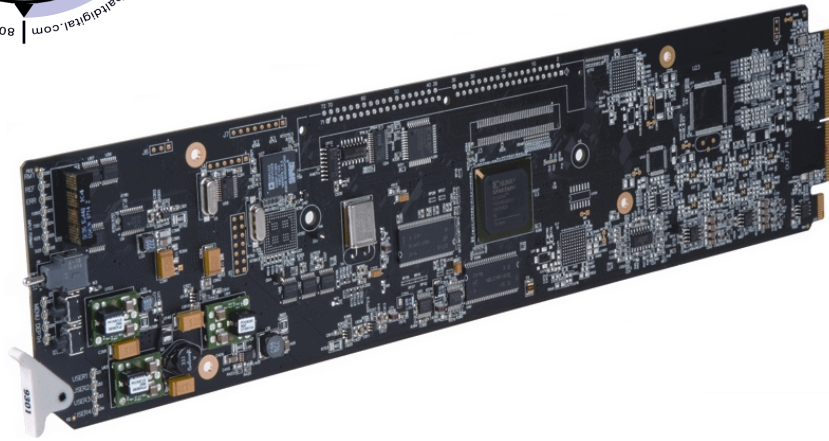


# 9082



## 9082 HD/SD Frame Sync

# *Product Manual*

---



**Cobalt Digital Inc.**

2406 E. University Ave.  
Urbana, IL 61802  
Voice 217.344.1243 • Fax 217.344.1245  
[www.cobaltdigital.com](http://www.cobaltdigital.com)

---

## Copyright

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

Duplication or distribution of this manual and any information contained within is strictly prohibited without the express written permission of Cobalt Digital Inc. This manual and any information contained within, may not be reproduced, distributed, or transmitted in any form, or by any means, for any purpose, without the express written permission of Cobalt Digital Inc. Reproduction or reverse engineering of software used in this device is prohibited.

## Disclaimer

The information in this document has been carefully examined and is believed to be entirely reliable. However, no responsibility is assumed for inaccuracies. Furthermore, Cobalt Digital Inc. reserves the right to make changes to any products herein to improve readability, function, or design. Cobalt Digital Inc. does not assume any liability arising out of the application or use of any product or circuit described herein.

## Trademark Information

**Cobalt**<sup>®</sup> is a registered trademark of Cobalt Digital Inc.

**COMPASS**<sup>®</sup> and **FUSION3G**<sup>®</sup> are registered trademarks of Cobalt Digital Inc.

**openGear**<sup>®</sup> is a registered trademark of Ross Video Limited. **DashBoard**<sup>™</sup> is a trademark of Ross Video Limited.

Congratulations on choosing the Cobalt ® 9082 HD/SD Frame Sync. The 9082 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 9082, please contact us at the contact information on the front cover.

<b>Manual No.:</b>	9082-OM
<b>Document Version:</b>	V4.4
<b>Release Date:</b>	August 22, 2013
<b>Applicable for Firmware Version (or greater):</b>	3314
<b>Description of product/manual changes:</b>	<ul style="list-style-type: none"><li>- Update to include latest card functionality.</li><li>- Revise manual for minor edits.</li><li>- Add new rear I/O modules.</li><li>- Clarification of Framesync control descriptions.</li></ul>

# Table of Contents

---

<b>Chapter 1</b>	<b>Introduction . . . . .</b>	<b>1-1</b>
	Overview .....	1-1
	9082 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
	9082 Functional Description .....	1-5
	9082 Input/Output Formats .....	1-5
	Video Processor Description .....	1-7
	User Control Interface .....	1-9
	9082 Rear I/O Modules .....	1-11
	Video Formats Supported by the 9082.....	1-12
	Technical Specifications.....	1-12
	Warranty and Service Information .....	1-15
	Cobalt Digital Inc. Limited Warranty.....	1-15
	Contact Cobalt Digital Inc.....	1-16
<b>Chapter 2</b>	<b>Installation and Setup . . . . .</b>	<b>2-1</b>
	Overview .....	2-1
	Installing the 9082 Into a Frame Slot .....	2-1
	Installing a Rear I/O Module .....	2-3
	9082 Rear I/O Modules .....	2-4
	Setting Up 9082 Network Remote Control .....	2-6

---

<b>Chapter 3</b>	<b>Operating Instructions .....</b>	<b>3-1</b>
	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 9082 Card via Remote Control .....	3-5
	Accessing the 9082 Card Using DashBoard™ .....	3-5
	Accessing the 9082 Card Using a Cobalt® Remote Control Panel .....	3-6
	Checking 9082 Card Information.....	3-7
	Ancillary Data Line Number Locations and Ranges .....	3-8
	9082 Function Submenu List and Descriptions .....	3-9
	Video Proc .....	3-10
	AFD .....	3-11
	Framesync .....	3-12
	Timecode .....	3-15
	Licensable Features .....	3-19
	Presets .....	3-19
	Troubleshooting .....	3-22
	Error and Failure Indicator Overview .....	3-22
	Basic Troubleshooting Checks.....	3-26
	9082 Processing Error Troubleshooting.....	3-27
	Troubleshooting Network/Remote Control Errors.....	3-28
	In Case of Problems .....	3-28

---

# Introduction

## Overview

This manual provides installation and operating instructions for the 9082 HD/SD Frame Sync card (also referred to herein as the 9082).

**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 9082.
- **Chapter 2, “Installation and Setup”** – Provides instructions for installing the 9082 in a frame, and optionally installing 9082 Rear I/O Modules.
- **Chapter 3, “Operating Instructions”** – Provides overviews of operating controls and instructions for using the 9082.

**This chapter** contains the following information:

- **9082 Card Software Versions and this Manual (p. 1-2)**
- **Manual Conventions (p. 1-3)**
- **Safety Summary (p. 1-4)**
- **9082 Functional Description (p. 1-5)**
- **Technical Specifications (p. 1-12)**
- **Warranty and Service Information (p. 1-15)**
- **Contact Cobalt Digital Inc. (p. 1-16)**

## 9082 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 9082 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.

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

<p>Card Software <b>earlier</b> 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 <b>Support&gt;Firmware Downloads</b> link at <a href="http://www.cobaltdigital.com">www.cobaltdigital.com</a>. 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><b>Software updates are field-installed without any need to remove the card from its frame.</b></p>
<p>Card Software <b>newer</b> than version in manual</p>	<p>A new manual is expediently released whenever a card’s software is updated <b>and specifications and/or functionality have changed</b> 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 <b>Support&gt;Documents&gt;Product Information and Manuals</b> link at <a href="http://www.cobaltdigital.com">www.cobaltdigital.com</a>.</p>

## Cobalt Reference Guides

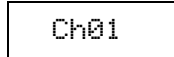
From the Cobalt® web home page, go to **Support>Documents>Reference Guides** for easy to use guides covering network remote control, card firmware updates, and other topics.

---

## Manual Conventions

In this manual, display messages and connectors are shown using the exact name shown on the 9082 itself. Examples are provided below.

- Card-edge display messages are shown like this:



```
Ch01
```

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

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

- **9082** refers to the 9082 HD/SD Frame Sync 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 9082 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.
	<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"> <li>• Do not dispose of this product as unsorted municipal waste.</li> <li>• Collect this product separately.</li> <li>• Use collection and return systems available to you.</li> </ul>

## 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 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 9082 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.



---

## 9082 Functional Description

Figure 1-1 shows a functional block diagram of the 9082. The 9082 frame synchronizer also includes a video processor. The 9082 also handles AFD code detection and processing, and closed captioning support.

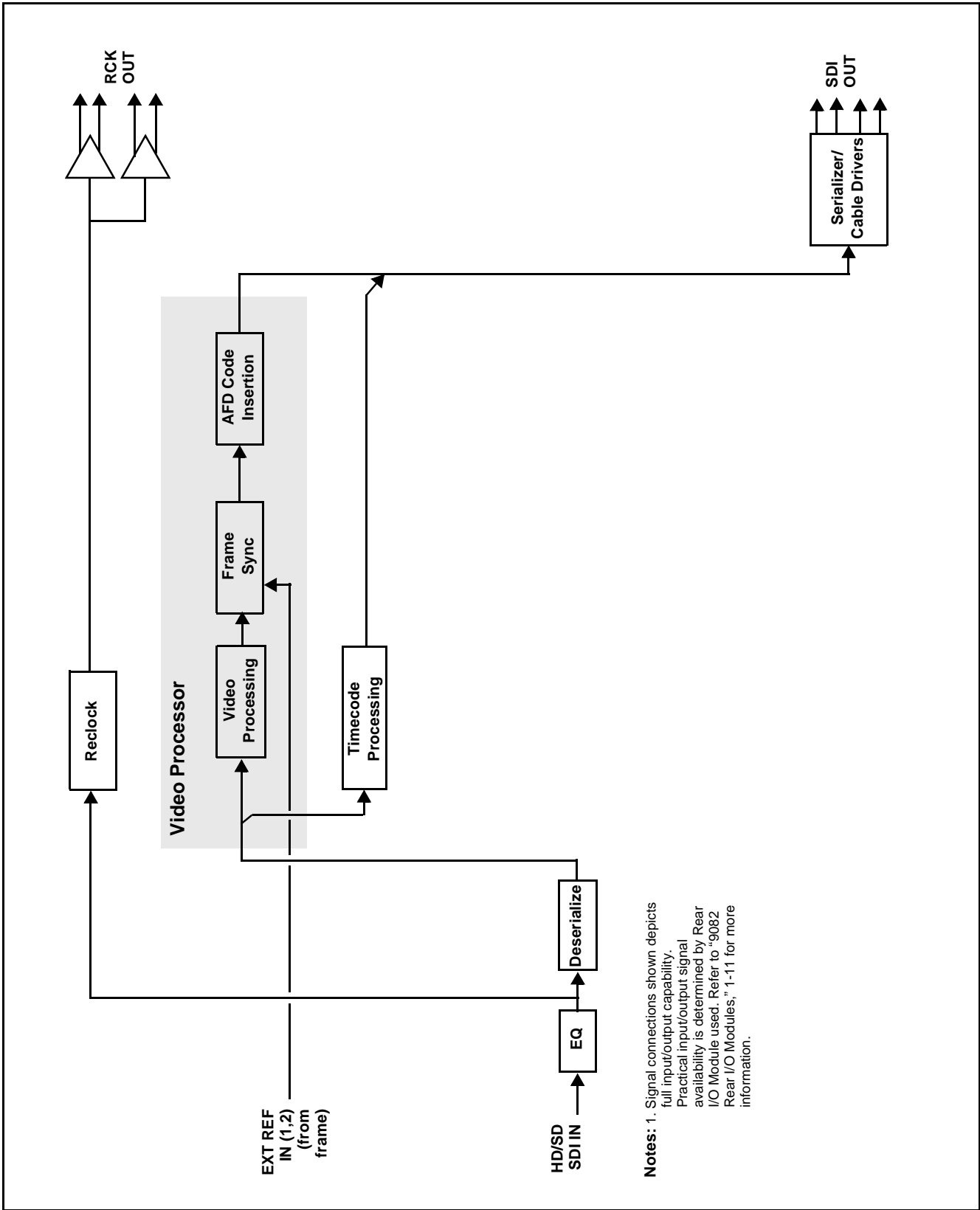
**Note:** Some of the functions described below are available only when using the DashBoard™, or Cobalt® OGCP-9000 or OGCP-9000/CC Control Panels user interfaces. Refer to User Control Interface (p. 1-9) for user interface descriptions.

### 9082 Input/Output Formats

The 9082 provides the following inputs and outputs:

- **Inputs:**
  - **HD/SD SDI IN** – dual-rate HD/SD-SDI input
- **Outputs:**
  - **SDI OUT** – four dual-rate HD/SD-SDI buffered video outputs
  - **RCK OUT** – four reclocked HD/SD-SDI input copies

**Note:** The input/output complement listed above represents the maximum capability of the 9082. The practical input/output complement is determined by the particular Rear I/O Module used with the 9082. Refer to 9082 Rear I/O Modules (p. 1-11) for more information.



**Notes:** 1. Signal connections shown depicts full input/output capability. Practical input/output signal availability is determined by Rear I/O Module used. Refer to "9082 Rear I/O Modules," 1-11 for more information.

Figure 1-1 9082 Functional Block Diagram

---

## Video Processor Description

### Video Processor

The 9082 provides full color processing control (luma gain and lift, chroma saturation, and color phase) of the output video.

### Frame Sync Function

This function provides for frame sync control using either one of two external **EXT REF IN (1,2)** reference signals distributed with the card frame, or the input video as a frame sync reference.

This function allows horizontal and/or vertical offset to be added between the output video and the frame sync reference. A video delay offset function allows adding or reducing video delay. This function is useful for correcting lip sync problems when video and audio paths in the chain experience differing overall delays. A Reset Framesync function resets the frame sync following any horizontal or vertical offset changes, clearing any buffered video and re-establishing the frame sync. The 9082 re-establishes video sync following framesync changes by applying an offset in small, progressive amounts to provide a seamless, glitch-free retiming.

