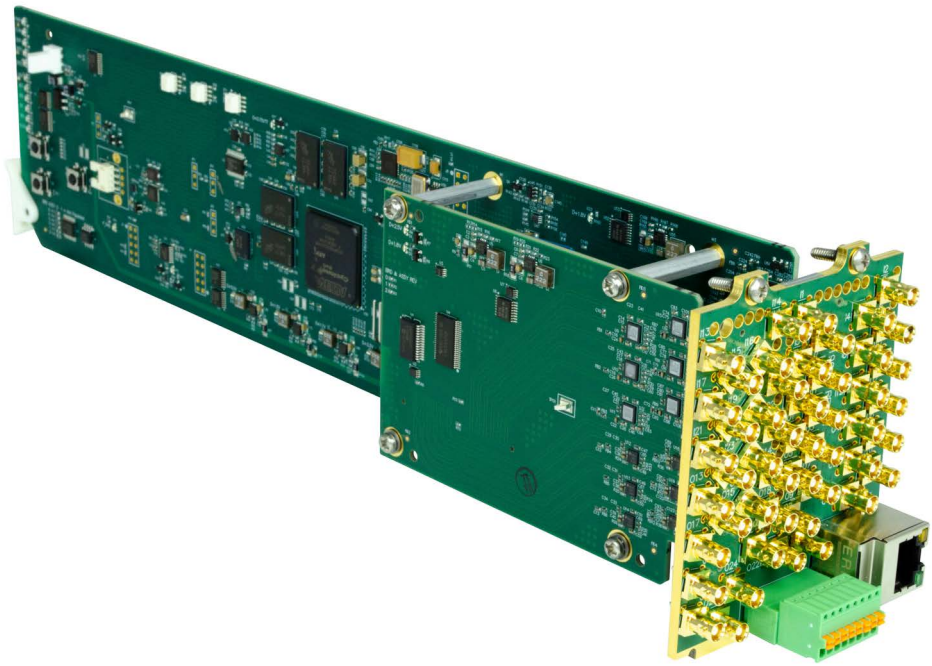
9942-RTR



12G/3G/HD/SD-SDI / ASI / MADI Routers
For openGear® Systems

Product Manual

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9942-RTR-OM (V1.0)

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Congratulations on choosing the Cobalt® 9942-RTR 12G/3G/HD/SD-SDI / ASI / MADI Routers For openGear® Systems. The 9942-RTR models are part of a full line of modular processing and conversion gear for live production and 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 9942-RTR, please contact us at the contact information on the front cover.

Manual No.:	9942-RTR-OM
Document Version:	V1.0
Release Date:	December 8, 2023
Applicable for Firmware Version (or greater):	V1.0 or greater
Description of product/manual changes:	- Initial release

Table of Contents

Chapter 1

Introduction

Overview

This manual provides installation and operating instructions for the WAVE 9942-RTR 12G/3G/HD/SD-SDI / ASI / MADI Routers for openGear Systems card (also referred to herein as the 9942-RTR).

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 9942-RTR.
- **Chapter 2, "Installation and Setup"** – Provides instructions for installing the 9942-RTR in a frame, and optionally installing 9942-RTR Rear I/O Modules.
- **Chapter 3, "Operating Instructions"** – Provides overviews of operating controls and instructions for using the 9942-RTR.

This chapter contains the following information:

9942-RTR 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 9942-RTR Card Information (p. 3-5) in Chapter 3, "Operating Instructions" for more information. You can then check our website for the latest software version currently released for the card as described below.

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

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

Cobalt Reference Guides

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

Manual Conventions

In this manual, display messages and connectors are shown using the exact name shown on the 9942-RTR itself. Examples are provided below.

- Card-edge display messages are shown like this:

  BOOT

- Connector and control names are shown like this: **IN 1**

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

- **9942-RTR** refers to the 12G/3G/HD/SD-SDI / ASI / MADI Routers for openGear Systems card.
- **Frame** refers to the HPF-9000, oGx, OG3-FR, or similar 20-slot frame that houses Cobalt® or other cards.
- **Device** and/or **Card** refers to a Cobalt® or other card.
- **System** and/or **Video System** refers to the mix of interconnected production and terminal equipment in which the 9942-RTR and other cards operate.
- Functions and/or features that are available only as an option are denoted in this manual like this:

  Most options are covered in this manual. However, if your card has DashBoard tabs that are not described in this manual it indicates that the optional function/feature is covered in a separate Manual Supplement.

  If your have not received a Manual Supplement for options on your card, you can download a pdf for the option by going to the card's web page and clicking on **Product Downloads**, where you can select from any available option Manual Supplements for the card.

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.

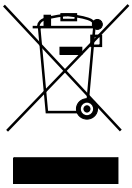
Cautions

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

	Important note regarding product usage. Failure to observe may result in unexpected or incorrect operation.
	Electronic device or assembly is susceptible to damage from an ESD event. Handle only using appropriate ESD prevention practices. If ESD wrist strap is not available, handle card only by edges and avoid contact with any connectors or components.
	Symbol (WEEE 2002/96/EC) For product disposal, ensure the following: • Do not dispose of this product as unsorted municipal waste. • Collect this product separately. • Use collection and return systems available to you.

Safety Summary

Warnings

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

Cautions

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

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

CAUTION **If required, make certain Rear I/O Module(s) is installed before installing the 9942-RTR 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.**

9942-RTR Functional Description

Figure 1-1 shows a functional block diagram of the 9942-RTR. The 9942-RTR video routing switch accepts multiple SDI inputs and routes these inputs to multiple SDI outputs using DashBoard™ network remote control, serial automated control, and/or IP-based automated control (when integrated to appropriate external control automation systems). All inputs are equipped with cable equalizers, and all outputs are equipped with reclocking. Source-to-destination routing is non-inverting, thereby allowing the card to pass DVB-ASI signals.

Input/output matrix capacity depends on model as is as follows:

- **9942-RTR-12x12-12G** 3G/HD/SD-SDI / ASI / MADI 12x12 Router
- **9942-RTR-24x24-12G** 3G/HD/SD-SDI / ASI / MADI 24x24 Router

RP 168 Switching

The card switches on the RP 168 VBI switching line in the vertical blanking interval. (The video formats must have the same frame rate or have frame rates between the reference and video that have a ratio of either 1:2 or 2:1, i.e. 29.97 Hz frame rate reference with a video frame of 59.94 Hz.)

Note: The SDI program material inputs are expected to be frame synchronized to a common reference.

GPI-Based Routing Control

Up to 24 GPI inputs (depending on the card) are available to invoke Source (**SRC**) / Destination (**DST**) routing. For each GPI input, separate and independent routing conditions can be invoked on a **GPI Open** or **GPI Closed** transition state. Triggering conditions are edge-triggered.

User Mnemonics Display

A **Mnemonics** DashBoard UI tab allows changing the DashBoard-displayed I/O numbering/names from the default source **SRC 1**, **SRC 2**...(and so on) and default destination **DST 1**, **DST 2** (and so on) designations to custom user names (for example, **CAM 1** instead of default name “SRC 1”). The user-entered mnemonics names are propagated to the routing “buttons” in DashBoard. A checkbox allows suppressing the user mnemonics and instantly reverting to the default designations.

