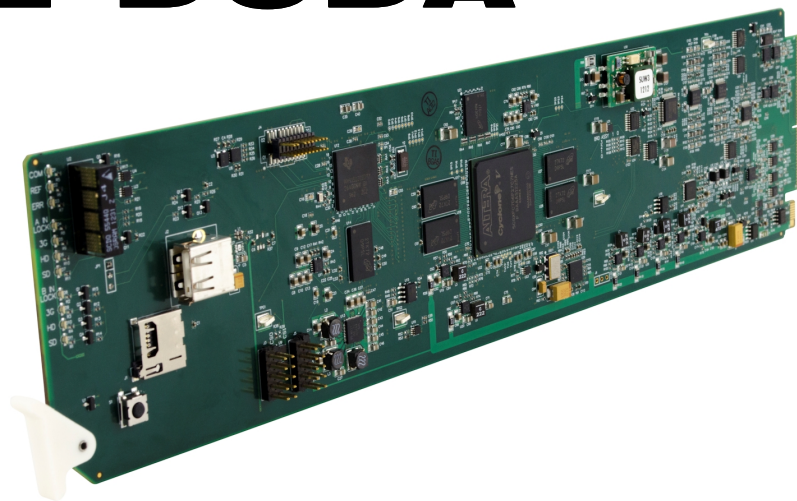

OBSIDIAN **3G**

9502-DCDA



Downconverter / DA

**Downconverter with 3G/HD/SD-SDI Input, HD/SD-SDI
Processed Outputs, and SDI Input Reclocking**

Product Manual



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Congratulations on choosing the Cobalt[®] 9502-DCDA Downconverter with 3G/HD/SD-SDI Input, HD/SD-SDI Processed Outputs, and SDI Input Reclocking. The 9502 is part of a full line of modular processing and conversion gear for broadcast TV environments. The Cobalt Digital Inc. line includes video decoders and encoders, audio embedders and de-embedders, distribution amplifiers, format converters, remote control systems and much more. Should you have questions pertaining to the installation or operation of your 9502, please contact us at the contact information on the front cover.

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Table of Contents

Chapter 1	Introduction	1-1
	Overview	1-1
	9502 Card Software Versions and this Manual	1-2
	Cobalt Reference Guides	1-2
	Manual Conventions	1-3
	Warnings, Cautions, and Notes	1-3
	Labeling Symbol Definitions	1-4
	Safety Summary	1-4
	Warnings	1-4
	Cautions	1-4
	9502-DCDA Functional Description	1-5
	9502-DCDA Input/Output Formats	1-5
	Video Processor Description	1-7
	Audio Processor Description	1-9
	User Control Interface	1-10
	9502-DCDA Rear I/O Modules	1-12
	Technical Specifications	1-12
	Warranty and Service Information	1-14
	Cobalt Digital Inc. Limited Warranty	1-14
	Contact Cobalt Digital Inc.	1-15
Chapter 2	Installation and Setup	2-1
	Overview	2-1
	Installing the 9502-DCDA Into a Frame Slot	2-1
	Installing a Rear I/O Module	2-3
	9502-DCDA Rear I/O Modules	2-4
	Setting Up 9502-DCDA Network Remote Control	2-6

Chapter 3	Operating Instructions	3-1
	Overview	3-1
	Control and Display Descriptions	3-1
	Function Submenu/Parameter Submenu Overview	3-2
	DashBoard™ User Interface	3-3
	Cobalt® Remote Control Panel User Interfaces	3-4
	Accessing the 9502-DCDA Card via Remote Control.....	3-5
	Accessing the 9502-DCDA Card Using DashBoard™.....	3-5
	Accessing the 9502-DCDA Card Using a Cobalt® Remote Control Panel.....	3-6
	Checking 9502-DCDA Card Information	3-7
	Ancillary Data Line Number Locations and Ranges	3-8
	9502-DCDA Function Submenu List and Descriptions.....	3-9
	Input Video Controls	3-10
	Scaler	3-10
	Video Alignment	3-12
	Timecode	3-13
	Video Payload ID	3-17
	Proc (Video) Control	3-18
	Closed Captioning	3-19
	Reticules	3-20
	Output Audio Routing/Controls	3-23
	Presets/Card Firmware Upgrade	3-26
	Log Status/Download	3-27
	Troubleshooting	3-28
	Error and Failure Indicator Overview	3-28
	Basic Troubleshooting Checks.....	3-32
	9502-DCDA Processing Error Troubleshooting.....	3-33
	Troubleshooting Network/Remote Control Errors.....	3-34
	In Case of Problems	3-34

Introduction

Overview

This manual provides installation and operating instructions for the 9502-DCDA Downconverter with 3G/HD/SD-SDI Input, HD/SD-SDI Processed Outputs, and SDI Input Reclocking card (also referred to herein as the 9502-DCDA).

Note: This manual also is applicable for reduced functionality version **-HD** which accepts and processes only SD and HD (SMPTE 259M and SMPTE 292M) SDI inputs. 3G inputs, controls, and functions described in this manual are not applicable to 9502-DCDA-HD. In all other aspects, this version function identically as described in this manual.

This manual consists of the following chapters:

- **Chapter 1, “Introduction”** – Provides information about this manual and what is covered. Also provides general information regarding the 9502.
- **Chapter 2, “Installation and Setup”** – Provides instructions for installing the 9502 in a frame, and optionally installing a 9502-DCDA Rear I/O Module.
- **Chapter 3, “Operating Instructions”** – Provides overviews of operating controls and instructions for using the 9502-DCDA.

This chapter contains the following information:

- **9502 Card Software Versions and this Manual (p. 1-2)**
- **Manual Conventions (p. 1-3)**
- **Safety Summary (p. 1-4)**
- **9502-DCDA Functional Description (p. 1-5)**
- **Technical Specifications (p. 1-12)**
- **Warranty and Service Information (p. 1-14)**
- **Contact Cobalt Digital Inc. (p. 1-15)**

9502 Card Software Versions and this Manual

When applicable, Cobalt Digital Inc. provides for continual product enhancements through software updates. As such, functions described in this manual may pertain specifically to cards loaded with a particular software build.

The Software Version of your card can be checked by viewing the **Card Info** menu in DashBoard™. See Checking 9502-DCDA Card Information (p. 3-7) in Chapter 3, “Operating Instructions” for more information. You can then check our website for the latest software version currently released for the card as described below.

Note: Not all functionality described in this manual may appear on cards with initial software versions.

Check our website and proceed as follows if your card’s software does not match the latest version:

<p>Card Software earlier than latest version</p>	<p>Card is not loaded with the latest software. Not all functions and/or specified performance described in this manual may be available.</p> <p>You can update your card with new Update software by going to the Support>Firmware Downloads link at www.cobaltdigital.com. Download “Firmware Update Guide”, which provides simple instructions for downloading the latest firmware for your card onto your computer, and then uploading it to your card through DashBoard™.</p> <p>Software updates are field-installed without any need to remove the card from its frame.</p>
<p>Card Software newer than version in manual</p>	<p>A new manual is expediently released whenever a card’s software is updated and specifications and/or functionality have changed as compared to an earlier version (a new manual is not necessarily released if specifications and/or functionality have not changed). A manual earlier than a card’s software version may not completely or accurately describe all functions available for your card.</p> <p>If your card shows features not described in this manual, you can check for the latest manual (if applicable) and download it by going to the card’s web page on www.cobaltdigital.com.</p>

Cobalt Reference Guides

From the Cobalt® web home page, go to **Support>Reference Documents** for easy to use guides covering network remote control, card firmware updates, example card processing UI setups and other topics.

Manual Conventions

In this manual, display messages and connectors are shown using the exact name shown on the 9502-DCDA itself. Examples are provided below.

- Card-edge display messages are shown like this:



- Connector names are shown like this: **SDI IN A**

In this manual, the terms below are applicable as follows:

- **9502-DCDA** refers to the 9502-DCDA Downconverter with 3G/HD/SD-SDI Input, HD/SD-SDI Processed Outputs, and SDI Input Reclocking card.
- **Frame** refers to the HPF-9000, OG3-FR, 8321, or similar 20-slot frame that houses Cobalt® or other cards.
- **Device** and/or **Card** refers to a Cobalt® or other card.
- **System** and/or **Video System** refers to the mix of interconnected production and terminal equipment in which the 9502-DCDA and other cards operate.
- Functions and/or features that are available only as an option are denoted in this manual like this:



Warnings, Cautions, and Notes

Certain items in this manual are highlighted by special messages. The definitions are provided below.

Warnings

Warning messages indicate a possible hazard which, if not avoided, could result in personal injury or death.




Cautions

Caution messages indicate a problem or incorrect practice which, if not avoided, could result in improper operation or damage to the product.

Notes

Notes provide supplemental information to the accompanying text. Notes typically precede the text to which they apply.

Labeling Symbol Definitions

	<p>Attention, consult accompanying documents.</p>
	<p>Electronic device or assembly is susceptible to damage from an ESD event. Handle only using appropriate ESD prevention practices.</p> <p>If ESD wrist strap is not available, handle card only by edges and avoid contact with any connectors or components.</p>
	<p>Symbol (WEEE 2002/96/EC)</p> <p>For product disposal, ensure the following:</p> <ul style="list-style-type: none"> • Do not dispose of this product as unsorted municipal waste. • Collect this product separately. • Use collection and return systems available to you.

Safety Summary

Warnings

! WARNING !

To reduce risk of electric shock do not remove line voltage service barrier cover on frame equipment containing an AC power supply. **NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.**

Cautions

CAUTION

This device is intended for environmentally controlled use only in appropriate video terminal equipment operating environments.

CAUTION

This product is intended to be a component product of an openGear® frame. Refer to the openGear® frame Owner's Manual for important safety instructions regarding the proper installation and safe operation of the frame as well as its component products.

CAUTION

Heat and power distribution requirements within a frame may dictate specific slot placement of cards. Cards with many heat-producing components should be arranged to avoid areas of excess heat build-up, particularly in frames using only convection cooling. The 9502-DCDA has a moderate power dissipation (<18 W). As such, avoiding placing the card adjacent to other cards with similar dissipation values if possible.

CAUTION

If required, make certain Rear I/O Module(s) is installed before installing the 9502-DCDA into the frame slot. Damage to card and/or Rear I/O Module can occur if module installation is attempted with card already installed in slot.

CAUTION

If card resists fully engaging in rear I/O module mating connector, check for alignment and proper insertion in slot tracks. Damage to card and/or rear I/O module may occur if improper card insertion is attempted.

CAUTION

The 9502 FPGA is designed for a normal-range operating temperature around 85° C core temperature. Operation in severe conditions exceeding this limit for non-sustained usage are within device operating safe parameters, and can be allowed by setting this control to Disable. However, the disable (override) setting should be avoided under normal conditions to ensure maximum card protection.

9502-DCDA Functional Description

Figure 1-1 shows a functional block diagram of the 9502-DCDA. The 9502-DCDA downconverter also includes embedded audio support and de-embedding to AES outputs. 4x distribution amplifiers (DAs) are provided for the card down-converted HD/SD-SDI output.

The 9502-DCDA also provides ARC processing and timecode/closed-captioning conversion from packet-based timecode formats and CEA608/708 HD formats to HD ATC, SD_ATC, and SD VITC-based (waveform) timecode. Closed captioning from CEA708 to HD formats and line 21 SD closed captioning are available on the processed HD-SD-SDI outputs.

9502-DCDA Input/Output Formats

The 9502-DCDA provides the following inputs and outputs:

- **Inputs:**
 - **3G/HD/SD SDI IN A / SDI IN B** – two dual-rate HD/SD-SDI inputs (GUI-selectable or basic failover)
- **Outputs:**
 - **HD/SD-SDI OUT (1-4)** – four dual-rate HD/SD-SDI buffered video outputs
 - **RCK OUT (1-4)** – four 3G/HD/SD-SDI reclocked buffered video outputs
 - **AES OUT (1-8)** – eight AES-3id (coaxial 75Ω) outputs (16 AES channels)

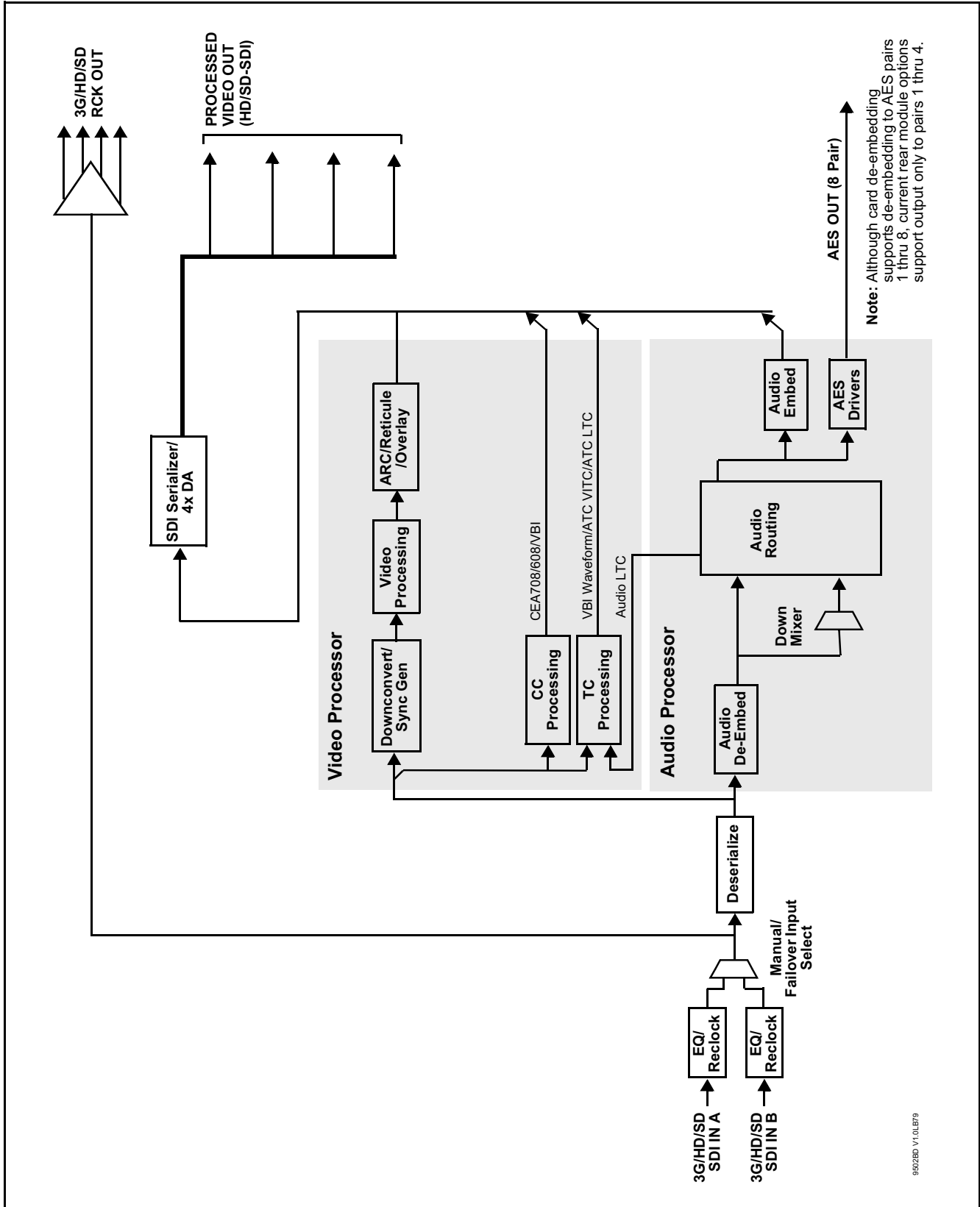


Figure 1-1 9502-DCDA Functional Block Diagram

Video Processor Description

The 9502-DCDA features a downconverting scaler, video proc, and user-adjustable aspect ratio control and zoom control. The 9502-DCDA video subsystem also provides the functions described below.

Video Processor

The 9502-DCDA provides full color processing control (luma gain and lift, chroma saturation, and color phase) of the output video.


Scaler Function

The scaler function provides down-conversion to HD/SD from multiple standard SD and 3G/HD video formats and multiple frame rates, and cross-conversion between interlaced and progressive formats, with auto-format detect/down-conversion of SMPTE 424M/292M/259M formats.

The scaler function also provides aspect ratio conversion that provides a choice from several standard aspect ratios. User-defined settings allow custom user-defined H and V aspect ratio control. Reticule insertion provides safe action area marking as well as other reticule functions and patterns.

Timecode Processor

(See Figure 1-2.) This function provides for extraction of timecode data from the input video, and in turn re-insertion of timecode data into the output SDI. In this manner, timecode data can be preserved, even after format conversion. The function can monitor the SDI video input of the card for supported timecode formats and convert the timecode to either or both ATC_LTC or ATC_VITC for down-conversions to HD, and ATC_VITC or VITC waveform (with selectable odd/even field line number control) for SD down-conversions.

Option  When licensed with option **+LTC**, this function also can receive and translate audio LTC timecode (from Emb Ch 1-16) for insertion as SMPTE 12M ATC timecode formats onto the output video as described above.