In the event of input video loss of signal, this function provides for disabling the video, going to a desired color raster, or freezing to the last intact frame (frame having valid SAV and EAV codes).

**Note:** Although the 9082 passes all four groups of embedded audio, the 9082 frame sync function is not ideally suited for streams carrying audio because the 9082 does not have tracking embedded audio delay found on our cards specifically designed for video/audio framesync (such as the Compass<sup>®</sup> 9081 or 9083 models). If the 9082 is used to carry audio, noticeable audio glitches may occur when processing asynchronous inputs.

### AFD Inserter

This function provides for assignment and insertion of AFD codes into the SDI output video. 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 and ancillary data line number for the outputted AFD code.

## 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. The function can monitor the SDI video input of the card for supported timecode formats, and then select and prioritize among SDI VITC, SDI ATC VITC, and SDI ATC LTC timecode sources. If the preferred format is detected, the preferred format is used by the card; if the preferred format is not detected, the card uses other formats (where available) as desired.

The function provides conversion between various timecode formats and provides independent insertion and line number controls for each SDI timecode output format.

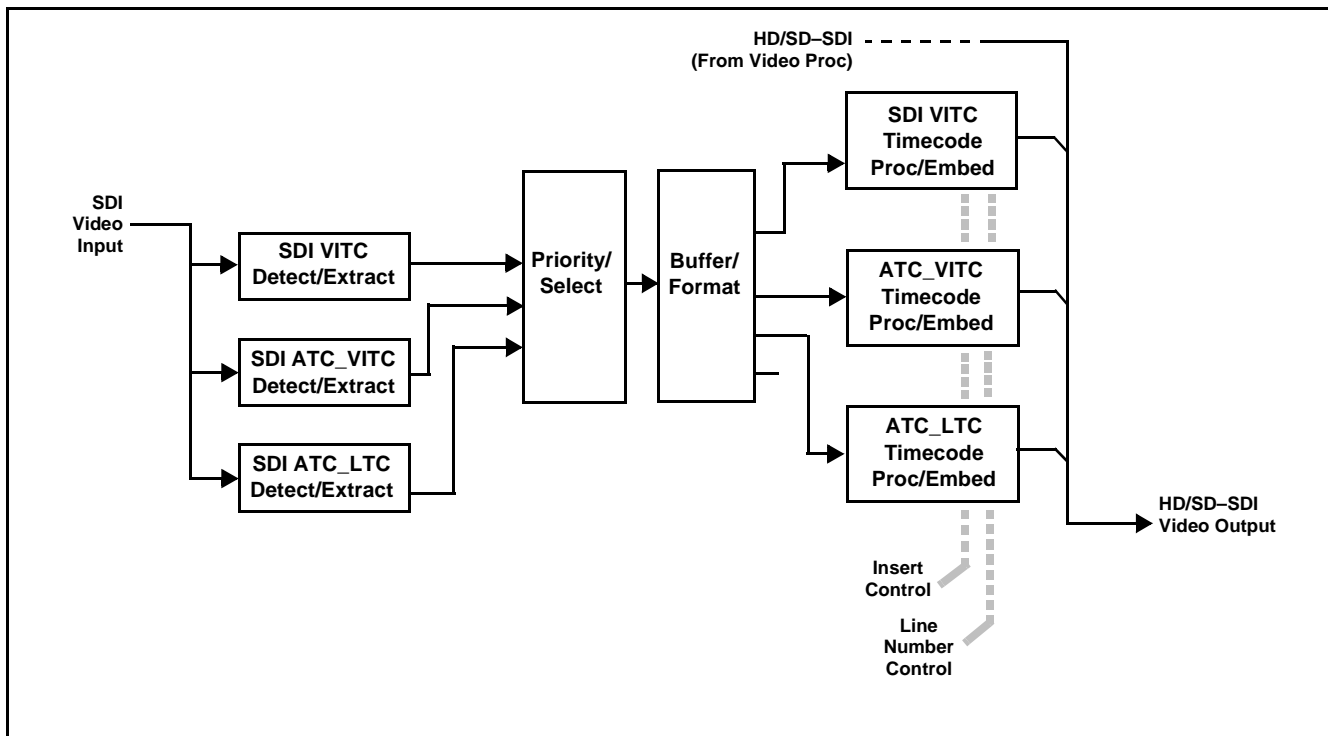
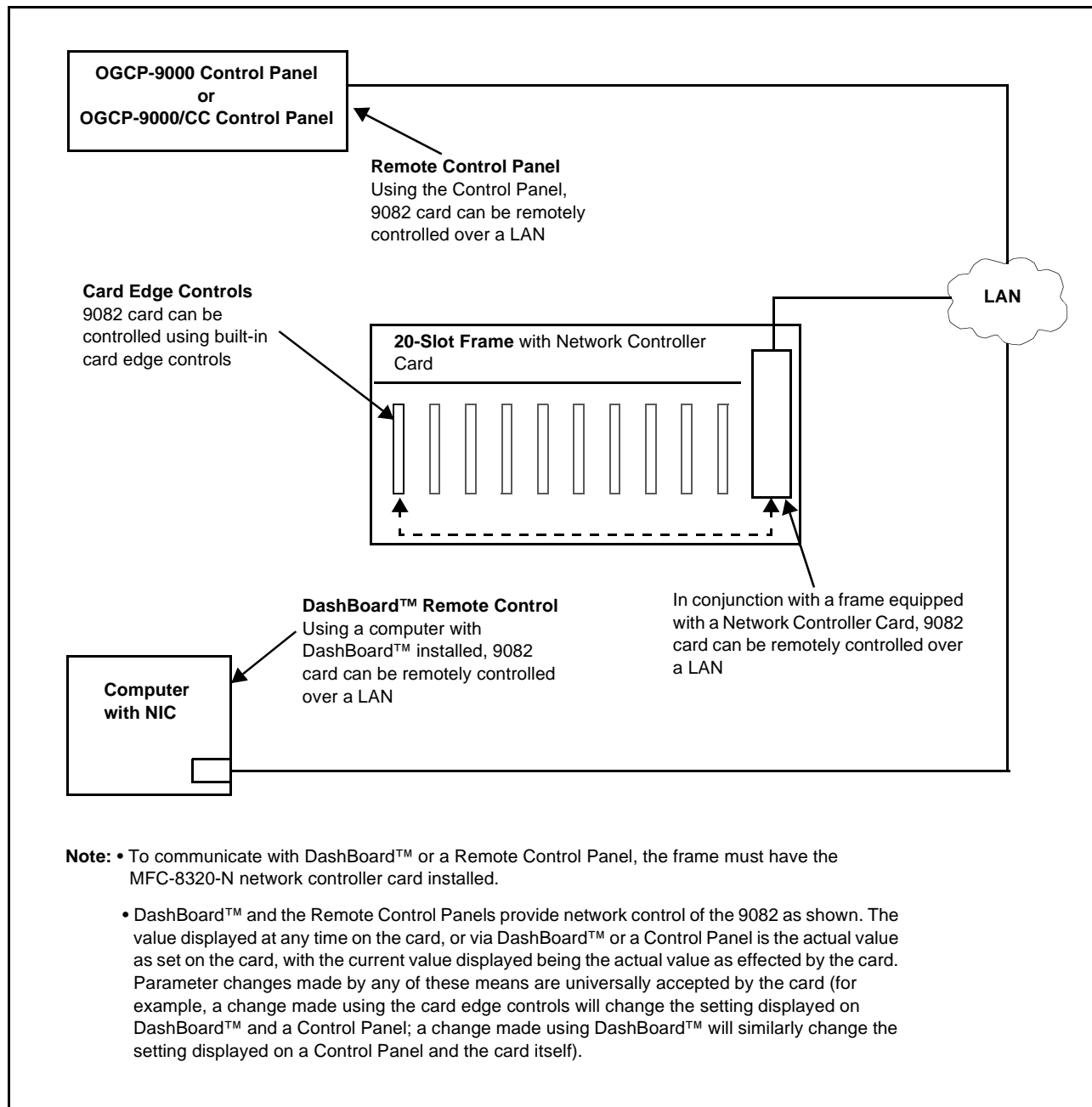


Figure 1-2 Timecode Processor

## User Control Interface

Figure 1-3 shows the user control interface options for the 9082. 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.



**Figure 1-3 9082 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 9082 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 9082 and other cards installed in openGear®<sup>1</sup> 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](http://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>Documents>Reference Guides** link at [www.cobaltdigital.com](http://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. 1-16).

- **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.

9082 Rear I/O Modules

The 9082 physically interfaces to system video connections using a Rear I/O Module. Figure 1-4 shows a typical 9082 Rear I/O Module.

All inputs and outputs shown in the 9082 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 9082 card edge connections to industry standard connections that interface with other components and systems in the signal chain.

In this manner, the particular inputs and outputs required for a particular application can be accommodated using a Rear I/O Module that best suits the requirements. The required input and outputs are broken out to the industry standard connectors on the Rear I/O Module; the unused inputs and outputs remain unterminated and not available for use.

The full assortment of 9082 Rear I/O Modules is shown and described in 9082 Rear I/O Modules (p. 2-4) in Chapter 2, "Installation and Setup".

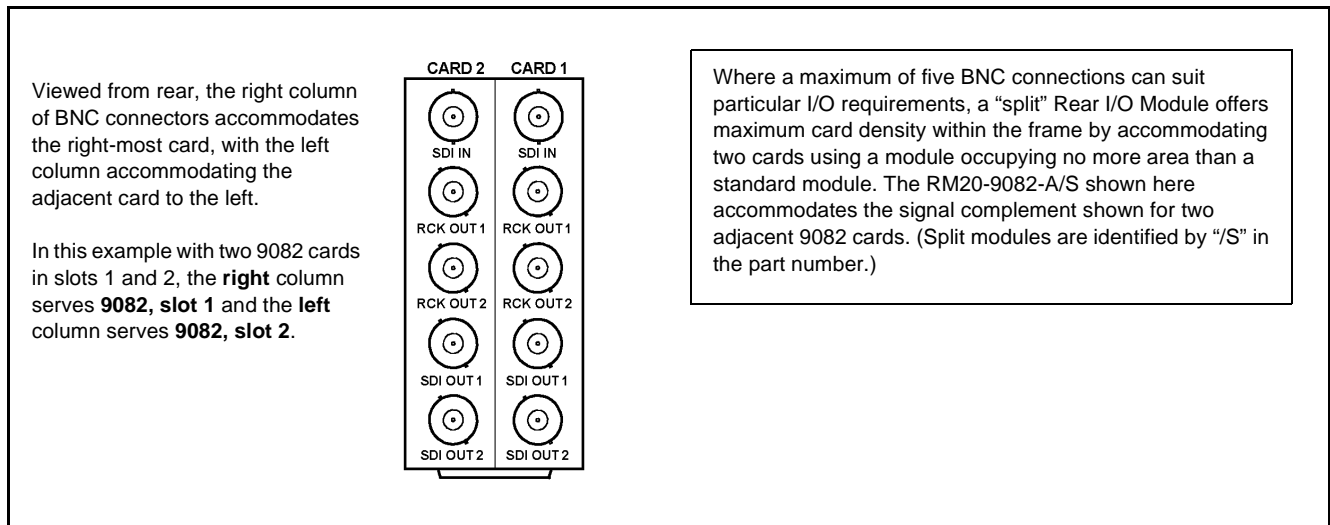


Figure 1-4 Typical 9082 Rear I/O Modules

## Video Formats Supported by the 9082

The 9082 supports all current SMPTE standard SD and HD video formats. Table 1-1 lists and provides details regarding the video formats supported by the 9082.

**Table 1-1 Supported Video Formats**

Item	Description/Specification	
Input / Output Video	Raster Structure:	Frame Rate:
	1080PsF	23.98; 24
	1080p	23.98; 24
	1080i <sup>(1)</sup>	25; 29.97; 30
	720p	23.98; 24; 25; 29.97; 30; 50; 59.94; 60
	486i <sup>(1)</sup>	29.97
	575i <sup>(1)</sup>	25
(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 9082 HD/SD Frame Sync card.

**Table 1-2 Technical Specifications**

Item	Characteristic
Part number, nomenclature	• 9082 – HD/SD Frame Sync
Installation/usage environment	Intended for installation and usage in frame meeting openGear® modular system definition.
Power consumption	< 9 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.