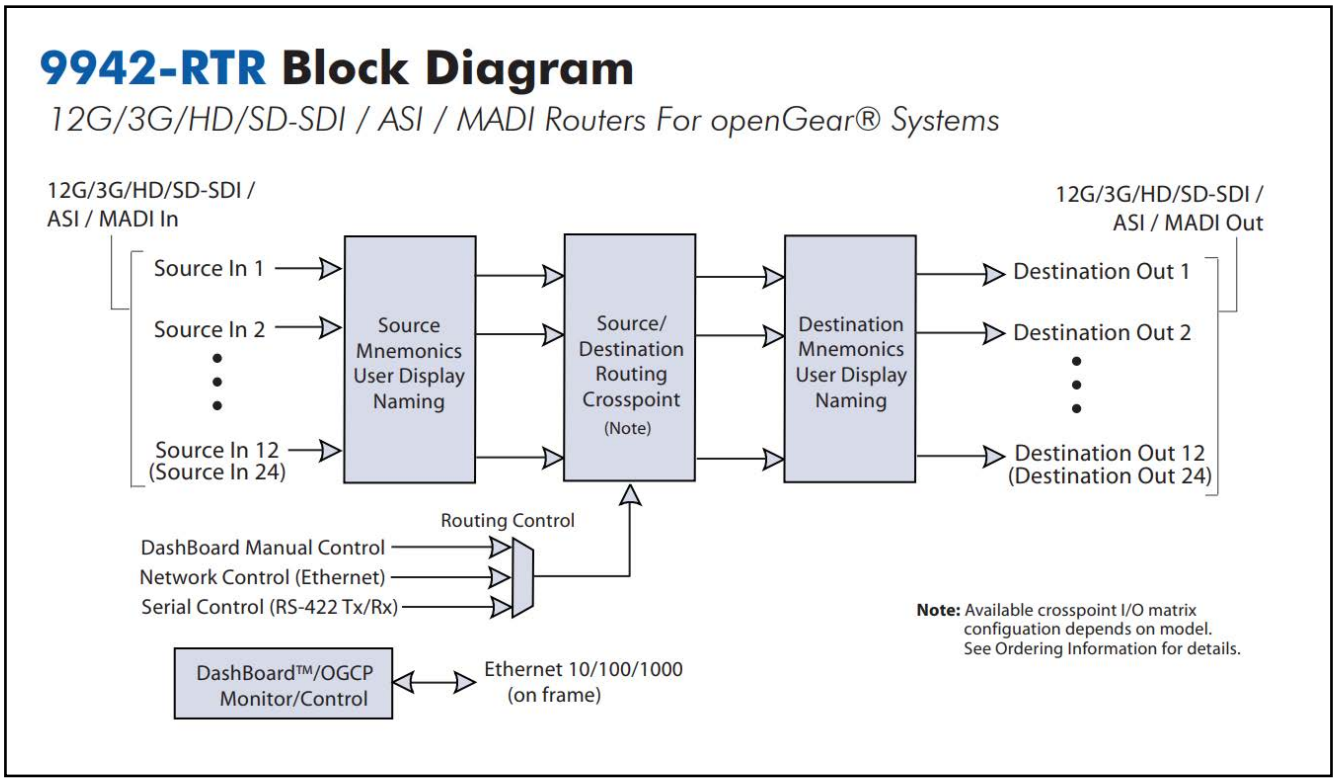


Figure 1-1 9942-RTR Functional Block Diagram

Currently Supported Protocols

Although not necessarily all inclusive, designated supported protocols for interface with external systems are as follows:

Direct interface compatibility

- openGear®
- Cobalt® Relfex
- SW-P-08
- Sierra™ (over serial)

Direct compatibility with the following panels

- DNF
- PNET
- PESA
- SNAP

DashBoard™ User Control Interface

Figure 1-2 shows the DashBoard™ user control interface for the 9942-RTR.

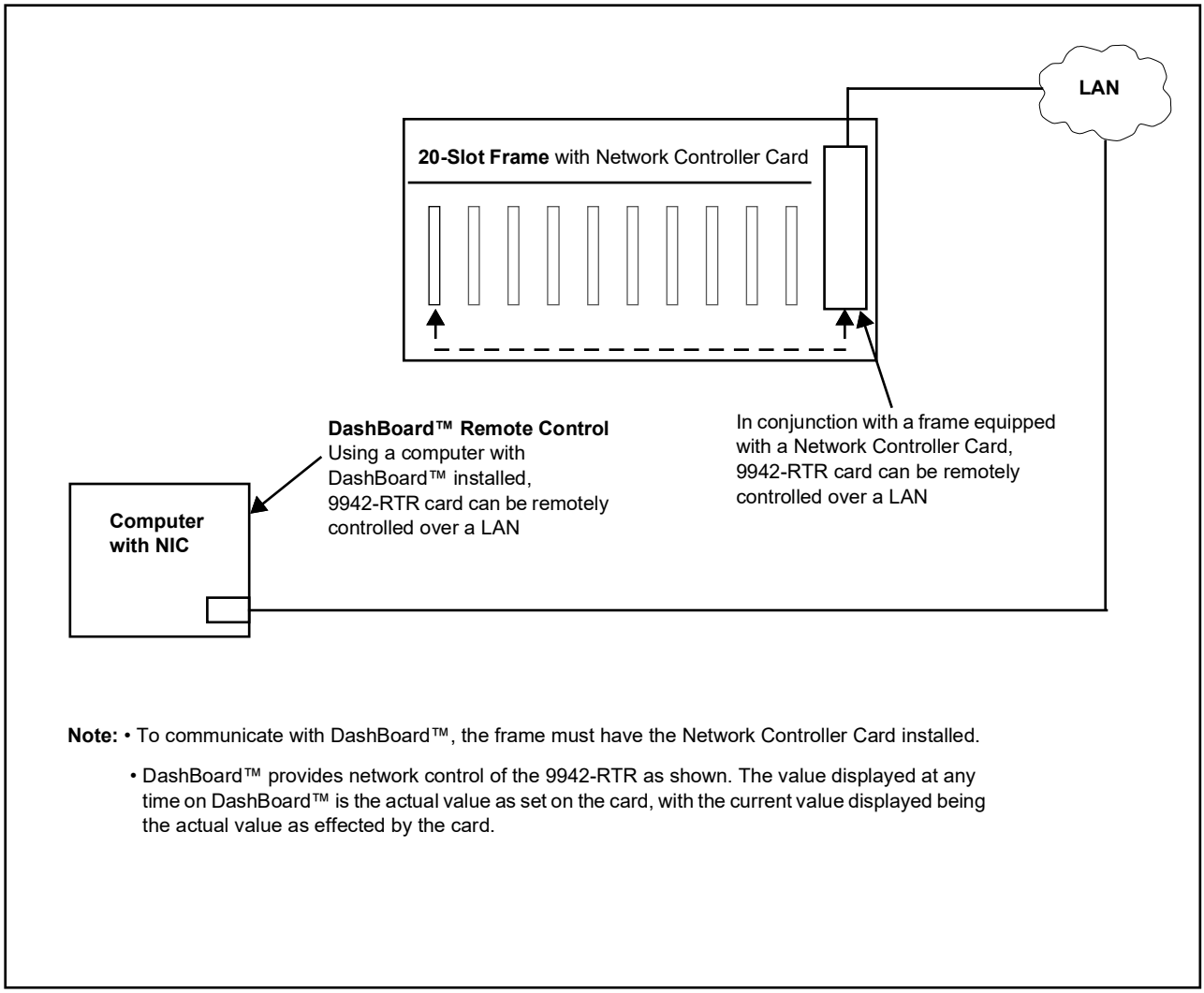


Figure 1-2 9942-RTR User Control Interface

Using DashBoard™, the 9942-RTR and other cards installed in openGear® compatible frames such as the Cobalt® HPF-9000 or 8321 frame can be controlled from a computer and monitor.

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

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

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

Download a copy of this guide by clicking on the **Support>Reference Documents** link at www.cobaltdigital.com and then select the DashBoard Remote Control Setup Guide as a download, or contact Cobalt® as listed in A 6-level router using only "X" commands could generate as many as 6 "X" commands of status output. The first command is for level 1, the next for level 2, etc. until the last level is reached. (However, each "X" command contains the level number, so the sequence in which the data is sent is not really important.)

9942-RTR Rear I/O Modules

The 9942-RTR physically interfaces to system video connections at the rear of its frame using a Rear I/O Module.

All signal inputs and outputs shown in the 9942-RTR 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 card edge connections to coaxial and other connectors that interface with other components and systems in the signal chain.

Technical Specifications

Table 1-1 lists the technical specifications for the 9942-RTR 12G/3G/HD/SD-SDI / ASI / MADI Routers for openGear Systems card.