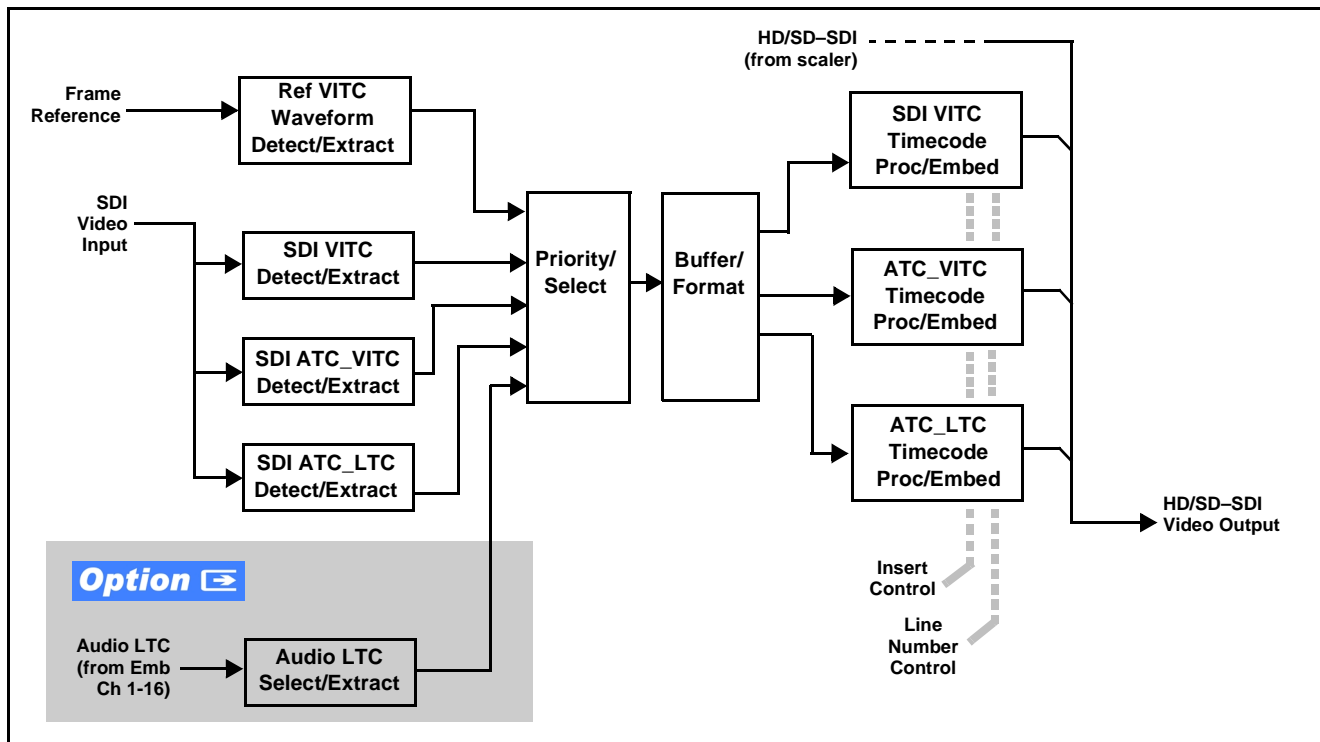


Figure 1-2 Timecode Processor

Closed Captioning Processor

This function provides support for closed captioning setup. The function allows the selection of the ancillary data line number where the ancillary closed caption data is outputted when the output is HD. When receiving HD-SDI, both CEA 608 and CEA 708 are supported, with CEA 608 and CEA 708 (containing CEA 608 packets) converted to line 21 closed captioning on outputs down-converted to SD.

Audio Processor Description

The audio processor operates as an internal audio router. This function chooses from the following inputs:

- 16 channels of embedded audio from the SDI video input (1-to-1 routing to SDI output)

The router function provides the following audio outputs:

- 16 channels of embedded audio on SDI processed outputs
- 16 channels of AES de-embedding on eight AES outputs pairs

Note: Although card de-embedding supports de-embedding to AES pairs 1 thru 8, current rear module options support output only to pairs 1 thru 4.

The processor function provides group enable/disable and de-embedding of the 16-channel embedded audio SDI input.

Audio Down Mix Function

(See Figure 1-3.) The Audio Down Mixer function provides for the selection of any five embedded channels serving as Left (**L**), Right (**R**), Center (**C**), Left Surround (**Ls**), and Right Surround (**Rs**) individual signals to be multiplexed into stereo pair Down Mix Left (**DM-L**) and Down Mix Right (**DM-R**). The resulting stereo pair **DM-L** and **DM-R** can in turn be routed to any embedded audio pair as desired (or de-embedded to an AES audio output).

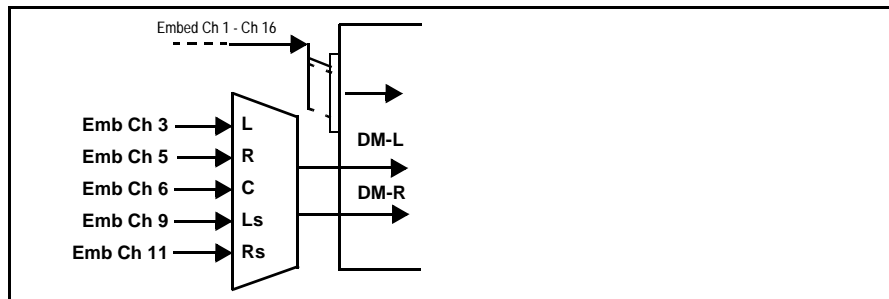


Figure 1-3 Audio Down Mix Functional Block Diagram with Example Sources

User Control Interface

Figure 1-4 shows the user control interface options for the 9502-DCDA. These options are individually described below.

Note: All user control interfaces described here are cross-compatible and can operate together as desired. Where applicable, any control setting change made using a particular user interface is reflected on any other connected interface.

- **DashBoard™ User Interface** – Using DashBoard™, the 9502-DCDA and other cards installed in openGear®¹ frames can be controlled from a computer and monitor.

DashBoard™ allows users to view all frames on a network with control and monitoring for all populated slots inside a frame. This simplifies the setup and use of numerous modules in a large installation and offers the ability to centralize monitoring. Cards define their controllable parameters to DashBoard™, so the control interface is always up to date.

The DashBoard™ software can be downloaded from the Cobalt Digital Inc. website: www.cobaltdigital.com (enter “DashBoard” in the search window). The DashBoard™ user interface is described in Chapter 3, “Operating Instructions”.

- **Cobalt® OGCP-9000 and OGCP-9000/CC Remote Control Panels** – The OGCP-9000 and OGCP-9000/CC Remote Control Panels conveniently and intuitively provide parameter monitor and control of the 9502-DCDA and other video and audio processing terminal equipment meeting the open-architecture Cobalt® cards for openGear™ standard.

In addition to circumventing the need for a computer to monitor and control signal processing cards, the Control Panels allow quick and intuitive access to hundreds of cards in a facility, and can monitor and allow adjustment of multiple parameters at one time.

The Remote Control Panels are totally compatible with the openGear™ control software DashBoard™; any changes made with either system are reflected on the other. The Remote Control Panel user interface is described in Chapter 3, “Operating Instructions”.

1. openGear® is a registered trademark of Ross Video Limited. DashBoard™ is a trademark of Ross Video Limited.

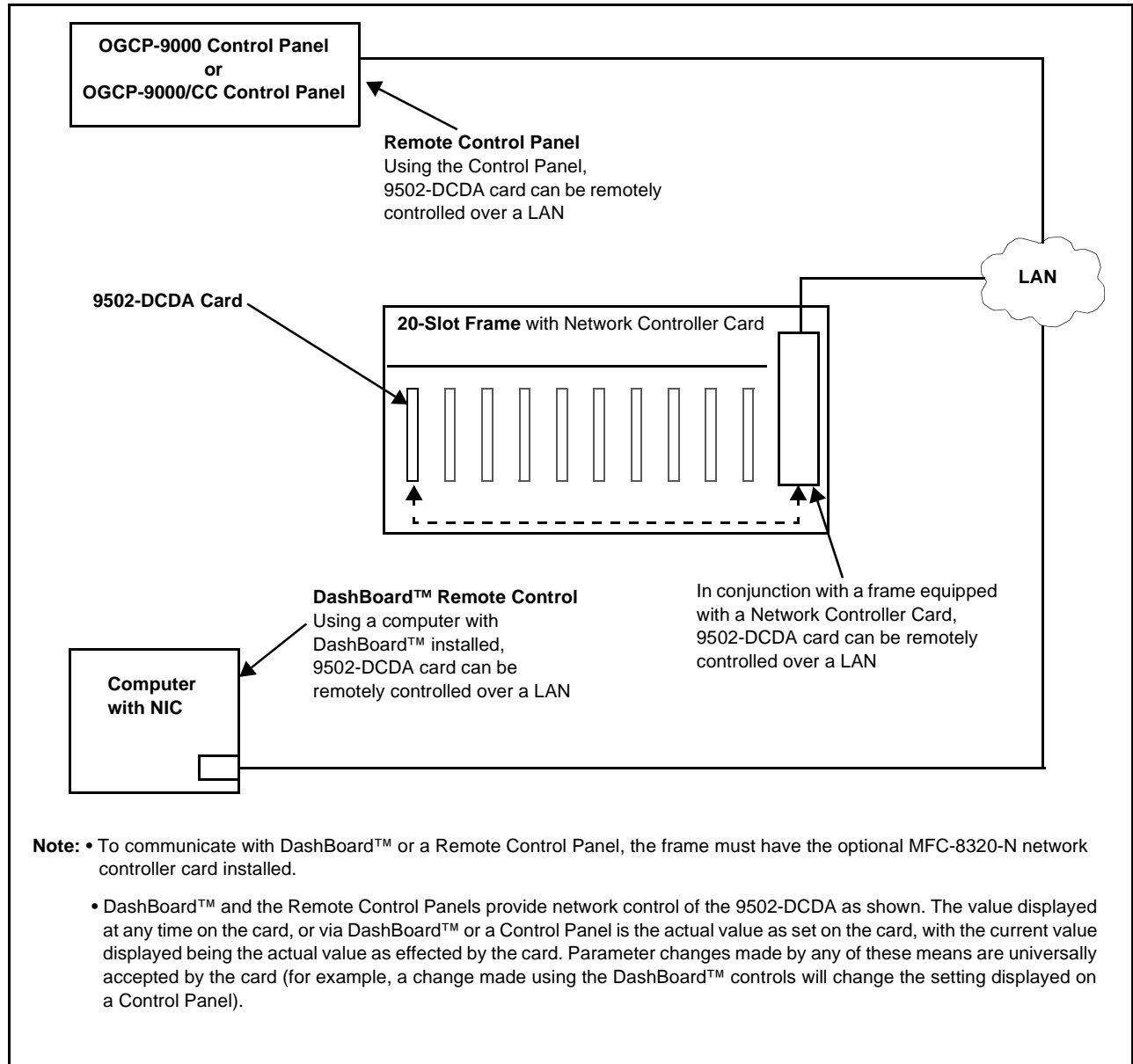


Figure 1-4 9502-DCDA User Control Interface

Note: If network remote control is to be used for the frame and the frame has not yet been set up for remote control, Cobalt® reference guide **Remote Control User Guide (PN 9000RCS-RM)** provides thorough information and step-by-step instructions for setting up network remote control of Cobalt® cards using Dashboard™. (Cobalt® OGCP-9000 and OGCP-9000/CC Remote Control Panel product manuals have complete instructions for setting up remote control using a Remote Control Panel.)

Download a copy of this guide by clicking on the **Support>Reference Documents** link at www.cobaltdigital.com and then select Dashboard Remote Control Setup Guide as a download, or contact Cobalt® as listed in Contact Cobalt Digital Inc. (p. 1-15).

9502-DCDA Rear I/O Modules

The 9502-DCDA physically interfaces to system video connections at the rear of its frame using a Rear I/O Module.

All inputs and outputs shown in the 9502-DCDA Functional Block Diagram (Figure 1-1) enter and exit the card via the card edge backplane connector. The Rear I/O Module breaks out the 9502-DCDA card edge connections to BNC and other connectors that interface with other components and systems in the signal chain.

The full assortment of 9502-DCDA Rear I/O Modules is shown and described in 9502-DCDA Rear I/O Modules (p. 2-4) in Chapter 2, “Installation and Setup”.

Technical Specifications

Table 1-1 lists the technical specifications for the 9502-DCDA Up/Down/Cross Format Converter, Video/Audio In with Frame Sync card.

Table 1-1 *Technical Specifications*

Item	Characteristic
Note: 3G (SMPTE 424M) specifications are applicable for card model 9502-DCDA-3G only.	
Part number, nomenclature	9502-DCDA Up/Down/Cross Format Converter, Video/Audio In with Frame Sync
Installation/usage environment	Intended for installation and usage in frame meeting openGear™ modular system definition.
Power consumption	< 18 Watts maximum
Installation Density	Up to 20 cards per 20-slot frame
Environmental: Operating temperature: Relative humidity (operating or storage):	32° – 104° F (0° – 40° C) < 95%, non-condensing
Frame communication	10/100 Mbps Ethernet with Auto-MDIX.
Indicators	Card edge display and indicators as follows: <ul style="list-style-type: none"> • 4-character alphanumeric display • Status/Error LED indicator • Input Format LED indicator

Table 1-1 Technical Specifications — continued

Item	Characteristic
Serial Digital Video Input	Number of inputs: Two, with manual select or failover to card processing path Data Rates Supported: SMPTE 424M, 292M, SMPTE 259M-C Impedance: 75 Ω terminating Return Loss: > 15 dB up to 1.485 GHz > 10 dB up to 2.970 GHz
Post-Processor Serial Digital Video Outputs	Number of Outputs: Four 3G/HD/SD-SDI BNC Impedance: 75 Ω Return Loss: > 15 dB at 5 MHz – 270 MHz Signal Level: 800 mV ± 10% DC Offset: 0 V ± 50 mV Jitter (SD): < 0.2 UI (all outputs) Overshoot: < 0.2% of amplitude
Pre-Processor (Reclocked) Serial Digital Video Outputs	Number of Outputs: Four 3G/HD/SD-SDI BNC per IEC 60169-8 Amendment 2 Impedance: 75 Ω
AES Audio Outputs	Standard: SMPTE 276M Number of Outputs: 4 unbalanced (8-ch); AES-3id Output Impedance: 75 Ω

Warranty and Service Information

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.

Cobalt Digital Inc. Factory Service Center

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Contact Cobalt Digital Inc.

Feel free to contact our thorough and professional support representatives for any of the following:

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

Phone:	(217) 344-1243
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Web:	www.cobaltdigital.com
General Information:	info@cobaltdigital.com
Technical Support:	support@cobaltdigital.com

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Installation and Setup

Overview

This chapter contains the following information:

- Installing the 9502-DCDA Into a Frame Slot (p. 2-1)
- Installing a Rear I/O Module (p. 2-3)
- Setting Up 9502-DCDA Network Remote Control (p. 2-6)

Installing the 9502-DCDA Into a Frame Slot

CAUTION

Heat and power distribution requirements within a frame may dictate specific slot placement of cards. Cards with many heat-producing components should be arranged to avoid areas of excess heat build-up, particularly in frames using only convection cooling. The 9502-DCDA has a moderate power dissipation (<18 W). As such, avoiding placing the card adjacent to other cards with similar dissipation values if possible.

CAUTION



This device contains semiconductor devices which are susceptible to serious damage from Electrostatic Discharge (ESD). ESD damage may not be immediately apparent and can affect the long-term reliability of the device.

Avoid handling circuit boards in high static environments such as carpeted areas, and when wearing synthetic fiber clothing. Always use proper ESD handling precautions and equipment when working on circuit boards and related equipment.

Note: If installing the 9502-DCDA in a slot with no rear I/O module, a **Rear I/O Module is required** before cabling can be connected. Refer to Installing a Rear I/O Module (p. 2-3) for rear I/O module installation procedure.

CAUTION

If required, make certain Rear I/O Module(s) is installed before installing the 9502-DCDA into the frame slot. Damage to card and/or Rear I/O Module can occur if module installation is attempted with card already installed in slot.

Note: Check the packaging in which the 9502-DCDA was shipped for any extra items such as a Rear I/O Module connection label. In some cases, this label is shipped with the card and to be installed on the Rear I/O connector bank corresponding to the slot location of the card.

Install the 9502-DCDA into a frame slot as follows:

1. Determine the slot in which the 9502-DCDA is to be installed.
2. Open the frame front access panel.
3. While holding the card by the card edges, align the card such that the plastic ejector tab is on the bottom.
4. Align the card with the top and bottom guides of the slot in which the card is being installed.
5. Gradually slide the card into the slot. When resistance is noticed, gently continue pushing the card until its rear printed circuit edge terminals engage fully into the rear I/O module mating connector.

CAUTION

If card resists fully engaging in rear I/O module mating connector, check for alignment and proper insertion in slot tracks. Damage to card and/or rear I/O module may occur if improper card insertion is attempted.

6. Verify that the card is fully engaged in rear I/O module mating connector.
7. Close the frame front access panel.
8. Connect the input and output cables as shown in 9502-DCDA Rear I/O Modules (p. 2-4).
9. Repeat steps 1 through 8 for other 9502-DCDA cards.

Note: The 9502-DCDA BNC inputs are internally 75-ohm terminated. It is not necessary to terminate unused BNC inputs or outputs.

Note: To remove a card, press down on the ejector tab to unseat the card from the rear I/O module mating connector. Evenly draw the card from its slot.

10. If network remote control is to be used for the frame and the frame has not yet been set up for remote control, perform setup in accordance with Setting Up 9502-DCDA Network Remote Control (p. 2-6).

Note: If installing a card in a frame already equipped for, and connected to DashBoard™, no network setup is required for the card. The card will be discovered by DashBoard™ and be ready for use.

