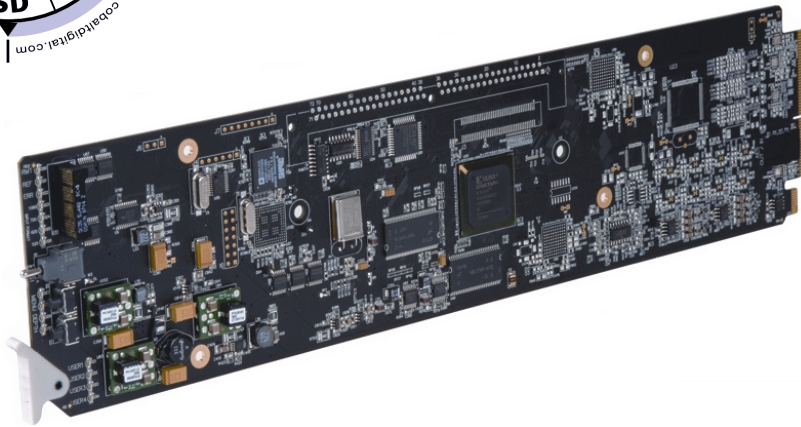# 9362

HD/SD-SDI Test Signal Generator

with Text Overwrite, SDI Input Frame Capture/Store, AFD/Timecode Support, and Fail-Safe Mode

Product Manual

Cobalt Digital Inc.

2406 E. University Ave.
Urbana, IL 61802
Voice 217.344.1243 • Fax 217.344.1245
www.cobaltdigital.com

Copyright

©Copyright 2013, Cobalt Digital Inc. All Rights Reserved.

Disclaimer

Trademark Information

Cobalt® is a registered trademark of Cobalt Digital Inc.

COMPASS® and **FUSION3G**® are registered trademarks of Cobalt Digital Inc.

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

Congratulations on choosing the Cobalt® 9362 HD/SD-SDI Test Signal Generator with Text Overwrite, SDI Input Frame Capture/Store, AFD/Timecode Support, and Fail-Safe Mode. The 9362 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 9362, please contact us at the contact information on the front cover.

Manual No.:	9362-OM
Document Version:	V4.1
Release Date:	December 30, 2013
Applicable for Firmware Version (or greater):	2773
Description of product/manual changes:	- Revise manual for minor edits.

Table of Contents

Chapter 1

Introduction

Overview

This manual provides installation and operating instructions for the 9362 HD/SD-SDI Test Signal Generator with Text Overwrite, SDI Input Frame Capture/Store, AFD/Timecode Support, and Fail-Safe Mode card (also referred to herein as the 9362).

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 9362.

- **Chapter 2, "Installation and Setup"** – Provides instructions for installing the 9362 in a frame, and optionally installing 9362 Rear I/O Modules.

- **Chapter 3, "Operating Instructions"** – Provides overviews of operating controls and instructions for using the 9362.

This chapter contains the following information:

- **9362 Card Software Versions and this Manual (p. 1-2)**

- **Manual Conventions (p. 1-3)**

- **Safety Summary (p. 1-4)**

- **9362 Functional Description (p. 1-5)**

- **Technical Specifications (p. 1-12)**

- **Warranty and Service Information (p. 1-14)**

- **Contact Cobalt Digital Inc. (p. 1-15)**

9362 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 9362 Card Information (p. 3-5) 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.

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

Card Software **earlier** than latest version	Card is not loaded with the latest software. Not all functions and/or specified performance described in this manual may be available.
	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™.
	Software updates are field-installed without any need to remove the card from its frame.
Card Software **newer** than version in manual	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.
	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.

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 9362 itself. Examples are provided below.

- Card-edge display messages are shown like this:

> ```
> TSG
> ```

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

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

- **9362** refers to the 9362 HD/SD-SDI Test Signal Generator with Text Overwrite, SDI Input Frame Capture/Store, AFD/Timecode Support, and Fail-Safe Mode 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 COMPASS® card.
- **System** and/or **Video System** refers to the mix of interconnected production and terminal equipment in which the 9362 and other COMPASS® cards operate.

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

⚠	Attention, consult accompanying documents.
	Electronic device or assembly is susceptible to damage from an ESD event. Handle only using appropriate ESD prevention practices.
	If ESD wrist strap is not available, handle card only by edges and avoid contact with any connectors or components.
	Symbol (WEEE 2002/96/EC)
	For product disposal, ensure the following:
	• 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.**

CAUTION **If required, make certain Rear I/O Module(s) is installed before installing the 9362 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.**

9362 Functional Description

Figure 1-1 shows a functional block diagram of the 9362. With a valid input present, the card passes input SDI and all ancillary data unaffected. In the event of loss of input SDI, the card automatically outputs a Test Signal Generator (TSG) selected pattern, selectable tones or silence on all four groups of embedded audio, and can output timecode data generated from the card. The card also can capture and store a frame received on the program video input to be used as a pattern. A text overlay can be applied to the TSG output frame. The test signal generator output can be manually invoked at any time. The 9362 also handles AFD code detection/ insertion available when outputting program video.

As such, the 9362 can provide test pattern failover when used with a live SDI stream, while also providing text ID/pattern generation/timecode as a discrete standalone source.

Note: Some of the functions described below are available only when using the DashBoard™, or Cobalt® OGCP-9000 or OGCP-9000/CC Control Panels user interfaces. Refer to User Control Interface (p. 1-9) for user interface descriptions.

9362 Input/Output Formats

The 9362 provides the following inputs and outputs:

- **Inputs:**
  - **HD/SD SDI IN** – dual-rate HD/SD-SDI input
- **Outputs:**
  - **SDI OUT** – four SD-SDI buffered video outputs; output selectable from program video input/TSG failover, or manually set to TSG output.
  - **RCK OUT**– four SD-SDI reclocked buffered video outputs

TSG Description

The TSG provides automatic failover or manual overwrite of the **SDI OUT** signal with any of the following patterns:

- Black Flat Frame
- 75% Color Bars
- Sweep Pattern
- User Captured frame

When the TSG is invoked (either automatically of manually), all four groups of embedded audio are overwritten with TSG channels (which can be set for tones or silence as desired for each channel). When a TSG output is invoked, text can be superimposed over the pattern. TSG output format can be selected from NTSC and PAL SD formats, and 59.94 and 50 Hz 720p and 1080i HD formats. User Captured TSG selection allows a full video frame to captured and stored, available then as one of the pattern choices.
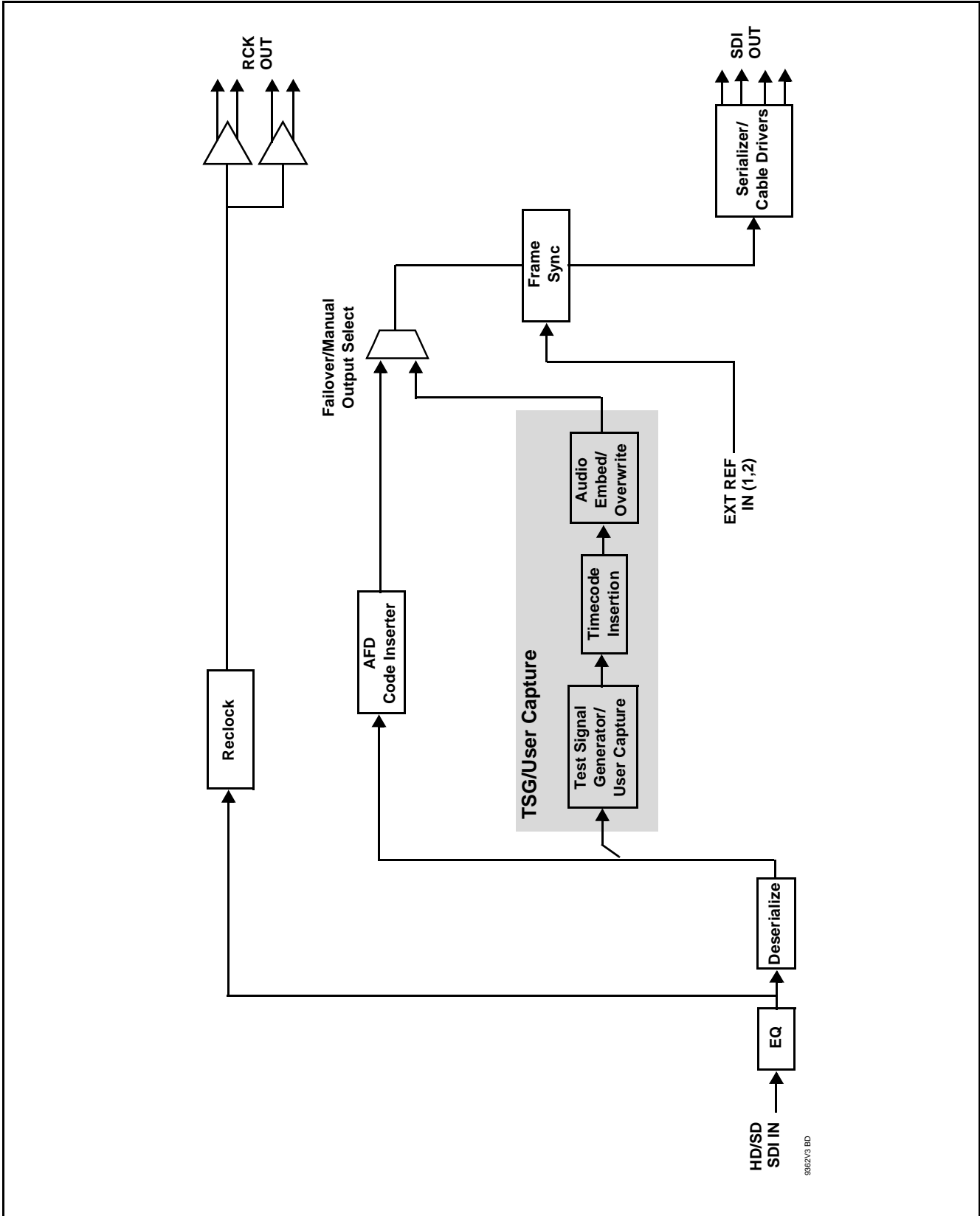
Figure 1-1 9362 Functional Block Diagram

The input video, as well as TSG pattern output, can be frame synchronized to either one of two external **EXT REF IN (1,2)** reference signals distributed with the card frame, or the card can be set to internal self timing for both program video and TSG patterns.

When program input video is passed, the entire input video SDI contents are transferred to the outputs unaffected, with all ancillary data as present in the input video.

TSG Timecode Insertion

(See Figure 1-2.) This function provides for insertion of timecode data into the output SDI when the TSG is invoked. Starting timecode count can be entered (in standard HH:MM:SS:FF format) and applied, after which a running timecode is present on the SDI output.