Table 1-2 Technical Specifications — continued

Item	Characteristic
Indicators	Card edge display and indicators as follows: <ul style="list-style-type: none"> <li>• 4-character alphanumeric display</li> <li>• Status/Error LED indicator</li> <li>• Input Format LED indicator</li> </ul>
Controls	Card edge switches as follows: <ul style="list-style-type: none"> <li>• Menu Enter pushbutton switch</li> <li>• Menu Exit pushbutton switch</li> <li>• Up/down selection toggle switch</li> </ul>
Resolution	10-bit video data path
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 $\Omega$ 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: Four HD/SD-SDI BNC per IEC 60169-8 Amendment 2 Impedance: 75 $\Omega$ Return Loss: > 15 dB at 5 MHz – 270 MHz > 12 dB at 270 MHz – 1.485 GHz Signal Level: 800 mV $\pm$ 10% DC Offset: 0 V $\pm$ 50 mV Jitter (HD): < 0.15 UI (all outputs) Jitter (SD): < 0.10 UI (all outputs) Overshoot: < 0.2% of amplitude

Table 1-2 Technical Specifications — continued

Item	Characteristic
Pre-Processor (Reclocked) Serial Digital Video Outputs	Number of Outputs: Four HD/SD-SDI BNC per IEC 60169-8 Amendment 2 Impedance: 75 $\Omega$
Reference Video Input	Number of Inputs: Two non-terminating (looping) Frame Reference inputs Standards Supported (HD): 720p 24; 25; 29.97; 30; 50; 59.94 1080i 25; 29.97 1080p 23.98; 24; 25; 29.97; 30 1080p/sF 23.98; 24 Standards Supported (SD): 486i 29.97 (NTSC); 575i 25 (PAL) Signal Level: 1 V <sub>p-p</sub> nominal Signal Type: Analog video sync (black burst or tri-level) Impedance: 75 $\Omega$ Return Loss: > 30 dB to 30 MHz Allowable Maximum DC on Ref Input: $\pm 1.0$ V

---

## 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  
Urbana, IL 61802 USA  
www.cobaltdigital.com

Office: (217) 344-1243  
Fax: (217) 344-1245  
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

<b>Phone:</b>	(217) 344-1243
<b>Fax:</b>	(217) 344-1245
<b>Web:</b>	<a href="http://www.cobaltdigital.com">www.cobaltdigital.com</a>
<b>General Information:</b>	info@cobaltdigital.com
<b>Technical Support:</b>	support@cobaltdigital.com

---

# Installation and Setup

## Overview

This chapter contains the following information:

- Installing the 9082 Into a Frame Slot (p. 2-1)
- Installing a Rear I/O Module (p. 2-3)
- Setting Up 9082 Network Remote Control (p. 2-6)

## Installing the 9082 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.

### 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 9082 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 9082 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 9082 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 should be installed on the Rear I/O connector bank corresponding to the slot location of the card.

Install the 9082 into a frame slot as follows:

1. Determine the slot in which the 9082 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 follows:
  - If the 9082 is being installed in a PN 8310-BNC or 8310-C-BNC frame, refer to the label on the connector bank corresponding to the card's slot location for connector designations.
  - If the 9082 is being installed in a frame using a 9082 Rear I/O Module, connect cabling in accordance with the appropriate diagram shown in Table 2-1, "9082 Rear I/O Modules" (p. 2-5).
9. Repeat steps 1 through 8 for other 9082 cards.

**Note:** External frame sync reference signals are received by the card over a reference bus on the card frame, and not on any card rear I/O module connectors. The frame has BNC connectors labeled **REF 1** and **REF 2** which receive the reference signal from an external source such as a house distribution.

**Note:** The 9082 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 Cobalt® reference guide “Remote Control User Guide (PN 9000RCS-RM)”.

**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.

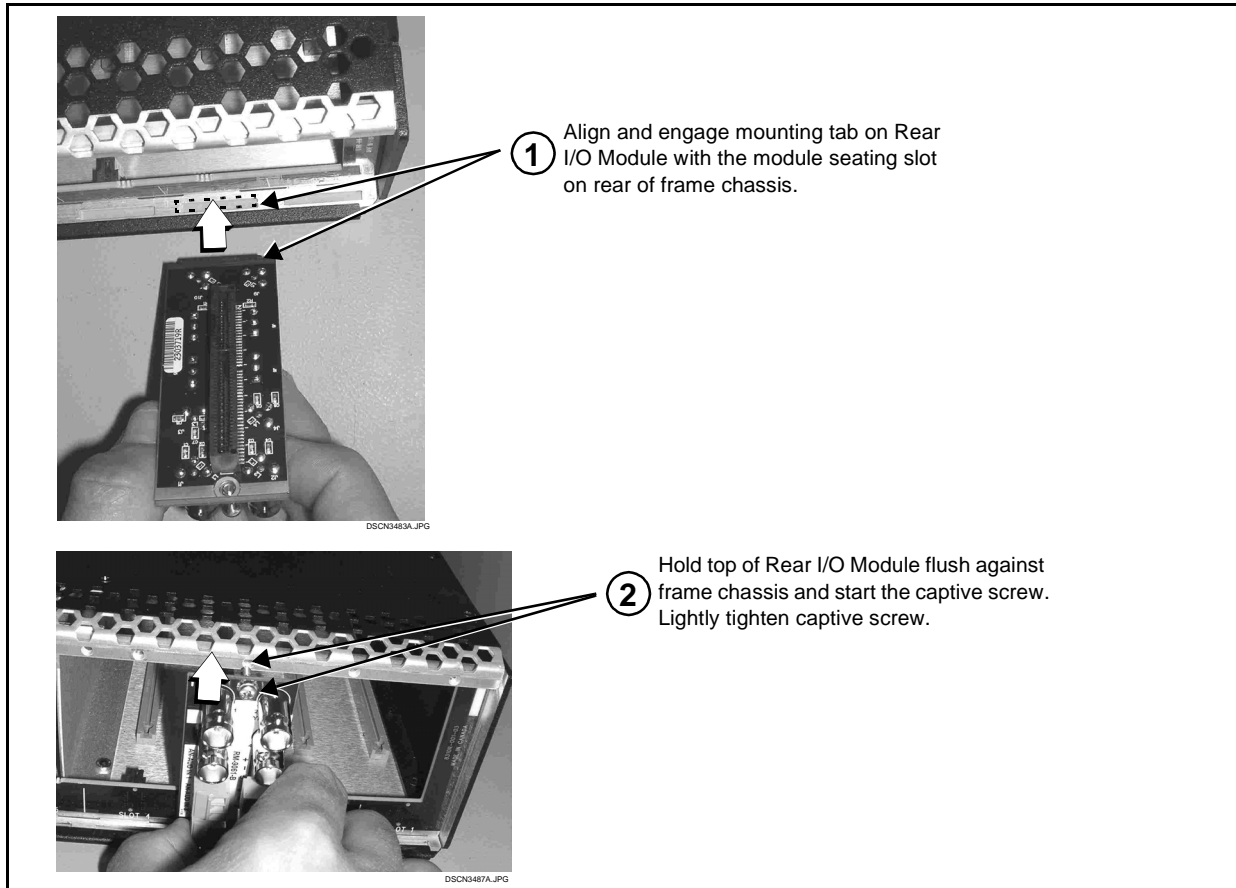
## Installing a Rear I/O Module

**Note:** This procedure is applicable **only if a Rear I/O Module is not currently installed** in the slot where the 9082 is to be installed.

If installing the 9082 in a 8310-C-BNC or 8310-BNC frame (which is pre-equipped with a 100-BNC rear I/O module installed across the entire backplane) or 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 9082 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.



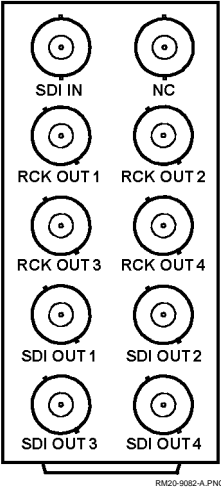
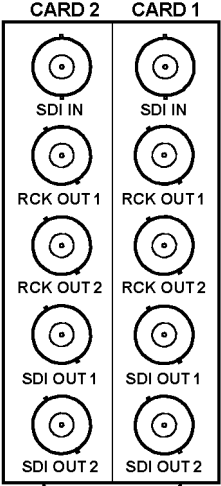
**Figure 2-1 Rear I/O Module Installation**

## 9082 Rear I/O Modules

Table 2-1 shows and describes the full assortment of Rear I/O Modules specifically for use with the 9082.



**Table 2-1 9082 Rear I/O Modules**

9082 Rear I/O Module	Description
<p><b>RM20-9082-A</b></p> 	<p>Provides the following connections:</p> <ul style="list-style-type: none"> <li>• HD/SD-SDI coaxial input (<b>SDI IN</b>)</li> <li>• Four HD/SD-SDI reclocked input copies (<b>RCK OUT 1</b> thru <b>RCK OUT 4</b>)</li> <li>• Four buffered SDI coaxial outputs (<b>SDI OUT 1</b> thru <b>SDI OUT 4</b>)</li> </ul>
<p><b>RM20-9082-A/S</b></p> 	<p>Split Rear Module. Provides <b>each</b> of the following connections for two 9082 cards:</p> <ul style="list-style-type: none"> <li>• HD/SD-SDI coaxial input (<b>SDI IN</b>)</li> <li>• HD/SD-SDI reclocked input copies (<b>RCK OUT 1</b> and <b>RCK OUT 2</b>)</li> <li>• Buffered SDI coaxial outputs (<b>SDI OUT 1</b> and <b>SDI OUT 2</b>)</li> </ul> <p><b>Note:</b> RM20-9082-A/S Rear I/O Module compatible only with 20-slot frames.</p>

---

## Setting Up 9082 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>Documents>Reference Guides** link at [www.cobaltdigital.com](http://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. 1-16).
  - 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 9082 Function Submenu List and Descriptions (p. 3-9).

This chapter contains the following information:

- Control and Display Descriptions (p. 3-1)
- Accessing the 9082 Card via Remote Control (p. 3-5)
- Checking 9082 Card Information (p. 3-7)
- Ancillary Data Line Number Locations and Ranges (p. 3-8)
- 9082 Function Submenu List and Descriptions (p. 3-9)
- Troubleshooting (p. 3-22)

## Control and Display Descriptions

This section describes the user interface controls, indicators, and displays (both on-card and remote controls) for using the 9082 card. The 9082 functions can be accessed and controlled using any of the user interfaces described here.

The format in which the 9082 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 9082 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).

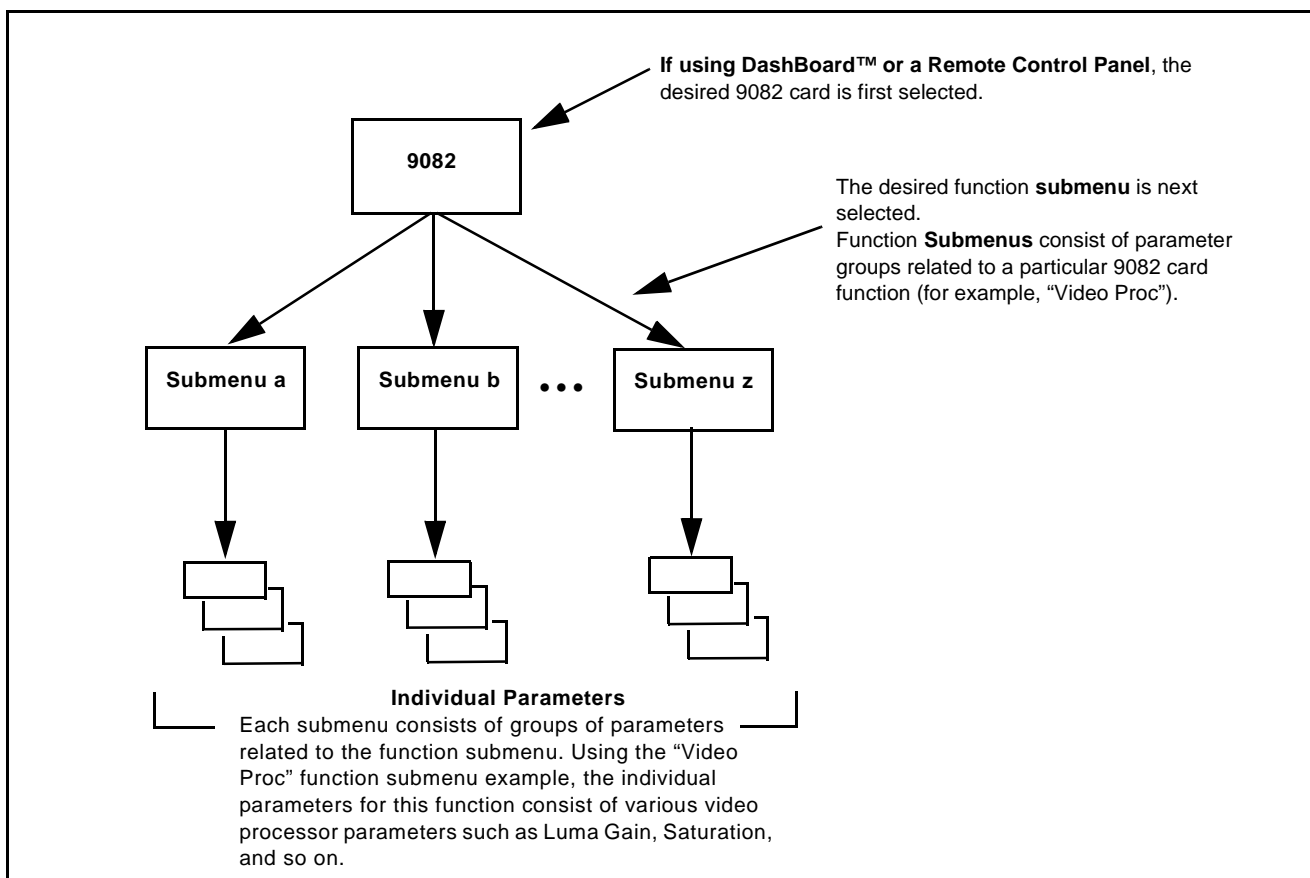
**Note:** DashBoard™ and the Remote Control Panel provide greatly simplified user interfaces as compared to using the card edge controls. For this reason, **it is strongly recommended** that DashBoard™ or a Remote Control Panel be used for all card applications other than the most basic cases. Card edge 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](http://www.cobaltdigital.com)>Support>Documents>Reference Guides.