Installing a Rear I/O Module

Note: This procedure is applicable **only if a Rear I/O Module is not currently installed** in the slot where the 9502-DCDA is to be installed.

If installing the 9502-DCDA in a slot already equipped with a suitable I/O module, omit this procedure.

Install a Rear I/O Module as follows:

1. On the frame, determine the slot in which the 9502-DCDA is to be installed.
2. In the mounting area corresponding to the slot location, install Rear I/O Module as shown in Figure 2-1.

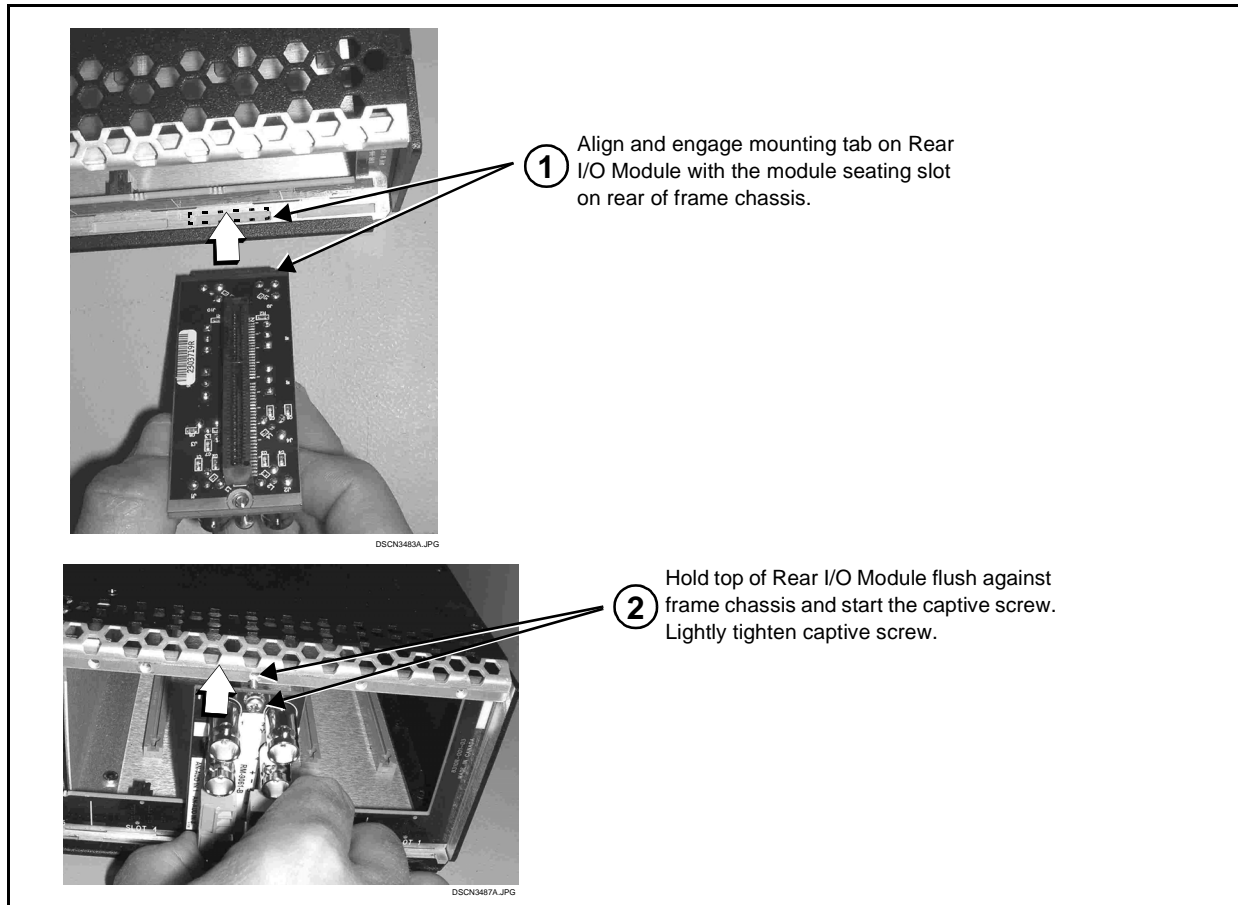


Figure 2-1 Rear I/O Module Installation

9502-DCDA Rear I/O Modules

Table 2-1 shows and describes the full assortment of Rear I/O Modules specifically for use with the 9502-DCDA.

Notes: • Rear I/O Modules equipped with 3-wire Phoenix connectors are supplied with removable screw terminal block adapters. For clarity, the adapters are omitted in the drawings below.

Table 2-1 9502-DCDA Rear I/O Modules

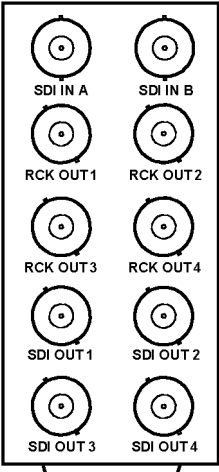
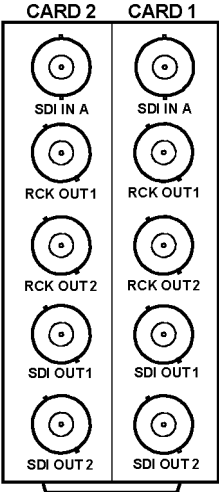
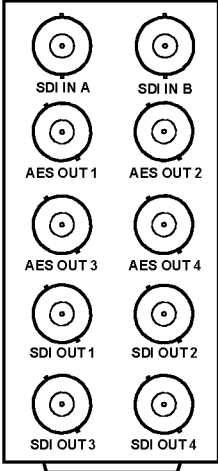
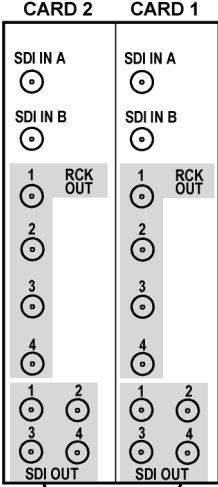

9502-DCDA Rear I/O Module	Description
<p>RM20-9502-A</p>  <p>The diagram shows a vertical panel of eight circular ports. From top to bottom, the ports are labeled: SDI IN A, SDI IN B, RCK OUT 1, RCK OUT 2, RCK OUT 3, RCK OUT 4, SDI OUT 1, SDI OUT 2, SDI OUT 3, and SDI OUT 4.</p>	<p>Provides the following connections:</p> <ul style="list-style-type: none"> • Two 3G/HD/SD-SDI coaxial input (SDI IN A and SDI IN B) • Four reclocked SDI input copies (RCK OUT 1 thru RCK OUT 4) • Four processed coaxial outputs (SDI OUT 1 thru SDI OUT 4)
<p>RM20-9502-A/S</p>  <p>The diagram shows a vertical panel with two columns of ports. The left column is labeled 'CARD 2' and the right column is labeled 'CARD 1'. From top to bottom, the ports are labeled: SDI IN A, RCK OUT 1, RCK OUT 2, SDI OUT 1, SDI OUT 2 for both CARD 2 and CARD 1.</p>	<p>Split Rear Module. Provides each of the following connections for two 9502 cards:</p> <ul style="list-style-type: none"> • 3G/HD/SD-SDI coaxial input (SDI IN A) • Two reclocked SDI input copies (RCK OUT 1 and RCK OUT 2) • Two processed coaxial outputs (SDI OUT 1 and SDI OUT 2)

Table 2-1 9502-DCDA Rear I/O Modules — continued

9502-DCDA Rear I/O Module	Description
<p>RM20-9502-F</p> 	<p>Provides the following connections:</p> <ul style="list-style-type: none"> • Two 3G/HD/SD-SDI coaxial input (SDI IN A and SDI IN B) • Four AES coaxial audio outputs (AES OUT 1 thru AES OUT 4) • Four processed coaxial outputs (SDI OUT 1 thru SDI OUT 4) <p>Note: Although card de-embedding supports de-embedding to AES pairs 1 thru 8, current rear module options support output only to pairs 1 thru 4.</p>
<p>RM20-9502-C/S</p> 	<p>Split Rear Module. Provides each of the following connections for two 9502 cards:</p> <ul style="list-style-type: none"> • Two 3G/HD/SD-SDI coaxial input (SDI IN A and SDI IN B) • Four reclocked SDI input copies (RCK OUT 1 thru RCK OUT 4) • Four processed coaxial outputs (SDI OUT 1 thru SDI OUT 4) <p>Note: Available equipped with High-Density BNC (HDBNC) or DIN1.0/2.3 connectors as: RM20-9502-C/S-HDBNC or RM20-9502-C/S-DIN, respectively.</p>
<div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 10px; margin-right: 20px;">  <p style="text-align: center;">COBALT RM20-9001-B/S-DIN</p> <p style="text-align: center;">**SAMPLE-NOT FOR USE**</p> </div> <div> <p>Due to the density of connector placement on Rear Modules using high-density connectors (e.g., RM20-9001-B/S-DIN), these modules use a QR barcode label instead a regular label. Simply scan the image with a smart phone and a link to the rear module label (as shown in our catalog) will appear. (Smart phone must have a QR reader app such as QuickMark QR Code Reader or equivalent.)</p> <p>Not all devices may be able to acquire the image. If this occurs, use the device to access the web page for card/rear module to view the diagram.</p> </div> </div>	

Setting Up 9502-DCDA Network Remote Control

Perform remote control setup in accordance with Cobalt® reference guide “Remote Control User Guide” (PN 9000RCS-RM).

- Note:**
- If network remote control is to be used for the frame and the frame has not yet been set up for remote control, Cobalt® reference guide **Remote Control User Guide (PN 9000RCS-RM)** provides thorough information and step-by-step instructions for setting up network remote control of Cobalt® cards using DashBoard™. (Cobalt® OGCP-9000 and OGCP-9000/CC Remote Control Panel product manuals have complete instructions for setting up remote control using a Remote Control Panel.)

Download a copy of this guide by clicking on the **Support>Reference Documents** link at www.cobaltdigital.com and then select DashBoard Remote Control Setup Guide as a download, or contact Cobalt® as listed in Contact Cobalt Digital Inc. (p. 1-15).

- If installing a card in a frame already equipped for, and connected to DashBoard™, no network setup is required for the card. The card will be discovered by DashBoard™ and be ready for use.

Operating Instructions

Overview

If you are already familiar with using DashBoard or a Cobalt Remote Control Panel to control Cobalt cards, please skip to 9502-DCDA Function Submenu List and Descriptions (p. 3-9).

This chapter contains the following information:

- Control and Display Descriptions (p. 3-1)
- Accessing the 9502-DCDA Card via Remote Control (p. 3-5)
- Checking 9502-DCDA Card Information (p. 3-7)
- Ancillary Data Line Number Locations and Ranges (p. 3-8)
- 9502-DCDA Function Submenu List and Descriptions (p. 3-9)
- Troubleshooting (p. 3-28)

Control and Display Descriptions

This section describes the user interface controls, indicators, and displays for using the 9502-DCDA card. The 9502-DCDA functions can be accessed and controlled using any of the user interfaces described here.

The format in which the 9502-DCDA functional controls, indicators, and displays appear and are used varies depending on the user interface being used. Regardless of the user interface being used, access to the 9502-DCDA functions (and the controls, indicators, and displays related to a particular function) follows a general arrangement of Function Submenus under which related controls can be accessed (as described in Function Submenu/Parameter Submenu Overview below).

Note: When a setting is changed, settings displayed on DashBoard™ (or a Remote Control Panel) are the settings as effected by the card itself and reported back to the remote control; the value displayed at any time is the actual value as set on the card.

Function Submenu/Parameter Submenu Overview

The functions and related parameters available on the 9502-DCDA card are organized into function **submenus**, which consist of parameter groups as shown below.

Figure 3-1 shows how the 9502-DCDA card and its submenus are organized, and also provides an overview of how navigation is performed between cards, function submenus, and parameters.

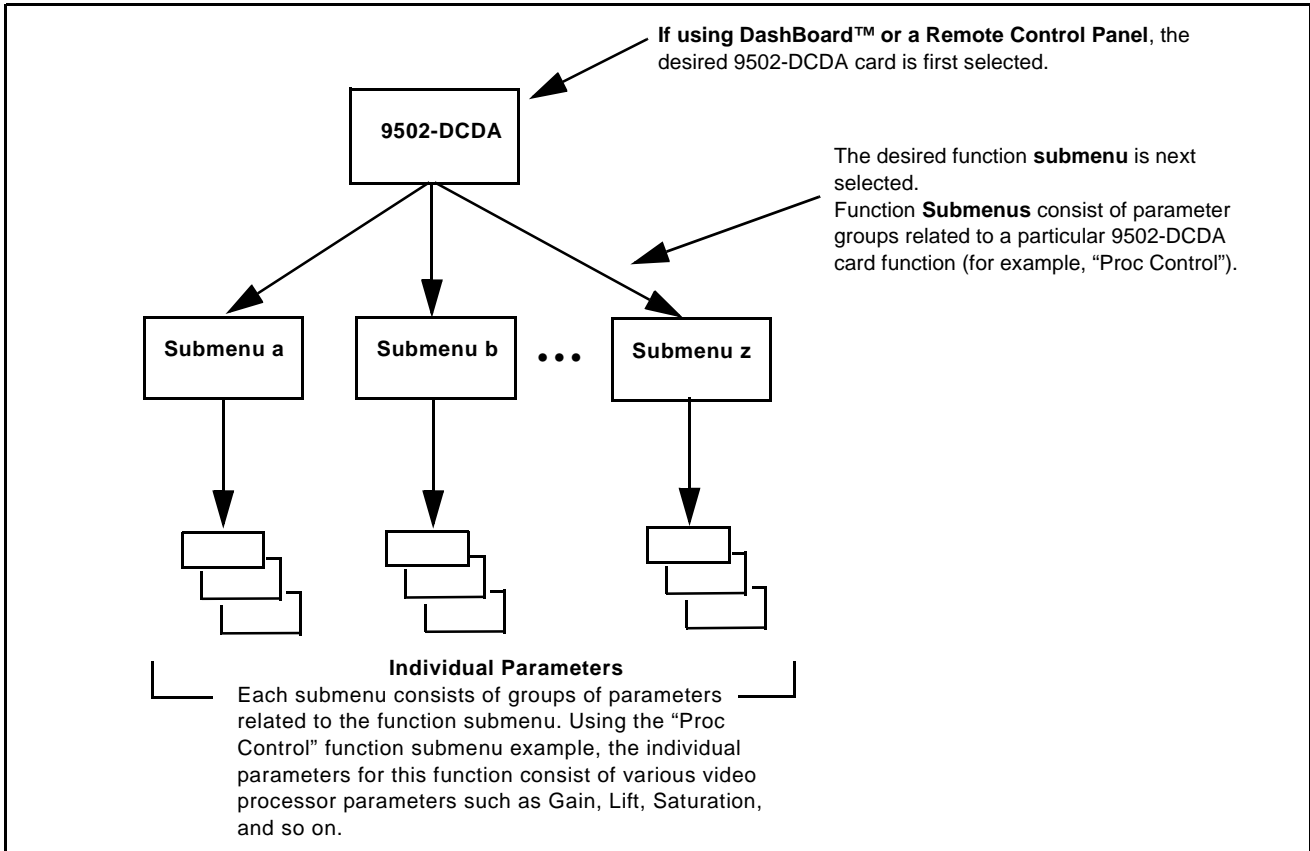


Figure 3-1 Function Submenu/Parameter Submenu Overview

DashBoard™ User Interface

(See Figure 3-2.) The card function submenus are organized in DashBoard™ using tabs. When a tab is selected, each parametric control or selection list item associated with the function is displayed. Scalar (numeric) parametric values can then be adjusted as desired using the GUI slider controls. Items in a list can then be selected using GUI drop-down lists.