Note: Timecode entered with this function is applied to TSG output only; program material timecode when outputted by the card is not affected by this function

Figure 1-2 Timecode Insertion

AFD Inserter

This function provides for assignment and insertion of AFD codes into the SDI output video when program video is being passed. Using this function, AFD codes in accordance with the standard 4-bit AFD code designations can be applied to the output video.
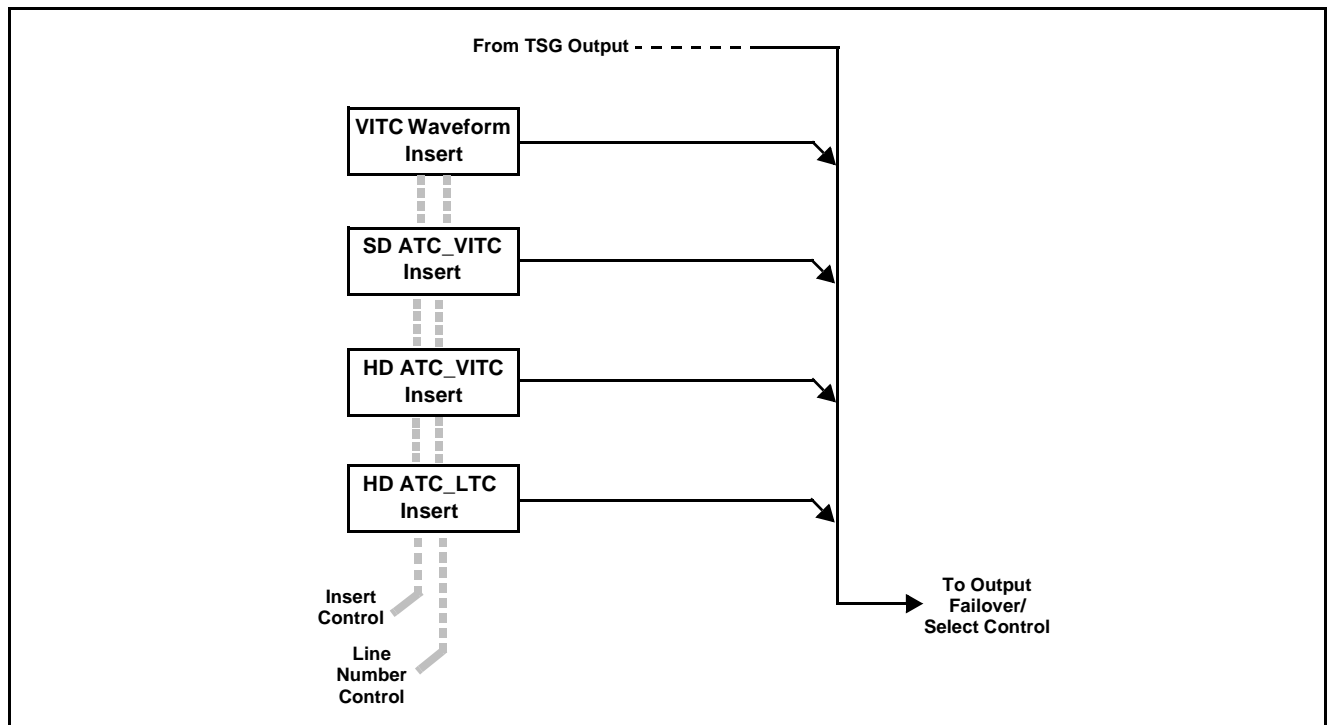
This function checks for any existing AFD code within the received video input. If a code is present, the code is displayed. When used in conjunction with a separate downstream card capable of providing AFD-directed scaling, the image can in turn be scaled in accordance with the AFD coding embedded by this card.

The function also allows the selection/changing of the AFD code ancillary data line number for the outputted AFD code.

Embedded Audio Groups 1–4 Controls

When the TSG output is invoked (either automatically or manually), all four embedded groups are overwritten with TSG audio. As such, each embedded channel can be set to one of four internal audio tone generators (or to silence).

Tone Generator Function

The 9362 contains four built-in tone generators (Tone Generator 1 thru Tone Generator 4). Each of the four tone generators can be set to a different frequency, and are available as audio sources for the embedded audio outputs.

18 discrete sine wave frequencies are available, ranging from 50 Hz to 16 kHz (default frequency is 1.0 kHz, with a unity-gain output level equivalent to -20 dBu).

User Control Interface

Figure 1-3 shows the user control interface options for the 9362. 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.
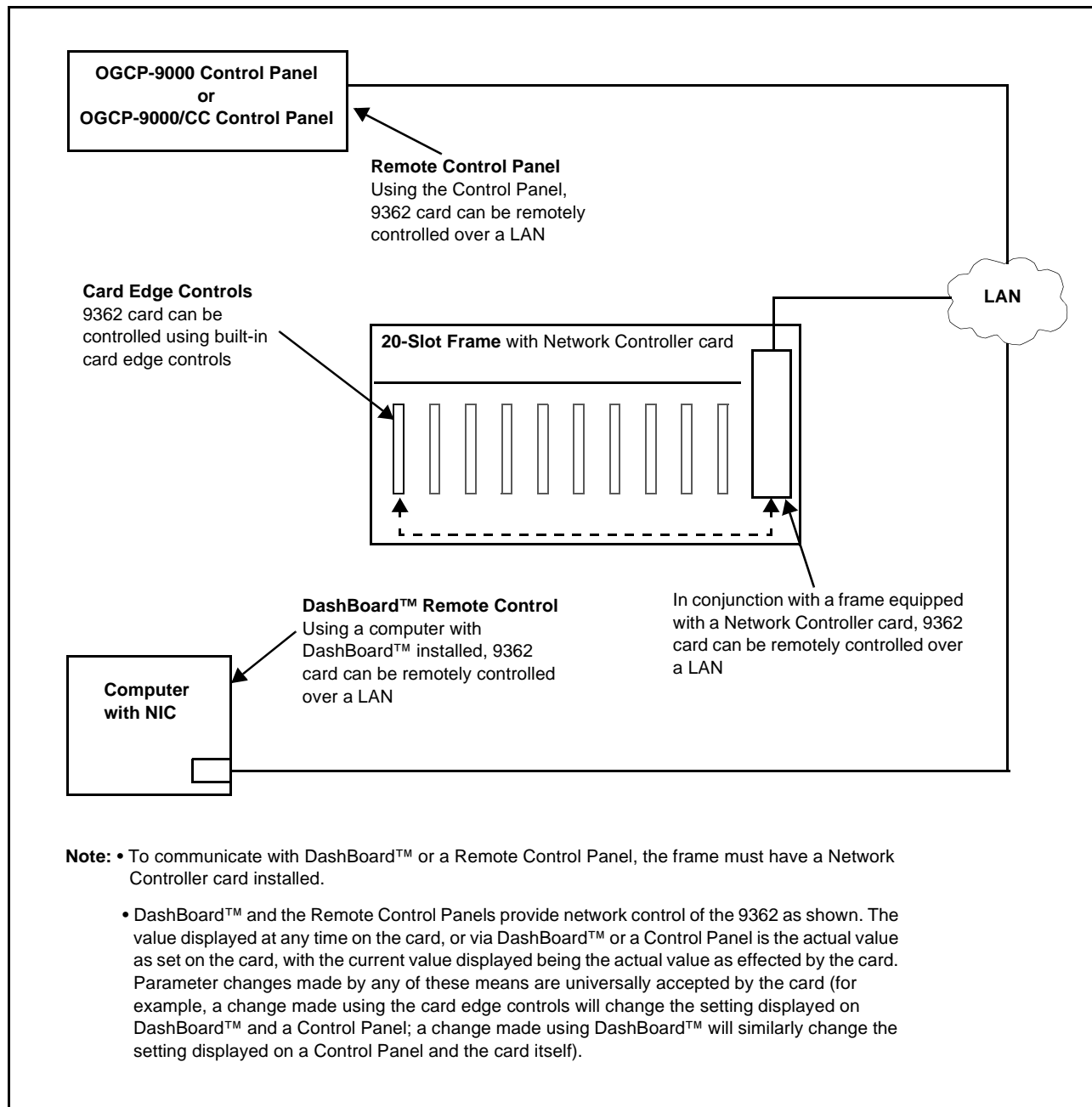
OGCP-9000 Control Panel
or
OGCP-9000/CC Control Panel

Remote Control Panel
Using the Control Panel,
9362 card can be remotely
controlled over a LAN

Card Edge Controls
9362 card can be
controlled using built-in
card edge controls

LAN

20-Slot Frame with Network Controller card

In conjunction with a frame equipped
with a Network Controller card, 9362
card can be remotely controlled over
a LAN

DashBoard™ Remote Control
Using a computer with
DashBoard™ installed, 9362
card can be remotely controlled
over a LAN

**Computer
with NIC**

Note: • To communicate with DashBoard™ or a Remote Control Panel, the frame must have a Network
Controller card installed.

• DashBoard™ and the Remote Control Panels provide network control of the 9362 as shown. The
value displayed at any time on the card, or via DashBoard™ or a Control Panel is the actual value
as set on the card, with the current value displayed being the actual value as effected by the card.
Parameter changes made by any of these means are universally accepted by the card (for
example, a change made using the card edge controls will change the setting displayed on
DashBoard™ and a Control Panel; a change made using DashBoard™ will similarly change the
setting displayed on a Control Panel and the card itself).

Figure 1-3 9362 User Control Interface

• **Built-in Card Edge User Interface** – Using the built-in card edge controls and display, card control settings can be set using a front panel menu which is described in Chapter 3,"Operating Instructions".

Note: Some of the 9362 functions described in this manual are available only when using the DashBoard™, or Cobalt® OGCP-9000 or OGCP-9000/CC Remote Control Panel user interfaces.

• **DashBoard™ User Interface** – Using DashBoard™, the 9362 and other cards installed in openGear®[1] frames such as the Cobalt® HPF-9000 or 8321 Frame 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".

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 COMPASS® 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).

• **Cobalt® OGCP-9000, OGCP-9000/CC and WinOGCP Remote Control Panels** – The OGCP-9000, OGCP-9000/CC, and WinOGCP Remote Control Panels conveniently and intuitively provide parameter monitor and control of the cards within the 20-slot frame.

The remote 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.

---

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

9362 Rear I/O Modules

The 9362 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 9362 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 9362 card edge connections to BNC connectors that interface with other components and systems in the signal chain.

These BNC connections are provided by using an optional Rear I/O Module. The 9362 Rear I/O Modules are shown and described in Chapter 2, "Installation and Setup".

Audio and Video Formats Supported by the 9362

The 9362 supports all current SMPTE standard SD and HD video formats. Table 1-1 lists and provides details regarding the audio and video formats supported by the 9362.

Table 1-1   Supported Audio and Video Formats

Item	Description/Specification	
SDI Program Video Input / Output	Raster Structure:	Frame Rate:
	1080PsF	23.98; 24
	1080p	23.98; 24
	1080i [1]	25; 29.97; 30
	720p	23.98; 24; 25; 29.97; 30; 50; 59.94; 60
	486i [1]	29.97
	575i [1]	25
Embedded Audio	The 9362 supports all four groups (16 channels) of embedded audio at full 24-bit resolution in both SD (with extended data packets) and HD.	
(1) All rates displayed as frame rates; interlaced ("i") field rates are two times the rate value shown.		

Technical Specifications

Table 1-2 lists the technical specifications for the 9362 HD/SD-SDI Test Signal Generator with Text Overwrite, SDI Input Frame Capture/Store, AFD/ Timecode Support, and Fail-Safe Mode card.

Table 1-2   Technical Specifications

Item	Characteristic
Part number, nomenclature	9362 HD/SD-SDI Test Signal Generator with Text Overwrite, SDI Input Frame Capture/Store, AFD/Timecode Support, and Fail-Safe Mode
Installation/usage environment	Intended for installation and usage in frame meeting openGear™ modular system definition.
Power consumption	< 8 Watts maximum
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: • 4-character alphanumeric display • Remote Activity LED indicator • Input Format LED indicator
Controls	Card edge switches as follows: • Menu Enter pushbutton switch • Menu Exit pushbutton switch • Up/down selection toggle switch
Video Test Signal Generator	Selectable output patterns: • Black flat frame • 75% color bars • Sweep pattern • User captured frame Selectable formats/frame rates: • 525i5994 / 625i/50 • 720p2997 / 720p25 • 1080i5994 / 1080i50
Internal Tone Generators	Four built-in tone generators, each configurable for 18 discrete sine wave frequencies ranging from 50 Hz to 16 kHz. Generator source signal level is equivalent to -20 dBu.
Resolution:	10-bit video data path

Table 1-2 Technical Specifications — continued

Item	Characteristic

Serial Digital Video Input	Data Rates Supported:
	  SMPTE 292 HD-SDI: 1.485 Gbps or 1.485/1.001 Gbps
	  SMPTE 259M-C SD-SDI: 270 Mbps
	
	Impedance:
	  75 Ω terminating
	
	Equalization (HD):
	  328 ft (100 m) Belden 1694A
	
	Equalization (SD):
	  1000 ft (305 m) Belden 1694A
	
	Return Loss:
	  > 15 dB at 5 MHz – 1.485 GHz

Post-Processor Serial Digital Video Outputs	Number of Outputs:
	  Two HD/SD-SDI BNC per IEC 60169-8 Amendment 2
	
	Impedance:
	  75 Ω
	
	Return Loss:
	  > 15 dB at 5 MHz – 270 MHz
	  > 12 dB at 270 MHz – 1.485 GHz
	
	Signal Level:
	  800 mV ± 10%
	
	DC Offset:
	  0 V ± 50 mV
	
	Jitter (HD):
	  < 0.15 UI (all outputs)
	
	Jitter (SD):
	  < 0.10 UI (all outputs)
	
	Overshoot:
	  < 0.2% of amplitude

Pre-Processor (Reclocked) Serial Digital Video Outputs	Number of Outputs:
	  Four SD-SDI BNC per IEC 60169-8 Amendment 2
	
	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

2406 E. University Avenue	Office: (217) 344-1243
Urbana, IL 61802 USA	Fax: (217) 344-1245
www.cobaltdigital.com	Email: info@cobaltdigital.com

THIS LIMITED WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES EXPRESSED OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE AND OF ALL OTHER OBLIGATIONS OR LIABILITIES ON COBALT'S PART. ANY SOFTWARE PROVIDED WITH, OR FOR USE WITH, THE PRODUCT IS PROVIDED "AS IS." THE BUYER OF THE PRODUCT ACKNOWLEDGES THAT NO OTHER REPRESENTATIONS WERE MADE OR RELIED UPON WITH RESPECT TO THE QUALITY AND FUNCTION OF THE GOODS HEREIN SOLD. COBALT PRODUCTS ARE NOT AUTHORIZED FOR USE IN LIFE SUPPORT APPLICATIONS.