Table 1-1 Technical Specifications

Item	Characteristic
Part number, nomenclature	9942-RTR 12G/3G/HD/SD-SDI / ASI / MADI Routers for openGear Systems • **9942-RTR-12x12-12G** 12G/HD/SD-SDI / ASI / MADI 12x12 Router • **9942-RTR-24x24-12G** 12G/HD/SD-SDI / ASI / MADI 24x24 Router
Installation/usage environment	Intended for installation and usage in frame meeting openGear modular system definition
Power consumption	< 10 Watts maximum

Table 1-1 Technical Specifications — continued

Item	Characteristic
Environmental: Operating temperature: Relative humidity (operating or storage):	 32° – 104° F (0° – 40° C) < 95%, non-condensing
Frame communication	10/100/1000 Mbps Ethernet with Auto-MDIX
Serial Digital Video Input	Number of Inputs: See model descriptions above Data Rates Supported (as applicable per model): SMPTE ST2082-1 SMPTE 424 SMPTE 292 SMPTE 259M-C Impedance: 75 Ω terminating
Serial Digital Video Outputs	Number of Outputs: See model descriptions above Impedance: 75 Ω Level: 800 mVp-p ±10% Return Loss: > 15 dB at 5 MHz – 1.5 GHz > 10 dB at 1.5 GHz – 3.0 GHz Alignment Jitter: < 0.2 UI (max; coupled through 100 kHz high-pass filter)
GPI	GPI LO @ Vin < 1.5 V GPI HI @ Vin > 2.3 V Max Vin: 9 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.

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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

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General Information:	info@cobaltdigital.com
Technical Support:	support@cobaltdigital.com

Chapter 2

Installation and Setup

Overview

This chapter contains the following information:

Installing the 9942-RTR Into a Frame Slot

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.**

CAUTION

If required, make certain Rear I/O Module(s) is installed before installing the 9942-RTR 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 9942-RTR was shipped for any extra items such as a Rear I/O Module connection label. In some cases, this label is shipped with the card and to be installed on the Rear I/O connector bank corresponding to the slot location of the card.

Install the 9942-RTR into a frame slot as follows:

1. Determine the slot in which the 9942-RTR is to be installed.
2. Open the frame front access panel.
3. While holding the card by the card edges, align the card such that the plastic ejector tab is on the bottom.
4. Align the card with the top and bottom guides of the slot in which the card is being installed.
5. Gradually slide the card into the slot. When resistance is noticed, gently continue pushing the card until its rear printed circuit edge terminals engage fully into the rear I/O module mating connector.

CAUTION

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

6. Verify that the card is fully engaged in rear I/O module mating connector.
7. Close the frame front access panel.
8. Connect the input and output cables as shown in 9942-RTR Rear I/O Modules (p. 2-4).
9. Repeat steps 1 through 8 for other 9942-RTR cards.

Note:
- The 9942-RTR BNC inputs are internally 75-ohm terminated. It is not necessary to terminate unused BNC inputs or outputs.
- To remove a card, press down on the ejector tab to unseat the card from the rear I/O module mating connector. Evenly draw the card from its slot.

10. If network remote control is to be used for the frame and the frame has not yet been set up for remote control, perform setup in accordance with Setting Up 9942-RTR Network Remote Control (p. 2-4).

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 9942-RTR is to be installed.

Install a Rear I/O Module as follows:

1. On the frame, determine the slot in which the 9942-RTR 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.

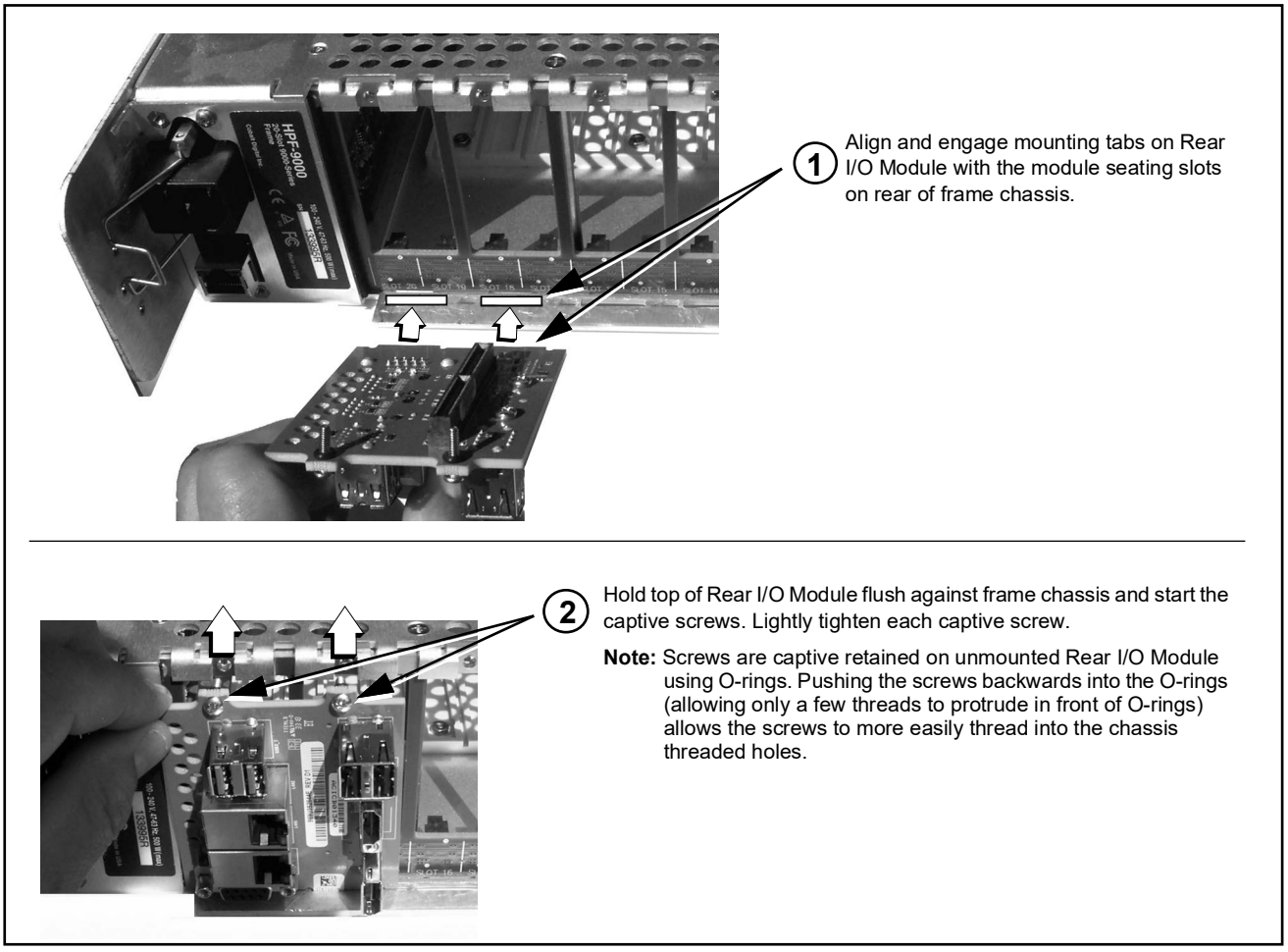
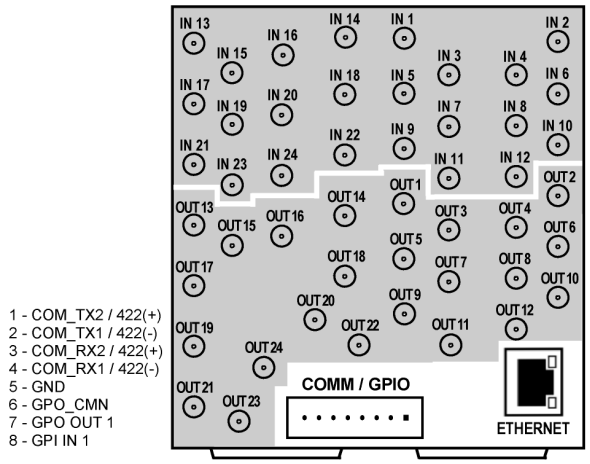


Figure 2-1 Rear I/O Module Installation

9942-RTR Rear I/O Modules

Table 2-1 shows and describes the full assortment of Rear I/O Modules specifically for use with the 9942-RTR.