**Note:** When a setting is changed, settings displayed on DashBoard™ (or the Remote Control Panel) are the settings as effected by the 9082 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 9082 card are organized into function **submenus**, which consist of parameter groups as shown below.

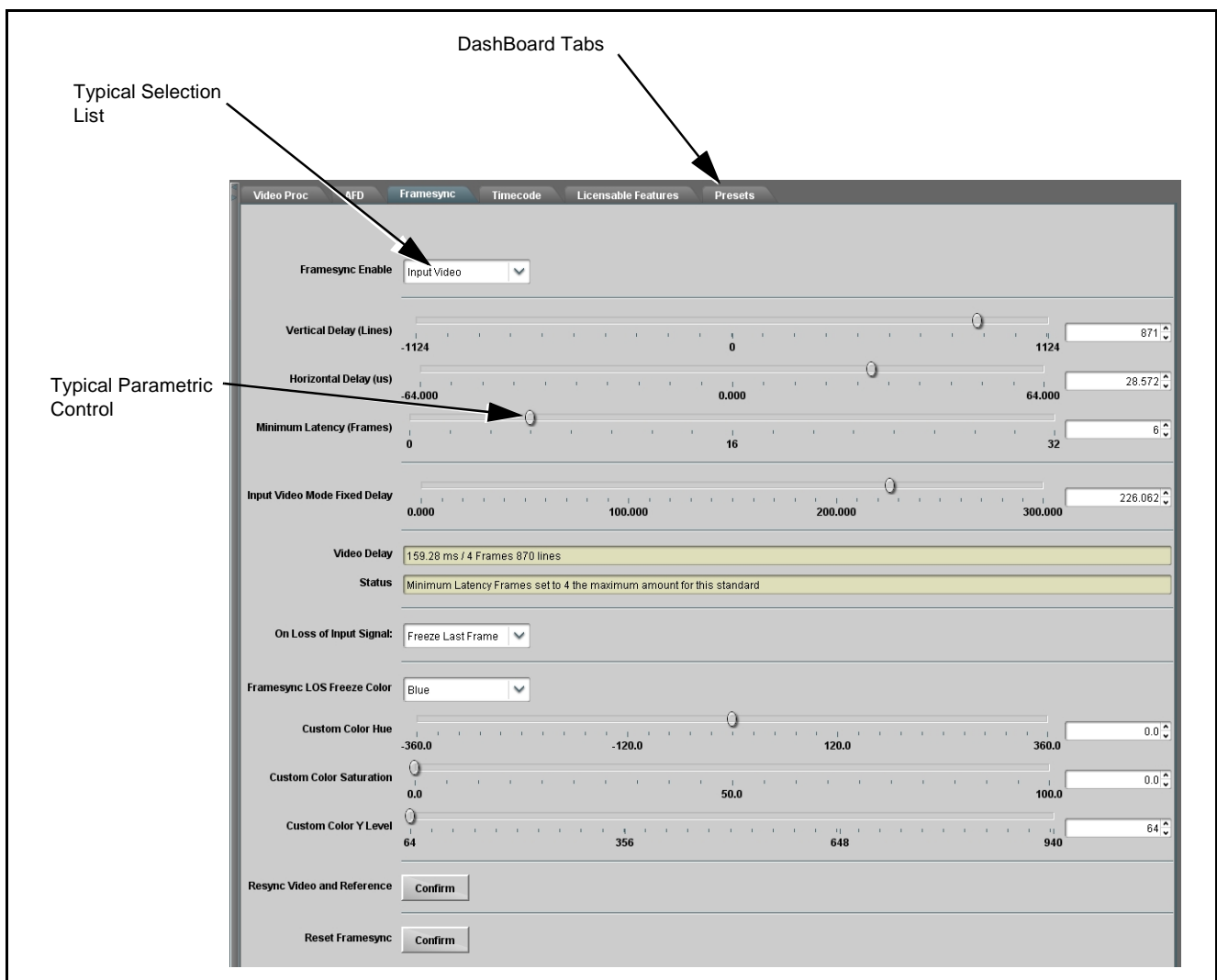
Figure 3-1 shows how the 9082 card and its submenus are organized, and also provides an overview of how navigation is performed between cards, function submenus, and parameters.



**Figure 3-1 Function Submenu/Parameter Submenu Overview**

## DashBoard™ User Interface

(See Figure 3-2.) The 9082 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. (In this manner, the setting effected using controls and selection lists displayed in DashBoard™ are comparable to the submenu items accessed and committed using the 9082 card edge controls.



**Figure 3-2 Typical DashBoard Tabs and Controls**

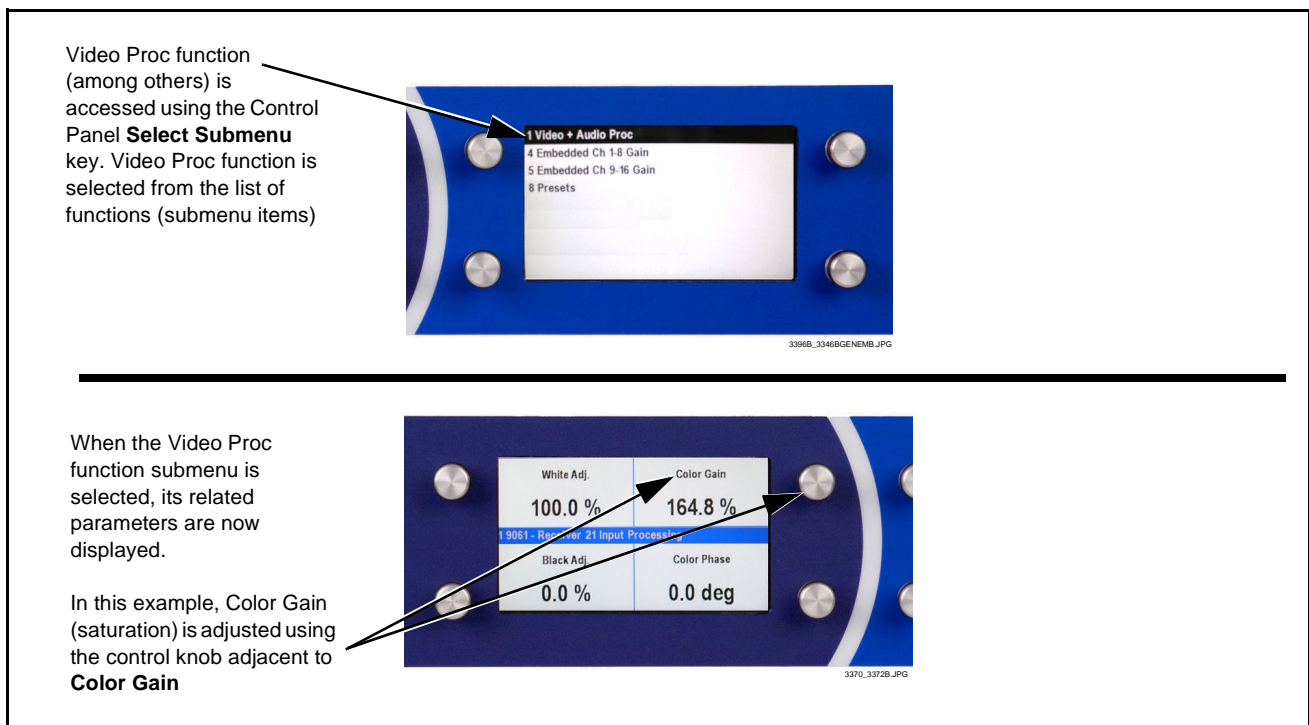
## Cobalt® Remote Control Panel User Interfaces

(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 9082 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.



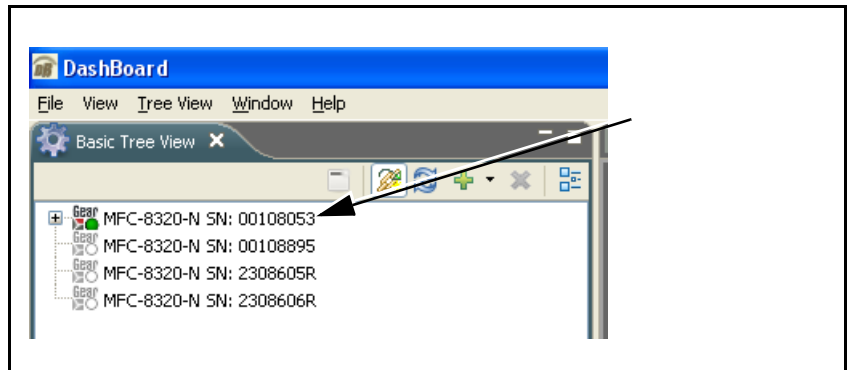
**Figure 3-3 Remote Control Panel Setup of Example Video Proc Function Setup**

## Accessing the 9082 Card via Remote Control

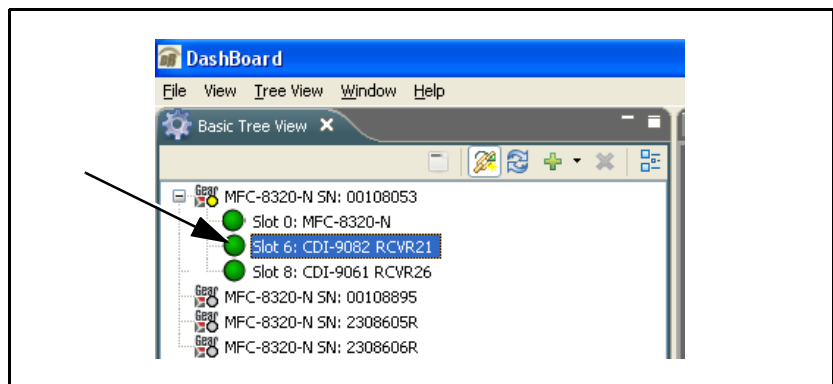
Access the 9082 card using DashBoard™ or Cobalt® Remote Control Panel as described below.