COBALT'S LIABILITY, WHETHER IN CONTRACT, TORT, WARRANTY, OR OTHERWISE, IS LIMITED TO THE REPAIR OR REPLACEMENT, AT ITS OPTION, OF ANY DEFECTIVE PRODUCT, AND SHALL IN NO EVENT INCLUDE SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES (INCLUDING LOST PROFITS), EVEN IF IT HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

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
Fax:	(217) 344-1245
Web:	www.cobaltdigital.com
General Information:	info@cobaltdigital.com
Technical Support:	support@cobaltdigital.com

This page intentionally blank

Chapter 2

Installation and Setup

Overview

This chapter contains the following information:

Installing the 9362 Into a Frame Slot

CAUTION

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.

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 9362 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 9362 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 9362 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 9362 into a frame slot as follows:

1. Determine the slot in which the 9362 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 Figure 2-1.

9. Repeat steps 1 through 8 for other 9362 cards.

Note: The 9362 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 9362 Network Remote Control (p. 2-5).

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.
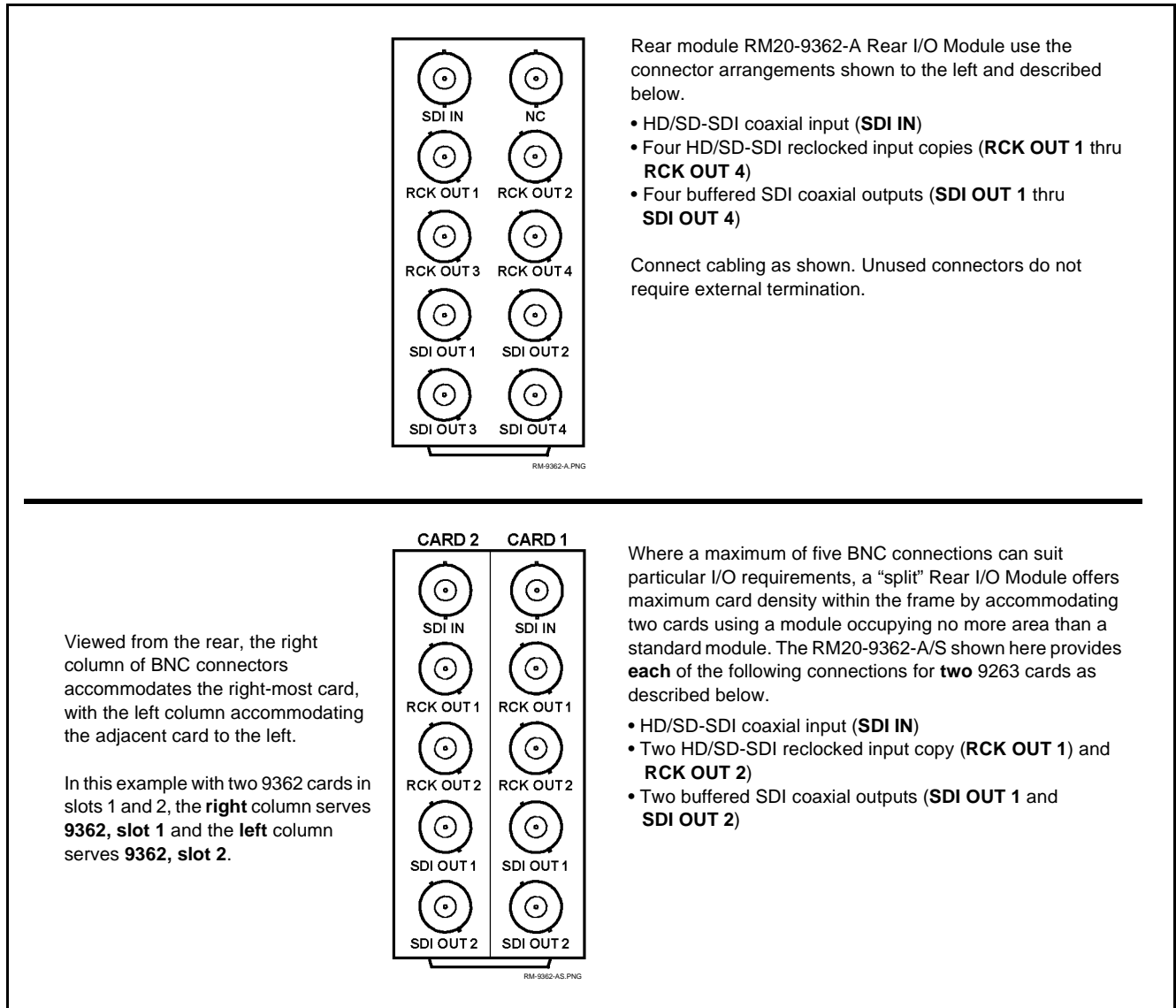

Rear module RM20-9362-A Rear I/O Module use the connector arrangements shown to the left and described below.

• HD/SD-SDI coaxial input (**SDI IN**)
• Four HD/SD-SDI reclocked input copies (**RCK OUT 1** thru **RCK OUT 4**)
• Four buffered SDI coaxial outputs (**SDI OUT 1** thru **SDI OUT 4**)

Connect cabling as shown. Unused connectors do not require external termination.

Viewed from the rear, the right column of BNC connectors accommodates the right-most card, with the left column accommodating the adjacent card to the left.

In this example with two 9362 cards in slots 1 and 2, the **right** column serves **9362, slot 1** and the **left** column serves **9362, slot 2**.

Where a maximum of five BNC connections can suit particular I/O requirements, a "split" Rear I/O Module offers maximum card density within the frame by accommodating two cards using a module occupying no more area than a standard module. The RM20-9362-A/S shown here provides **each** of the following connections for **two** 9263 cards as described below.

• HD/SD-SDI coaxial input (**SDI IN**)
• Two HD/SD-SDI reclocked input copy (**RCK OUT 1**) and **RCK OUT 2**)
• Two buffered SDI coaxial outputs (**SDI OUT 1** and **SDI OUT 2**)

Figure 2-1 9362 Rear I/O Module Connections

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 9362 is to be installed.

If installing the 9362 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 9362 is to be installed.

2. In the mounting area corresponding to the slot location, install Rear I/O Module as shown in Figure 2-2.

1) Align and engage mounting tab on Rear I/O Module with the module seating slot on rear of frame chassis.

DSCN3483A.JPG

2) Hold top of Rear I/O Module flush against frame chassis and start the captive screw. Lightly tighten captive screw.

DSCN3487A.JPG
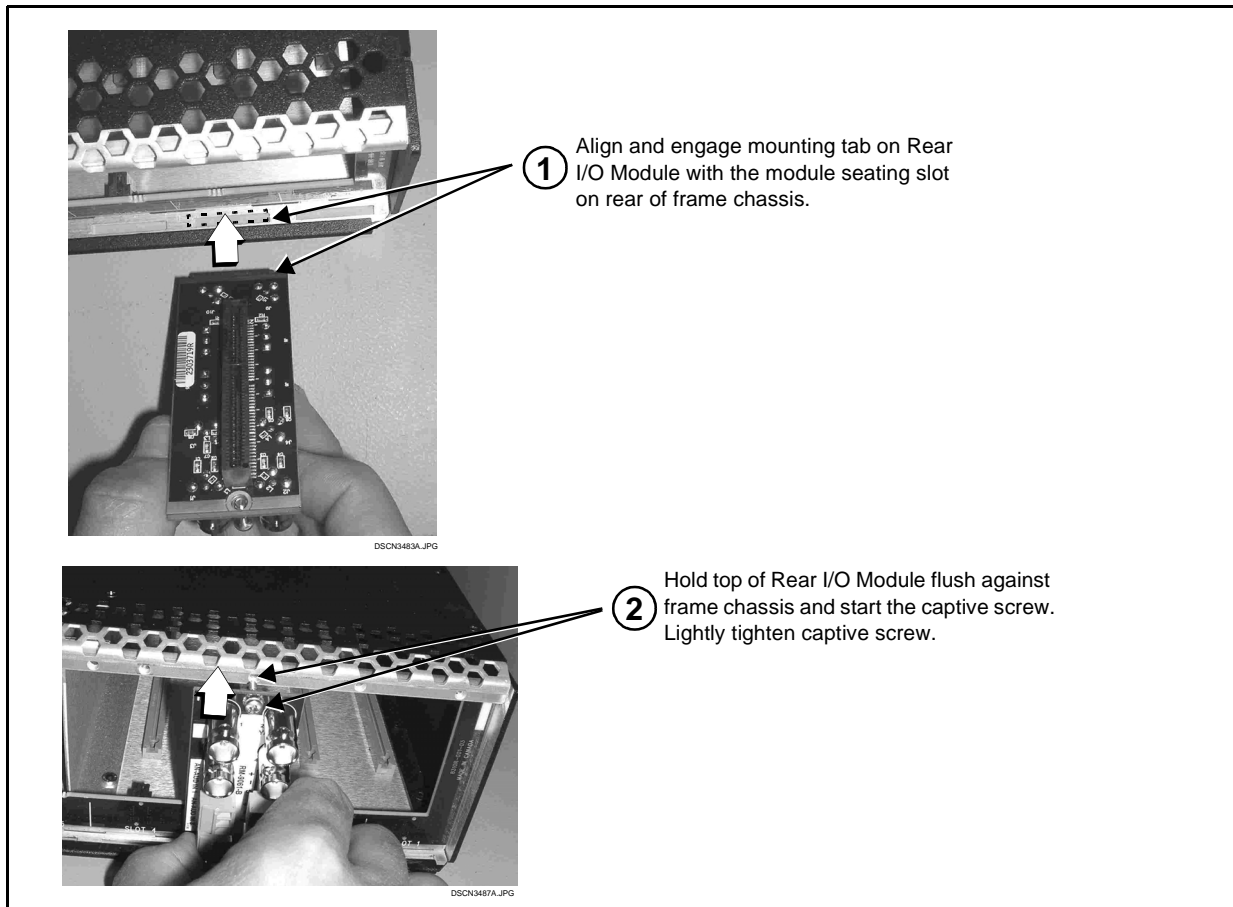
Figure 2-2 Rear I/O Module Installation

Setting Up 9362 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 COMPASS™ 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.

This page intentionally blank

Operating Instructions

Overview

If you are already familiar with using DashBoard or a Cobalt Remote Control Panel to control Cobalt cards, please skip to 9362 Function Submenu List and Descriptions (p. 3-8).