Table 2-1 9942-RTR Rear I/O Module

9942-RTR Rear I/O Module	Description
RM20-9942-24X42-A-BNC  	Provides the following connections: • (24) SDI/ASI/MADI BNC coaxial router Inputs (**IN 1** thru **IN 24**) • (4) SDI/ASI/MADI BNC coaxial router Outputs (**OUT 1** thru **OUT 24**) • **COMM/GPIO** port • 100/1000 BaseT **ETHERNET** control port **Note:** RM20-9942-24x24-A-HDBNC is compatible with 9942-RTR-12x12-12G and 9942-RTR-24x24-12G models. When used with the 12x12 model, **IN 13** thru I**N 24** and **OUT 13** thru **OUT 24** ports are NC.

Setting Up 9942-RTR 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™.

Download a copy of this guide by clicking on the **Support>Reference Documents** link at www.cobaltdigital.com and then select DashBoard Remote Control Setup Guide as a download, or contact Cobalt® as listed in Contact Cobalt Digital Inc. (p. 1-12).

• 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.

Chapter 3

Operating Instructions

Overview

If you are already familiar with using DashBoard or a Cobalt Remote Control Panel to control Cobalt cards, please skip to 9942-RTR Function Submenu List and Descriptions (p. 3-7).

This chapter contains the following information:

Control and Display Descriptions

This section describes the user interface controls and indicators, and displays (both on-card and remote controls) for using the 9942-RTR card.

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

Function Submenu/Parameter Submenu Overview

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

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

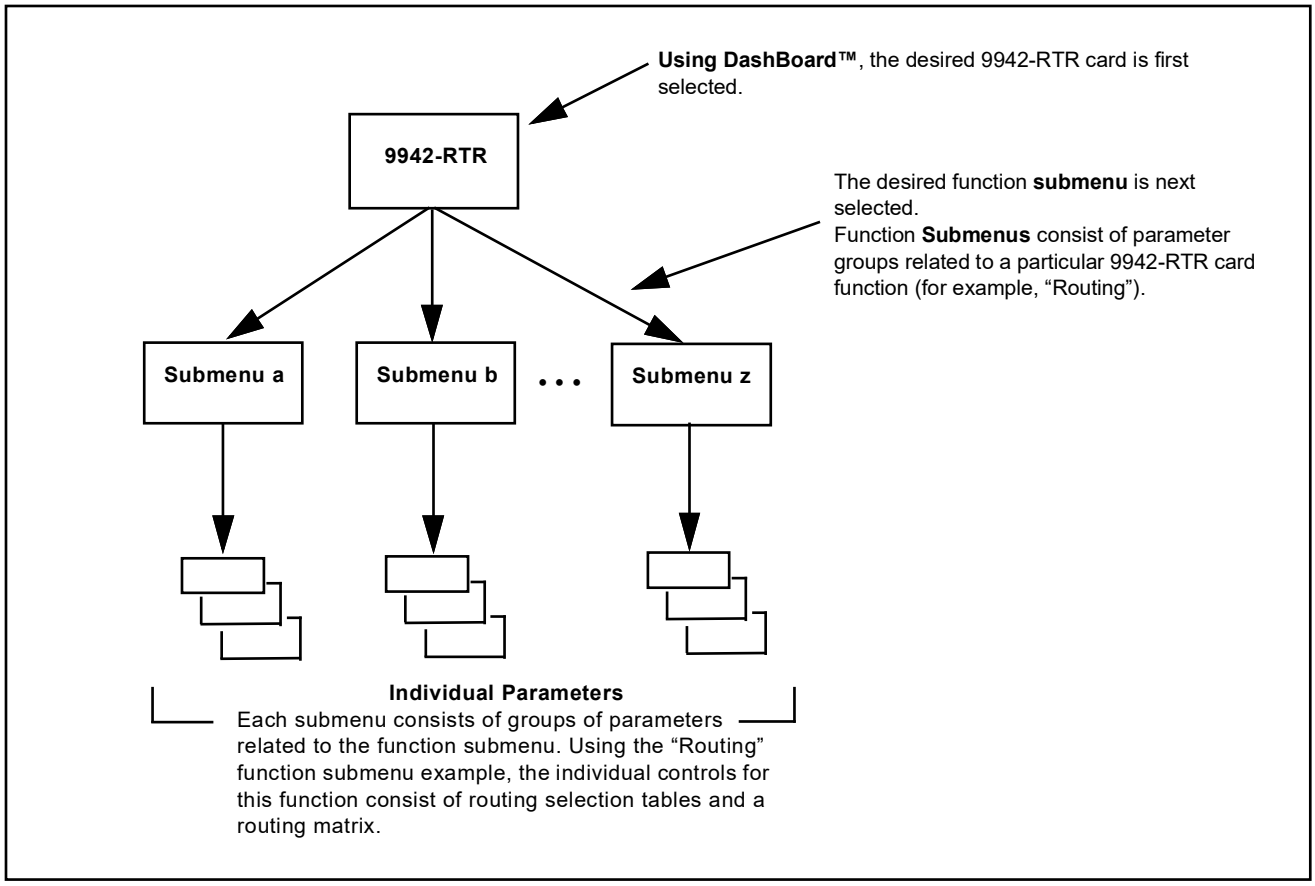


Figure 3-1 Function Submenu/Parameter Submenu Overview

DashBoard™ User Interface

The card function menus are organized in DashBoard™ using tabs. When a tab is selected, each parametric control or selection list item associated with the function is displayed. Items in a list can then be selected using GUI drop-down lists. See Figure 3-2 .

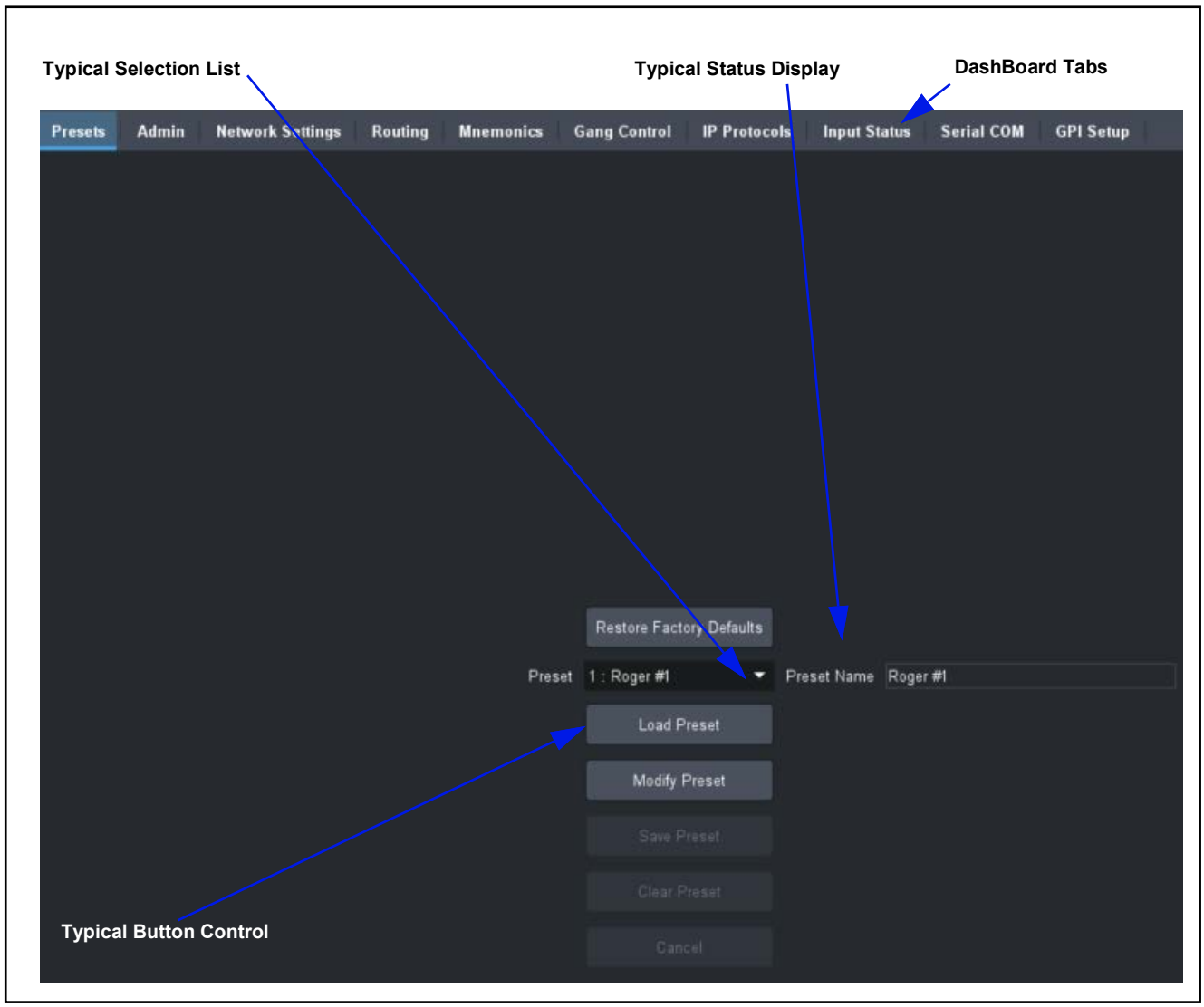
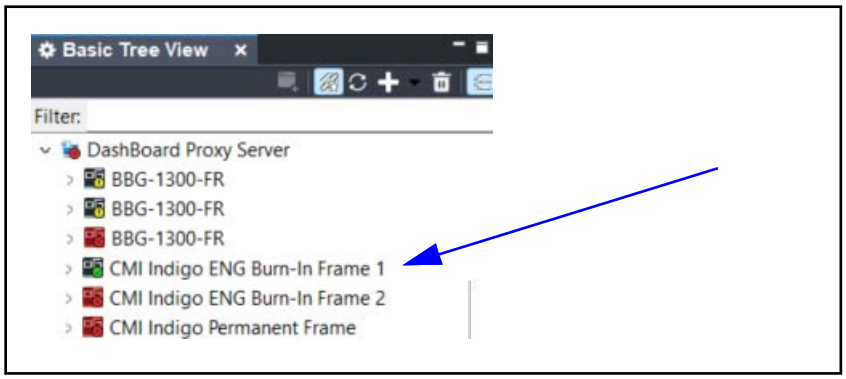