### Accessing the 9082 Card Using DashBoard™

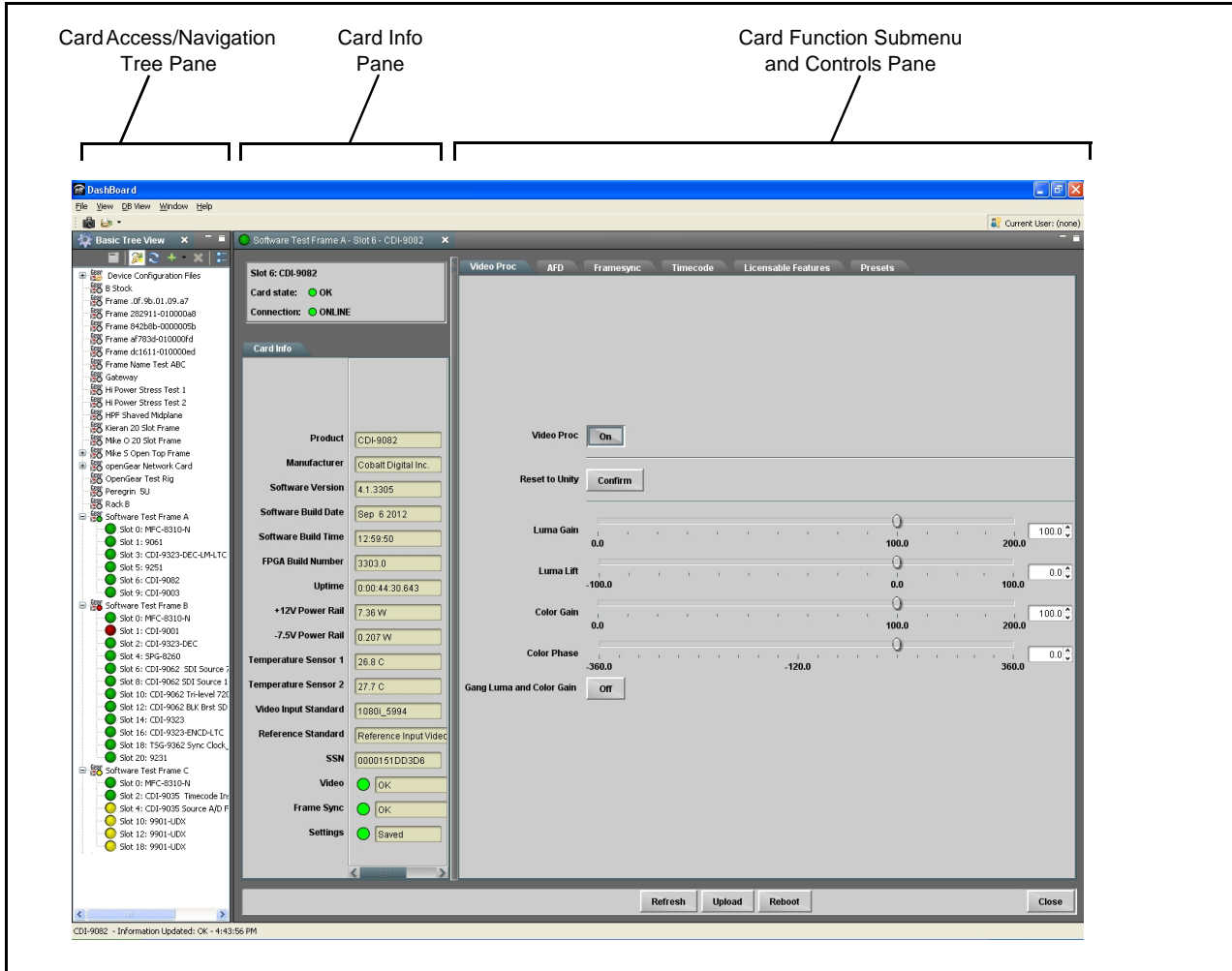
1. On the computer connected to the frame LAN, open DashBoard™.
2. As shown below, in the left side Basic View Tree locate the Network Controller Card associated with the frame containing the 9082 card to be accessed (in this example, “MFC-8320-N SN: 00108053”).



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: CDI-9082 RCVR21”).



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 9082 Card Using a Cobalt® Remote Control Panel

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





## Checking 9082 Card Information

The operating status and software version the 9082 card can be checked using DashBoard™ or the card edge control user interface. Figure 3-4 shows and describes the 9082 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. 3-22) for corrective action.

The **Tree View** shows the cards seen by DashBoard™. In this example, Network Controller Card MFC-8320-N (serial number ...8053) is hosting a 9082 card in slot 6.

**Software Version Number**  
Refer to this number to check that documentation (such as this manual) matches the card's Software Version Number. Use this number also when communicating to Cobalt® regarding this card.

**Power Consumption and Temperature Displays**  
This display shows the power consumed by the 9082 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 9082. Green Settings icon shows that any changes made on DashBoard™ are successfully saved on the card's memory.

Figure 3-4 9082 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**

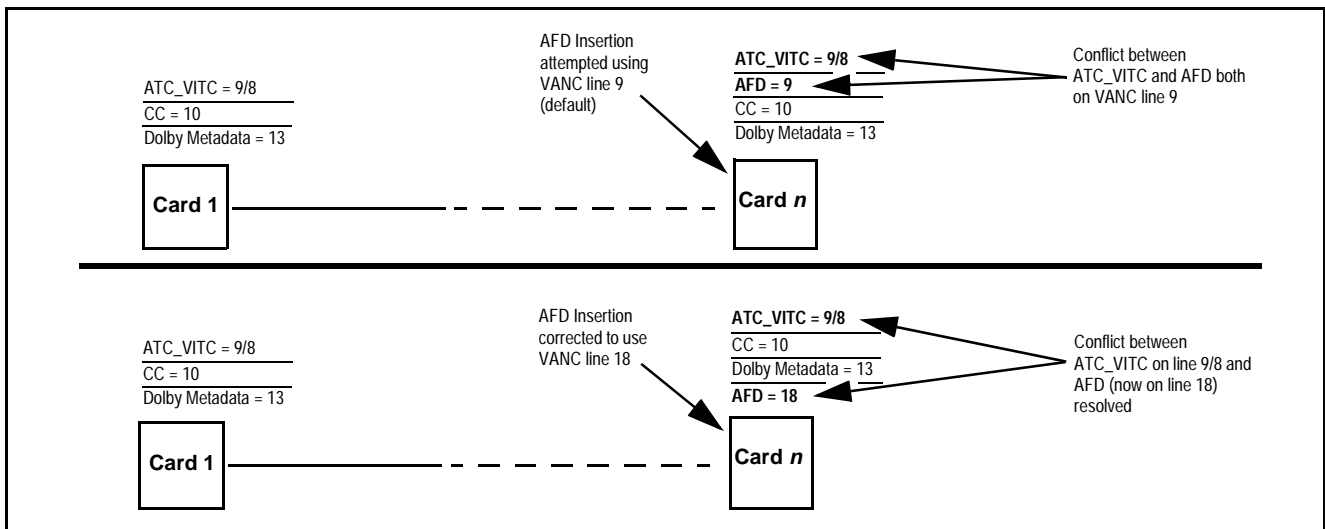
Item	Default Line No. / Range	
	SD	HD
AFD	12 (Note 2)	9 (Note 2)
ATC_VITC	13 (Note 2)	9/8 (Note 2)
ATC_LTC	—	10 (Note 2)
Dolby® Metadata	13 (Note 2)	13 (Note 2)
SDI VITC Waveform	14/16 (Note 2)	—
Closed Captioning	21 (locked)	10 (Note 2)

Notes:

- 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 Conflict and Resolution**

## 9082 Function Submenu List and Descriptions




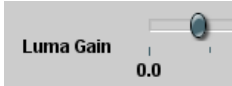

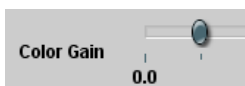


Table 3-2 individually lists and describes each 9082 function submenu and its related list selections, controls, and parameters. Where helpful, examples showing usage of a function are also provided. Table 3-2 is primarily based upon using DashBoard™ to access each function and its corresponding submenus 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.)

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
Video Proc	3-10	Timecode	3-15
AFD	3-11	Licensable Features	3-19
Framesync	3-12	Presets	3-19

Table 3-2 9082 Function Submenu List

	<p>Provides the following Video Proc parametric controls.</p>
<p>• <b>Video Proc</b></p> 	<p><b>Video Proc (On/Off)</b> provides master on/off control of all Video Proc functions.</p> <ul style="list-style-type: none"> <li>• When set to <b>Off</b>, all processing is bypassed.</li> <li>• When set to <b>On</b>, currently displayed parameter settings take effect.</li> </ul>
<p>• <b>Reset to Unity</b></p> 	<p><b>Reset to Unity</b> provides unity reset control of all Video Proc functions. When Confirm is clicked, a <b>Confirm?</b> pop-up appears, requesting confirmation.</p> <ul style="list-style-type: none"> <li>• Click <b>Yes</b> to proceed with the unity reset.</li> <li>• Click <b>No</b> to reject unity reset.</li> </ul>
<p>• <b>Luma Gain</b></p> 	<p>Adjusts gain percentage applied to Luma (Y channel). (0% to 200% range in 0.1% steps; unity = 100%)</p>
<p>• <b>Luma Lift</b></p> 	<p>Adjusts lift applied to Luma (Y-channel). (-100% to 100% range in 0.1% steps; null = 0.0%)</p>
<p>• <b>Color Gain</b></p> 	<p>Adjusts gain percentage (saturation) applied to Chroma (C-channel). (0% to 200% range in 0.1% steps; unity = 100%)</p>
<p>• <b>Color Phase</b></p> 	<p>Adjusts phase angle applied to Chroma. (-360° to 360° range in 0.1° steps; null = 0°)</p>
<p>• <b>Gang Luma and Color Gain</b></p> 	<p>When set to <b>On</b>, changing either the <b>Luma Gain</b> or <b>Color Gain</b> controls increases or decreases both the Luma and Chroma levels by equal amounts.</p>

**Table 3-2 9082 Function Submenu List — continued**


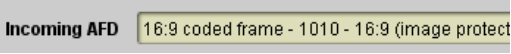
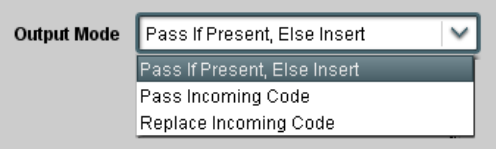
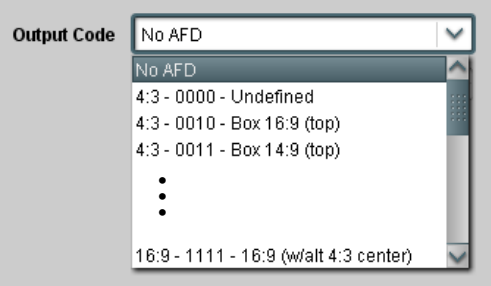


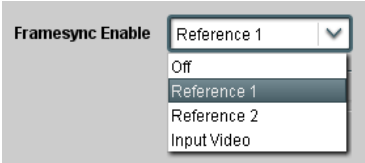



	<p>Allows assignment of AFD (Active Format Description) codes to the SDI output video.</p>																																																																
<p><b>Note:</b> This function only marks the SDI output with an AFD code. Actual AFD processing must be performed by a downstream card or system that recognizes an AFD code assigned here.</p>																																																																	
<p><b>• Incoming AFD</b></p> 	<p>Displays incoming AFD setting as follows:</p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• If no AFD setting is present in the video signal, <b>No AFD Present</b> is displayed.</li> </ul>																																																																
<p><b>• Output Mode</b></p> 	<p>Drop-down selection determines action to take in presence or absence of existing AFD code on input video.</p>																																																																
<p><b>• Output Code</b></p> 	<p>Drop-down list assigns desired AFD to output SDI.</p> <table border="1" data-bbox="776 905 1419 1188"> <thead> <tr> <th colspan="4">4:3 Coded Frame</th> </tr> <tr> <th>AFD Code<sup>(1)</sup></th> <th>Description</th> <th>AFD Code<sup>(1)</sup></th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>–</td> <td>No code present</td> <td>1001</td> <td>Full frame</td> </tr> <tr> <td>0000</td> <td>Undefined</td> <td>1010</td> <td>16:9 (center)</td> </tr> <tr> <td>0010</td> <td>Box 16:9 (top)</td> <td>1011</td> <td>14:9 (center)</td> </tr> <tr> <td>0011</td> <td>Box 14:9 (top)</td> <td>1101</td> <td>4:3 (with alternate 14:9 center)</td> </tr> <tr> <td>0100</td> <td>Box &gt; 16:9 (center)</td> <td>1110</td> <td>16:9 (with alternate 14:9 center)<sup>(2)</sup></td> </tr> <tr> <td>1000</td> <td>Full frame</td> <td>1111</td> <td>16:9 (with alternate 4:3 center)<sup>(2)</sup></td> </tr> </tbody> </table> <table border="1" data-bbox="776 1188 1419 1499"> <thead> <tr> <th colspan="4">16:9 Coded Frame</th> </tr> <tr> <th>AFD Code<sup>(1)</sup></th> <th>Description</th> <th>AFD Code<sup>(1)</sup></th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>–</td> <td>No code present</td> <td>1001</td> <td>4:3 (center)</td> </tr> <tr> <td>0000</td> <td>Undefined</td> <td>1010</td> <td>16:9 (image protected)<sup>(2)</sup></td> </tr> <tr> <td>0010</td> <td>Full frame</td> <td>1011</td> <td>14:9 (center)</td> </tr> <tr> <td>0011</td> <td>4:3 (center)</td> <td>1101</td> <td>4:3 (with alternate 14:9 center)</td> </tr> <tr> <td>0100</td> <td>Box &gt; 16:9 (center)</td> <td>1110</td> <td>16:9 (with alternate 14:9 center)<sup>(2)</sup></td> </tr> <tr> <td>1000</td> <td>Full frame</td> <td>1111</td> <td>16:9 (with alternate 4:3 center)<sup>(2)</sup></td> </tr> </tbody> </table> <p>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.</p>	4:3 Coded Frame				AFD Code <sup>(1)</sup>	Description	AFD Code <sup>(1)</sup>	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) <sup>(2)</sup>	1000	Full frame	1111	16:9 (with alternate 4:3 center) <sup>(2)</sup>	16:9 Coded Frame				AFD Code <sup>(1)</sup>	Description	AFD Code <sup>(1)</sup>	Description	–	No code present	1001	4:3 (center)	0000	Undefined	1010	16:9 (image protected) <sup>(2)</sup>	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) <sup>(2)</sup>	1000	Full frame	1111	16:9 (with alternate 4:3 center) <sup>(2)</sup>
4:3 Coded Frame																																																																	
AFD Code <sup>(1)</sup>	Description	AFD Code <sup>(1)</sup>	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) <sup>(2)</sup>																																																														
1000	Full frame	1111	16:9 (with alternate 4:3 center) <sup>(2)</sup>																																																														
16:9 Coded Frame																																																																	
AFD Code <sup>(1)</sup>	Description	AFD Code <sup>(1)</sup>	Description																																																														
–	No code present	1001	4:3 (center)																																																														
0000	Undefined	1010	16:9 (image protected) <sup>(2)</sup>																																																														
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) <sup>(2)</sup>																																																														
1000	Full frame	1111	16:9 (with alternate 4:3 center) <sup>(2)</sup>																																																														
<p><b>• Output Line</b></p> 	<p>Allows selecting the line location of the AFD data within the video signal Ancillary Data space. (Range is 9 thru 41.)</p> <p><b>Note:</b></p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• The card does not check for conflicts on a given line number. Make certain the selected line is available and carrying no other data.</li> </ul>																																																																