This chapter contains the following information:

- Control and Display Descriptions (p. 3-1)
- Accessing the 9362 Card via Remote Control (p. 3-3)
- Checking 9362 Card Information (p. 3-5)
- Ancillary Data Line Number Locations and Ranges (p. 3-7)
- 9362 Function Submenu List and Descriptions (p. 3-8)
- Troubleshooting (p. 3-19)

Control and Display Descriptions

This section describes the user interface controls, indicators, and displays for using the 9362 card. The 9362 functions can be accessed and controlled using any of the user interfaces described here.

The format in which the 9362 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 9362 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: DashBoard™ and the Remote Control Panel provide greatly simplified user interfaces as compared to using the card edge controls. For this reason, **it is strongly recommended** that DashBoard™ or a Remote Control Panel be used for all card applications other than the most basic cases. Card edge control codes are not included in this manual. If card-edge control is to be used, obtain a copy of "Manual Supplement – Card-Edge Control Reference Master List and Instructions for Using Compass® Card-edge (Local) Control Codes" (989CEC-MS.pdf) at **www.cobaltdigital.com>Support>>Reference Documents**.

Note: When a setting is changed, settings displayed on DashBoard™ (or a Remote Control Panel) are the settings as effected by the 9362 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 9362 card are organized into function **submenus**, which consist of parameter groups as shown below.

Figure 3-1 shows how the 9362 card and its submenus are organized, and also provides an overview of how navigation is performed between cards, function submenus, and parameters.
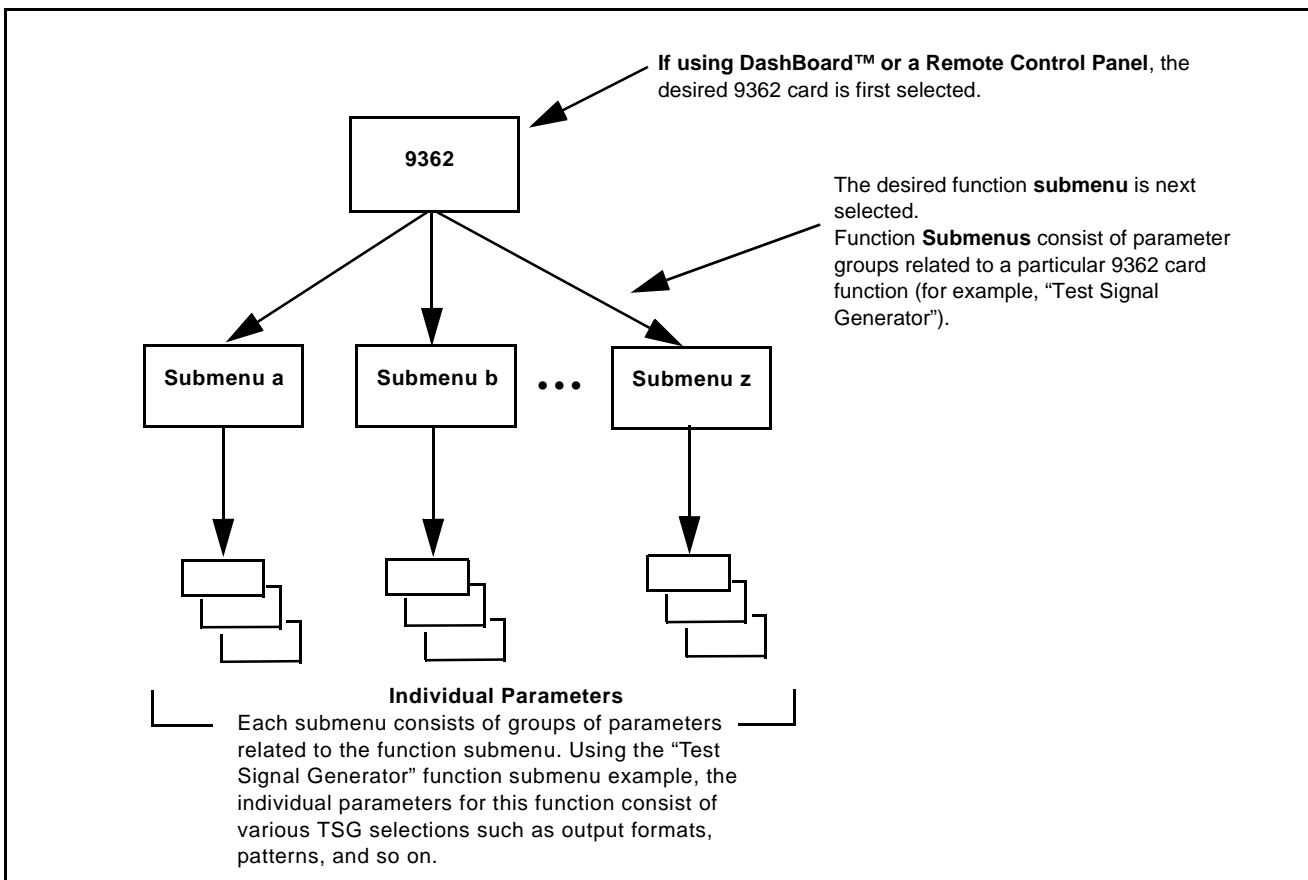
Figure 3-1 Function Submenu/Parameter Submenu Overview

DashBoard™ User Interface

(See Figure 3-2.) The 9362 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.
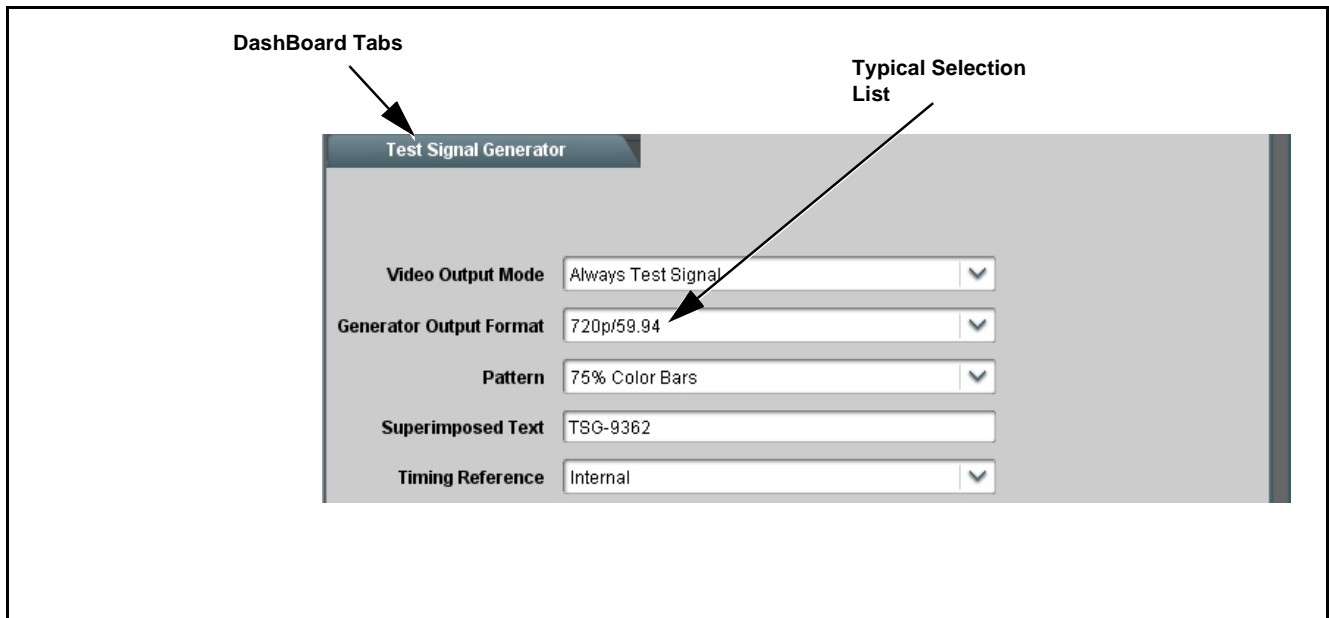
Figure 3-2 Typical DashBoard Tabs and Controls

Accessing the 9362 Card via Remote Control

Access the 9362 card using DashBoard™ or Cobalt® Remote Control Panel as described below.

Accessing the 9362 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 9362 card to be accessed (in this example, "MFC-8320-N SN: 00108053").
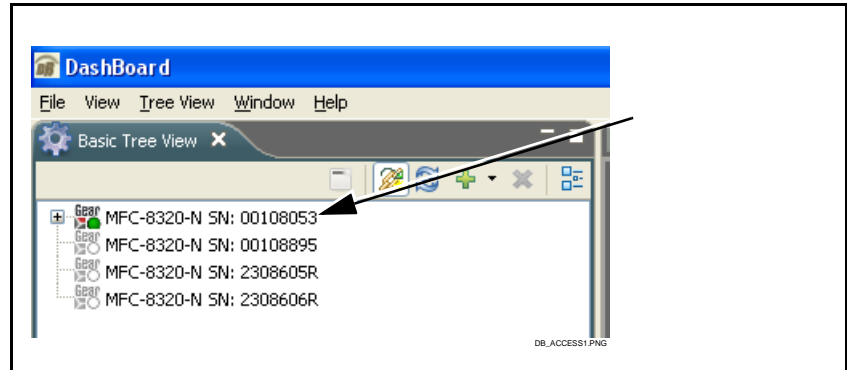
3. As shown below, expand the tree to access the cards within the frame. Click on the card to be accessed (in this example, "Slot 6: TSG-9362").
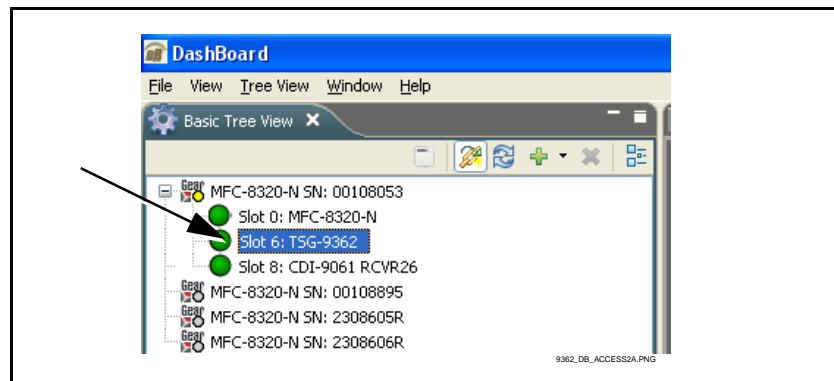
As shown on the next page, when the card is accessed a DashBoard™ its function submenu screen showing tabs for each function is displayed. (The particular submenu screen displayed is the previously displayed screen from the last time the card was accessed by DashBoard™).