Figure 3-2 Typical DashBoard Tabs and Controls

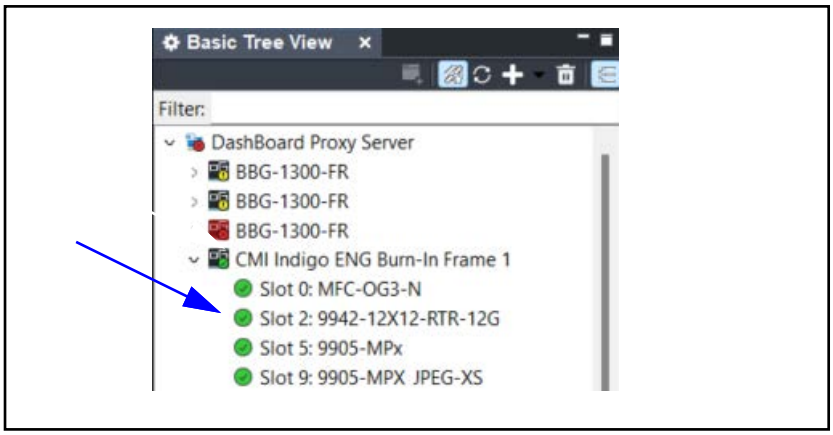
Accessing the 9942-RTR Card via DashBoard™

Access the card using DashBoard™ as described below.

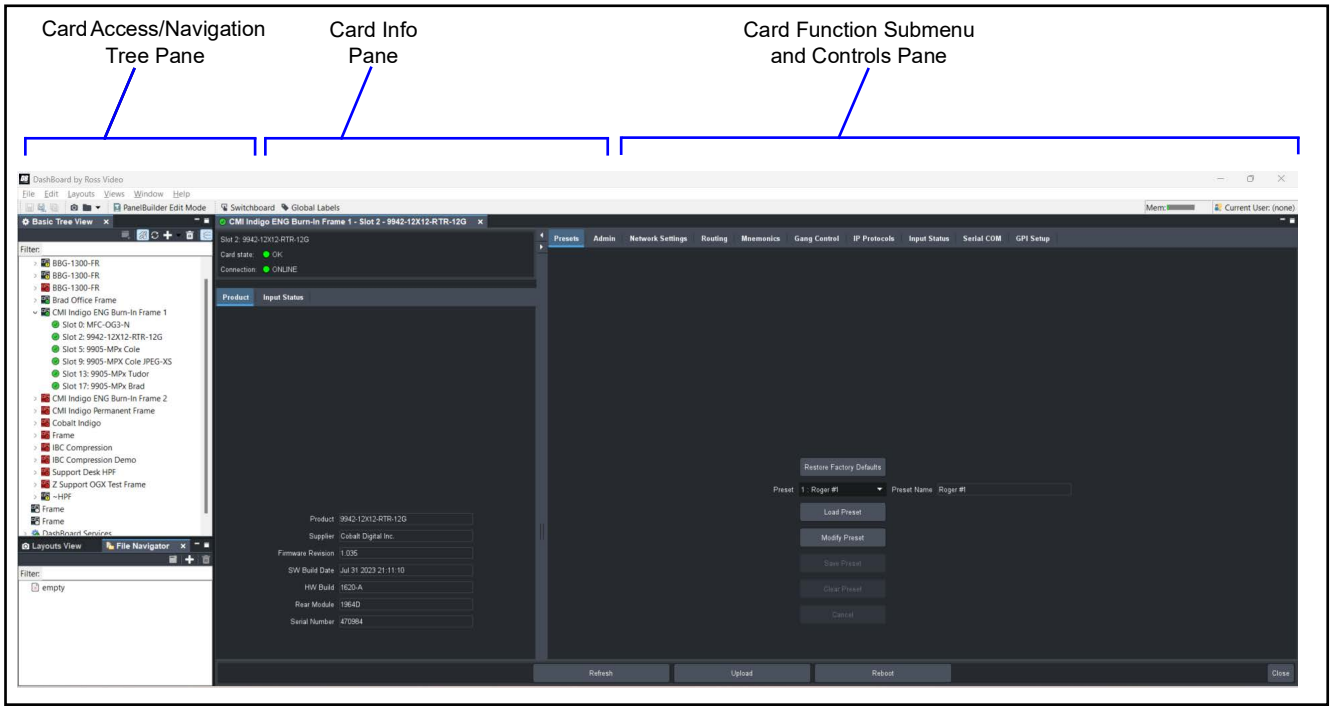
1. On the computer connected to the frame LAN, open DashBoard™.
2. As shown below (in the left side Basic View Tree) locate the Network Controller Card associated with the frame containing the 9942-RTR card to be accessed (in this example, “CMI Indigo ENG BURN-In Frame 1”).



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 2: 9942-24X24-RTR-12G”).



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™).



Checking 9942-RTR Card Information

The operating status and software version the 9942-RTR card can be checked using DashBoard™ or the card edge control user interface. Figure 3-3 shows and describes the 9942-RTR card information screen using DashBoard™ and accessing card information using the card edge control user interface.

Note: Proper operating status in DashBoard™ is denoted by green icons for the status indicators shown in Figure 3-3 . Yellow or red icons respectively indicate an alert or failure condition. Refer to Corrective Action (p. 3-18) for more information.

The **Tree View** shows the cards seen by DashBoard™. In this example, Network Controller Card is hosting a 9942-RTR card in slot 2.

Status Display
This displays shows the status of the signals being received by the 9942-RTR.

Card Info (Product) Display
This displays (alternately selected in the Card Info pane) shows the the card hardware and software version info.