Table 3-2 9082 Function Submenu List — continued

	<p>Provides video Frame Sync select and offset tools.</p>
<p><b>Note:</b> Because the 9082 does not have audio controls and the tracking embedded audio delay found on cards designed specifically to also include audio processing, noticeable audio glitches may occur when processing asynchronous inputs.</p>	
<p>• <b>Framesync Enable</b></p> 	<p>Disables the Frame Sync function, or selects from choices below.</p> <ul style="list-style-type: none"> <li>• <b>Off:</b> Video path bypasses frame sync entirely; output video timing tracks with input video timing.</li> <li>• <b>Reference 1:</b> Allows Frame Sync function to use external Reference 1 as the reference (“house”) standard.</li> <li>• <b>Reference 2:</b> Allows Frame Sync function to use external Reference 2 as the reference (“house”) standard.</li> </ul> <p><b>Note:</b> If Reference 1 or Reference 2 is selected and an appropriate external reference is not received, the  indication appears in the Card Info status portion of DashBoard™, indicating invalid frame sync reference error. (Additionally, the card edge ERR indicator illuminates indicating the same.) External reference signals Reference 1 and Reference 2 are distributed to the card and other cards via a frame bus.</p> <ul style="list-style-type: none"> <li>• <b>Input Video:</b> Allows full framesync functionality (such as delay offset), but instead uses the input video signal as the reference standard.</li> </ul> <p><b>Note:</b> • If <b>Input Video</b> is used for framesync, any timing instability on the input video will result in corresponding instability on the output video. This setting should only be used where syncing to input video is known to be reliable.</p> <ul style="list-style-type: none"> <li>• Negative vertical or horizontal delay values (using the controls below) should <b>not</b> be used when using <b>Input Video</b> mode. This may result in image motion “jerkiness”. To add an offset in this case, instead apply a positive value that results in the desired net offset.</li> </ul>
<p>• <b>Vertical Delay Control</b></p> 	<p>When Framesync is enabled, sets vertical delay (in number of lines of <b>output video</b>) between the output video and the frame sync reference.</p> <p>(Range is -1124 thru 1124 lines.)</p> <p><b>Note:</b> Lines refer to lines in the output video format, and not to the reference format.</p>
<p>• <b>Horizontal Delay Control</b></p> 	<p>When Framesync is enabled, sets (in <math>\mu\text{sec}</math> of <b>output video timing</b>) horizontal delay between the output video and the frame sync reference.</p> <p>(Range is -64.000 thru 64.000 <math>\mu\text{sec}</math>)</p> <p><b>Note:</b> 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 <math>\pm 2</math> clock periods. Therefore, a framesync reset will not result if offsets within this window are applied.</p> <p>To apply an offset/framesync reset within this window, first apply a relatively large offset, then apply the target smaller offset.</p> <p><b>Example:</b> 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.</p>

**Table 3-2 9082 Function Submenu List — continued**




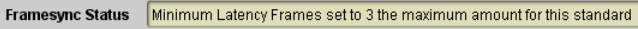

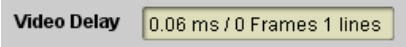



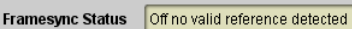
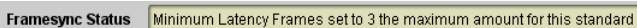
	(continued)
<p>• <b>Minimum Latency Control</b></p> 	<p>When Framesync is enabled, specifies the smallest amount of latency allowed by the frame sync (latency measurement in output video frames). The frame sync will not output a frame unless the specified number of frames are captured in the buffer. <b>The operational latency of the frame sync is always between the specified minimum latency and minimum latency plus one frame (not one field).</b> (Maximum range is 0 to 32.)</p> <p><b>Note:</b> Due to card memory limits, the maximum available Minimum Latency Frames is related to the output video format. For example, with a 1080i59.94 output, the maximum allowed setting is 5. For a 1080i film (23.98) output, the maximum allowed setting is 3. Conversely, greater maximum settings are allowed for SD formats such as 525i59.94, where the practical maximum limit is 13.</p> <p>When using this control, be sure to check the <b>Framesync Status</b> display as follows:</p>  <ul style="list-style-type: none"> <li>• Latency frames selection within limits.</li> </ul>  <ul style="list-style-type: none"> <li>• Latency frames selection exceeds limits.</li> </ul>
<p>• <b>Input Video Mode Fixed Delay Control</b></p> 	<p>With Framesync mode set to Input Video, allows output video to be delayed a fixed amount from that on the input. Vertical and horizontal delay controls, as well as frame latency, automatically track in step with the setting here.</p> <p><b>Note:</b> Due to card memory limits, the maximum available Minimum Latency Frames is related to the output video format. For example, with a 1080i59.94 output, the maximum allowed setting is 5. For a 1080i film (23.98) output, the maximum allowed setting is 3. Conversely, greater maximum settings are allowed for SD formats such as 525i59.94, where the practical maximum limit is 13.</p>
<p>• <b>Video Delay Display</b></p> 	<p>Displays the current input-to-output video delay (in msec units) as well as in terms of Frames/fractional frame (in number of lines).</p>
<p>• <b>Framesync Status Display</b></p> 	<p>Displays the current framesync status as follows:</p>  <ul style="list-style-type: none"> <li>• Framesync status OK.</li> </ul>  <ul style="list-style-type: none"> <li>• Framesync source off or not connected.</li> </ul>  <ul style="list-style-type: none"> <li>• Improper or missing framesync reference.</li> </ul>  <ul style="list-style-type: none"> <li>• Latency frames selection exceeds limits.</li> </ul> <p><b>Note:</b> See <b>Minimum Latency Frames Control</b> above for more information about this message.</p>

Table 3-2 9082 Function Submenu List — continued

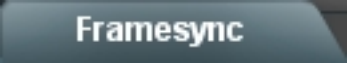

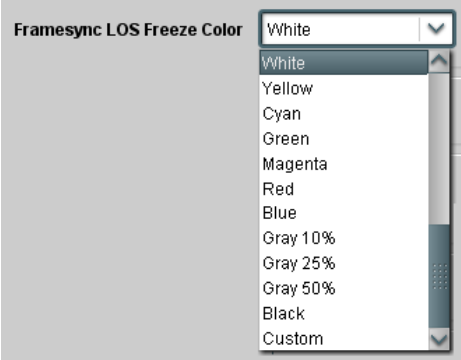



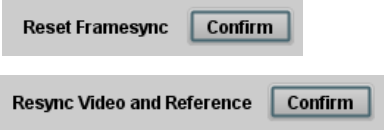

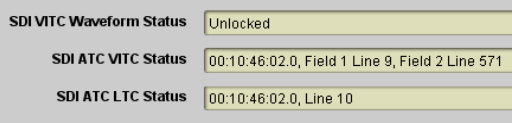
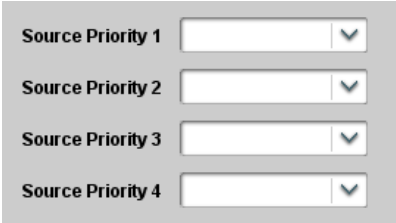

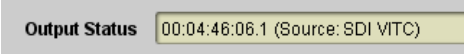
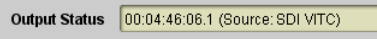

	(continued)
<p>• <b>Loss of Input Signal Selection</b></p> 	<p>In the event of input video Loss of Signal (LOS), determines action to be taken as follows:</p> <ul style="list-style-type: none"> <li>• <b>Disable Outputs:</b> Disable all outputs.</li> <li>• <b>Freeze Last Frame:</b> Freeze image to last good frame (last frame having valid SAV and EAV codes).</li> <li>• <b>Freeze to Color:</b> Freeze image to a color raster (as selected using Framesync LOS Freeze Color control).</li> </ul>
<p>• <b>Framesync LOS Freeze Color</b></p> 	<p>In the event of LOS with <b>Freeze to Color</b> enabled above, sets the image raster color from choices shown to the left.</p>
<p>• <b>Custom Color Hue</b></p> 	<p>Adjusts raster hue (phase angle) for custom LOS color. (-360° to 360° range in 0.1° steps; null = 0°)</p>
<p>• <b>Custom Color Saturation</b></p> 	<p>Adjusts raster saturation level for custom LOS color. (0% to 100% range in 0.1% steps)</p>
<p>• <b>Custom Color Y Level</b></p> 	<p>Adjusts raster luma level for custom LOS color. (64 to 940 range)</p>
<p>• <b>Reset/Resync Framesync</b></p> 	<p><b>Reset Framesync</b> resets the frame sync, clearing any buffered video. <b>Resync Video and Reference</b> resets the input processing paths for video and reference.</p> <p>When Confirm is clicked, a <b>Confirm?</b> pop-up appears, requesting confirmation.</p> <ul style="list-style-type: none"> <li>• Click <b>Yes</b> to reset the frame sync.</li> <li>• Click <b>No</b> to reject reset.</li> </ul> <p><b>Note:</b> These controls are not normally used or required when the card is receiving a stable, continuous frame sync reference.</p>



Table 3-2 9082 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 SDI video with SDI VITC waveform timecode is to be converted to SDI ATC_VITC timecode data. Each Timecode control is fully described on the pages that follow.</p>									
<div style="border: 1px solid black; padding: 5px; display: inline-block;"> <p>525i 5994 w/ VITC Waveform → <b>9082</b> → 525i 5994 w/ ATC_VITC</p> </div>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>SDI VITC Waveform Status</td> <td>21:41:29:17.0</td> </tr> <tr> <td>SDI ATC_LTC Status</td> <td>Unlocked</td> </tr> <tr> <td>SDI ATC_VITC Status</td> <td>Unlocked</td> </tr> </table>	SDI VITC Waveform Status	21:41:29:17.0	SDI ATC_LTC Status	Unlocked	SDI ATC_VITC Status	Unlocked		
SDI VITC Waveform Status	21:41:29:17.0								
SDI ATC_LTC Status	Unlocked								
SDI ATC_VITC Status	Unlocked								
<p><b>A</b> Noting that the incoming video contains VITC waveform timecode data (as shown in the status display), set the Source Priority drop-down lists to include VITC Waveform timecode data (<b>SDI VITC</b>) as a choice. This extracts VITC Waveform timecode data from the incoming video.</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>Source Priority 1</td> <td>SDI VITC</td> </tr> <tr> <td>Source Priority 2</td> <td>ATC_VITC</td> </tr> <tr> <td>Source Priority 3</td> <td>None</td> </tr> <tr> <td>Source Priority 4</td> <td>None</td> </tr> </table>	Source Priority 1	SDI VITC	Source Priority 2	ATC_VITC	Source Priority 3	None	Source Priority 4	None
Source Priority 1	SDI VITC								
Source Priority 2	ATC_VITC								
Source Priority 3	None								
Source Priority 4	None								
<p><b>B</b> In this example, it is desired to provide SDI ATC_VITC timecode data in the SDI output video. As such, set <b>SD ATC Insertion</b> to <b>Enabled</b>.</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>SD ATC Insertion</td> <td>Enabled</td> </tr> <tr> <td>SD ATC Insertion Line</td> <td>13</td> </tr> </table>	SD ATC Insertion	Enabled	SD ATC Insertion Line	13				
SD ATC Insertion	Enabled								
SD ATC Insertion Line	13								


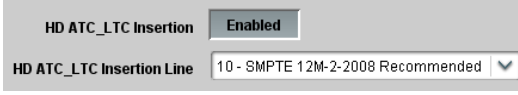
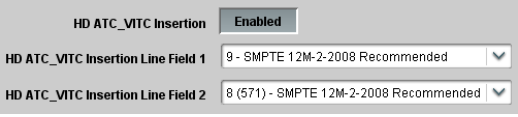