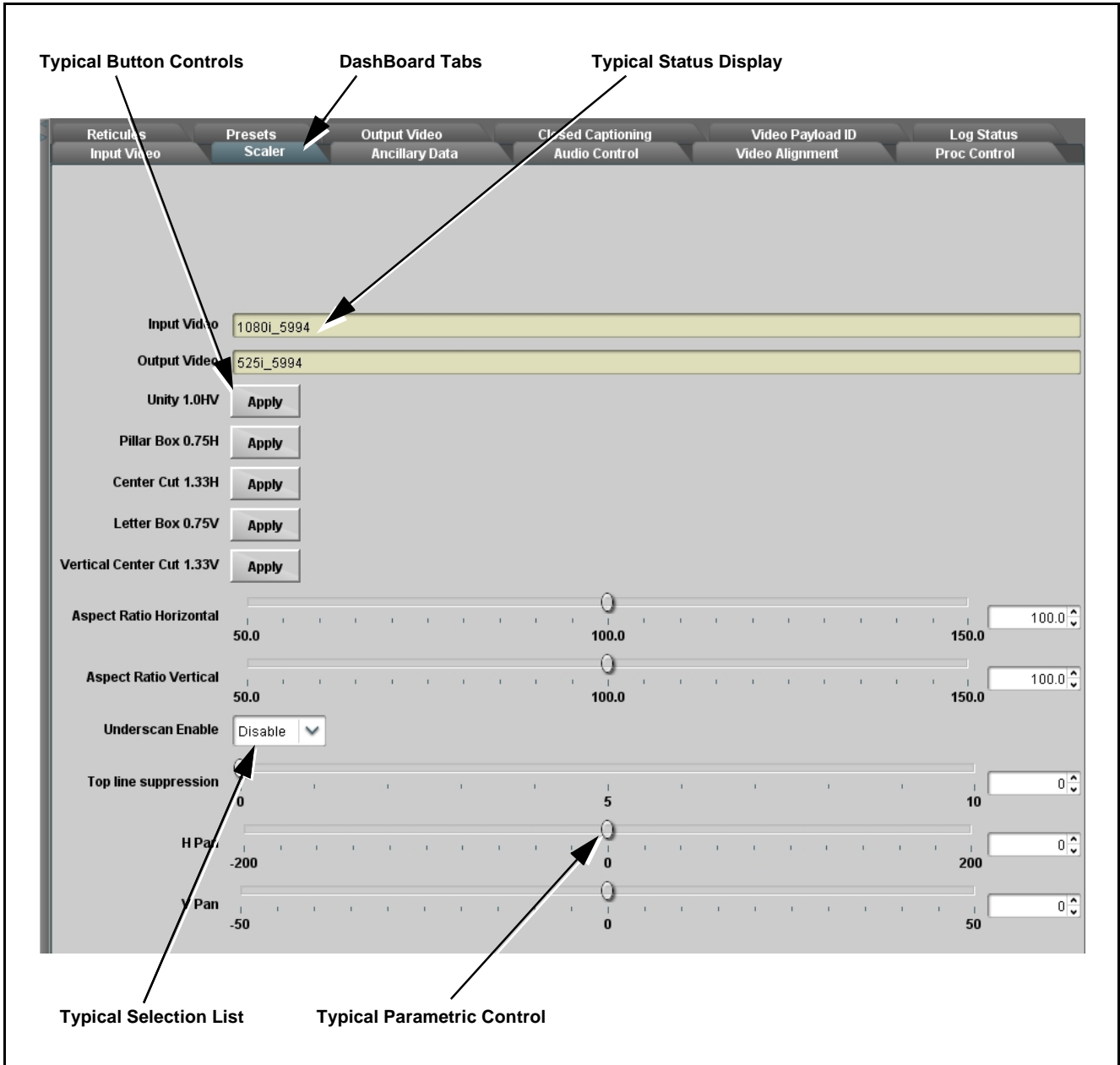


Figure 3-2 Typical DashBoard Tabs and Controls

Cobalt® Remote Control Panel User Interfaces

(See Figure 3-3.) Similar to the function submenu tabs using DashBoard™, the Remote Control Panels have a Select Submenu key that is used to display a list of function submenus. From this list, a control knob on the Control Panel is used to select a function from the list of displayed function submenu items.

When the desired function submenu is selected, each parametric control or selection list item associated with the function is displayed. Scalar (numeric) parametric values can then be adjusted as desired using the control knobs, which act like a potentiometer. Items in a list can then be selected using the control knobs which correspondingly act like a rotary switch. (In this manner, the setting effected using controls and selection lists displayed on the Control Panel are comparable to the submenu items accessed and committed using the 9502-DCDA card edge controls.)

Figure 3-3 shows accessing a function submenu and its parameters (in this example, “Video Proc”) using the Control Panel as compared to using the card edge controls.

Note: Refer to “OGCP-9000 Remote Control Panel User Manual” (PN OGCP-9000-OM) or “OGCP-9000/CC Remote Control Panel User Manual” (PN OGCP-9000/CC-OM) for complete instructions on using the Control Panels.



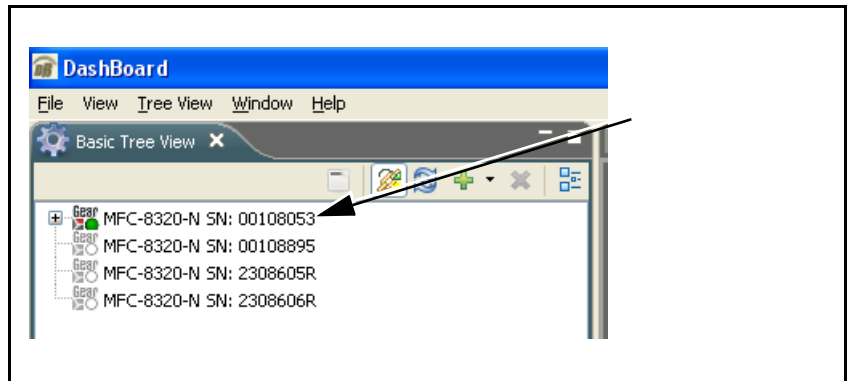
Figure 3-3 Remote Control Panel Setup of Example Video Proc Function Setup

Accessing the 9502-DCDA Card via Remote Control

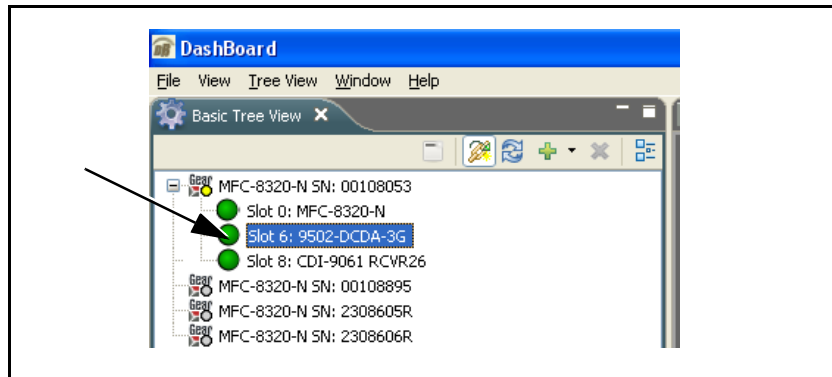
Access the 9502-DCDA card using DashBoard™ or Cobalt® Remote Control Panel as described below.

Accessing the 9502-DCDA Card Using DashBoard™

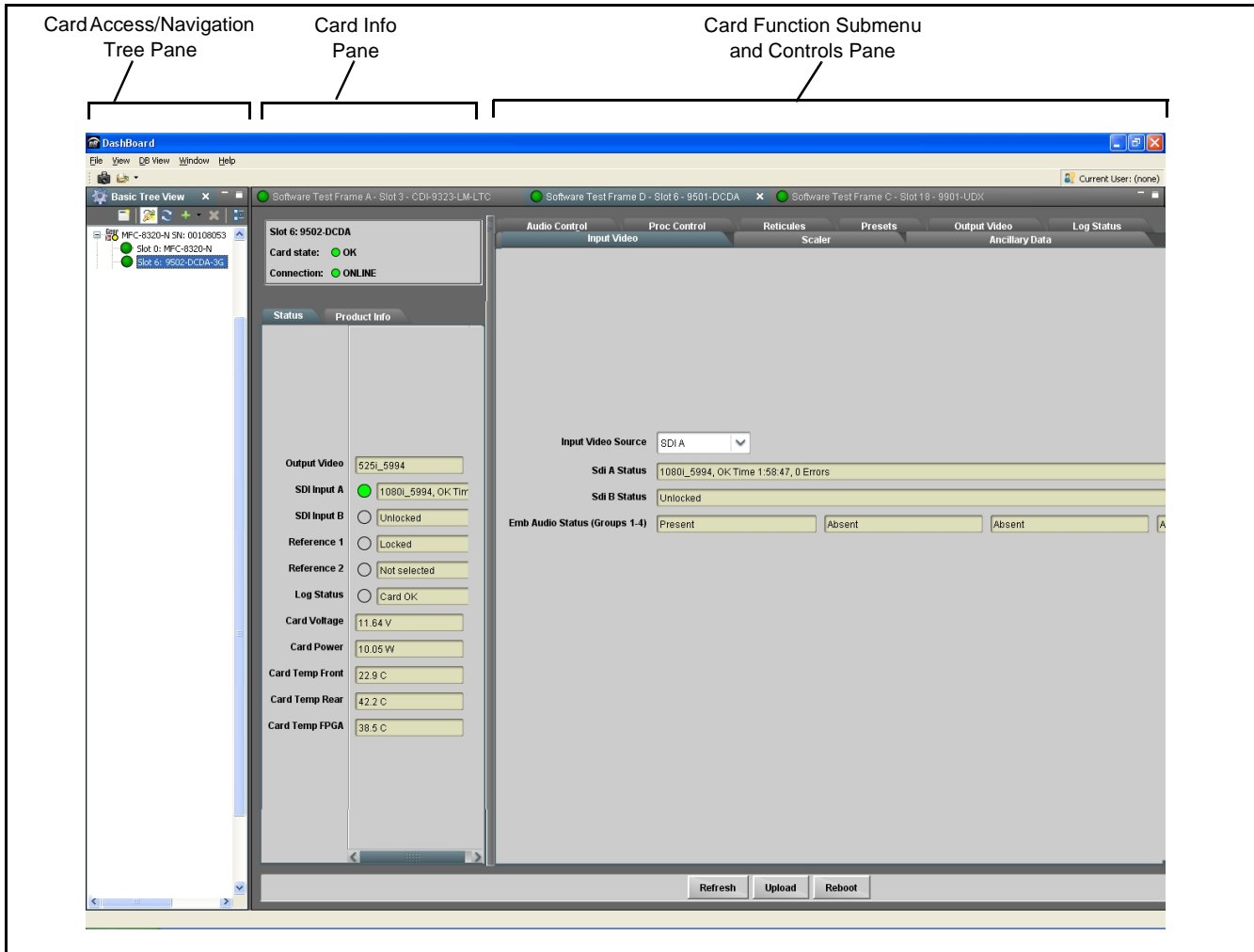
1. On the computer connected to the frame LAN, open DashBoard™.
2. As shown below, in the left side Basic View Tree locate the Network Controller Card associated with the frame containing the 9502-DCDA card to be accessed (in this example, “MFC-8320-N SN: 00108053”).



3. As shown below, expand the tree to access the cards within the frame. Click on the card to be accessed (in this example, “Slot 6: 9502-DCDA-3G”).

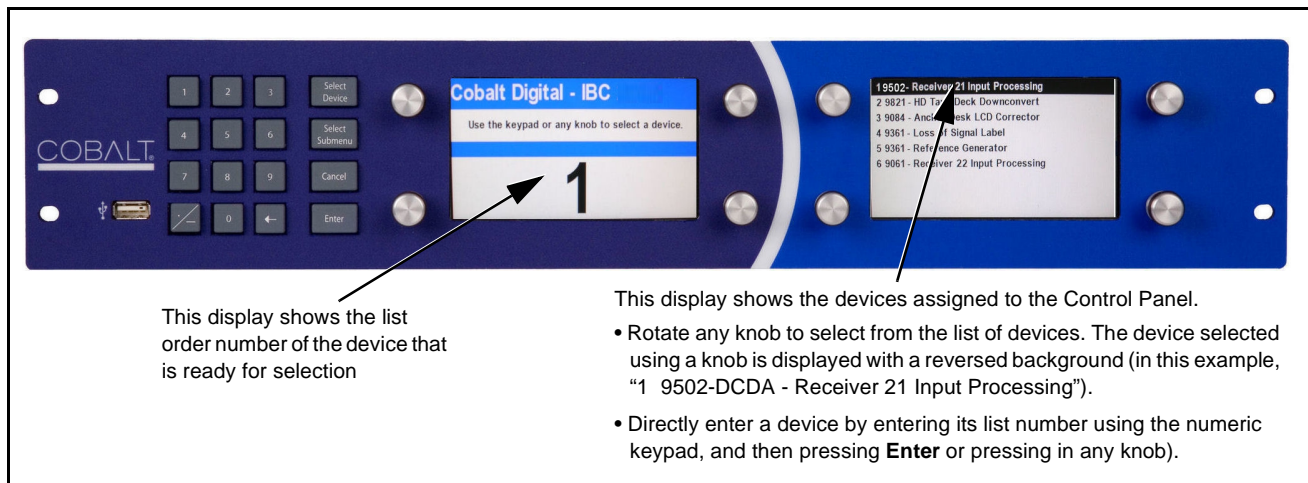


As shown on the next page, when the card is accessed in DashBoard™ its function submenu screen showing tabs for each function is displayed. (The particular submenu screen displayed is the previously displayed screen from the last time the card was accessed by DashBoard™).



Accessing the 9502-DCDA Card Using a Cobalt® Remote Control Panel

Press the **Select Device** key and select a card as shown in the example below.



Checking 9502-DCDA Card Information

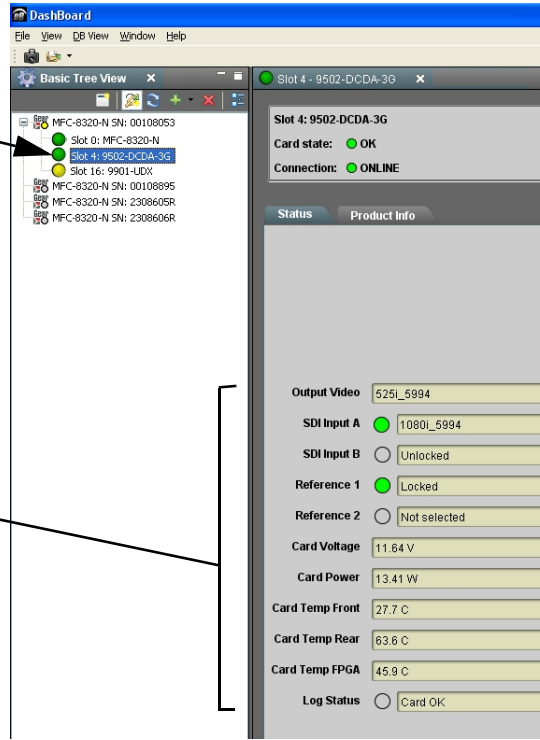
The operating status and software version the 9502-DCDA card can be checked using DashBoard™ or the card edge control user interface. Figure 3-4 shows and describes the 9502-DCDA card information screen using DashBoard™ and accessing card information using the card edge control user interface.

Note: Proper operating status in DashBoard™ is denoted by green icons for the status indicators shown in Figure 3-4. Yellow or red icons respectively indicate an alert or failure condition. Refer to Troubleshooting (p. 3-28) for corrective action.

The **Tree View** shows the cards seen by DashBoard™. In this example, Network Controller Card is hosting a 9502-DCDA card in slot 4.

Status Display
This displays shows the status and format of the signals being received by the 9502-DCDA, as well as card status.

Card Info Display
This displays (alternately selected in the Card Info pane) shows the the card hardware and software version info, as well as a Cobalt code number for the currently installed rear module.



The screenshot shows the DashBoard™ interface. On the left is the 'Basic Tree View' showing a hierarchy of cards. Slot 4 is highlighted, containing a 9502-DCDA-3G card. On the right is the 'Slot 4: 9502-DCDA-3G' information pane. It shows 'Card state: OK' and 'Connection: ONLINE'. Below this are two tabs: 'Status' and 'Product Info'. The 'Status' tab is active, displaying various signal and card parameters. The 'Product Info' tab is also visible, showing hardware and software details.

Parameter	Value
Output Video	525i_5994
SDI Input A	<input checked="" type="radio"/> 1080i_5994
SDI Input B	<input type="radio"/> Unlocked
Reference 1	<input checked="" type="radio"/> Locked
Reference 2	<input type="radio"/> Not selected
Card Voltage	11.64 V
Card Power	13.41 W
Card Temp Front	27.7 C
Card Temp Rear	63.6 C
Card Temp FPGA	45.9 C
Log Status	<input type="radio"/> Card OK

Parameter	Value
Product	9502-DCDA-3G
Supplier	Cobalt Digital Inc.
Revision	1.0.0000
FPGA Revision	1.00.0000
Build Date	Jun 16 2013 14:00:58
Serial Number	321891
Rear Module	1840

Figure 3-4 9502-DCDA Card Info/Status Utility

Ancillary Data Line Number Locations and Ranges

Table 3-1 lists typical default output video VANC line number locations for various ancillary data items that may be passed or handled by the card.

Table 3-1 Typical Ancillary Data Line Number Locations/Ranges

Item	Default Line No. / Range	
	SD	HD
AFD	12 (Note 2)	9 (Note 2)
ATC_VITC	13 (Note 2)	9/8 (Note 2)
ATC_LTC	—	10 (Note 2)
Dolby® Metadata	13 (Note 2)	13 (Note 2)
SDI VITC Waveform	14/16 (Note 2)	—
Closed Captioning	21 (locked)	10 (Note 2)

Notes:

- The card does not check for conflicts on a given line number. Make certain the selected line is available and carrying no other data.
- While range indicated by drop-down list on GUI may allow a particular range of choices, the actual range is automatically clamped (limited) to certain ranges to prevent inadvertent conflict with active picture area depending on video format. Limiting ranges for various output formats are as follows:

Format	Line No. Limiting	Format	Line No. Limiting	Format	Line No. Limiting
525i	12-19	720p	9-25	1080p	9-41
625i	9-22	1080i	9-20		

Because line number allocation is not standardized for all ancillary items, consideration should be given to all items when performing set-ups. Figure 3-5 shows an example of improper and corrected VANC allocation within an HD-SDI stream.