9362_DB_ACCESS3A3.PNG
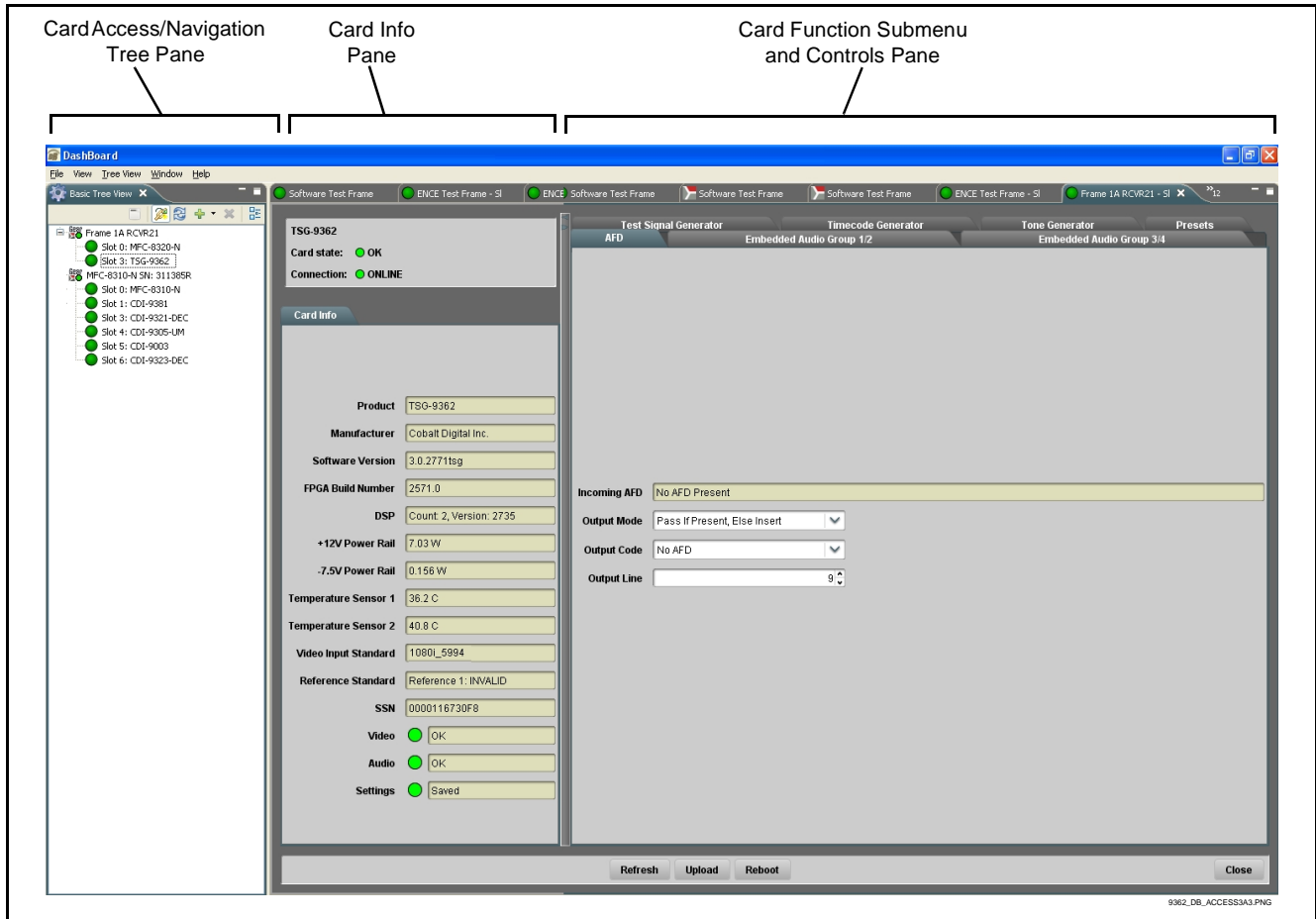
Checking 9362 Card Information

The operating status and software version the 9362 card can be checked using DashBoard™ or the card edge control user interface. Figure 3-3 shows and describes the 9362 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 3-3. Yellow or red icons respectively indicate an alert or failure condition. Refer to Troubleshooting (p. 3-19) for corrective action.

The **Tree View** shows the cards seen by DashBoard™.
In this example, Frame A is hosting a 9362 card in slot 6.

Software Version and
Software Build Number
Refer to these numbers to check that documentation (such as this manual) matches the card's Software Release Number and Software Build Number. Use these numbers also when communicating to Cobalt® regarding this card.

Power Consumption and Temperature Displays
This display shows the power consumed by the 9362 for both the +12V and -7.5V rails, as well as key device temperatures.

Status Displays
These displays show the status the signal being received by the 9362. Green Settings icon shows that any changes made on DashBoard™ are sucessfully saved on the card's memory.

Figure 3-3 9362 Card Info 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:

1. The card does not check for conflicts on a given line number. Make certain the selected line is available and carrying no other data.

2. 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 3-4 shows an example of improper and corrected VANC allocation within an HD-SDI stream.
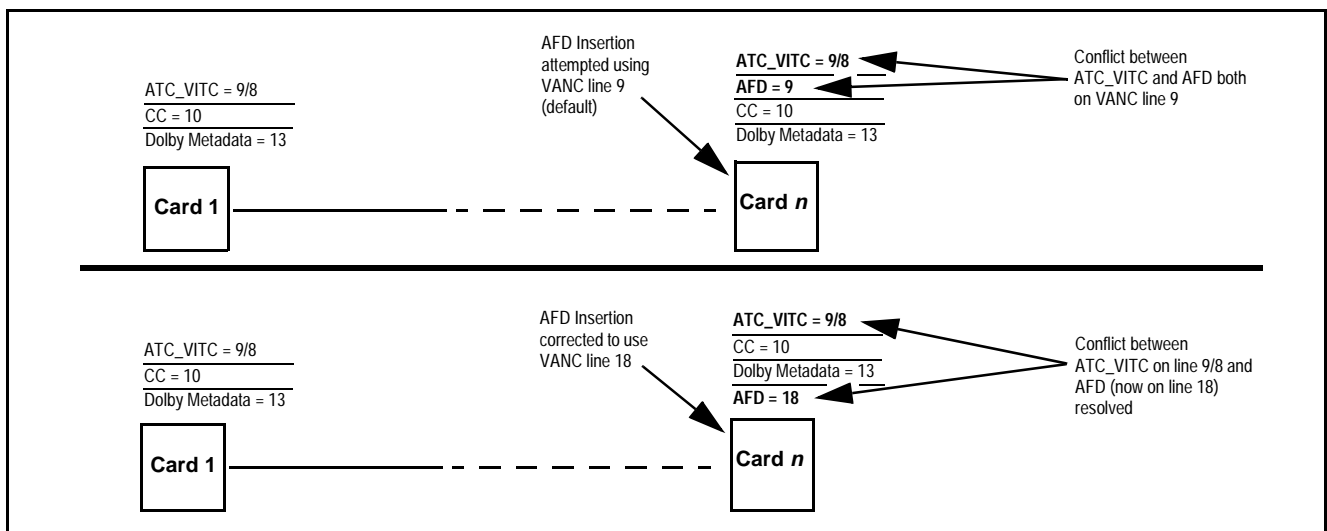
Figure 3-4 Example VANC Line Number Allocation Conflict and Resolution

9362 Function Submenu List and Descriptions

Table 3-2 individually lists and describes each 9362 function submenu "tab" 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.)

On DashBoard™ itself and in Table 3-2, the function submenu items are organized using tabs as shown below.
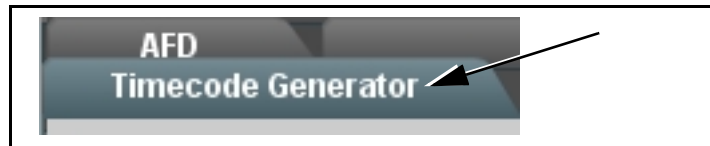
The table below provides a quick-reference to the page numbers where each function submenu item can be found.

Function Submenu Item	Page	Function Submenu Item	Page
AFD	3-9	Timecode Generator	3-14
Embedded Audio Group 1/2 and 3/4 TSG Audio Controls	3-10	Tone Generator	3-16
Test Signal Generator	3-12	Presets	3-16

Table 3-2   9362 Function Submenu List
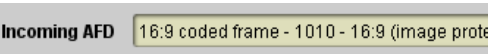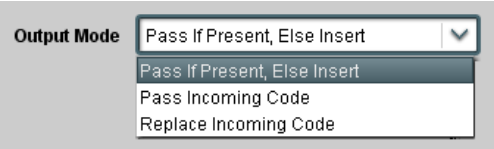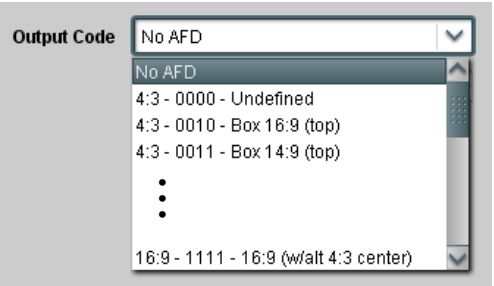
AFD	Allows assignment of AFD (Active Format Description) codes to the SDI output video.

Note: This function only marks the SDI output with an AFD code. Actual AFD processing must be performed by a downstream card or system that recognizes an AFD code assigned here.	

• Incoming AFD Incoming AFD [16:9 coded frame - 1010 - 16:9 (image prote]	Displays incoming AFD setting as follows: • If AFD code is present, one of the 11, four-bit AFD codes is displayed (as shown in the example to the left). Also displayed is the VANC line number of the incoming AFD code. • If no AFD setting is present in the video signal, **No AFD Present** is displayed.

• Output Mode Output Mode [Pass If Present, Else Insert ▼] Pass If Present, Else Insert Pass Incoming Code Replace Incoming Code	Drop-down selection determines action to take in presence or absence of existing AFD code on input video. **Note:** Outputted AFD generated by card is present for both input video and TSG output streams.

• Output Code Output Code [No AFD ▼] No AFD 4:3 - 0000 - Undefined 4:3 - 0010 - Box 16:9 (top) 4:3 - 0011 - Box 14:9 (top) • • 16:9 - 1111 - 16:9 (w/alt 4:3 center)	Drop-down list assigns desired AFD to output SDI.

4:3 Coded Frame

AFD Code[1]	Description	AFD Code[1]	Description
–	No code present	1001	Full frame
0000	Undefined	1010	16:9 (center)
0010	Box 16:9 (top)	1011	14:9 (center)
0011	Box 14:9 (top)	1101	4:3 (with alternate 14:9 center)
0100	Box > 16:9 (center)	1110	16:9 (with alternate 14:9 center)[2]
1000	Full frame	1111	16:9 (with alternate 4:3 center)[2]

16:9 Coded Frame

AFD Code[1]	Description	AFD Code[1]	Description
–	No code present	1001	4:3 (center)
0000	Undefined	1010	16:9 (image protected)[2]
0010	Full frame	1011	14:9 (center)
0011	4:3 (center)	1101	4:3 (with alternate 14:9 center)
0100	Box > 16:9 (center)	1110	16:9 (with alternate 14:9 center)[2]
1000	Full frame	1111	16:9 (with alternate 4:3 center)[2]

1: AFD codes numbering and definitions conform to SMPTE 2016-1-2007.

2: Image Protected implies picture content that must not be cropped by conversion processes or display devices. Alternate center formats may have protected center areas, with areas outside of the protected area not containing mandatory content.

• Output Line Output Line [9 ▲▼]	Allows selecting the line location of the AFD data within the video signal Ancillary Data space. (Range is 9 thru 41; default is line #12.) **Note:** • 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. 3-7) 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.