Table 3-2 9082 Function Submenu List — continued

	(continued)
<p>• <b>Timecode Source Status Displays</b></p> 	<p>Displays the current status and contents of the three supported timecode formats shown to the left.</p> <ul style="list-style-type: none"> <li>• If a format is receiving timecode data, the current content (timecode running count and line number) is displayed.</li> <li>• If a format is not receiving timecode data, Unlocked is displayed.</li> </ul>
<p>• <b>Source Priority</b></p> 	<p>As described here, selects the priority assigned to each of the four supported formats in the event the preferred source is unavailable. Each of the four Source Priority selection lists allows assignment of source priority from the following choices:</p>  <p><b>Source Priority 1</b> thru <b>Source Priority 4</b> select the preferred format to be used in descending order (i.e., Source Priority 2 selects the second-most preferred format, and so on).</p>
<p>• <b>Output Status Display</b></p> 	<p>Displays the current content and source being used for the timecode data as follows:</p>  <ul style="list-style-type: none"> <li>• Output status OK (in this example, SDI VITC timecode received and outputted).</li> </ul>  <ul style="list-style-type: none"> <li>• <b>Timecode Insertion</b> button set to <b>Disabled</b>; output insertion disabled.</li> </ul> <p><b>Note:</b></p> <ul style="list-style-type: none"> <li>• If timecode is not available from Source Priority selections performed, timecode on output reverts to Free Run (internal count) mode.</li> <li>• 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:             <ul style="list-style-type: none"> <li>0.0 Frame 0</li> <li>0.1 Frame 1</li> <li>1.0 Frame 2</li> <li>1.1 Frame 3</li> <li>•</li> <li>•</li> <li>29.1 Frame 59</li> </ul> </li> </ul>

**Table 3-2 9082 Function Submenu List — continued**

<div style="background-color: #333; color: white; padding: 5px; text-align: center; font-weight: bold;">Timecode</div>	(continued)
<p><b>• Offset Controls</b></p> <div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;"> <p>Offset <span style="border: 1px solid #ccc; padding: 2px;">Advanced</span> ▼</p> <p style="margin-left: 20px;">Delayed</p> <p style="margin-left: 20px; background-color: #333; color: white;">Advanced</p> </div> <hr style="border: 0; border-top: 1px solid #ccc; margin: 5px 0;"/> <div style="border: 1px solid #ccc; padding: 5px;"> <p>Offset Field <span style="border: 1px solid #ccc; padding: 2px;">0</span> ▼</p> <p>Offset Frame <span style="border: 1px solid #ccc; padding: 2px;">0</span> ▼</p> </div>	<p>Allows the current timecode count to be advanced or delayed on the output video.</p> <ul style="list-style-type: none"> <li>• <b>Offset Advance</b> or <b>Delay</b> selects offset advance or delay.</li> <li>• <b>Offset Field</b> delays or advances or delays timecode by one field.</li> <li>• <b>Offset Frame</b> delays or advances or delays timecode by up to 5 frames.</li> </ul> <p><b>Note:</b> Default settings are null, with both controls set at zero as shown.</p>
<p><b>• SD VITC Waveform Insertion Controls</b></p> <div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 10px;"> <p>VITC Waveform Output 1 Line Number <span style="border: 1px solid #ccc; padding: 2px;">14</span> ▼</p> <p>VITC Waveform Output 2 Line Number <span style="border: 1px solid #ccc; padding: 2px;">16</span> ▼</p> <p>SD VITC Waveform Insertion <span style="background-color: #333; color: white; padding: 2px 5px;">Enabled</span></p> </div>	<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><b>Note:</b></p> <ul style="list-style-type: none"> <li>• 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. 3-8) for more information.</li> <li>• The card does not check for conflicts on a given line number. Make certain the selected line is available and carrying no other data.</li> <li>• If only one output line is to be used, set both controls for the same line number.</li> </ul>
<p><b>• SD ATC Insertion Control</b></p> <div style="border: 1px solid #ccc; padding: 5px;"> <p>SD ATC_VITC Insertion <span style="background-color: #333; color: white; padding: 2px 5px;">Enabled</span></p> <p>SD ATC Insertion Line <span style="border: 1px solid #ccc; padding: 2px;">13 - SMPTE 12M-2-2008 Recommended</span> ▼</p> </div>	<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><b>Note:</b></p> <ul style="list-style-type: none"> <li>• Although the output line drop-down will allow any choice within the 9 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. 3-8) for more information.</li> <li>• The card does not check for conflicts on a given line number. Make certain the selected line is available and carrying no other data.</li> </ul>

Table 3-2 9082 Function Submenu List — continued

	(continued)
<p>• <b>HD ATC_LTC Insertion Control</b></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><b>Note:</b></p> <ul style="list-style-type: none"> <li>• 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. 3-8) for more information.</li> <li>• The card does not check for conflicts on a given line number. Make certain the selected line is available and carrying no other data.</li> </ul>
<p>• <b>HD ATC_VITC Insertion Control</b></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> <p><b>Note:</b></p> <ul style="list-style-type: none"> <li>• 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. 3-8) for more information.</li> <li>• The card does not check for conflicts on a given line number. Make certain the selected line is available and carrying no other data.</li> <li>• If only one output line is to be used, set both controls for the same line number.</li> </ul>
<p>• <b>ATC_VITC Legacy Support Control</b></p> 	<p>When enabled, accommodates equipment requiring ATC_VITC packet in both fields as a "field 1" packet (non-toggling).</p> <p><b>Note:</b> 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>

**Table 3-2 9082 Function Submenu List — continued**


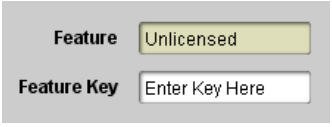

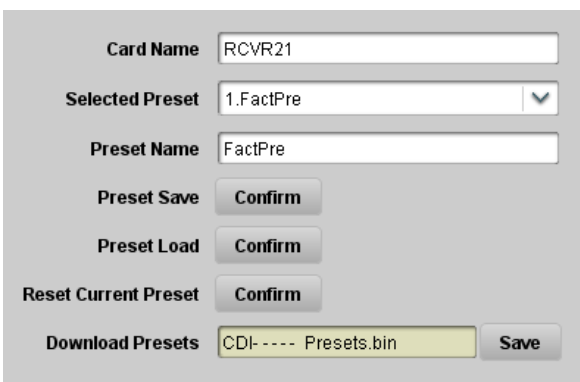



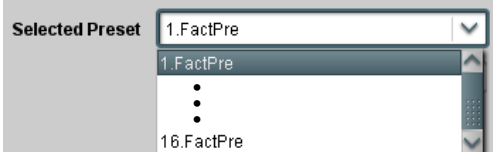





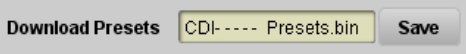
	<p>Allows activation of optional licensed features.</p>
<p><b>Note:</b> For card pre-ordered with licensed feature(s), the activation steps described below are not required; the feature will already be installed activated. To order features and obtain a license key, contact Cobalt® sales at sales@cobaltdigital.com or at the contact information in Contact Cobalt Digital Inc. in Chapter 1, “Introduction”. Please provide the “SSN” number of your card (displayed in the Card Info pane) when contacting us for your key.</p>	
<p>• <b>License Feature and Key Entry window</b></p> 	<p>Activate licensable feature as described below.</p> <ol style="list-style-type: none"> <li>1. Enter the feature key string in the <b>Feature Key</b> box. Press return or click outside of the box to acknowledge entry.                     <p><b>Note:</b> Entry string is case sensitive. Do not enter any spaces.</p> </li> <li>2. In the DashBoard™ Card Info pane, wait for the feature identification to be shown for the card product number (for example, “-UM” appearing after the card part number) and <b>Valid Key Entered</b> to be displayed. This indicates the key was correctly entered and recognized by the card.                     <p><b>Note:</b> If DashBoard™ card function submenu/control pane does not re-appear, close the card and re-open it.</p> </li> <li>3. Click and confirm <b>Reboot</b>. When the card function submenu/control pane appears again, the licensable feature will be available.                     <p><b>Note:</b> Applying the licensable feature and its reboot has no effect on prior settings. All control settings and drop-down selections are retained.</p> </li> </ol>
	<p>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 such as Gain, etc.) are saved when a Preset Save is invoked.</p>
	<p>The <b>Preset Name</b> field and <b>Preset Save</b> button allow custom user setting configurations to be labeled and saved to a Preset for future use.</p> <p>The <b>Preset Load</b> button and the <b>Selected Preset</b> 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.</p> <p>Saved presets can be uploaded to a computer for use with other same-model COMPASS™ cards.</p> <p>Each of the items to the left are described in detail on the following pages.</p>

Table 3-2 9082 Function Submenu List — continued

	(continued)
<p>• <b>Preset Save and Load</b></p>  	<ul style="list-style-type: none"> <li>• <b>Preset Save</b> 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)</li> <li>• <b>Preset Load</b> loads (applies) all card control settings defined by whatever preset (<b>Preset 1</b> thru <b>Preset 16</b>) is currently selected in the <b>Selected Preset</b> 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)</li> </ul> <p>The above buttons have a <b>Confirm?</b> pop-up that appears, requesting confirmation.</p> <p><b>Note:</b> Applying a change to a preset using the buttons described above <b>rewrites</b> the previous preset contents with the invoked contents. Make certain change is desired before confirming preset change.</p>
<p>• <b>Selected Preset</b></p> 	<p><b>Selected Preset 1</b> thru <b>Selected Preset 16</b> range in drop-down list selects one of 16 stored presets as ready for <b>Save</b> (being written to) or for <b>Load</b> (being applied to the card).</p> <p><b>Note:</b> 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.</p>
<p>• <b>Card Name</b></p> 	<p>Text entry field provides for optional entry of card name, function, etc. (as shown in this example).</p> <p><b>Note:</b> Card name can be 31 ASCII characters maximum.</p>

**Table 3-2 9082 Function Submenu List — continued**


	(continued)
<p>• <b>Preset Name</b></p> 	<p>With one of 16 presets selected, provides for entry of custom name for the preset (as shown in example below).</p>  <p>Entering text in Preset Name field (in this example, "RCVR21") applies custom name to selected Preset (in this example, Preset 2)</p> <p><b>Note:</b></p> <ul style="list-style-type: none"> <li>• Preset name can be seven ASCII characters maximum.</li> <li>• The Preset ID number does not need to be entered; it is added automatically.</li> </ul>
<p>• <b>Reset Current Preset</b></p> 	<p>• <b>Reset Current Preset</b> resets all parameters (including preset custom name entered) of the currently selected Preset (as displayed in the <b>Selected Preset</b> field) to factory default settings.</p> <p>The above button has a <b>Confirm?</b> pop-up that appears, requesting confirmation.</p>
<p>• <b>Download Presets</b></p> 	<p>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.</p>

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.

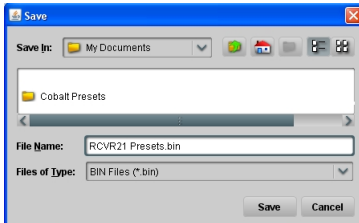
**Download (save)** card presets to a network computer by clicking **Download Presets – Save** at the bottom of the Presets page.




▼

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.



▼

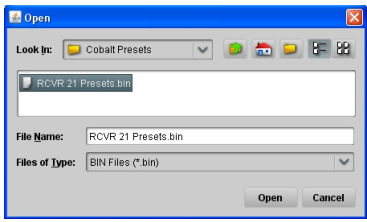
Browse to the location where the file was saved on the computer or drive (in this example, *My Documents\Cobalt Presets*).

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 9082 card and its remote control interface. The 9082 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 9082 card itself and its remote control systems all (to varying degrees) provide error and failure indications. Depending on how the 9082 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 9082 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. 3-26)
- 9082 Processing Error Troubleshooting (p. 3-27)
- Troubleshooting Network/Remote Control Errors (p. 3-28)



### 9082 Card Edge Status/Error Indicators and Display

Figure 3-6 shows and describes the 9082 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.