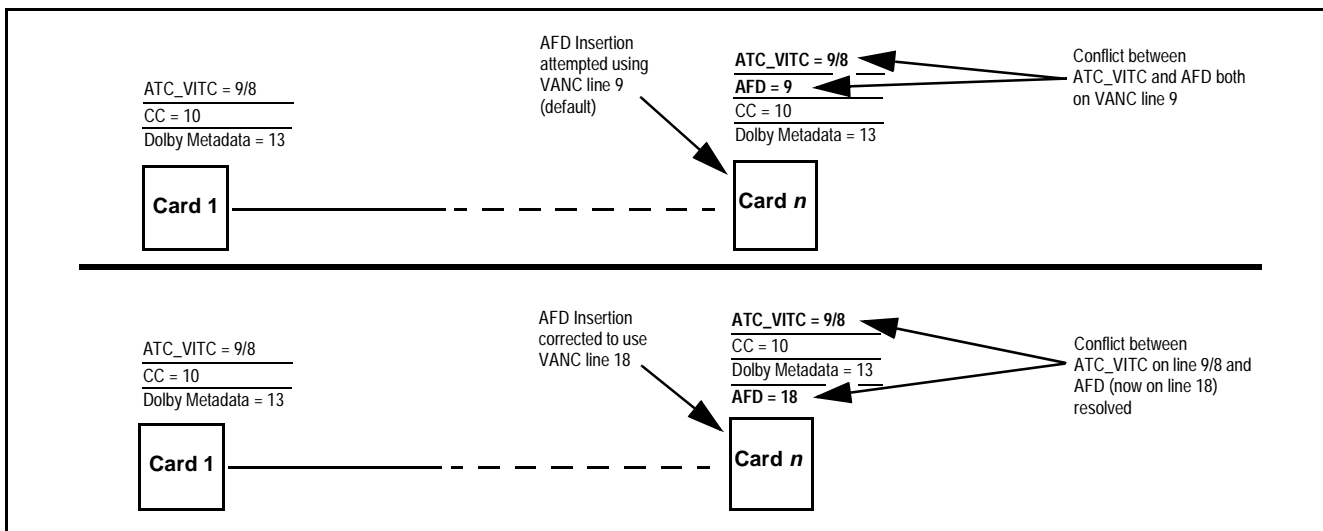



Figure 3-5 Example VANC Line Number Allocation Example

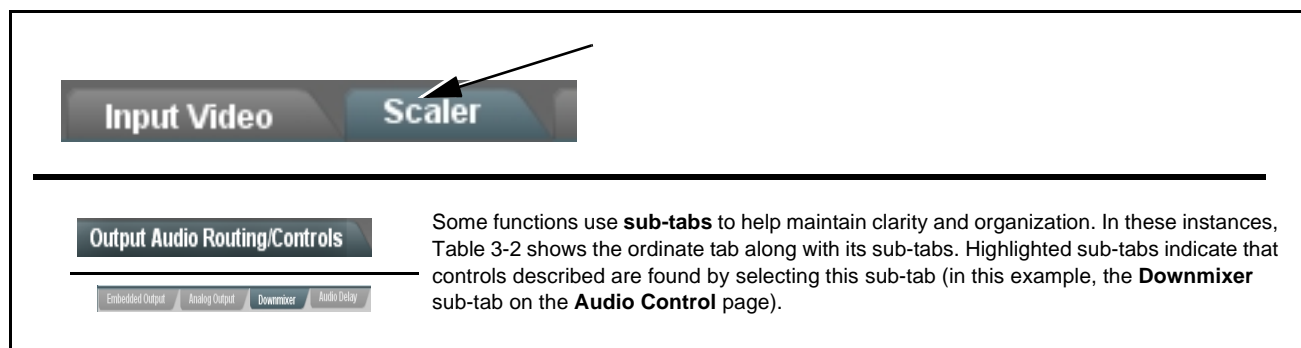
9502-DCDA Function Submenu List and Descriptions

Table 3-2 individually lists and describes each 9502-DCDA function submenu and its related list selections, controls, and parameters. Where helpful, examples showing usage of a function are also provided. Table 3-2 is primarily based upon using DashBoard™ to access each function and its corresponding submenus and parameters.

Note: All numeric (scalar) parameters displayed on DashBoard™ can be changed using the slider controls,  arrows, or by numeric keypad entry in the corresponding numeric field. (When using numeric keypad entry, add a return after the entry to commit the entry.)

Note: 3G inputs, controls, and functions described in this section are not applicable to 9502-DCDA-HD. In all other aspects, this version function identically as described.

On DashBoard™ itself and in Table 3-2, the function submenu items are organized using tabs as shown below.



Some functions use **sub-tabs** to help maintain clarity and organization. In these instances, Table 3-2 shows the ordinate tab along with its sub-tabs. Highlighted sub-tabs indicate that controls described are found by selecting this sub-tab (in this example, the **Downmixer** sub-tab on the **Audio Control** page).

The table below provides a quick-reference to the page numbers where each function submenu item can be found.

Function Submenu Item	Page	Function Submenu Item	Page
Input Video Controls	3-10	Closed Captioning	3-19
Scaler	3-10	Reticules	3-20
Video Alignment	3-12	Output Audio Routing/Controls	3-23
Timecode	3-13	Presets/Card Firmware Upgrade	3-26
Video Payload ID	3-17	Log Status/Download	3-27
Proc (Video) Control	3-18		

Table 3-2 9502-DCDA Function Submenu List


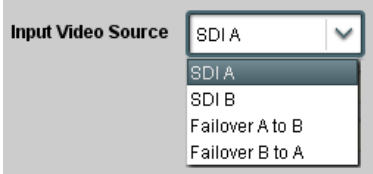
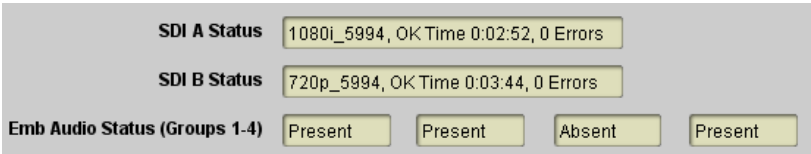


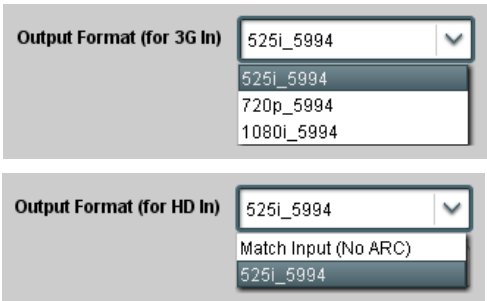
	<p>Allows manual or failover selection of card SDI inputs and displays status, raster format, and embedded group status of received SDI video.</p>
<p>• Input Video Source</p> 	<p>Selects the input video source to be applied to the card's program video input.</p> <ul style="list-style-type: none"> • SDI A and SDI B choices allow forced manual selection of correspondingly SDI IN A or SDI IN B. • Failover A to B sets main path preference of SDI IN A. <ul style="list-style-type: none"> - If SDI IN A goes invalid, then SDI IN B is selected. - If SDI IN A goes valid again, failover automatically reverts to SDI IN A. • Failover B to A sets main path preference of SDI IN B. <ul style="list-style-type: none"> - If SDI IN B goes invalid, then SDI IN A is selected. - If SDI IN B goes valid again, failover automatically reverts to SDI IN B. <p>Note: Failover criteria is simple signal presence.</p>
<p>• Input Video Status</p> 	<p>Displays input status and audio group presence, along with elapsed time of signal acquire.</p> <p>SDI A and SDI B Status show raster/format for both card inputs. If signal is not present or is invalid, Unlocked is displayed. (These status indications are also propagated to the Card Info pane.) Presence of each embedded audio group is also displayed for actively selected input.</p>
	<p>Provides aspect ratio controls and user H/V controls.</p>
<p>• Input/Output Video Status</p> 	<p>Displays signal format/status sent to scaler (as a function of Input Video Source settings above), as well as output format/status. If invalid or no signal is present, none is displayed.</p>
<p>• Downconverter Controls</p> 	<p>9502-DCDA provides selectable down-conversion for 3G, HD and SD inputs with the choices as shown using the controls here. Selected settings will automatically engage when corresponding video input format is received by the card.</p>

Table 3-2 9502-DCDA Function Submenu List — continued

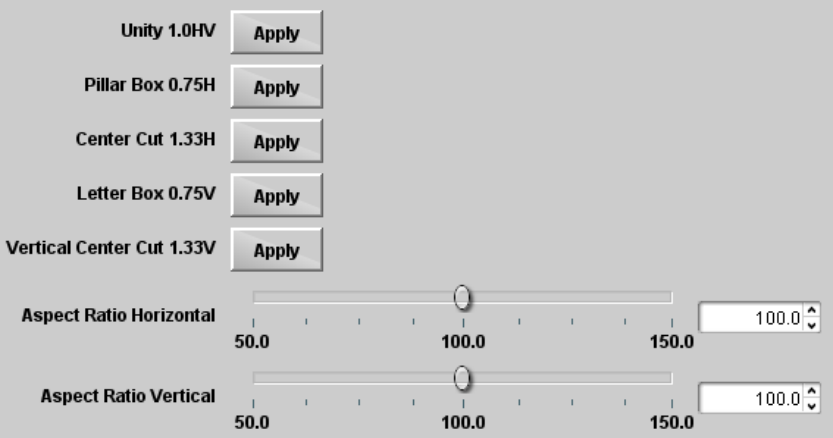
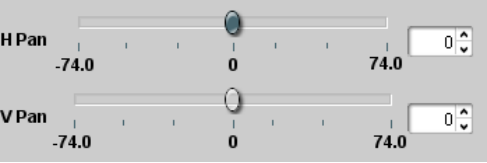
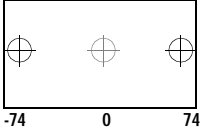
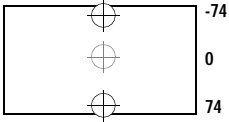
<div style="background-color: #333; color: white; padding: 5px; text-align: center; font-weight: bold; font-size: 1.2em;">Scaler</div>	<p>(continued)</p>
<p>• ARC Select Controls</p> 	<p>Selects between the standard preset Aspect Ratio Conversions (ARC) shown here, as well as User Defined Settings.</p> <p>Buttons allow standard ARC presets to be applied to output video. For any setting, using the Horizontal or Vertical controls allow user custom settings.</p> <p>Pressing any of the preset buttons restores the ARC to the selected setting and overrides any previous custom settings.</p> <p>(50% to 150% user range in 0.1% steps; null = 100.0)</p>
<p>• H Pan and V Pan Controls</p> 	<p>H Pan control shifts horizontal center of image left (negative settings) or right (positive settings)</p> <p>(-74% to 74% range in 0.1% steps; null = 0.0)</p>  <hr/> <p>V Pan control shifts vertical center of image down (negative settings) or up (positive settings)</p> <p>(-74% to 74% range in 0.1% steps; null = 0.0)</p> 

Table 3-2 9502-DCDA Function Submenu List — continued


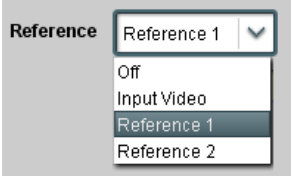

	<p>Shows the card output video alignment relative to selected video or reference sources.</p> <p>This allows assessment of the card's video timing/sync relative to other video or house reference sources.</p>
<p>• Reference Relative-To Select</p> 	<p>Selects the timing source to which the card's output video is measured against (in example here, card output video is measured relative to frame Reference 1).</p>
<p>• Alignment Timing Display</p> 	<p>Shows (in near real-time msec) the offset between the card's output video timing and the selected reference source.</p> <p>Examples: With source set to Input Video, the card's static latent delay is shown. With Reference 1 selected, a slow drift indicates the card's input is not upstream frame synced or ref locked with this reference. A non-drifting display would indicate that upstream video is ref locked to the selected reference.</p>

Table 3-2 9502-DCDA Function Submenu List — continued

<div style="background-color: #333; color: white; padding: 5px; display: inline-block; border-radius: 5px;">Timecode</div>	<p>Provides timecode data extraction from various sources, and provides formatting and re-insertion controls for inserting the timecode into the output video.</p>																		
<p>Shown below is an example in which received 1080i 5994 SDI video is being down-converted to 525i 5994. To preserve and re-insert the timecode data after scaling (which removes timecode packets), timecode re-insertion is performed using the Timecode controls. Each Timecode control is fully described on the pages that follow.</p>																			
<div style="border: 1px solid black; padding: 5px; display: inline-block;"> <p>1080i 5994 w/ ATC_LTC → 9502 → 525i5994 w/ ATC_VITC w/ VITC waveform</p> </div>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>Reference VITC Status</td><td>Not Present</td></tr> <tr><td>Input VITC Status</td><td>Not Present</td></tr> <tr><td>Input ATC LTC Status</td><td>03:50:43:20.1, Line 10</td></tr> <tr><td>Input ATC VITC Status</td><td>Not Present</td></tr> <tr><td>Input LTC Status</td><td>Not Present</td></tr> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>Source Priority 1</td><td>Input ATC_LTC</td></tr> <tr><td>Source Priority 2</td><td>Disable Output</td></tr> <tr><td>Source Priority 3</td><td>Disable Output</td></tr> <tr><td>Source Priority 4</td><td>Disable Output</td></tr> </table>	Reference VITC Status	Not Present	Input VITC Status	Not Present	Input ATC LTC Status	03:50:43:20.1, Line 10	Input ATC VITC Status	Not Present	Input LTC Status	Not Present	Source Priority 1	Input ATC_LTC	Source Priority 2	Disable Output	Source Priority 3	Disable Output	Source Priority 4	Disable Output
Reference VITC Status	Not Present																		
Input VITC Status	Not Present																		
Input ATC LTC Status	03:50:43:20.1, Line 10																		
Input ATC VITC Status	Not Present																		
Input LTC Status	Not Present																		
Source Priority 1	Input ATC_LTC																		
Source Priority 2	Disable Output																		
Source Priority 3	Disable Output																		
Source Priority 4	Disable Output																		
<p>A Noting that the incoming video contains ATC_LTC timecode data (as shown in the status display), set the Source Priority drop-down lists to include ATC_LTC timecode data as a choice. This extracts ATC_LTC timecode data from the incoming video to allow for re-insertion as a selected format.</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td>SD VITC Waveform Output 1 Line Number</td><td>14</td></tr> <tr><td>SD VITC Waveform Output 2 Line Number</td><td>16</td></tr> <tr><td>SD VITC Waveform Insertion</td><td>Enabled</td></tr> <tr><td>SD ATC_VITC Insertion</td><td>Enabled</td></tr> <tr><td>SD ATC Insertion Line</td><td>13 - SMPTE 12M-2-2008 Recommended</td></tr> </table>	SD VITC Waveform Output 1 Line Number	14	SD VITC Waveform Output 2 Line Number	16	SD VITC Waveform Insertion	Enabled	SD ATC_VITC Insertion	Enabled	SD ATC Insertion Line	13 - SMPTE 12M-2-2008 Recommended								
SD VITC Waveform Output 1 Line Number	14																		
SD VITC Waveform Output 2 Line Number	16																		
SD VITC Waveform Insertion	Enabled																		
SD ATC_VITC Insertion	Enabled																		
SD ATC Insertion Line	13 - SMPTE 12M-2-2008 Recommended																		
<p>B In this example, it is desired to provide both SDI ATC_VITC and VITC waveform timecode data in the converted SD output video. As such, set both SD ATC VITC Insertion and SD VITC Waveform Insertion to Enabled.</p> <p>In the example here, the line numbers are set to the default SMPTE 12M-2-2008 recommended values.</p>																			

Table 3-2 9502-DCDA Function Submenu List — continued



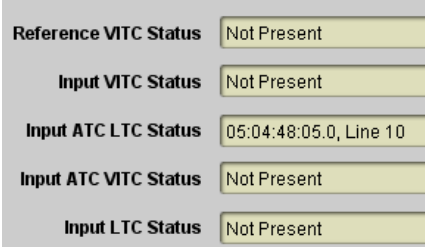
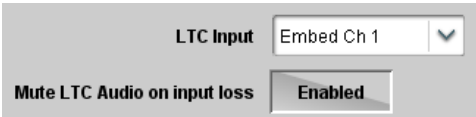



	(continued)
<p>Option  Audio LTC controls described below only appear on cards with +LTC licensed optional feature. This feature allows audio LTC from an embedded audio channel to be used as a timecode source, with conversion to a selected SMPTE 12M format on the output video.</p>	
<p>• Timecode Source Status Displays</p> 	<p>Displays the current status and contents of the received timecode formats shown to the left.</p> <ul style="list-style-type: none"> • If a format is receiving timecode data, the current content (timecode running count) is displayed. • If a format is not receiving timecode data, Not Present is displayed.
<p>• Audio LTC Source and Mute Controls</p>  <p>Option </p>	<p>(+LTC option only)</p> <p>LTC Input control selects input embedded audio channel when audio LTC is to be used as a source.</p> <p>Mute LTC Audio control allows timecode using LTC audio sources to freeze as follows:</p> <ul style="list-style-type: none"> • When set to Enabled and input timecode is lost, timecode insertion is disabled. • When set to Disabled and input timecode is lost, timecode output reverts to free-run. <p>Note: If muting upon loss of a particular input format is desired, set all Source Priority 1 thru 4 to that particular input format. If this is not done, the card failover timecode selection may substitute another format choice for the format not being received.</p>
<p>• Incoming ATC Packet Removal Control</p> 	<p>Enables or disables removal of existing input video ATC timecode packets from the output. This allows removal of undesired existing timecodes from the output, resulting in a “clean slate” where only desired timecodes are then re-inserted into the output. (For example, if both SDI ATC_VITC and ATC_LTC are present on the input video, and only ATC_LTC is desired, using the Removal control will remove both timecodes from the output. The ATC_LTC timecode by itself can then be re-inserted on the output using the other controls discussed here.)</p> <p>Note: When the Scaler is enabled, ATC packets are automatically removed. The Timecode function must be used to re-insert the timecode data into the output video.</p>
<p>• Timecode Master Insertion Control</p> 	<p>Turns on (when checked) or turns off Timecode insertion onto the output video.</p> <p>Note: This control must be enabled for any timecode re-insertion regardless of desired timecode output format.</p>