Table 3-2   9362 Function Submenu List — continued

Embedded Audio Group 1/2 **Embedded Audio Group 3/4**	Selects the TSG audio source for each embedded audio channel 1 thru 16 (Embedded Audio Groups 1/2 and 3/4) to be used when TSG is active.
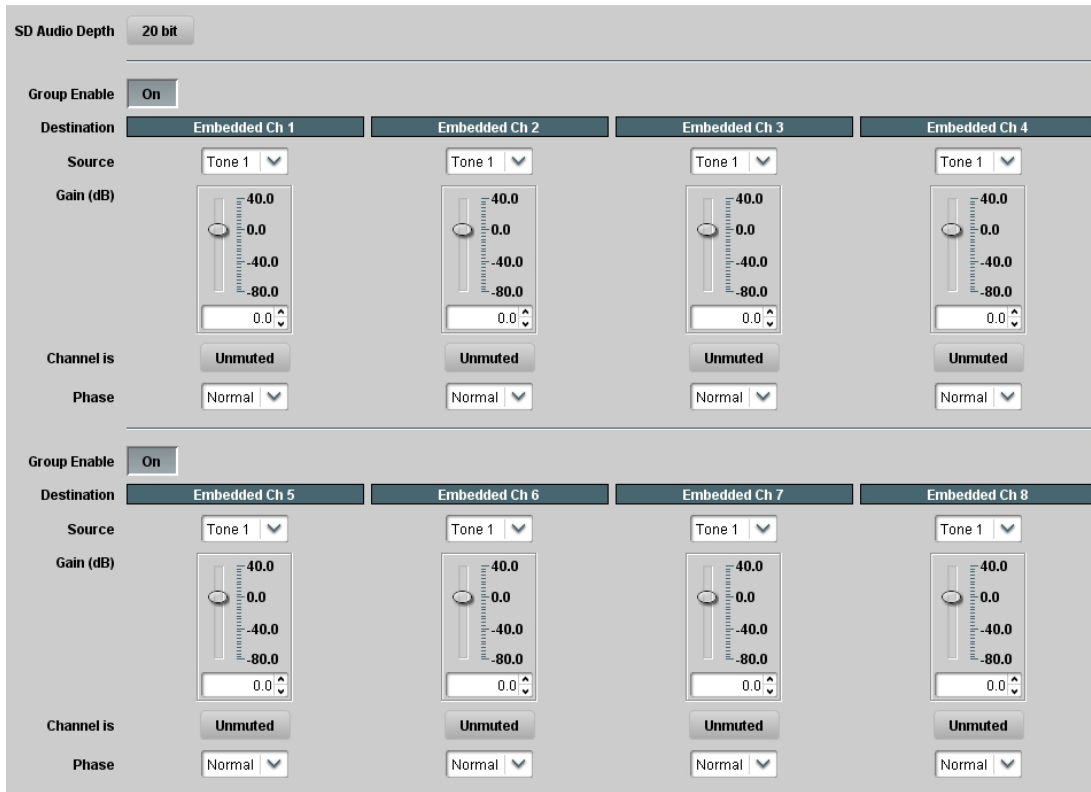
• SD Audio Depth SD Audio Depth **20 bit** SD Audio Depth **24 bit**	Allows option of using 24-bit audio data structure per SMPTE 272M, §3.10. **Note:** • If 24-bit depth is desired, make certain downstream equipment is compatible with 24-bit SD audio data. • Depth control setting applied here affects both Embedded Audio Group 1/2 and 3/4.
• Group Enable Group Enable **On**	When enabled (**On**), enables the embedding of the corresponding embedded audio group (Embedded Audio Group 1 thru 4). Group Enable buttons correspondingly enable or disable Embedded Audio Group 1 thru Embedded Audio Group 4. Disabling a group removes the entire group of embedded audio channels while preserving the settings of the channels belonging to the group. **Note:** These controls are only to be used with TSG audio, and only while TSG is invoked. Manipulating these controls while the card is passing input video will result in severe embedded audio corruption.

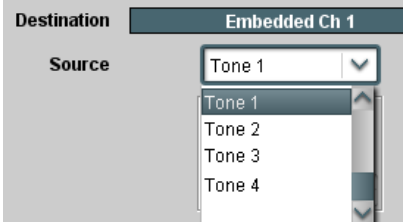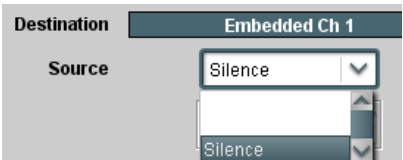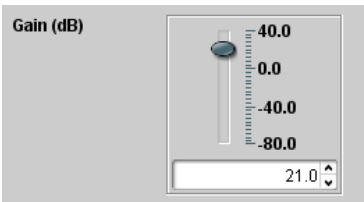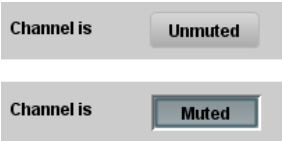*Table 3-2   9362 Function Submenu List — continued*
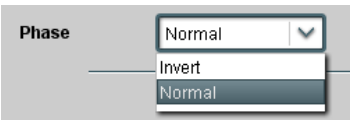
Embedded Audio Group 1/2 **Embedded Audio Group 3/4**	**(continued)**

Note: • When input video is active on output, embedded channel routing is per assignment in program SDI video. Source, destination, and other controls here **only** control TSG audio (overwrite using card tone generators or silence).

• **Embedded Ch 2** thru **Embedded Ch 8**, and **Embedded Ch 9** 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.

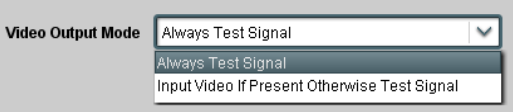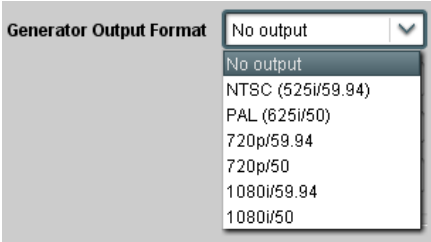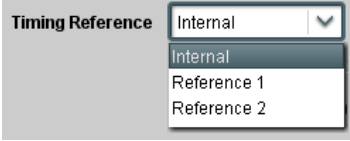|	
• Tone Generator 1 thru 4 as Source Destination — Embedded Ch 1 Source — Tone 1 Tone 1 / Tone 2 / Tone 3 / Tone 4	**Tone Generator 1** thru **Tone Generator 4** range in Source drop-down list enables one of four tone generators (Tone 1 thru Tone 4) to be the source for the selected destination Embedded Audio Group channel. (In this example, Tone 1 (tone generator 1) is the source for destination Embedded Ch 1) **Note:** Tone generator frequencies can be independently set for the four tone generator sources. Refer to **Tone Generator** function description on page 3-16 for more information.
• Silence (Mute) as Source Destination — Embedded Ch 1 Source — Silence Silence	**Silence** selection in Source drop-down list mutes the selected destination Embedded Audio Group channel. **Use this setting for unused destination channels.** (In this example, silence (muting) is applied to Embedded Ch 1)
• Gain (dB) Control Gain (dB) — 40.0 / 0.0 / -40.0 / -80.0 — 21.0	Adjusts relative gain (in dB) applied to the corresponding destination Embedded Audio Group channel. (-80 to +40 dB range in 0.1 dB steps; unity = 0.0 dB)
• Mute Control Channel is — Unmuted Channel is — Muted	Allows pushbutton On/Off channel muting while saving all other settings.
• Phase Control Phase — Normal Invert / Normal	Selects between **Normal** and **Invert** phase (relative to source original phase) for the destination Embedded Audio Group channel.

Table 3-2   9362 Function Submenu List — continued

Test Signal Generator	Provides video Test Signal Generator pattern, output, failover, and frame sync controls.
• Video Output Mode Video Output Mode: Always Test Signal Always Test Signal Input Video If Present Otherwise Test Signal	**Video Output Mode** selects between automatic failover or manually invoked TSG output. • When set to **Always Test Signal**, card outputs selected TSG output regardless of presence of valid SDI input. • When set to **Input Video If Present Otherwise Test Signal**, card is set for automatic failover. Valid SDI passes unaffected, with output switching to selected TSG output only in the event of input SDI loss of signal.
• Generator Output Format Generator Output Format: No output No output NTSC (525i/59.94) PAL (625i/50) 720p/59.94 720p/50 1080i/59.94 1080i/50	Sets TSG output format (as shown from choices to the left) when TSG is invoked either automatically of manually. **Note:** Selection **only** applies to TSG SDI output and has no relationship with input video format. It is recommended in normal operation that this control be set to match that of the normal program video format being handled by the card.
• Superimposed Text Superimposed Text: TSG-9362	Text entry box for entering text (using keyboard) that is superimposed over center of TSG image. Press keyboard Enter key to commit text entry. **Note:** Maximum character entry is 20 characters.
• Timing Reference Timing Reference: Internal Internal Reference 1 Reference 2	Sets output timing to use internal clock timing source, or either of two frame-supplied framesync sources. • **Internal** setting uses card internal (self) clocking. The Internal setting allows the card to output TSG patterns without any external signal feeds to the card. • The **Reference 1** and **Reference 2** settings allows the card output to frame sync with an external reference. **Note: Reference 1** and/or **Reference 2** settings apply frame sync to either input video or TSG output. **Note:** • **Reference 1** and/or **Reference 2** settings apply frame sync to either input video or TSG output. • This card is not specified for use of 720p tri-level frame sync with 525i5994 program video input. **Do not** use 720p reference with 525i5994 program video input.

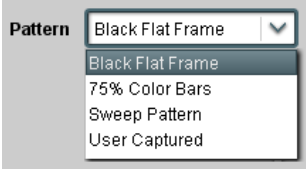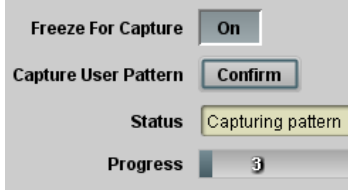*Table 3-2   9362 Function Submenu List — continued*

Test Signal Generator	**(continued)**
• **Pattern** Pattern: Black Flat Frame Black Flat Frame 75% Color Bars Sweep Pattern User Captured • **Capture Controls** Freeze For Capture — On Capture User Pattern — Confirm Status — Capturing pattern Progress — 3	Sets TSG output pattern (as shown from choices to the left) when TSG is invoked either automatically of manually. For **User Captured** selection, first capture an input video frame as follows: Note: • Output video freeze and momentary interruption occurs when an image is captured. **Do not** perform this step using live OTA video. • HD captures take longer than SD captures to fully acquire frame. 1. Set **Video Output Mode** to **Input Video**. 2. Roll video containing image to be captured. 3. When segment containing desired image appears, set **Freeze to Capture** to **On**. 4. Click/confirm **Capture User Pattern: Confirm**. Wait until the **Progress** bar indicates **100%**. Image is now captured. 5. When capture is 100%, set **Freeze for Capture** to **Off**; the live input video resumes. Note: User captured frame displays properly **only** when **Generator Output Format** setting matches format of captured frame; the capture function does not cross-convert formats.
• **Vertical Delay Control** Vertical Delay (Lines) -1124	When Reference 1 or Reference 2 framesync is enabled, sets vertical delay (in number of lines of **output video/format**) between the output video and the frame sync reference. (Range is -1124 thru 1124 lines.) Note: Lines refer to lines in the output video format, and not to the reference format.
• **Horizontal Delay Control** Horizontal Delay (us) -64.000	When Reference 1 or Reference 2 framesync is enabled, sets (in µsec of **output video timing**) horizontal delay between the output video and the frame sync reference. (Range is -64.000 thru 64.000 µsec) Note: When an external framesync reference is used, the card will not produce a framesync reset until the variance between framesync reference and output video exceeds ± 2 clock periods. Therefore, a framesync reset will not result if offsets within this window are applied. To apply an offset/framesync reset within this window, first apply a relatively large offset, then apply the target smaller offset. **Example:** To apply a 1-period offset, first apply a 10-period positive offset and then apply a 9-period negative offset. This results in the target 1-period offset being applied to the output video.

Table 3-2   9362 Function Submenu List — continued

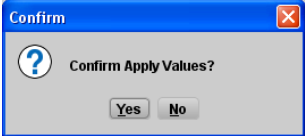| Timecode Generator	Provides configurable timecode data for TSG output in various formats supporting all available TSG output SDI formats.
• VITC Waveform Output Line VITC Waveform Output 1 Line Number 14 VITC Waveform Output 2 Line Number 16	When an SD TSG output is selected, selects the VITC1 and VITC2 line numbers (6 thru 22) where the VITC data is inserted. **Note:** • Although the output line drop-down will allow any choice within the 6 thru 22 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. 3-7) 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. • If only one output line is to be used, set both controls for the same line number.
• SD VITC Waveform Insertion Control SD VITC Waveform Insertion Disabled	Enables or disables VITC waveform timecode insertion into the SD-SDI output stream.
• SD ATC Insertion Control SD ATC Insertion Disabled	For SD TSG output, enables or disables SD ATC_VITC timecode insertion into the video stream. **Note:** SD ATC_VITC is locked to line 12. The card does not check for conflicts on a given line number. Make certain this line is available if SD ATC_VITC is to be used. See Ancillary Data Line Number Locations and Ranges (p. 3-7) for more information.
• HD ATC_VITC Insertion Control HD ATC VITC Insertion Disabled	For HD TSG output, enables or disables ATC_VITC timecode insertion into the video stream.
• HD ATC_VITC Line Insertion Controls HD ATC_VITC Insertion Line Field 1 9 - SMPTE 12M-2-2008 Recommended HD ATC_VITC Insertion Line Field 2 8 (571) - SMPTE 12M-2-2008 Recommended	For HD ATC_VITC TSG timecode output, selects the line number for ATC_VITC1 and ATC_VITC2. **Note:** • Although the output line drop-down will allow any choice within the 8 thru 20 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. 3-7) 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. • If only one output line is to be used, set both controls for the same line number.
• HD ATC_LTC Insertion Control HD ATC LTC Insertion Disabled	For HD TSG output, enables or disables ATC_LTC timecode insertion into the video stream.