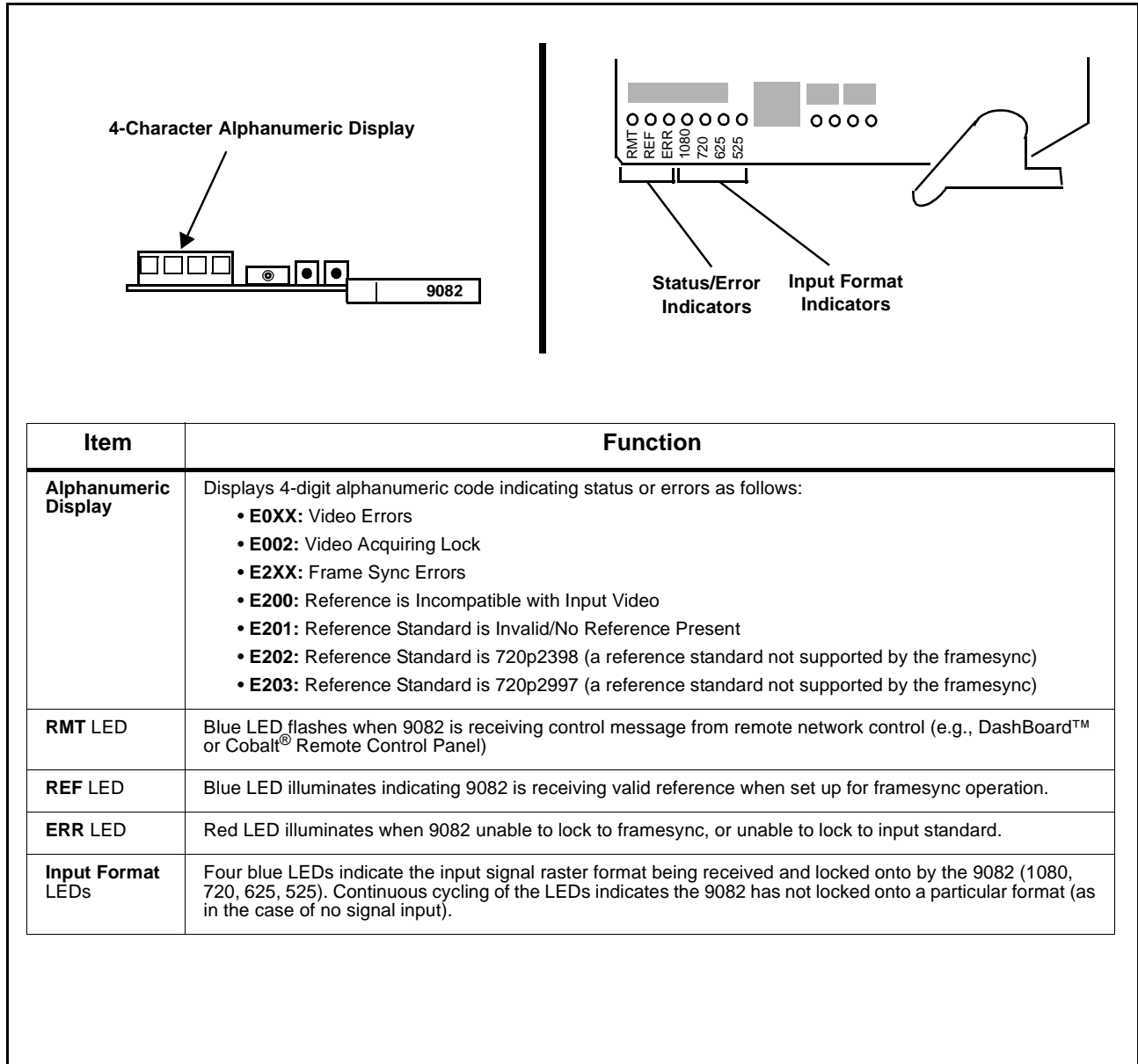


Figure 3-6 9082 Card Edge Status Indicators and Display

## 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 9082 card itself and remote (network) communications.

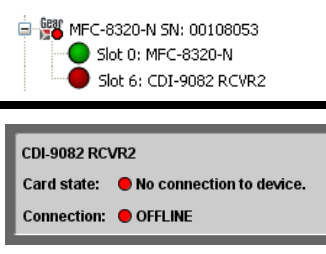
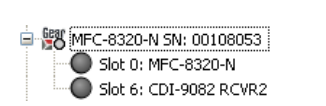
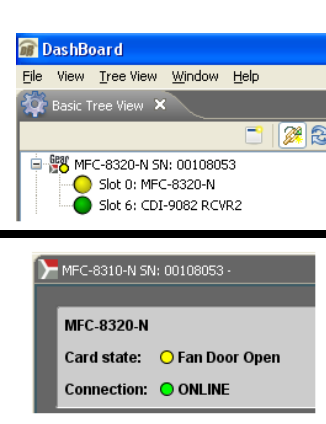
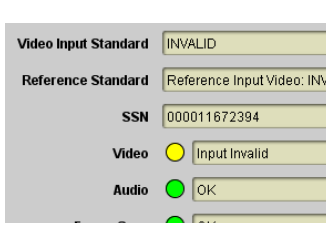
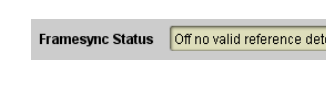
Indicator Icon or Display	Error Description
	<p>Red indicator icon in Card Access/Navigation Tree pane shows card with Error condition (in this example, the Card Access/Navigation Tree pane shows a general error issued by the 9082 card in slot 6).</p> <p>Specific errors are displayed in the Card Info pane (in this example “No connection to device” indicating 9082 card is not connecting to frame/LAN).</p> <p>If the 9082 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 9082 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 9082 Card Info pane shows error alert, along with cause for alert (in this example, the 9082 is receiving no video input, or a video input that is invalid for the card and/or its current settings).</p>
	<p>Where available, error messages within a function submenu pane show highly specific information relating to detected errors (in this example, message shows an invalid or missing Framesync Enable reference selection).</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).

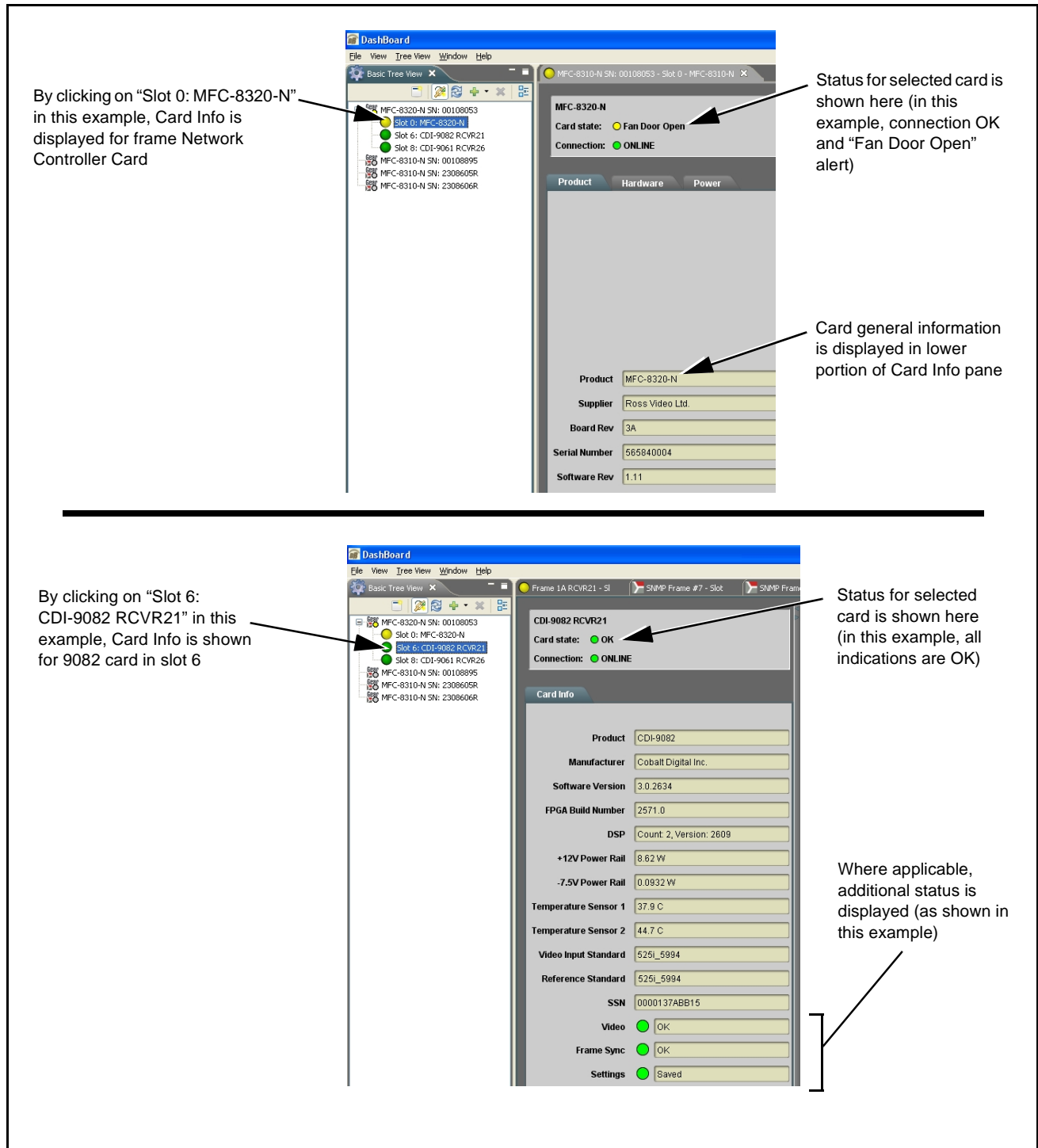


Figure 3-8 Selecting Specific Cards for Card Info Status Display

## 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
<b>Verify power presence and characteristics</b>	<ul style="list-style-type: none"> <li>• On both the frame Network Controller Card and the 9082, 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.</li> <li>• Check the Power Consumed indications for both the +12 V and -7.5 V supply rails for the 9082 card. This can be observed using the DashBoard™ Card Info pane, or using the card edge controls and indicators as shown in Figure 3-4 on page 3-7.               <ul style="list-style-type: none"> <li>• If either of the rail supplies show <b>no</b> power being consumed, either the frame power supply, connections, or the 9082 card itself is defective.</li> <li>• If either of the rail supplies show <b>excessive</b> power being consumed (see Technical Specifications (p. 1-12) in Chapter 1, “Introduction”), the 9082 card may be defective.</li> </ul> </li> </ul>
<b>Check Cable connection secureness and connecting points</b>	<p>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.</p>
<b>Card seating within slots</b>	<p>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.)</p>
<b>Check status indicators and displays</b>	<p>On both DashBoard™ and the 9082 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.</p>
<b>Troubleshoot by substitution</b>	<p>All cards within the frame can be hot-swapped, replacing a suspect card or module with a known-good item.</p>

## 9082 Processing Error Troubleshooting

Table 3-4 provides 9082 processing troubleshooting information. If the 9082 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 9082 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 9082 card edge status indicators.

**Note:** Where errors are displayed on both the 9082 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"> <li>DashBoard™ shows <b>Video</b> yellow icon and Input Invalid message in 9082 Card Info pane.</li> </ul>  <ul style="list-style-type: none"> <li>Card edge <b>Input Format</b> LEDs show continuous cycling.</li> </ul>	No video input present	Make certain intended video source is connected to appropriate 9082 card video input. Make certain BNC cable connections between frame Rear I/O Module for the card and signal source are OK.
<ul style="list-style-type: none"> <li>DashBoard™ shows <b>Frame Sync</b> red icon and Reference Invalid message in 9082 Card Info pane.</li> </ul>  <ul style="list-style-type: none"> <li>Card edge red <b>ERR</b> indicator illuminated.</li> </ul>	Frame sync reference not properly selected or not being received	<ul style="list-style-type: none"> <li>If external frame sync reference is not intended to be used, make certain the Framesync Enable selection list is set to <b>Off</b> or <b>Input Video</b> as desired.</li> <li>If external frame sync reference is intended to be used, make certain selected external frame sync reference is active on frame sync frame bus. (External reference signals Reference 1 and Reference 2 are distributed to the 9082 and other cards via frame bus.)</li> </ul> <p>Refer to <b>Framesync</b> function submenu tab on page 3-12 for more information.</p>
Unsmooth, “jerky” motion observed on video output with Framesync set to lock to input video.	Incompatible negative H/V delay value user setting of Vertical Delay or Horizontal Delay controls	Negative vertical or horizontal delay values (using the controls below) should <b>not</b> be used when using Input Video mode. To add an offset in this case, instead apply a positive value that results in the desired net offset.

Table 3-4 Troubleshooting Processing Errors by Symptom — continued

Symptom	Error/Condition	Corrective Action
<p><b>DashBoard™</b> shows <b>Framesync Status</b> error message in 9082 Framesync function submenu screen.</p> 	Specified Minimum Latency Frames setting exceeds 9082 card buffer space for the selected output video format	<p>Reduce the Minimum Latency Frames setting as specified in the error message to correct the error.</p> <p><b>Note:</b> Due to card memory limits, the maximum available Minimum Latency Frames is related to the output video format selected.</p> <p>For example, with a 1080i 5994 output, the maximum setting is 5. For a 1080i film (2398) output, the maximum setting is 3 (due to the increased buffer space needed for the slower frame rate). Conversely, greater maximum settings are allowed for SD formats such as 525i 5994, where the practical maximum limit is 13.</p>
Ancillary data (closed captioning, timecode, Dolby® metadata, AFD) not transferred through 9082.	<ul style="list-style-type: none"> <li>Control(s) not enabled</li> </ul>	<ul style="list-style-type: none"> <li>Make certain respective control is set to <b>On</b> or <b>Enabled</b> (as appropriate).</li> </ul>
	<ul style="list-style-type: none"> <li>VANC line number conflict between two or more ancillary data items</li> </ul>	<ul style="list-style-type: none"> <li>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).</li> </ul>

## 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. 1-16) in Chapter 1, “Introduction“ for contact information.





**Cobalt Digital Inc.**

2406 E. University Ave.  
Urbana, IL 61802  
Voice 217.344.1243 • Fax 217.344.1245  
[www.cobaltdigital.com](http://www.cobaltdigital.com)