Table 3-2 9502-DCDA Function Submenu List — continued

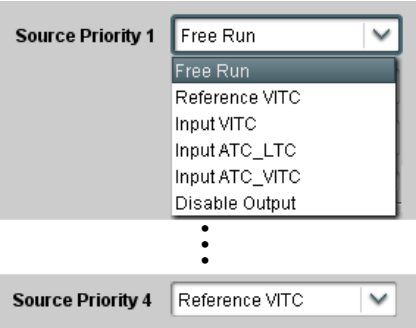
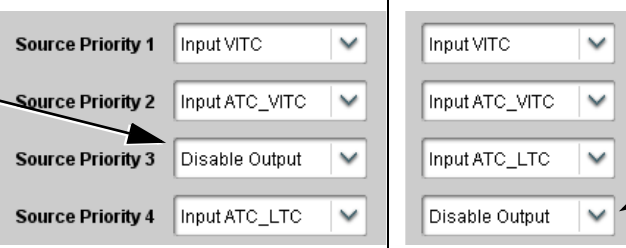
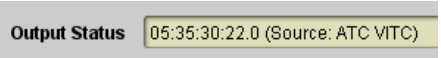
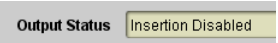
<div style="background-color: #333; color: white; padding: 5px; text-align: center; font-weight: bold;">Timecode</div>	(continued)
<p>• Source Priority</p>  <p>Note: Disable Output setting should be used with care. If Disable Output is selected with alternate intended format(s) set as a lower priority, the card will indeed disable all timecode output should the ordinate preferred format(s) become unavailable. Typically, choices other than Disable should be used if a timecode output is always desired, with Disable only being used to remove all timecode data.</p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div data-bbox="230 932 511 1146" style="width: 45%;"> <p>In this example, even though and ATC_LTC could be available to substitute for ATC_VITC not being present, the card will revert to no timecode output since the choice of Disable Output “out-prioritizes” ATC_LTC with these settings.</p> </div> <div data-bbox="548 911 1170 1157" style="width: 50%;">  </div> <div data-bbox="1198 932 1432 1052" style="width: 45%;"> <p>The choices shown here will allow ATC_LTC to “out-prioritize” Disable Output if ATC_VITC is not available.</p> </div> </div>	<p>Selects the priority assigned to each received format.</p> <p>Source Priority 1 thru Source Priority 4 select the preferred format to be used in descending order (i.e., Source Priority 2 selects the second-most preferred format, and so on. See example below.)</p> <p>Note: Reference VITC selection uses selection as set using Video Alignment tab for source.</p>
<p>• Output Status Display</p>  	<p>Displays the current content and source being used for the timecode data as follows:</p> <p>• Output status OK (in this example, ATC_VITC timecode being outputted).</p> <p>• Timecode Insertion button set to Disabled or selected format(s) unavailable as input; output insertion disabled.</p> <p>Note: Because the 1’s digit of the display Frames counter goes from 0 to 29, the fractional digit (along with the 1’s digit) indicates frame count as follows:</p> <ul style="list-style-type: none"> 0.0 Frame 0 0.1 Frame 1 1.0 Frame 2 1.1 Frame 3 • • • 29.1 Frame 59

Table 3-2 9502-DCDA Function Submenu List — continued


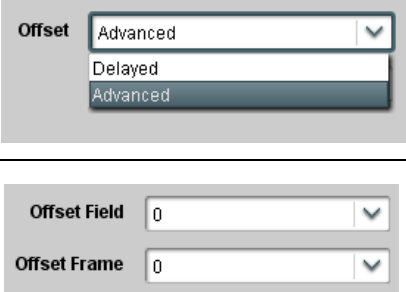
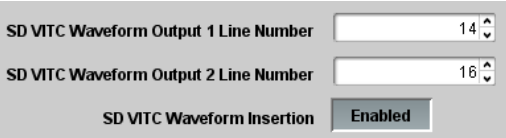

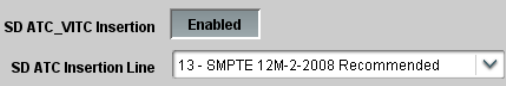
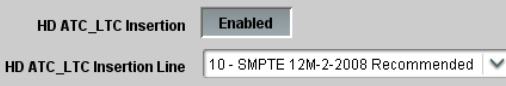
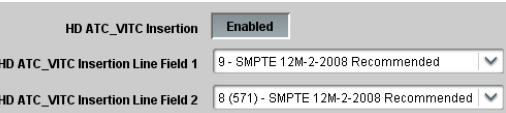
	(continued)
<p>• Offset Controls</p> 	<p>Allows the current timecode count to be advanced or delayed on the output video.</p> <ul style="list-style-type: none"> • Offset Advance or Delay selects offset advance or delay. • Offset Field delays or advances or delays timecode by one field. • Offset Frame delays or advances or delays timecode by up to 5 frames. <p>Note: Default settings are null, with both controls set at zero as shown.</p>
<p>Note:</p> <ul style="list-style-type: none"> • Although the output line drop-down on the controls described below will allow a particular range of choices, the actual range is automatically clamped (limited) to certain ranges to prevent inadvertent conflict with active picture area depending on video format. See Ancillary Data Line Number Locations and Ranges (p. 3-8) for more information. • The card does not check for conflicts on a given line number. Make certain the selected line is available and carrying no other data. 	
<p>• SD VITC Waveform Insertion Controls</p> 	<p>For SD output, enables or disables SD VITC waveform timecode insertion into the output video, and selects the VITC1 and VITC2 line numbers (6 thru 22) where the VITC waveform is inserted.</p> <p>Note:</p> <ul style="list-style-type: none"> • If only one output line is to be used, set both controls for the same line number. • SD VITC Waveform Insertion control only affects VITC waveforms inserted (or copied to a new line number) by this function. An existing VITC waveform on an unscaled SD SDI stream is not affected by this control and is passed on an SDI output.
<p>•  Audio LTC Output</p>	<p>Audio LTC output is routed to desired embedded and/or AES audio outputs using the Output Audio Routing/Controls (p. 3-23). Whatever timecode is displayed on the Output Status is converted to audio LTC and available as an LTC audio output.</p>
<p>• SD ATC Insertion Control</p> 	<p>For SD output, enables or disables SD ATC_VITC timecode insertion into the output video, and selects the line number for ATC_VITC.</p>
<p>• HD ATC_LTC Insertion Control</p> 	<p>For HD output, enables or disables ATC_LTC timecode insertion into the output video, and selects the line number for ATC_LTC timecode data.</p>
<p>• HD ATC_VITC Insertion Control</p> 	<p>For HD output, enables or disables ATC_VITC timecode insertion into the output video, and selects the line number for ATC_VITC1 and ATC_VITC2.</p>

Table 3-2 9502-DCDA Function Submenu List — continued

<div style="background-color: #333; color: white; padding: 5px; text-align: center; font-weight: bold;">Timecode</div>	<p>(continued)</p>
<p>• ATC_VITC Legacy Support Control</p> <div style="border: 1px solid #ccc; padding: 5px; background-color: #f0f0f0;"> <p>ATC VITC Legacy Support <input type="button" value="Disabled"/></p> </div>	<p>When enabled, accommodates equipment requiring ATC_VITC packet in both fields as a "field 1" packet (non-toggling).</p> <p>Note: Non-toggling VITC1 and VITC2 packets do not conform to SMPTE 12M-2-2008 preferences. As such, ATC_VITC Legacy Support should be enabled only if required by downstream equipment.</p>
<p>• Free Run Timecode Controls</p> <div style="border: 1px solid #ccc; padding: 5px; background-color: #f0f0f0;"> <p>Free Run Hours <input type="text" value="7"/> ▼</p> <p>Free Run Minutes <input type="text" value="0"/> ▼</p> <p>Free Run Seconds <input type="text" value="0"/> ▼</p> <p>Apply Free Run Values <input type="button" value="Confirm"/></p> </div>	<p>Allows an initial (starting) count to be applied to output video timecode when Free Run insertion is enabled.</p> <p>Note:</p> <ul style="list-style-type: none"> • Initialization can only be applied when card is outputting Free Run timecode (as shown by Output Status displaying "Free Run"). • If failover to Free Run occurs due to loss of external timecode(s), the Free Run count assumes its initial count from the last valid externally supplied count.
<div style="background-color: #333; color: white; padding: 5px; text-align: center; font-weight: bold;">Video Payload ID</div>	<p>Where applicable, allows display of payload identification in accordance with SMPTE 352M</p>
<p>Note: Refer to SMPTE 352M-2002 for descriptions of the various payload identifier bytes and their functions.</p>	
<p>• Status and Insertion Control</p> <div style="border: 1px solid #ccc; padding: 5px; background-color: #f0f0f0;"> <p>VPID Status on SDI A <input type="text" value="Detected"/></p> <p>Video Payload ID on SDI A <input type="text" value="89h CAh 00h 01h"/></p> <p>Extracted VPID Checksum on SDI A <input type="text" value="Normal"/></p> <p style="text-align: center;">⋮</p> <p>Video Payload ID Insertion <input type="button" value="Enabled"/></p> </div>	<ul style="list-style-type: none"> • Not Detected indicates SDI input is not marked with SMPTE 352-M package (other fields remain blank in this mode). • Detected indicates SDI input is marked with SMPTE 352-M package. Video Payload ID field is now populated with 4-byte SMPTE ID. <p>Note: Status display for SDI IN B (not shown) is identical as described above.</p> <ul style="list-style-type: none"> • Insertion control, when enabled, retains and inserts SMPTE 352M package on outputted SDI. When set to disabled, SMPTE 352M package is removed from SDI outputs.

Table 3-2 9502-DCDA Function Submenu List — continued






	<p>Provides the following Video Proc parametric controls.</p>
<p>• Luma Gain</p> 	<p>Adjusts gain percentage applied to Luma (Y channel). (0% to 200% range in 1% steps; unity = 100%)</p>
<p>• Luma Lift</p> 	<p>Adjusts lift applied to Luma (Y-channel). (-100% to 100% range in 1% steps; null = 0.0%)</p>
<p>• Saturation</p> 	<p>Adjusts gain percentage (saturation) applied to Chroma channels. (0% to 200% range in 1% steps; unity = 100%)</p>
<p>• Color Phase</p> 	<p>Adjusts phase angle applied to Chroma. (0° to 360° range in 1° steps; null = 0°)</p>

Table 3-2 9502-DCDA Function Submenu List — continued


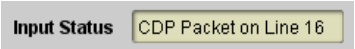
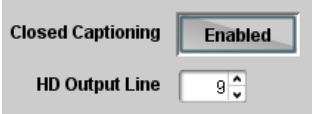
	<p>Provides support for closed captioning setup.</p>								
<p>Note: When receiving HD-SDI, both CEA 608 and CEA 708 are supported, with CEA 608 and CEA 708 (containing CEA 608 packets) converted to line 21 closed captioning on outputs down-converted to SD.</p>									
<p>• Closed Captioning Input Status</p> 	<p>Displays incoming Closed Captioning status as follows:</p> <ul style="list-style-type: none"> • If closed captioning is present, a message similar to the example shown left is displayed. Also displayed is the VANC line number of the incoming closed captioning packet (or SD waveform-based VANC line number). • If no closed captioning is present in the video signal, Not Present or Disabled is displayed. <p>Note: • Packet closed captioning status Captioning Rejected Due To message can appear due to the items described below. The closed captioning function assesses <i>cdp_identifier</i>, <i>cdp_frame_rate</i>, <i>ccdata_present</i>, and <i>caption_service_active</i> items contained in the packet header to make the determinations listed below. Refer to CEA-708-B for more information.</p> <table border="1" data-bbox="781 779 1430 1167"> <thead> <tr> <th>Message</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>Unsupported Frame Rate</td> <td>Film rate closed-captioning (either as pass-through or up/down conversion) is not supported by the card.</td> </tr> <tr> <td>Data Not Present</td> <td>Packet is marked from closed captioning source external to the card that no data is present.</td> </tr> <tr> <td>No Data ID</td> <td>Packet from closed captioning source external to the card is not properly identified with 0x9669 as the first word of the header (unidentified packet).</td> </tr> </tbody> </table> <ul style="list-style-type: none"> • caption service is marked as inactive display indicates bit in packet from upstream source may inadvertently be set as inactive. In this case, closed captioning data (if present) is still processed and passed by the card as normal. • The closed captioning function does not support PAL closed captioning standards. 	Message	Description	Unsupported Frame Rate	Film rate closed-captioning (either as pass-through or up/down conversion) is not supported by the card.	Data Not Present	Packet is marked from closed captioning source external to the card that no data is present.	No Data ID	Packet from closed captioning source external to the card is not properly identified with 0x9669 as the first word of the header (unidentified packet).
Message	Description								
Unsupported Frame Rate	Film rate closed-captioning (either as pass-through or up/down conversion) is not supported by the card.								
Data Not Present	Packet is marked from closed captioning source external to the card that no data is present.								
No Data ID	Packet from closed captioning source external to the card is not properly identified with 0x9669 as the first word of the header (unidentified packet).								
<p>• Closed Captioning On/Off and HD Insertion Line</p> 	<p>Turns on or turns off Closed Captioning insertion on the output.</p> <p>Note: • Closed captioning is set to standard default line number (line 21) for SD output.</p> <ul style="list-style-type: none"> • Although the output line drop-down will allow any choice within the 9 thru 41 range, the actual range is automatically clamped (limited to) certain ranges to prevent inadvertent conflict with active picture area depending on video format. See Ancillary Data Line Number Locations and Ranges (p. 3-8) for more information. • The card does not check for conflicts on a given line number. Make certain selected line is available and carrying no other data. • Closed captioning line may contain active unintended data even if closed captioning is set to Off. 								

Table 3-2 9502-DCDA Function Submenu List — continued

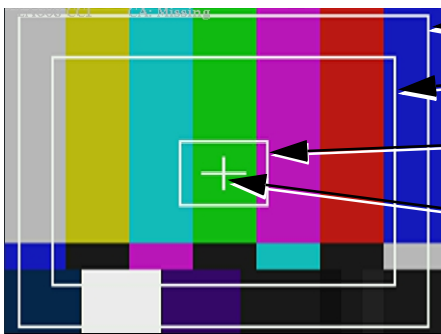
<div style="background-color: #333; color: white; padding: 5px; text-align: center; font-weight: bold; font-size: 1.2em;">Reticules</div> <hr/> <div style="display: flex; justify-content: space-around; border-bottom: 1px solid black;"> Basic Advanced </div>	<p>Allows Safe Action and/or Safe Title overlays and other static markers to be added to the output video image.</p>
<p>Typical Reticule/Overlay Marker Insertions The 9502 allows any combination of the reticule/overlay markers to be applied to the output video. Sizing and other characteristics for each type of marker can be set as described below.</p> <div style="display: flex; align-items: center;">  <div style="margin-left: 20px;"> <p>Safe Action Area (SAA) Reticule</p> <p>Safe Title Area (STA) Reticule</p> <p>Graticule</p> <p>Center Cross</p> </div> </div> <p>Note:</p> <ul style="list-style-type: none"> • Overlay markers using this function are for setup only. When enabled, these markers are embedded in the output video and will appear in the image. Use this function only on preview video and not on-air video. Make certain any overlay tools are turned off when no longer needed. • Multiple overlay markers described below can be simultaneously enabled as desired. 	
<p>• Insertion Master Enable/Disable</p> <div style="border: 1px solid #ccc; padding: 5px; background-color: #f0f0f0;"> <p>SDI Out Reticule Disable ▾</p> <div style="border: 1px solid #ccc; padding: 2px; margin-top: 2px;"> Disable Enable </div> </div>	<p>Provides independent master enable/disable for card SDI output.</p> <ul style="list-style-type: none"> • When enabled, any combination of reticules or other markers described below can be inserted. • When disabled, insertion of all reticules or other markers is disabled.
<p>• Safe Action Area (SAA) Controls</p> <div style="border: 1px solid #ccc; padding: 5px; background-color: #f0f0f0;"> <p>SAA Enable ▾</p> <div style="border: 1px solid #ccc; padding: 2px; margin-top: 2px;"> Disable Enable </div> <p>SAA Height 0 50 100 92 ▾</p> <p>SAA Width 0 50 100 92 ▾</p> </div>	<ul style="list-style-type: none"> • SAA provides enable/disable of safe action area graticule insertion. • SAA Height and SAA Width control height and width of insertion (from 0% to 100% of 4:3 outputted image area). <p>Note: Reticule Size control is locked to Custom for this card, with safe action area size control as described above.</p>

Table 3-2 9502-DCDA Function Submenu List — continued


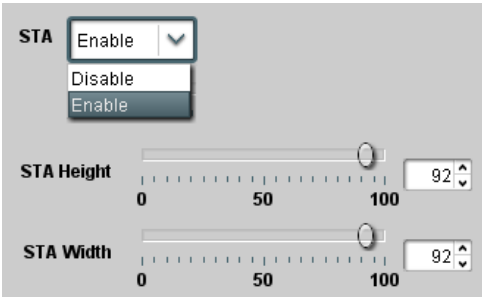



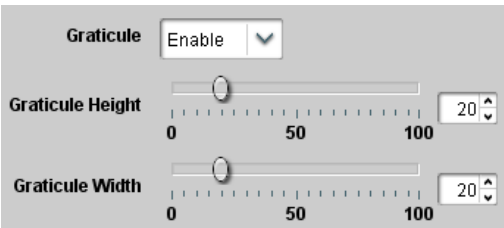
	<p>(continued)</p>
<p>• Safe Title Area (STA) Controls</p> 	<ul style="list-style-type: none"> • STA provides enable/disable of safe title area graticule insertion. • STA Height and STA Width control height and width of insertion (from 0% to 100% of 4:3 outputted image area).
<p>• Overlay Color Controls</p>  	<ul style="list-style-type: none"> • Overlay Color selects from white or black colors. • Inverse Color provides a negative of the underlying image pixels (see below). (Inverse setting overrides Overlay Color control setting.) • Opacity sets the opacity of the overlay for both white/black and inverse color modes.
	<p>Provides insertion and sizing controls for custom graticules and other markers. Also provides NTSC legacy 4:3 master reticule sizing.</p>
<p>Note: Color attributes of markers described below are set using the master Overlay Color Controls described above.</p>	
<p>• Graticule Controls</p> 	<ul style="list-style-type: none"> • Graticule provides enable/disable of user graticule insertion. • Graticule Height and Width control height and width of insertion (from 0% to 100% of 4:3 outputted image area).