Table 3-2   9362 Function Submenu List — continued

Timecode Generator	(continued)
• HD ATC_LTC Line Insertion Control HD ATC_LTC Insertion Line 10 - SMPTE 12M-2-2008 Recommended	For HD TSG timecode output, selects the line number for ATC_LTC timecode data. **Note:** • Although the output line drop-down will allow any choice within the 9 thru 20 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. 3-7) 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.
• ATC_VITC Legacy Support Control ATC_VITC Legacy Support Disabled	When enabled, accommodates equipment requiring ATC_VITC packet in both fields as a "field 1" packet (non-toggling). **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.
• Timecode Start Selection Generator Hours 0 Generator Minutes 0 Generator Seconds 0 Generator Frames 0 Apply Values Confirm	Selection lists for entering initial (starting) timecode in: **• Hours:** 0 to 24 hours **• Minutes:** 0 to 59 minutes **• Seconds:** 0 to 59 seconds **• Frames:** 0 to 59 frames **Note:** Although frame range drop-down shows full control range, frame range is clamped as appropriate for TSG output format selected using Test Signal Generator tab. Reset and start a count as follows: 1. Enable desired timecode format as described on previous pages. 2. Enter desired start count using drop-down lists shown to the left. 3. Click **Apply Values: Confirm**. The pop-up shown below appears showing the count is ready to be initialized to the entered values. Confirm ? Confirm Apply Values? Yes No 4. To reset and start the count at entered value, click **Yes**. At this instance, entered count commences and increments accordingly. **Note:** • Timecode entered with this function is applied to TSG output only; program material timecode when outputted by the card is not affected by this function. • When count is initiated, count remains in effect regardless of whether TSG output is invoked. If TSG output is invoked at a later time, the count reflects the running count, as initiated per the preceding Confirm action described above.

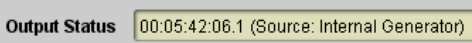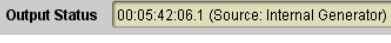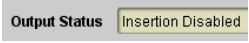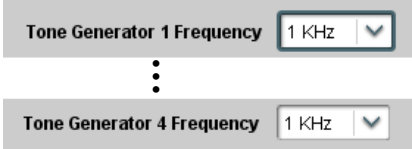***Table 3-2   9362 Function Submenu List — continued***
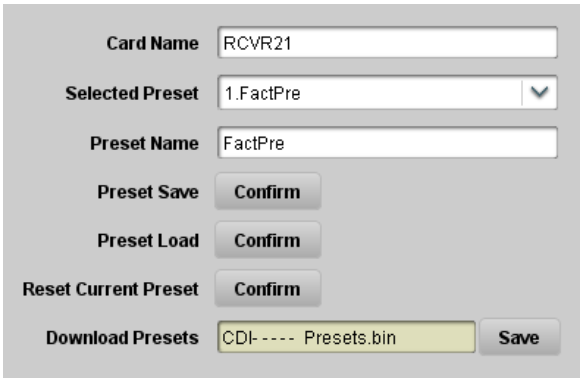
Timecode Generator	**(continued)**
• **Output Status Display** Output Status 00:05:42:06.1 (Source: Internal Generator)	Displays the current timecode being generated as follows: Output Status 00:05:42:06.1 (Source: Internal Generator) • Output status OK and enabled for output using an insertion control (described below). Output Status Insertion Disabled • Timecode disabled by no insertion selected on an insertion control (described below). **Note:** • Least significant 0 or 1 digit marks odd or even field for interlaced-format outputs. For progressive formats, digit toggles to mark each frame (i.e., frames 0 thru 59 are marked as 0.0 thru 29.1). • Status display may not indicate running real time updating due to network delays on DashBoard communications.
Tone Generator	Sets the test tone frequency for each of four tone generators (Tone Generator 1 thru 4).
• **Frequency Selection Lists** Tone Generator 1 Frequency [1 KHz ▼] ⋮ Tone Generator 4 Frequency [1 KHz ▼]	Selects the frequency for each of the four tone generators. 18 discrete sine wave frequencies are available, ranging from 50 Hz to 16 kHz (default frequency is 1.0 kHz). **Note:** Unity-gain signal level is equivalent to -20 dBu.
Presets	Allows up to 16 card user settings configuration presets to be saved in a Preset and then recalled (loaded) as desired. All current settings (including list selections and scalar (numeric) control settings are saved when a Preset Save is invoked.
Card Name [RCVR21] Selected Preset [1.FactPre ▼] Preset Name [FactPre] Preset Save [Confirm] Preset Load [Confirm] Reset Current Preset [Confirm] Download Presets [CDI- - - - Presets.bin] [Save]	The **Preset Name** field and **Preset Save** button allow custom user setting configurations to be labeled and saved to a Preset for future use. The **Preset Load** button and the **Selected Preset** drop-down list allow saved presets to be selected and loaded as desired. When a preset is loaded, it immediately becomes active with all user settings now automatically set as directed by the preset. Saved presets can be uploaded to a computer for use with other same-model COMPASS™ cards. Each of the items to the left are described in detail on the following pages.

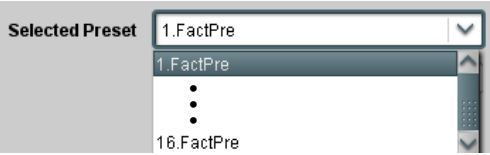***Table 3-2   9362 Function Submenu List — continued***
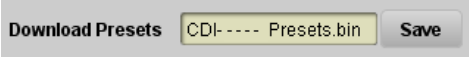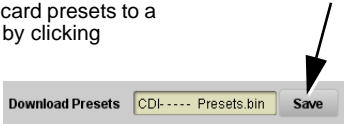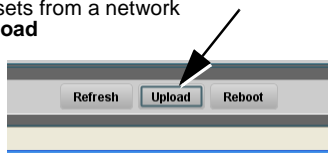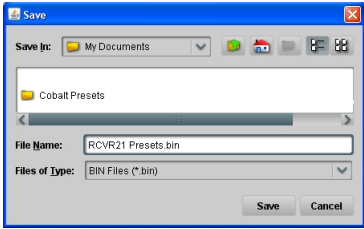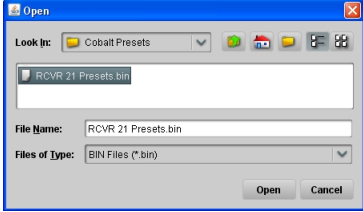
Presets	**(continued)**
• Preset Save and Load Preset Save Confirm Preset Load Confirm	**• Preset Save** stores all current card control settings to the currently selected preset. (For example, if Preset 1 is selected in the Selected Preset drop-down list, clicking and confirming Preset Save will then save all current card control settings to Preset 1) **• Preset Load** loads (applies) all card control settings defined by whatever preset (**Preset 1** thru **Preset 16**) is currently selected in the **Selected Preset** drop-down list. (For example, if Preset 3 is selected in the Selected Preset drop-down list, clicking and confirming Preset Load will then apply all card control settings defined in Preset 3) The above buttons have a **Confirm?** pop-up that appears, requesting confirmation. **Note:** Applying a change to a preset using the buttons described above **rewrites** the previous preset contents with the invoked contents. Make certain change is desired before confirming preset change.
• Selected Preset Selected Preset 1.FactPre 1.FactPre • • • 16.FactPre	**Selected Preset 1** thru **Selected Preset 16** range in drop-down list selects one of 16 stored presets as ready for **Save** (being written to) or for **Load** (being applied to the card). **Note:** The preset names shown to the left are the default (unnamed) preset names. All 16 presets in this case are loaded identically with the factory default settings.
• Preset Name Preset Name FactPre	With one of 16 presets selected, provides for entry of custom name for the preset (as shown in example below). Selected Preset 2.RCVR21 Preset Name RCVR21 Entering text in Preset Name field (in this example, "RCVR21") applies custom name to selected Preset (in this example, Preset 2) **Note:** • Preset name can be seven ASCII characters maximum. • The Preset ID number does not need to be entered; it is added automatically.
• Card Name Card Name RCVR 21 Input Processing	Text entry field provides for optional entry of card name, function, etc. (as shown in this example). **Note:** Card name can be 31 ASCII characters maximum.
• Reset Current Preset Reset Current Preset Confirm	**• Reset Current Preset** resets all parameters (including preset custom name entered) of the currently selected Preset (as displayed in the **Selected Preset** field) to factory default settings. The above button has a **Confirm?** pop-up that appears, requesting confirmation.

Table 3-2 **9362 Function Submenu List — continued**

Presets	(continued)
• Download Presets Download Presets CDI- - - - - Presets.bin Save	Download Presets allows all 16 presets to be stored to a specified location on a network computer for use with other same-model COMPASS™ cards. Refer to Cobalt® reference guide "Remote Control User Guide" (PN 9000RCS-RM) for instructions on using the Download Presets function.

Download a presets file to a computer on the card's DashBoard network to save presets. Preset files stored on a computer can then be uploaded back to the card.

Note also that a presets file can **also be uploaded to other same-model COMPASS® cards**. In this manner, presets built up using a single card can be easily applied to other same-model cards without repeating the setup work on the other cards.

Download (save) card presets to a network computer by clicking **Download Presets – Save** at the bottom of the Presets page.

Download Presets   CDI- - - - - Presets.bin   Save

Browse to a desired save location (in this example, *My Documents\Cobalt Presets*).

The file can then be renamed if desired (*RCVR21 Presets* in this example) before saving.

Upload (open) card presets from a network computer by clicking **Upload** at the bottom of DashBoard.

Refresh   Upload   Reboot

Browse to the location where the file was saved on the computer or drive (in this example, *My Documents\Cobalt Presets*).

Select the desired file and click **Open** to load the file to the card.

To upload presets saved from one card to another same-model card, simply click **Upload** on the other same-model card's DashBoard page and repeat the same steps here.

Note: • Preset transfer between card download and file upload is on a **group** basis (i.e., individual presets cannot be downloaded or uploaded separately).

• After uploading a presets file, engagement of a desired preset is only assured by pressing the Preset Load button for a desired preset.

Troubleshooting

This section provides general troubleshooting information and specific symptom/corrective action for the 9362 card and its remote control interface. The 9362 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 9362 card itself and its remote control systems all (to varying degrees) provide error and failure indications. Depending on how the 9362 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 9362 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. 3-23)

• 9362 Processing Error Troubleshooting (p. 3-24)

• Troubleshooting Network/Remote Control Errors (p. 3-25)

9362 Card Edge Status/Error Indicators and Display

Figure 3-5 shows and describes the 9362 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.