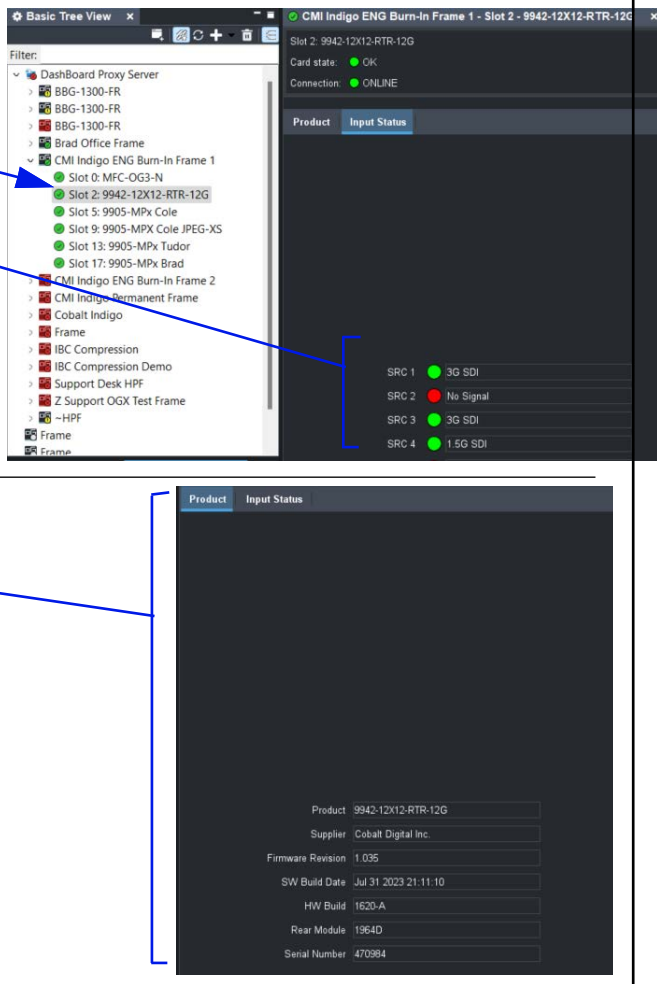
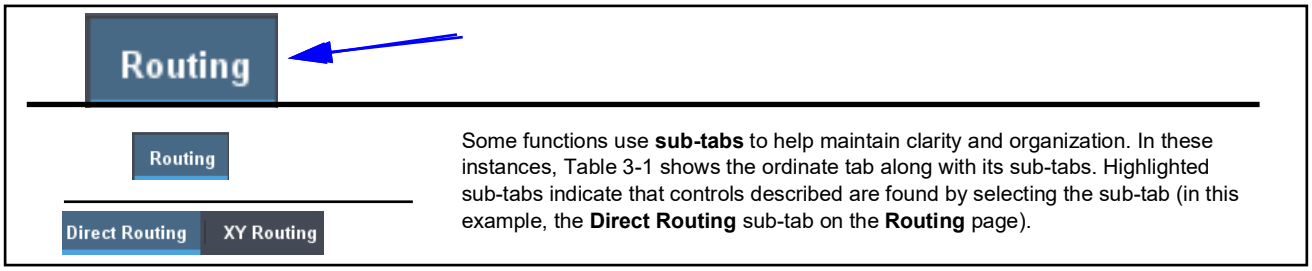


Figure 3-3 9942-RTR Card Info/Status Utility

9942-RTR Function Submenu List and Descriptions

Table 3-1 individually lists and describes each card function submenu ("tab") and its related list selections, controls, and parameters. Where helpful, examples showing usage of a function are also provided.

On DashBoard™ itself and in Table 3-1, the function menu items are organized using tabs as shown below.



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

Table 3-1 9942-RTR Function Submenu List

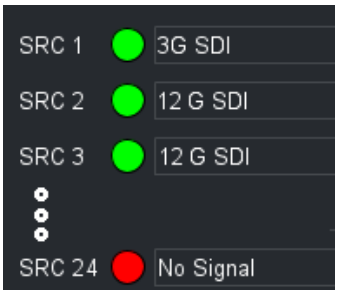
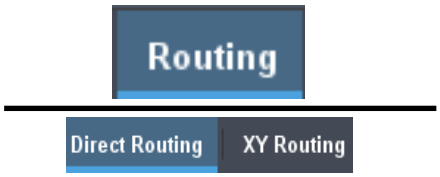
	Displays signal status (rate and presence) for each of the card's SDI inputs.
Note: The number of Source rows (**SRC *n***) shown in the Dashboard depends up model. The 9942-RTR-12x12-12G has **SRC 1** thru **SCR 12**; the 9942-RTR-24x24-12G has **SRC 1** thru **SCR 24** corresponding to the number of inputs accommodated by the model.	
In this example, **SRC 1** thru **SRC 3** have recognized SDI inputs present. Where no input is detected (or an unrecognized input) **No Signal** is displayed.  	
	Provides a routing table with drop-downs to select destination ports for each card input port. **Direct Routing** controls provide immediate routing changes via DashBoard.
Note: • The number of destinations (**DST *n***) and sources (**SRC *n***) shown in the Dashboard depend on the model. The number of destinations and sources correspond to the number of inputs/outputs accommodated by the model (12x12 and 24x24). • Direct Routing and XY Routing sub-tabs provide different methods for performing routing. Selections made in either are ganged, with selections appearing identically in both sub-tabs.	

Table 3-1 9942-RTR Function Submenu List — continued

Default has Destination 1 port (**DST 1**) thru Destination port *n* sourced from Source 1 port (**SRC 1**) thru Source port n.

The source for any of the destination ports can be changed using the drop-down for the destination port.
When settings are performed, they can be saved to a Preset to allow one-button routing engage (see Presets (p. 3-16) for info on using Presets).

Custom names for destinations and/or sources can be applied to the Dashboard labels and drop-downs using the Mnenonics tab and checking the **Enable Mnemonics** box (as in this example with **DST 1** and **SRC 3** custom-renamed as "**9942-ENC IN 1**" and "**9942-ENG OUT 1**" resptively.

(See Mnemonics (p. 3-11) for info on using Mnemonics.)

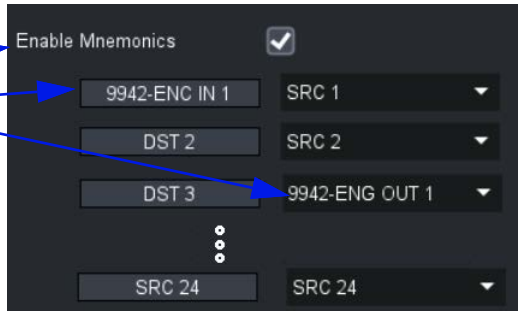
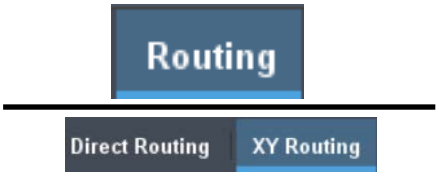


Table 3-1 9942-RTR Function Submenu List — continued

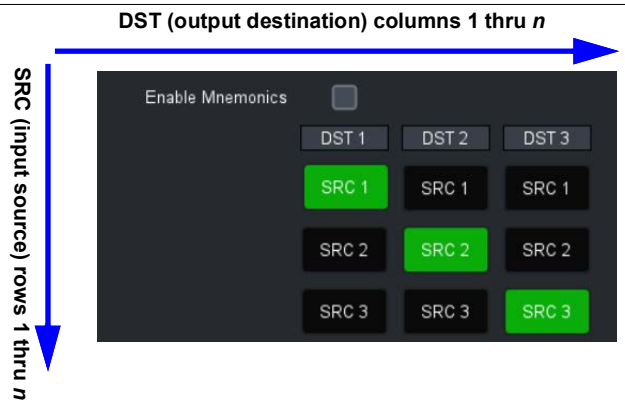


Provides a routing matrix to apply sources to various destination ports. **XY Routing** matrix provides a graphical overlay of routing that allows immediate routing assessment and changes via the DashBoard.

The default settings have Destination 1 port (**DST 1**) thru Destination port *n* sourced from Source 1 port (**SRC 1**) thru Source port n.

The source for any of the destination ports can be changed using the desired SRC button in the DST column.

When settings are performed, they can be saved to a Preset to allow one-button routing engage (see Presets (p. 3-16) for info on using Presets).



