded in the output or not.

## **7, 8, 9, A — Channel # Source**

Use Menus 7 to A to configure the source that is inserted into the embedded group if present. These menus are used in conjunction with Menu 5 (Group Select). The following are the default values based on the group selected:

- Group 1 — When Menu 5 is set to Grp1, the default value of Menu 7 is G1C1.
- Group 2 — When Menu 5 is set to Grp 2, the default value of Menu 8 is G2C2.
- Group 3 — When Menu 5 is set to Grp 3, the default value of Menu 9 is G3C3.
- Group 4 — When Menu 5 is set to Grp 4, the default value of Menu A is G4C4.



# Specifications

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## In This Chapter

This chapter provides technical specification details on the 9275. Note that specifications are subject to change without notice.

The following topics are discussed:

- 9275 Technical Specifications
- Channel Status Data Table

# Technical Specifications

This section includes the technical specifications for the 9275-4C and 9275-8C.

**Table 5.2 9275-4C and 9275-8C Technical Specifications**

Category	Parameter	Specification
<b>SDI Input</b>	Number of Inputs	1 HD-SDI input
	SDI Data Rates and SMPTE Standards Accommodated	SMPTE 292M, SMPTE 259M
	Impedance	75ohm
	Return Loss	> -15dB to 1.5GHz
	Equalization	Automatic
	Connector Type	BNC
<b>SDI Output</b>	Number of Outputs	1 HD-SDI output
	SDI Data Rates and SMPTE Standards Accommodated	SMPTE 292M, SMPTE 259M
	Impedance	75ohm
	Return Loss	> -15dB to 1.5GHz
	Signal Level	800mV, +/- 10%
	DC Offset	<50mV
	Rise and Fall Time (20-80%)	600ps typical @ SD rates 120ps typical @ HD rates
	Overshoot	<10%
	Minimum Video Delay	HD: 2.2us
	Connector Type	BNC
<b>Analog Audio Outputs</b>	Number of Outputs	9275-4C: 4 outputs 9275-8C: 8 outputs
	Maximum Output Level	+ 27dBu
	Frequency Response	± 0.07dB 22Hz to 20kHz @ Fs = 48kHz
	Signal to Noise Ratio	-90dB
	THD	> -76dB
	Amplitude Linearity	< 0.5dB @ -100dBFS
	Crosstalk	<-80dB (20Hz to 20kHz)
<b>Environmenta</b>	Operating Range	5°C to 40°C ambient
<b>Power</b>	Total Power Consumption	9275-4C: 8W 9275-8C: 9W

## Channel Status Data Table

The following table shows the channel status bit information that is used for all output audio.



**Table 5.3 Channel Status Data**

Byte	Bit	Function	Transmitted
<b>0</b>	0	Professional or Consumer use of Channel Status Block	Professional (1)
	1	Normal Audio or Non-Audio Mode	Normal Audio (0)
	2-4	Emphasis	No Emphasis (100)
	5	Lock Indication	Locked (0)
	6-7	Sampling Rate	48kHz (01)
<b>1</b>	0-3	Channel Mode	2 channel stereo (0001)
	4-7	User Bit Mode	192-bit (0001)
<b>2</b>	0-2	Auxiliary Bit Usage	20-bit audio sample, Aux bits undefined (000)
	3-5	Sample Word Length	20- or 24-bits (101)
	6-7	Alignment Level	Not Indicated (00)
<b>3</b>	0-7	Multi-channel Modes	Undefined (0)
<b>4</b>	0-1	Digital Audio Reference Signal	Not a Reference (0)
	2	Reserved	0
	3-6	Sampling Frequency	Not Indicated (0000)
	7	Sampling Frequency Scaling Flag	No Scaling (0)
<b>5</b>	0-7	Reserved	Unused (0)
<b>6-9</b>		ASCII Source ID	Unused (0)
<b>10-13</b>		ASCII Destination ID	Unused (0)
<b>14-17</b>		Local Sample Address	Unused (0)
<b>18-21</b>		Time of Day	Unused (0)
<b>22</b>	0-7	C data reliability	Only the first 5 Status Bytes are marked as Reliable. All other Status Bytes are marked as Unreliable.
<b>23</b>	0-7	CRC	Calculated CRC

## Passing the Status Bytes

The 9275 replaces Channel Status Bytes according to **Table 5.3** or passes Status Bytes through from input to output. In order for the Channel Status Bytes on the incoming embedded stream to be re-embedded, the outgoing Data Word Length must match the specified word length in the Channel Status bits.



# 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 9275, the following basic troubleshooting checklist may help identify the source of the problem. If the card still does not appear to be working properly after checking all possible causes, please contact your openGear products distributor, or the Cobalt Digital Inc. 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. **Card Exchange** – Exchanging a suspect card with a card that is known to be working correctly is an efficient method for localizing problems to individual cards.

## Bootload Button

In the unlikely event of a complete card failure, you may be instructed by a Cobalt Digital Inc. Technical Support specialist to perform a complete software reload on the 9275.

Use the following procedure to perform a software reload on the 9275:

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.

Software can be uploaded to the 9275 via DashBoard. Refer to your *DashBoard Control System Software User Manual* for further instructions.

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# Warranty and Repair Policy

## **Cobalt Digital Inc. Limited Warranty**

This product is warranted to be free from defects in material and workmanship for a period of five (5) years from the date of shipment to the original purchaser, except that 4000, 5000, 6000, 8000 series power supplies, and Dolby® modules (where applicable) are warranted to be free from defects in material and workmanship for a period of one (1) year.

Cobalt Digital Inc.'s ("Cobalt") sole obligation under this warranty shall be limited to, at its option, (i) the repair or (ii) replacement of the product, and the determination of whether a defect is covered under this limited warranty shall be made at the sole discretion of Cobalt.

This limited warranty applies only to the original end-purchaser of the product, and is not assignable or transferrable therefrom. This warranty is limited to defects in material and workmanship, and shall not apply to acts of God, accidents, or negligence on behalf of the purchaser, and shall be voided upon the misuse, abuse, alteration, or modification of the product. Only Cobalt authorized factory representatives are authorized to make repairs to the product, and any unauthorized attempt to repair this product shall immediately void the warranty. Please contact Cobalt Technical Support for more information.

To facilitate the resolution of warranty related issues, Cobalt recommends registering the product by completing and returning a product registration form. In the event of a warrantable defect, the purchaser shall notify Cobalt with a description of the problem, and Cobalt shall provide the purchaser with a Return Material Authorization ("RMA"). For return, defective products should be double boxed, and sufficiently protected, in the original packaging, or equivalent, and shipped to the Cobalt Factory Service Center, postage prepaid and insured for the purchase price. The purchaser should include the RMA number, description of the problem encountered, date purchased, name of dealer purchased from, and serial number with the shipment.

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# Contact Us

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## Contact Cobalt Digital Inc.

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