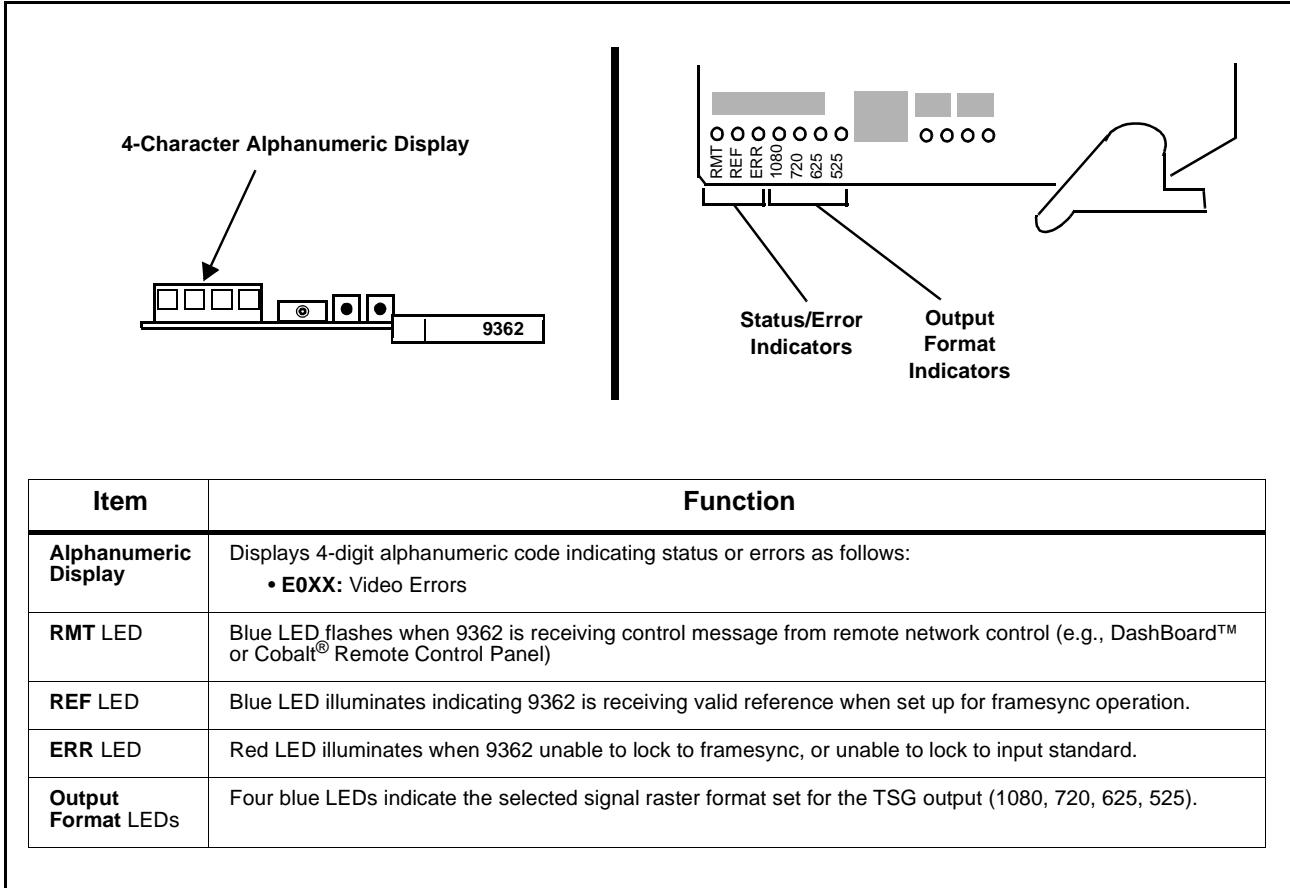| Item	Function
Alphanumeric Display	Displays 4-digit alphanumeric code indicating status or errors as follows: • **E0XX:** Video Errors
RMT LED	Blue LED flashes when 9362 is receiving control message from remote network control (e.g., DashBoard™ or Cobalt® Remote Control Panel)
REF LED	Blue LED illuminates indicating 9362 is receiving valid reference when set up for framesync operation.
ERR LED	Red LED illuminates when 9362 unable to lock to framesync, or unable to lock to input standard.
Output Format LEDs	Four blue LEDs indicate the selected signal raster format set for the TSG output (1080, 720, 625, 525).

Figure 3-5 9362 Card Edge Status Indicators and Display

DashBoard™ Status/Error Indicators and Displays

Figure 3-6 shows and describes the DashBoard™ status indicators and displays. These indicator icons and displays show status and error conditions relating to the 9362 card itself and remote (network) communications.
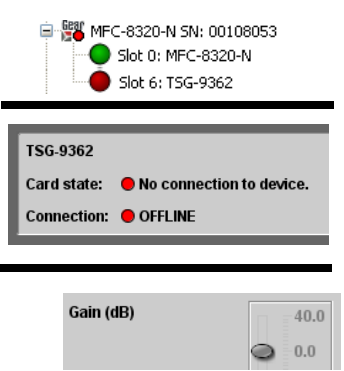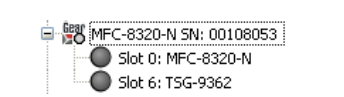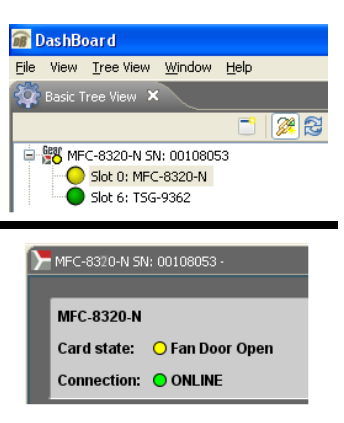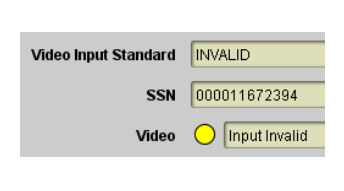
Indicator Icon or Display	Error Description
	Red indicator icon in Card Access/Navigation Tree pane shows card with Error condition (in this example, the Card Access/Navigation Tree pane shows a general error issued by the 9362 card in slot 6).
	Specific errors are displayed in the Card Info pane (in this example "No connection to device" indicating 9362 card is not connecting to frame/LAN).
	If the 9362 card is not connecting to the frame or LAN, all controls are grayed-out (as shown in the example here).
	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 9362 card in slot 6 and the MFC-8320-N Network Controller Card for its frame in slot 0 are not being seen).
	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).
	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.
	Yellow indicator icon in 9362 Card Info pane shows error alert, along with cause for alert (in this example, the 9362 is receiving no video input, or a video input that is invalid for the card and/or its current settings).

Figure 3-6 DashBoard™ Status Indicator Icons and Displays

Access the Card Info pane for a specific card by clicking the card slot position in the Card Access/Navigation Tree pane (as shown in the example in Figure 3-7).

By clicking on "Slot 0: MFC-8320-N" in this example, Card Info is displayed for frame Network Controller Card

Status for selected card is shown here (in this example, connection OK and "Fan Door Open" alert)

Card general information is displayed in lower portion of Card Info pane

By clicking on "Slot 6: TSG-9362" in this example, Card Info is shown for 9362 card in slot 6

Status for selected card is shown here (in this example, all indications are OK)

Where applicable, additional status is displayed (as shown in this example)
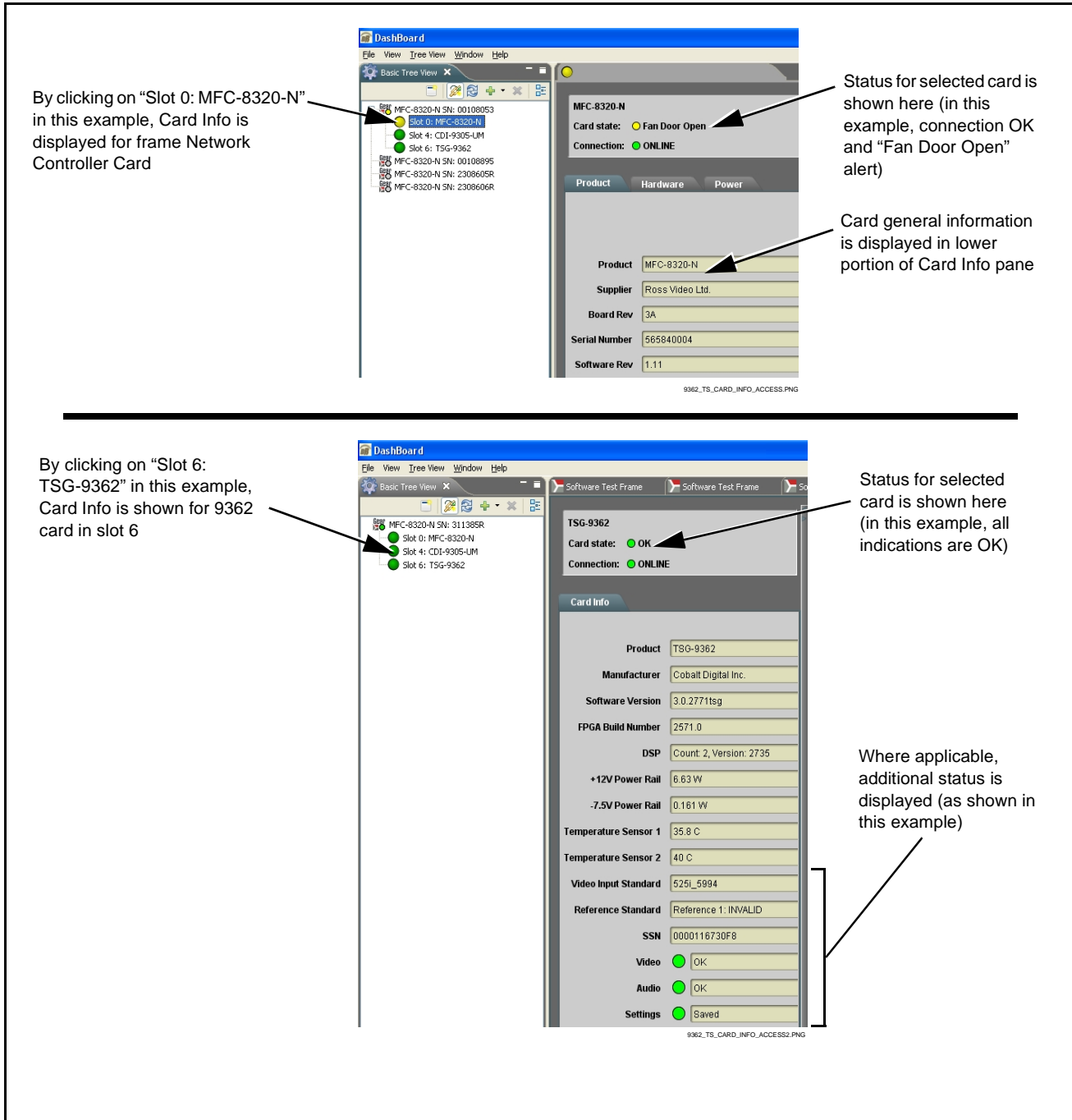
Figure 3-7 Selecting Specific Cards for Card Info Status Display

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

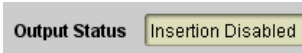| Item	Checks

Verify power presence and characteristics	• On both the frame Network Controller Card and the 9362, 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 indications for both the +12 V and -7.5 V supply rails for the 9362 card. This can be observed using the DashBoard™ Card Info pane, or using the card edge controls and indicators as shown in Figure 3-3 on page 3-6.
	    • If either of the rail supplies show **no** power being consumed, either the frame power supply, connections, or the 9362 card itself is defective.
	    • If either of the rail supplies show **excessive** power being consumed (see Technical Specifications (p. 1-12) in Chapter 1, "Introduction"), the 9362 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 9362 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.

9362 Processing Error Troubleshooting

Table 3-4 provides 9362 processing troubleshooting information. If the 9362 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 9362 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 9362 card edge status indicators.

Note: Where errors are displayed on both the 9362 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
DashBoard™ shows **Video** yellow icon and Input Invalid message in 9362 Card Info pane. Video ◯ Input Invalid	No video input present	Make certain intended video source is connected to appropriate 9362 card video input. Make certain BNC cable connections between frame Rear I/O Module for the card and signal source are OK.
User-captured frame not properly displayed downstream.	Captured frame not compatible with generator output format setting	Make certain Generator Output Format setting matches format of captured frame. If necessary, re-capture frame. User captured frame displays properly only when Generator Output Format setting matches format of captured frame; the capture function does not cross-convert formats.
DashBoard™ shows **Output Status** disabled message in 9362 Timecode function submenu screen. Output Status Insertion Disabled	Timecode ancillary output line not selected.	• Timecode output requires that ancillary data output line and enable are appropriately selected. Refer to **Timecode Generator** function submenu tab on page 3-14 for more information.
Ancillary data (closed captioning, timecode, Dolby® metadata, AFD) not transferred through 9362.	• Control(s) not enabled	• Make certain respective control is set to **On** or **Enabled** (as appropriate).
	• VANC line number conflict between two or more ancillary data items	• 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 3-7).

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.

This page intentionally blank

Cobalt Digital Inc.

2406 E. University Ave.
Urbana, IL 61802
Voice 217.344.1243 • Fax 217.344.1245
www.cobaltdigital.com