In this example, the following routing is performed:

- DST 1 is receiving source SRC 2 (**SRC 2** routed to **DST 1**)
- DST 2 is receiving source SRC 1 (**SRC 1** routed to **DST 2**)
- DST 3, 4, 5 are receiving source SRC 3 (**SRC 3** routed to **DST 3**, **DST 4**, and **DST 5**). In this manner, a 1x3 DA is set up here for SRC 3 to DST 3, 4, 5).

Custom names for destinations and/or sources can be applied to Dashboard labels and buttons using the Mnenonics tab and checking the **Enable Mnemonics** box (as in this example with **SRC1** and **SRC 2** custom-renamed as "**1711**" and "**BBG 7050 SDI Out 1**" and **DST 1** and **DST 2** custom-renamed as "**9992-ENC IN 1**" and "**PRISM 10.99.11.101**".

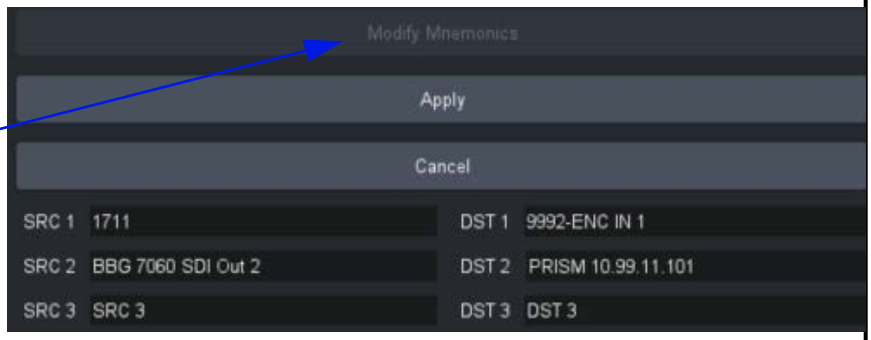
(See Mnemonics (p. 3-11) for info on using Mnemonics.)

Table 3-1 9942-RTR Function Submenu List — continued

Mnemonics	Provides a table for writing and applying custom names for SRC (source) and DST (destination) controls in the Dashboard tabs in place of the default names.

Note:
- Although the string length of custom names is not specifically restricted (and the Dashboard button and/or heading backgrounds will automatically resize to accommodate custom names), excessively long strings should be avoided because certain GUI aspects may be less readable in accommodating the long custom names.
- Mnemonics can be independently enabled or disabled in the **Routing > Direct Routing** and **Routing > XY Routing** sub-tab GUIs. Mnemonics do not appear in the **Input Status** displays; naming here is fixed to the default non-abstract convention (**SRC 1** thru **SRC *n*** and **DST 1** thru **DST *n***).

Clicking **Modify Mnemonics** opens the entry dialogs for all card SRC and DST channels (with the previous or default naming shown)



In this example, **SRC 1** and **SRC 2** have been renamed as “1711” and “BBG 7060 SDI Out 2”, respectively. Similarly, **DST 1** and **DST 2** have been renamed as “9992-ENC IN1 and “PRISM 10.99.11.101”.

To apply or cancel the entered changes, click **Apply** or **Cancel** as desired.

When custom names for destinations and/or sources have been applied, checking **Enable Mnemonics** substitutes the custom names (where entered) in place of the default names (as shown in this example)

Table 3-1 9942-RTR Function Submenu List — continued

Gang Control	Provides controls for ganging multiple destination outputs to a common Output Bus.

Ganging provides a convenient “one place” location to convert (for example) a 12x12 router to a 12x4 router by ganging destinations to a single common output bus ganging as desired.

For all settings here, clicking **Modify** opens the dialogs shown above. To apply or cancel the entered changes, click **Apply** or **Cancel** as desired.

In this example, a 12x3 router is effected by ganging Destinations **DST 1** thru **DST 4**, and repeating similarly thru Destinations **DST 9** thru **DST 12**, resulting in a three-node output ganged and DA-distributed across **DST 1-4** / **DST 5-8** and **/ DST 9-12**.

Table 3-1 9942-RTR Function Submenu List — continued

IP Protocols	Provides the user interface for integrating IP-based control panels with the 9942-RTR.

Note: The IP setup controls here are related only to the rear module **Ethernet** port, and are completely separate and independent of any DashBoard or frame IP setup.

Standard IP setup interfaces are provided for up to five independent control panels (**Panel 1** thru **Panel 5**).

Enable Panel checkbox allows individual panels to have control of the 9942-RTR, or to disable/block panels from controlling the 9942-RTR.

IP control setup here is typically used for panels (such as PESA™) which use standard IP protocol for integration to routing devices such as the 9942-RTR.

Note: Refer to the panel vendor setup documentation to make sure setup performed here is compatible with intended panel device(s).

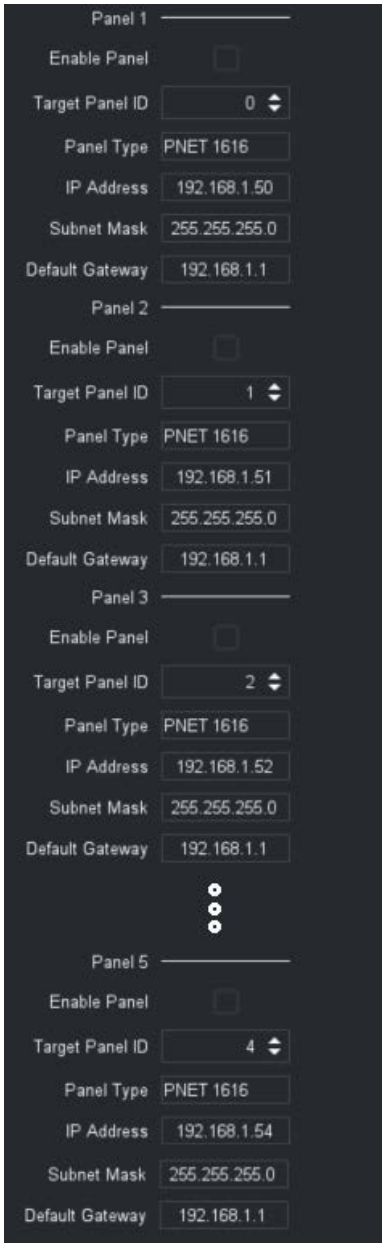


Table 3-1 9942-RTR Function Submenu List — continued

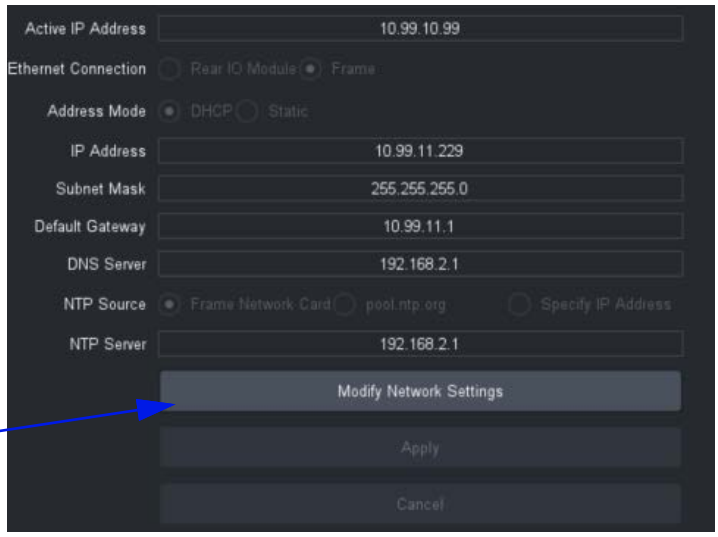
Network Settings	Provides controls for setting the card comm IP address and NTP time source.
Note: The IP setup controls here are related only to the rear module **Ethernet** port, and are completely separate and independent of any DashBoard or frame IP setup.	
• **Addressing Mode** allows setting address to static (user) address or via DHCP (where a DHCP server is available for the connection). • **IP Address**, **Subnet Mask**, and **Default Gateway** fields allow setting IP parameters when Static mode is selected. • **Card Active IP** shows the currently configured IP address (whether static or DHCP). • **DNS Server** allows setting IP address to match DNS Server where required. • **NTP Source** sets where the IP address will be connected from. • **NTP Server** sets the IP address where NTP is to be obtained. For all settings here, clicking **Modify Network Settings** opens the dialogs shown above. To apply or cancel the entered changes, click **Apply** or **Cancel** as desired.	
Serial COM	Provides controls for setting the COMM (serial) port for integration with serial automation systems such as Sierra™ 1991D and Grass Valley™ GVG TEN-XL.
• **COM1 Baud Rate** 	**COM1 Baud Rate** sets the card's serial Rx to match that of the serial Tx source.
• **COM1 Parity** 	**COM1 Parity** sets the card's Rx to expect odd or even parity from incoming data. When parity is set, incoming data not conforming to parity selection is rejected (**Disabled** setting ignores parity concerns).
• **COM1 Standard** 	**COM 1 Standard** selects the serial comm protocol expected as **RS-232** or **RS-422/RS-485**.