Table 3-2 9502-DCDA Function Submenu List — continued

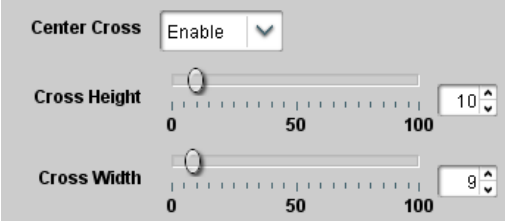
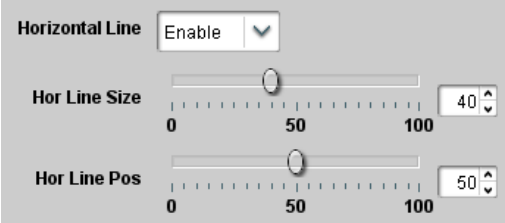
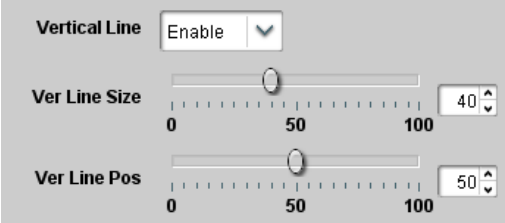
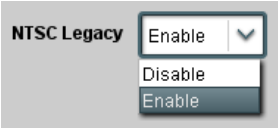
<div style="background-color: #333; color: white; padding: 5px; text-align: center; font-weight: bold;">Reticules</div> <div style="display: flex; justify-content: space-around; border-top: 1px solid black; border-bottom: 1px solid black; margin-top: 5px;"> Basic Advanced </div>	(continued)
<p>• Center Cross Controls</p> 	<ul style="list-style-type: none"> • Center Cross provides enable/disable of center cross insertion. • Cross Height and Width control height of vertical line and width of horizontal line (from 0% to 100% of 4:3 outputted image area).
<p>• Horizontal Line Controls</p> 	<ul style="list-style-type: none"> • Horizontal Line provides enable/disable of horizontal line insertion. • Horizontal Line Size controls the width of the horizontal line (from 0% to 100% of 4:3 outputted image area). • Horizontal Line Pos controls the vertical positioning of the horizontal line (from 0% to 100% of 4:3 outputted image area).
<p>• Vertical Line Controls</p> 	<ul style="list-style-type: none"> • Vertical Line provides enable/disable of vertical line insertion. • Vertical Line Size controls the height of the vertical line (from 0% to 100% of 4:3 outputted image area). • Vertical Line Pos controls the horizontal positioning of the line (from 0% to 100% of 4:3 outputted image area).
<p>• NTSC Legacy Reticule Fixed Control</p> 	<p>When set to enable, provides fixed-size safe action area 4:3 reticule suited for CRT-based displays.</p>

Table 3-2 9502-DCDA Function Submenu List — continued

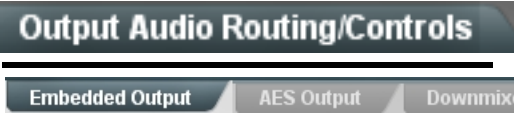

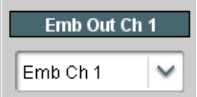

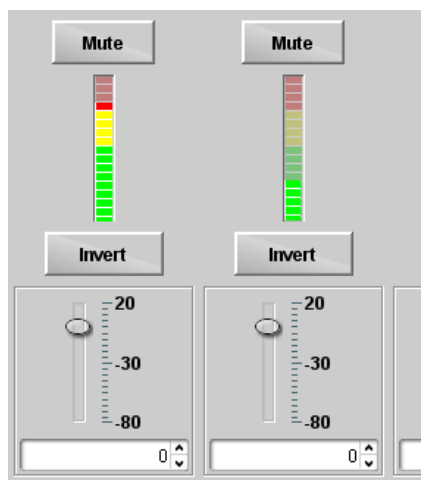
	<p>Provides an audio crosspoint allowing the audio source selection for each embedded audio output channel. Also provides Gain, Phase Invert, and Muting controls and peak level meters for each output channel.</p>
<p>Note:</p> <ul style="list-style-type: none"> • Embedded Ch 2 thru Embedded Ch 16 have controls identical to the Source, Gain, Mute, and Phase controls described here for Embedded Ch 1. Therefore, only the Embedded Ch 1 controls are shown here. • For each channel, its source and destination should be considered and appropriately set. Unused destination channels should be set to the Silence selection. 	
<p>• Group Enable/Disable Controls</p> 	<p>Allows enable/disable of embedded audio groups 1 thru 4 on card program video output to accommodate some legacy downstream systems that may not support all four embedded audio groups.</p> <p>Note: Changing the setting of this control will result in a noise burst in all groups. This control should not be manipulated when carrying on-air content.</p>
<p>• Embedded Output Channel Source</p> 	<p>Using the Source drop-down list, selects the audio input source to be embedded in the corresponding embedded output channel from the following choices:</p> <ul style="list-style-type: none"> • Embedded input channel 1 thru 16 (Emb Ch 1 thru Emb Ch 16) • Built-in Tone generators Tone 1 thru Tone 16 (all are -20 dBFS level; freq (Hz) in ascending order are 100, 200, 300, 400, 500, 600, 700, 800, 900, 1k, 2k, 4k, 6k, 8k, 12k, and 16k) • Option  Audio LTC • Downmixer L • Downmixer R
<p>• Channel Mute/Phase Invert/Gain Controls and Peak Level Display</p> 	<p>Provides Mute and phase Invert channel controls, as well as peak level meter for each output channel. (Meter shows level as affected by Level control.)</p> <p>Gain controls allow relative gain (in dB) control for the corresponding destination Embedded Audio Group channel.</p> <p>(-80 to +20 dB range in 1.0 dB steps; unity = 0 dB)</p> <p>Note: Although the 9502 can pass non-PCM data such as Dolby® E or AC-3, setting the gain control to any setting other than default 0 will corrupt Dolby data.</p>

Table 3-2 9502-DCDA Function Submenu List — continued

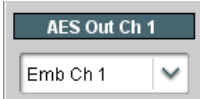

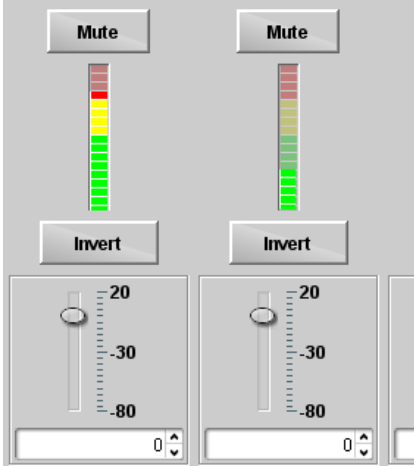
<p>Output Audio Routing/Controls</p> <p>AES Output Downmixer Audio Delay</p>	<p>Provides an audio crosspoint allowing the audio source selection for each AES audio output channel. Also provides Gain, Phase Invert, and Muting controls and peak level meters for each output channel.</p>
<p>Note:</p> <ul style="list-style-type: none"> • AES Out Ch 2 thru AES Out Ch 16 have controls identical to the Source, Gain, Mute, and Phase controls described here for AES Out Ch 1. Therefore, only the AES Out Ch 1 controls are shown here. • Although card de-embedding supports de-embedding to AES channels 1 thru 16 (AES pairs 1 thru 8), current rear module options support output only to pairs 1 thru 4. • For each channel, its source and destination should be considered and appropriately set. Unused destination channels should be set to the Silence selection. 	
<p>• AES Output Channel Source</p> 	<p>Using the Source drop-down list, selects the audio input source to be routed to the corresponding AES output channel from the following choices:</p> <ul style="list-style-type: none"> • Embedded input channel 1 thru 16 (Emb Ch 1 thru Emb Ch 16) • Built-in Tone generators Tone 1 thru Tone 16 (all are -20 dBFS level; freq (Hz) in ascending order are 100, 200, 300, 400, 500, 600, 700, 800, 900, 1k, 2k, 4k, 6k, 8k, 12k, and 16k) • Option  Audio LTC • Downmixer L • Downmixer R <p>Note: Although DashBoard controls for de-embedding to AES out channels AES Out Ch 1 thru AES Out Ch 16 are present, current rear modules allow only AN Out Ch 1 thru AN Out Ch 8 (pairs 1 thru 4) to be used.</p>
<p>• Channel Mute/Phase Invert/Gain Controls and Peak Level Display</p> 	<p>Provides Mute and phase Invert channel controls, as well as peak level meter for each output channel. (Meter shows level as affected by Level control.)</p> <p>Gain controls allow relative gain (in dB) control for the corresponding destination AES output channel.</p> <p>(-80 to +20 dB range in 1.0 dB steps; unity = 0 dB)</p> <p>Note: Although the 9502 can pass non-PCM data such as Dolby® E or AC-3, setting the gain control to any setting other than default 0 will corrupt Dolby data.</p>

Table 3-2 9502-DCDA Function Submenu List — continued


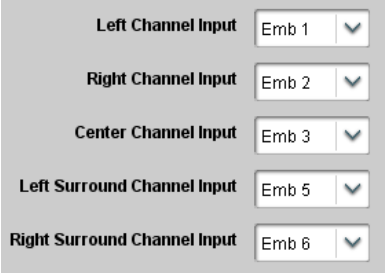
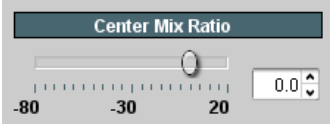
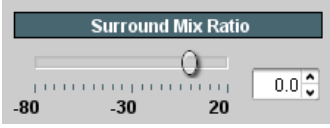
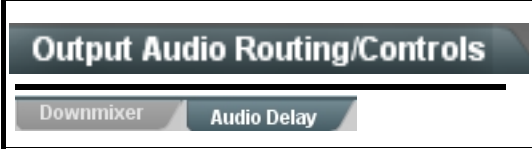

	<p>Provides audio down-mix audio routing selections that multiplexes any five embedded audio channel sources into a stereo pair.</p>
<p>• Downmixer Source Controls</p> 	<p>Left Channel Input thru Right Surround Channel Input select the five embedded source channels to be used for the downmix.</p> <p>Downmix channels Downmixer L and Downmixer R are available as sources for embedded and/or AES audio outputs using the Channel Source controls described above.</p>
<p>• Center Mix Ratio Control</p> 	<p>Adjusts the attenuation ratio of center-channel content from 5-channel source that is re-applied as Lt and Rt content to the DM-L and DM-R stereo mix.</p> <ul style="list-style-type: none"> -0 dB setting applies no ratiometric reduction. Center channel content is restored as in-phase center-channel content with no attenuation, making center-channel content more predominate in the overall mix. Maximum attenuation setting (-80 dB) applies a -80 dB ratiometric reduction of center-channel content. Center-channel content is restored as in-phase center-channel content at a -80 dB ratio relative to overall level, making center-channel content less predominate in the overall mix. <p>(20 dB to -80 dB range in 0 dB steps; default = 0 dB)</p> <p>Note: Default setting is recommended to maintain center-channel predominance in downmix representative to that of the original source 5-channel mix.</p>
<p>• Surround Mix Ratio Control</p> 	<p>Adjusts the attenuation ratio of surround-channel content from 5-channel source that is re-applied as Lo and Ro content to the DM-L and DM-R stereo mix.</p> <ul style="list-style-type: none"> -0 dB setting applies no ratiometric reduction. Surround-channel content is restored with no attenuation, making Lo and Ro content more predominate in the overall mix. Maximum attenuation setting (-80 dB) applies a -80 dB ratiometric reduction of surround-channel content. Surround-channel content is restored at a -80 dB ratio relative to overall level, making surround-channel content less predominate in the overall mix. <p>(20 dB to -80 dB range in 0 dB steps; default = 0 dB)</p> <p>Note: Default setting is recommended to maintain surround-channel predominance in downmix representative to that of the original source 5-channel mix.</p>
	<p>Provides a bulk audio delay control.</p>
<p>• Bulk (Master) Audio/Video Delay Control</p> 	<p>Delay control adds bulk (all four groups) audio delay from any video delay (net audio delay offset setting adds delay in addition to any delay included by other actions). This control is useful for correcting lip sync problems when video and audio paths in the chain experience differing overall delays. (-33 to +3000 msec range in 1-msec steps; null = 0 msec)</p> <p>Note: Delay settings are applied to embedded as well as AES audio outputs.</p>

Table 3-2 9502-DCDA Function Submenu List — continued

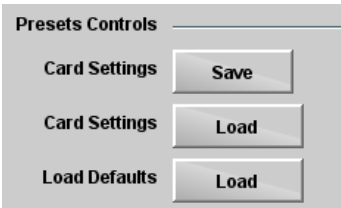
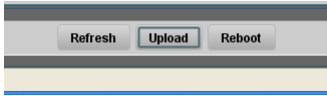
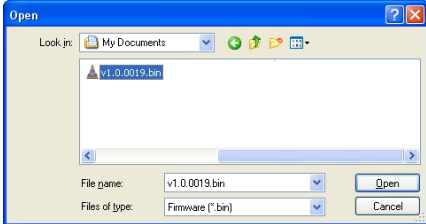
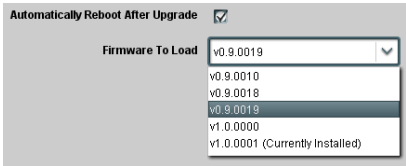
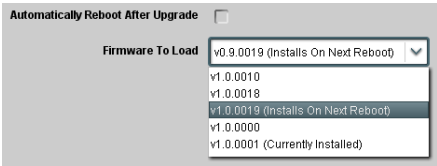
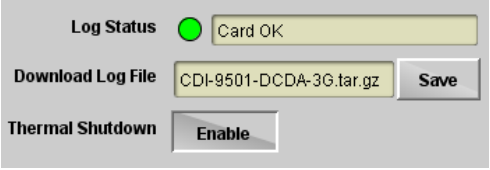
<p>Presets/Firmware Upgrade</p>	<p>Allows user control settings to be saved in a Preset and then recalled (loaded) as desired, and provides a one-button restore of factory default settings.</p> <p>Also provides controls for selecting and loading card firmware upgrade files.</p>
<p>• Preset Save/Load Controls</p> 	<p>Card Settings > Save button allows all custom user setting configurations to be saved to a Preset.</p> <p>Card Settings > Load button allows the saved preset to be loaded, with the preset overwriting all card settings with the saved preset. When a preset is loaded, it immediately becomes active with all user settings now automatically set as directed by the preset.</p> <p>All current settings (including list selections and scalar (numeric) control settings are saved when a Preset Save is invoked.</p>
<p>• Firmware Upgrade Controls</p>	<p>Firmware upgrade controls allow a selected firmware version (where multiple versions can be uploaded to the card's internal memory) to invoke an upgrade to a selected version either instantly, or set to install on the next card reboot (thereby allowing card upgrade downtime to be controlled at a scheduled point in time).</p>
<p>1. Access a firmware upgrade file from a network computer by clicking Upload at the bottom of DashBoard.</p> <p>2. Browse to the location of the firmware upgrade file (in this example, <i>My Documents\lv1.0.0019.bin</i>).</p> <p>3. Select the desired file and click Open to upload the file to the card.</p>	 
<p>• Immediate firmware upload. The card default setting of Automatically Reboot After Upgrade checked allow a selected firmware version to be immediately uploaded as follows:</p> <p>1. Click Firmware To Load and select the desired upgrade file to be loaded (in this example, "v1.0.0019").</p> <p>2. Click Load Selected Firmware. The card now reboots and the selected firmware is loaded.</p>	
<p>• Deferred firmware upload. With Automatically Reboot After Upgrade unchecked, firmware upgrade loading is held off until the card is manually rebooted. This allows scheduling a firmware upgrade downtime event until when it is convenient to experience to downtime (uploads typically take about 60 seconds).</p> <p>1. Click Firmware To Load and select the desired upgrade file to be loaded (in this example, "v1.0.0019"). Note now how the display shows "Installs on Next Reboot".</p> <p>2. Click Load Selected Firmware. The card holds directions to proceed with the upload, and performs the upload only when the card is manually rebooted (by pressing the Reboot button).</p> <p>3. To cancel a deferred upload, press Cancel Pending Upgrade. The card reverts to the default settings that allow an immediate upload/upgrade.</p>	

Table 3-2 9502-DCDA Function Submenu List — continued

<div style="background-color: #333; color: white; padding: 5px; text-align: center; font-weight: bold; font-size: 1.2em;">Log Status</div>	<p>Provides a global card operating status and allows a log download for factory engineering support.</p>
<p>• Log Status and Download Controls</p> 	<ul style="list-style-type: none"> • Log Status indicates overall card internal operating status. • Download Log File allows a card operational log file to be saved to a host computer. This log file can be useful in case of a card error or in the case of an operational error or condition. • Thermal Shutdown enable/disable allows the built-in thermal failover to be defeated. (Thermal shutdown is enabled by default). <div style="background-color: black; color: white; padding: 5px; font-weight: bold; font-size: 1.1em; margin-top: 10px;">CAUTION</div> <p>The 9502 FPGA is designed for a normal-range operating temperature around 85° C core temperature. Operation in severe conditions exceeding this limit for non-sustained usage are within device operating safe parameters, and can be allowed by setting this control to Disable. However, the disable (override) setting should be avoided under normal conditions to ensure maximum card protection.</p>

Troubleshooting

This section provides general troubleshooting information and specific symptom/corrective action for the 9502-DCDA card and its remote control interface. The 9502-DCDA card requires no periodic maintenance in its normal operation; if any error indication (as described in this section) occurs, use this section to correct the condition.