Table 3-1 9942-RTR Function Submenu List — continued

• **Serial Protocol** 	**Serial Protocol** selects the serial protocol expected as **Sierra** or **OVG TEN-XL**.
	Provides controls for setting up to 24 GPIs (depending on the card) to invoke one-to-one source-to-destination routing using edge-triggered GPI states. The **9942-RTR-12x12-12G** supports up to 12 GPIs; the **9942-RTR-24x24-12G** up to 24 GPIs.

Up to 24 GPI inputs (depending on the card) are available which can invoke separate/independent Source (**SRD**) and Destination (**DST**) routings using edge-triggered **OPEN** or **CLOSED** states.

In the example above for GPI 1, when GPI 1 goes closed from a previous stable state, **Source 1** is routed to **Destination 6**. When a GPI 1 closed-to-open is detected, Source 1 is now routed to Destination 1 (as set using the user-set drop-downs).

Other GPI rows set to No Action remove the GPI from having any influence on routing (this is the default state and makes certain unwanted GPI control is not invoked).

- GPI settings are saved across power cycles, and any routing in place persists.
- Current GPI status for each GPI input is shown in the left-most column (in the example here, all currently in **OPEN** state).
- When card is stable and running, GPI changes (edge triggering) is monitored and invoked when a GPI event occurs.
- If GPI control is not intended to be used, make certain all GPI inputs are set to **No Action** (as per default). If a GPI input is not set to No Action and a GPI change occurs, unintended routing could occur.
- Only certain rear I/O modules support the maximum available 24 GPI connections. See 9942-RTR Rear I/O Modules (p. 2-4) in Chapter 2 – Installation and Setup for more information.

Make certain GPI inputs are in accordance with GPI Inputs in Technical Specifications, Chapter 1. Introduction.

Table 3-1 9942-RTR Function Submenu List — continued

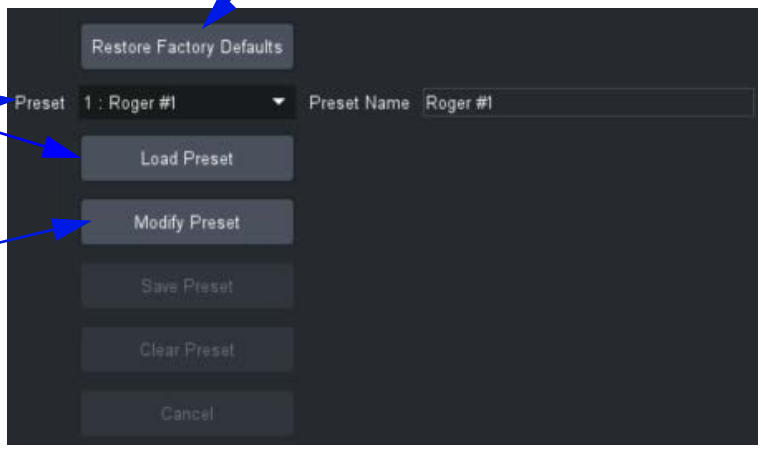
<table>
<tr><td> 
</td><td>Allows user control settings to be saved in a Preset and then loaded (recalled) with a one-button press as desired. Presets also provide a one-button restore of factory default settings.</td></tr>
<tr><td colspan="2">To restore factory defaults from any custom settings or engaged preset, press Restore Factory Defaults. (Saved presets can be invoked again if desired by selecting and engaging the preset as shown here.

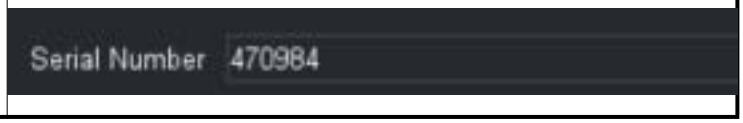
To load an already-saved preset, access the desired preset using the preset select drop-down, and then click Load Preset.

To open presets and enable Preset drop-down, click Modify Preset. Select a preset “holder” (Preset 1 thru Preset n) to be used to hold preset settings. If desired, a custom name for the preset can now be entered in the Preset Name field.

Save, Clear, or Cancel the preset save as desired using corresponding buttons.

To load a saved preset, access the desired preset using the preset select drop-down, and then click Load Preset.

 
</td></tr>
<tr><td> 
</td><td>Displays the card’s serial number.

 
</td></tr>
</table>

Troubleshooting

This section provides general troubleshooting information and specific symptom/corrective action for the card and its remote control interface. The 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 card itself and its remote control systems all (to varying degrees) provide error and failure indications. Check all available indications in the event of an error or failure condition.

The various 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. 3-17)
- 9942-RTR Processing Error Troubleshooting (p. 3-18)
- Troubleshooting Network/Remote Control Errors (p. 3-19)

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. 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 3-2 Basic Troubleshooting Checks

Item	Checks

Verify power presence and characteristics	• On both the frame Network Controller Card and the 9942-RTR, in all cases when power is being properly supplied there is always at least one indicator illuminated. Any card showing no illuminated indicators should be cause for concern.
	• Check the Power Consumed indication for the 9942-RTR card. This can be observed using the DashBoard™ Card Info pane.
	  • If **no** power is being consumed, either the frame power supply, connections, or the 9942-RTR card itself is defective.
	  • If **excessive** power is being consumed (see Technical Specifications (p. 1-9) in Chapter 1, “Introduction”), the card may be defective.

Check Cable connection secureness and connecting points	Make certain all cable connections are fully secure (including coaxial cable attachment to cable ferrules on BNC connectors). Also, make certain all connecting points are as intended. Make certain the selected connecting points correlate to the intended card inputs and/or outputs. Cabling mistakes are especially easy to make when working with large I/O modules.
Card seating within slots	Make certain all cards are properly seated within its frame slot. (It is best to assure proper seating by ejecting the card and reseating it again.)
Check status indicators and displays	If a status indicator signifies an error, proceed to the following tables in this section for further action.
Troubleshoot by substitution	All cards within the frame can be hot-swapped, replacing a suspect card or module with a known-good item.

9942-RTR Processing Error Troubleshooting

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

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

Table 3-3 Troubleshooting Processing Errors by Symptom

Symptom	Error/Condition	Corrective Action
DashBoard™ shows yellow or red icon (No Signal) in Card Info pane.	• No video input present on a source input	Make certain intended video sources are connected to appropriate card video inputs. Make certain BNC cable connections between frame Rear I/O Module for the card and signal source are OK.
	• **Alarm Mode** set for Warning or Alarm on unused channel.	Nuisance alarm due to alarm set for channel not intended to be used. Set **Alarm Mode** for these input channels to **Ignore**.

Table 3-3 Troubleshooting Processing Errors by Symptom — continued

Symptom	Error/Condition	Corrective Action
Routing not as expected; sources present on unexpected destination outputs.	• Gang Routing mistakenly enabled when not desired.	• Make certain Gang Routing is set to disabled (default) unless ganging of source>destination routing is desired. See Gang Control (Destination Ganging) (p. 3-12) for more information.
	• Switching command from external device (panel) not properly integrated with 9942-RTR.	• Make certain switching command interface (Protocol or Serial COM) is set up as expected for companion external command device(s). Make certain unwanted command interfaces (such as GPI when IP automation is to be used) are locked out by setting to Disabled or No Action as appropriate.

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. 1-12) for contact information.

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