Error and Failure Indicator Overview

The 9502-DCDA card itself and its remote control systems all (to varying degrees) provide error and failure indications. Depending on how the 9502-DCDA card is being used (i.e., standalone or network controlled through DashBoard™ or a Remote Control Panel), check all available indications in the event of an error or failure condition.

The various 9502-DCDA card and remote control error and failure indicators are individually described below.

Note: The descriptions below provide general information for the various status and error indicators. For specific failures, also use the appropriate subsection listed below.

- Basic Troubleshooting Checks (p. 3-32)
- 9502-DCDA Processing Error Troubleshooting (p. 3-33)
- Troubleshooting Network/Remote Control Errors (p. 3-34)

9502-DCDA Card Edge Status/Error Indicators and Display

Figure 3-6 shows and describes the 9502-DCDA card edge status indicators and display. These indicators and the display show status and error conditions relating to the card itself and remote (network) communications (where applicable). Because these indicators are part of the card itself and require no external interface, the indicators are particularly useful in the event of communications problems with external devices such as network remote control devices.

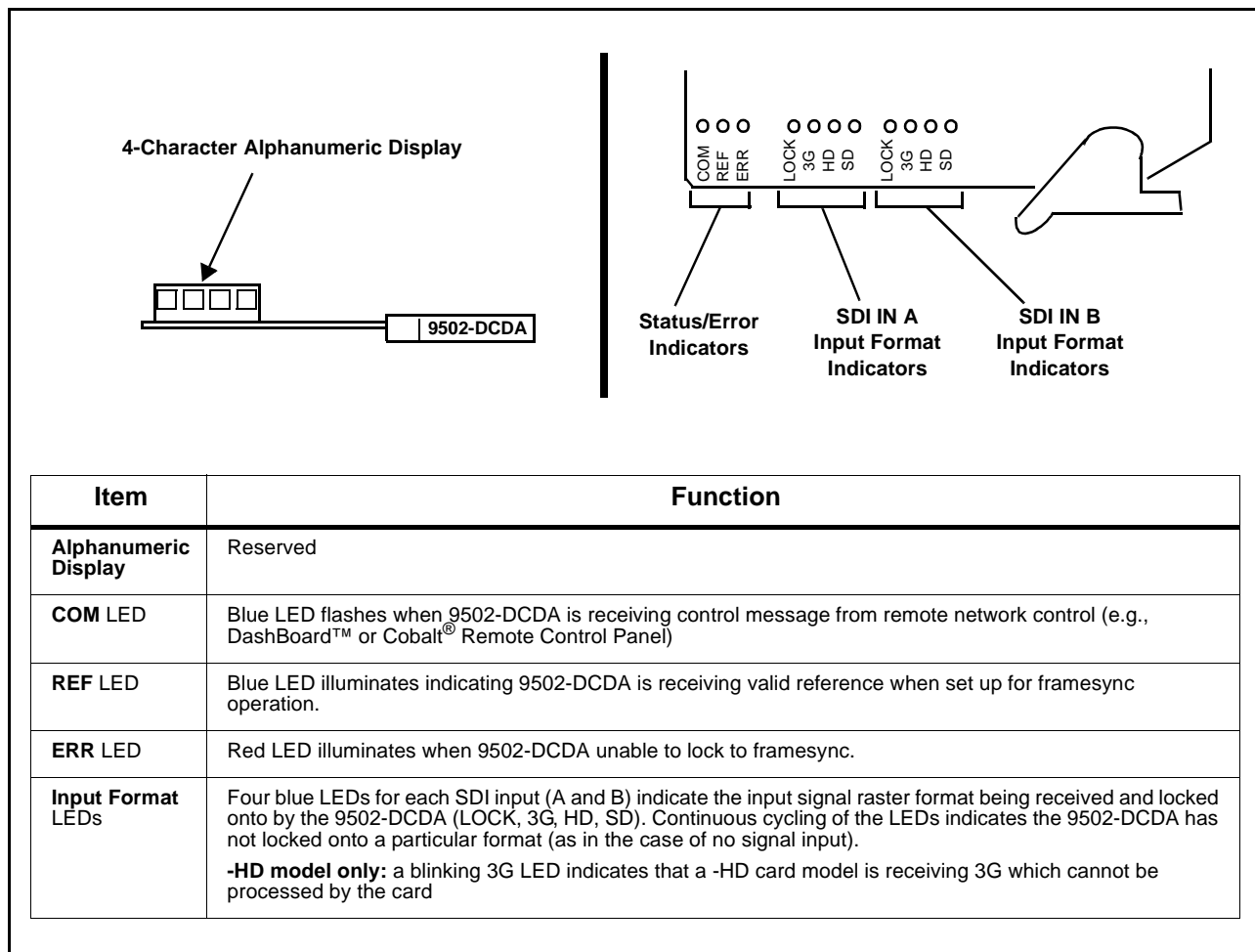


Figure 3-6 9502-DCDA Card Edge Status Indicators and Display

DashBoard™ Status/Error Indicators and Displays

Figure 3-7 shows and describes the DashBoard™ status indicators and displays. These indicator icons and displays show status and error conditions relating to the 9502-DCDA card itself and remote (network) communications.

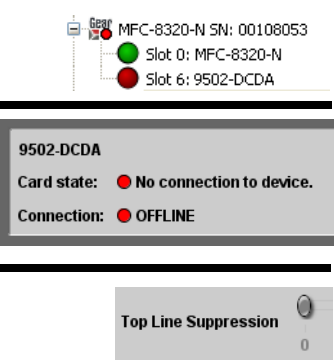
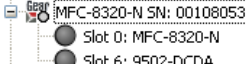
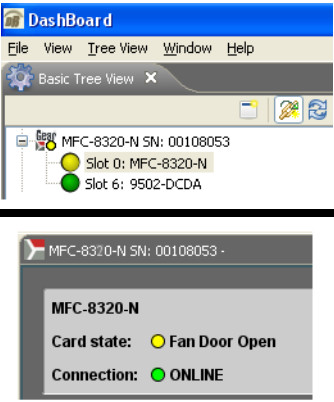
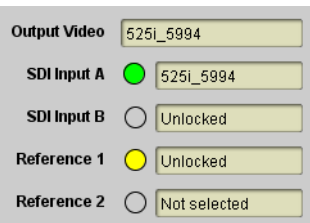
Indicator Icon or Display	Error Description
	<p>Red indicator icon in Card Access/Navigation Tree pane shows card with Error condition (in this example, the Card Access/Navigation Tree pane shows a general error issued by the 9502-DCDA card in slot 6).</p> <p>Specific errors are displayed in the Card Info pane (in this example “No connection to device” indicating 9502-DCDA card is not connecting to frame/LAN).</p> <p>If the 9502-DCDA card is not connecting to the frame or LAN, all controls are grayed-out (as shown in the example here).</p>
	<p>Gray indicator icon in Card Access/Navigation Tree pane shows card(s) are not being seen by DashBoard™ due to lack of connection to frame LAN (in this example, both a 9502-DCDA card in slot 6 and the MFC-8320-N Network Controller Card for its frame in slot 0 are not being seen).</p>
	<p>Yellow indicator icon in Card Access/Navigation Tree pane shows card with Alert condition (in this example, the Card Access/Navigation Tree pane shows a general alert issued by the MFC-8320-N Network Controller Card).</p> <p>Clicking the card slot position in the Card Access/Navigation Tree (in this example Network Controller Card “Slot 0: MFC-8320-N”) opens the Card Info pane for the selected card. In this example, a “Fan Door Open” specific error is displayed.</p>
	<p>Yellow indicator icon in 9502-DCDA Card Info pane shows error alert, along with cause for alert (in this example, the 9502-DCDA is not receiving an enabled framesync source).</p>

Figure 3-7 DashBoard™ Status Indicator Icons and Displays

Access Card Info panes for specific cards by clicking the card slot position in the Card Access/Navigation Tree pane (as shown in the example in Figure 3-8).

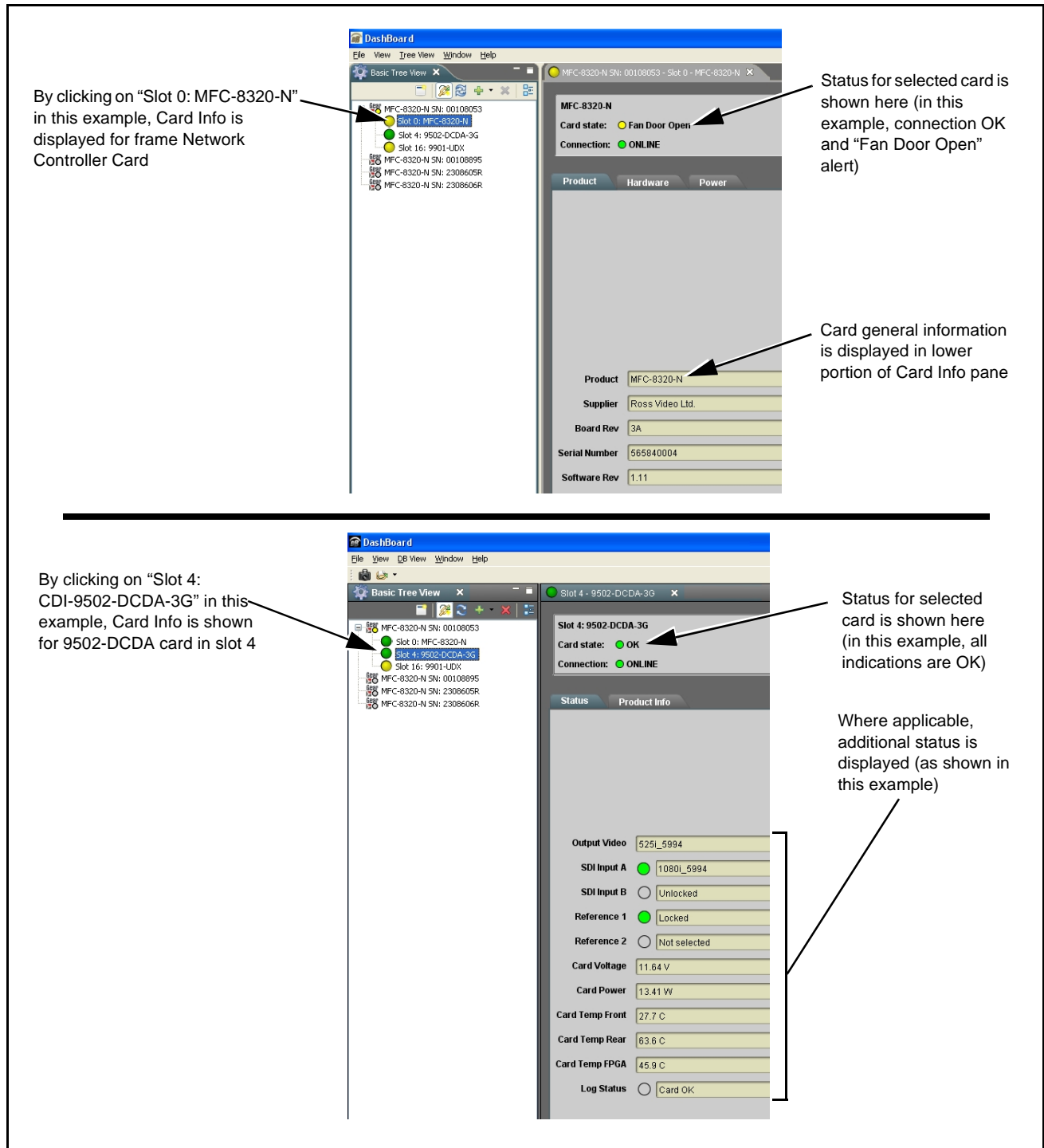


Figure 3-8 Selecting Specific Cards for Card Info Status Display

Basic Troubleshooting Checks

Failures of a general nature (affecting many cards and/or functions simultaneously), or gross inoperability errors are best addressed first by performing basic checks before proceeding further. Table 3-3 provides basic system checks that typically locate the source of most general problems. If required and applicable, perform further troubleshooting in accordance with the other troubleshooting tables in this section.

Table 3-3 Basic Troubleshooting Checks

Item	Checks
Verify power presence and characteristics	<ul style="list-style-type: none"> • On both the frame Network Controller Card and the 9502-DCDA, in all cases when power is being properly supplied there is always at least one indicator illuminated. Any card showing no illuminated indicators should be cause for concern. • Check the Power Consumed indication for the 9502-DCDA card. This can be observed using the DashBoard™ Card Info pane. <ul style="list-style-type: none"> • If display shows no power being consumed, either the frame power supply, connections, or the 9502-DCDA card itself is defective. • If display shows excessive power being consumed (see Technical Specifications (p. 1-12) in Chapter 1, “Introduction”), the 9502-DCDA card may be defective.
Check Cable connection secureness and connecting points	Make certain all cable connections are fully secure (including coaxial cable attachment to cable ferrules on BNC connectors). Also, make certain all connecting points are as intended. Make certain the selected connecting points correlate to the intended card inputs and/or outputs. Cabling mistakes are especially easy to make when working with large I/O modules.
Card seating within slots	Make certain all cards are properly seated within its frame slot. (It is best to assure proper seating by ejecting the card and reseating it again.)
Check status indicators and displays	On both DashBoard™ and the 9502-DCDA card edge indicators, red indications signify an error condition. If a status indicator signifies an error, proceed to the following tables in this section for further action.
Troubleshoot by substitution	All cards within the frame can be hot-swapped, replacing a suspect card or module with a known-good item.

9502-DCDA Processing Error Troubleshooting


Table 3-4 provides 9502-DCDA processing troubleshooting information. If the 9502-DCDA card exhibits any of the symptoms listed in Table 3-4, follow the troubleshooting instructions provided.

In the majority of cases, most errors are caused by simple errors where the 9502-DCDA is not appropriately set for the type of signal being received by the card.

Note: The error indications shown below are typical for the corresponding error conditions listed. Other error indications not specified here may also be displayed on DashBoard™ and/or the 9502-DCDA card edge status indicators.

Note: Where errors are displayed on both the 9502-DCDA card and network remote controls, the respective indicators and displays are individually described in this section.

Table 3-4 Troubleshooting Processing Errors by Symptom

Symptom	Error/Condition	Corrective Action
<ul style="list-style-type: none"> DashBoard™ shows Unlocked message in 9502-DCDA Card Info pane.  <ul style="list-style-type: none"> Card edge Input Format LEDs show continuous cycling. 	No video input present	Make certain intended video source is connected to appropriate 9502-DCDA card video input. Make certain BNC cable connections between frame Rear I/O Module for the card and signal source are OK.
Ancillary data (closed captioning, timecode) not transferred through 9502-DCDA.	<ul style="list-style-type: none"> Control(s) not enabled 	<ul style="list-style-type: none"> Make certain respective control is set to On or Enabled (as appropriate).
	<ul style="list-style-type: none"> VANC line number conflict between two or more ancillary data items 	<ul style="list-style-type: none"> Make certain each ancillary data item to be passed is assigned a unique line number (see Ancillary Data Line Number Locations and Ranges on page 3-8).
Audio not processed or passed through card	Enable control not turned on	On Output Audio Routing/Controls tab, Audio Group Enable control for group 1 thru 4 must be turned on for sources to be embedded into respective embedded channel groups.
Selected upgrade firmware will not upload	Automatic reboot after upgrade turned off	Card Presets > Automatically Reboot After Upgrade box unchecked. Either reboot the card manually, or leave this box checked to allow automatic reboot to engage an upgrade upon selecting the upgrade.

Troubleshooting Network/Remote Control Errors

Refer to Cobalt® reference guide “Remote Control User Guide” (PN 9000RCS-RM) for network/remote control troubleshooting information.

In Case of Problems

Should any problem arise with this product that was not solved by the information in this section, please contact the Cobalt Digital Inc. Technical Support Department.

If required, a Return Material Authorization number (RMA) will be issued to you, as well as specific shipping instructions. If required, a temporary replacement item will be made available at a nominal charge. Any shipping costs incurred are the customer’s responsibility. All products shipped to you from Cobalt Digital Inc. will be shipped collect.

The Cobalt Digital Inc. Technical Support Department will continue to provide advice on any product manufactured by Cobalt Digital Inc., beyond the warranty period without charge, for the life of the product.

See Contact Cobalt Digital Inc. (p. 1-15) in Chapter 1, “Introduction“ for contact information.



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