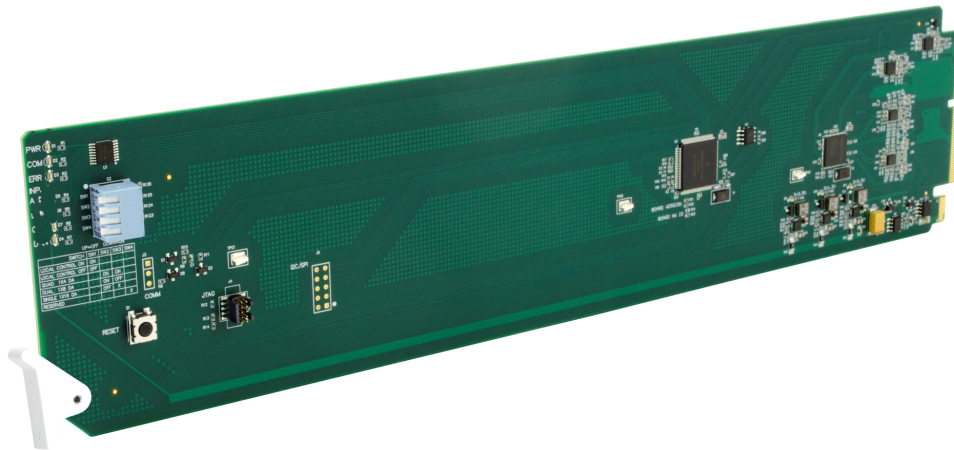


COBALT

9910DA-4Q-3G-RCK

9910DA-4Q-3G-EQ



Quad-Channel Multi-Rate DA with x4 Output Crosspoint

- 9910DA-4Q-3G-RCK (Reclocking)
- 9910DA-4Q-3G-EQ (Non-Reclocking)

Product Manual



Cobalt Digital Inc.

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

Copyright

©Copyright 2014, 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[®] is a registered trademark of Cobalt Digital Inc.

Compass[®] is a registered trademark of Cobalt Digital Inc.

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

Congratulations on choosing the Cobalt[®] 9910DA-4Q-3G Quad-Channel Multi-Rate Reclocking DA with x4 Output Crosspoint. (This manual covers both the 9910DA-4Q-3G-RCK Quad-Channel Multi-Rate Reclocking DA with x4 Output Crosspoint (Reclocking) and the 9910DA-4Q-3G-EQ Quad-Channel Multi-Rate Reclocking DA with x4 Output Crosspoint (Non-Reclocking) cards. The 9910DA-4Q-3G cards are 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 card, please contact us at the contact information on the front cover.

Manual No.:	9910DA-4Q-3G-OM
Document Version:	V1.1
Release Date:	May 29, 2014
Applicable for Firmware Version (or greater):	1.0.3
Description of product/manual changes:	<ul style="list-style-type: none">- Add new rear I/O modules.- Add info to clarify I/O routing when using rear I/O modules with less than full card I/O capacity.- Add info showing fixed I/O routing when using local (card edge) control.

Table of Contents

Chapter 1	Introduction	1-1
	Overview	1-1
	Manual Conventions	1-2
	Warnings, Cautions, and Notes	1-2
	Labeling Symbol Definitions.....	1-3
	Safety Summary	1-3
	Warnings.....	1-3
	Cautions	1-3
	9910DA-4Q-3G Functional Description	1-4
	9910DA-4Q-3G Rear I/O Modules	1-5
	Technical Specifications.....	1-6
	Warranty and Service Information	1-7
	Cobalt Digital Inc. Limited Warranty.....	1-7
	Contact Cobalt Digital Inc.....	1-8
Chapter 2	Installation and Setup	2-1
	Overview	2-1
	Card-Edge Switches and Monitoring	2-1
	Input/Output Routing With Card in Card-Edge (Local) Control Mode	2-2
	Installing the 9910DA-4Q-3G Into a Frame Slot	2-4
	Installing a Rear I/O Module	2-5
	9910DA-4Q-3G Rear I/O Modules	2-7
Chapter 3	Operating Instructions	3-1
	Overview	3-1
	Accessing the 9910DA-4Q-3G Card via Remote Control	3-1
	Accessing the 9910DA-4Q-3G Card Using DashBoard™	3-1
	Checking 9910DA-4Q-3G Card Information and Status	3-2
	Card-Edge Controls and Indicators	3-2
	9910DA-4Q-3G Function Menu List and Descriptions	3-3
	Output Source Crosspoint Control	3-3
	Reclock Outputs Control	3-5
	Presets	3-5
	Troubleshooting.....	3-6
	Basic Troubleshooting Checks	3-6
	Troubleshooting Network/Remote Control Errors	3-7
	In Case of Problems.....	3-7

This page intentionally blank

Introduction

Overview

This manual provides installation and operating instructions for the 9910DA-4Q-3G Quad-Channel Multi-Rate Reclocking DA with x4 Output Crosspoint cards (also referred to herein as the 9910DA-4Q-3G).

Note: This manual is applicable for both the 9910DA-4Q-3G-RCK Quad-Channel Multi-Rate Reclocking DA with x4 Output Crosspoint (Reclocking) and the 9910DA-4Q-3G-EQ Quad-Channel Multi-Rate DA with x4 Output Crosspoint (Non-Reclocking) versions of this card. Reclocking functions and specifications listed in this manual are not applicable to 9910DA-4Q-3G-EQ. In all other aspects, both versions function identically as described in this manual unless otherwise noted.

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 9910DA-4Q-3G.
- **Chapter 2, “Installation and Setup”** – Provides instructions for installing the 9910DA-4Q-3G in a frame, and optionally installing a 9910DA-4Q-3G Rear I/O Module.
- **Chapter 3, “Operating Instructions”** – Provides overviews of operating controls and instructions for using the 9910DA-4Q-3G.

This chapter contains the following information:

- **Manual Conventions (p. 1-2)**
- **Manual Conventions (p. 1-2)**
- **Safety Summary (p. 1-3)**
- **9910DA-4Q-3G Functional Description (p. 1-4)**
- **Technical Specifications (p. 1-6)**
- **Warranty and Service Information (p. 1-7)**
- **Contact Cobalt Digital Inc. (p. 1-8)**

Manual Conventions

In this manual, display messages and connectors are shown using the exact name shown on the 9910DA-4Q-3G itself (for example, connector names are shown like this: **SDI IN A**)

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

- **9910DA-4Q-3G-RCK** refers to the 9910DA-4Q-3G Quad-Channel Multi-Rate Reclocking DA with x4 Output Crosspoint card.
- **9910DA-4Q-3G-EQ** refers to the 9910DA-4Q-3G Quad-Channel Multi-Rate DA with x4 Output Crosspoint (Non-Reclocking) card.
- **Frame** refers to the HPF-9000, OG3-FR, 8321, or similar 20-slot frame that houses Cobalt® or other cards.
- **Device** and/or **Card** refers to a Cobalt® or other card.
- **System** and/or **Video System** refers to the mix of interconnected production and terminal equipment in which the 9910DA-4Q-3G and other 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

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

Safety Summary

Warnings

! WARNING !

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

Cautions

CAUTION

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

CAUTION

This product is intended to be a component product of an openGear® or equivalent frame. Refer to the frame Product 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 9910DA-4Q-3G 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.

9910DA-4Q-3G Functional Description

Figure 1-1 shows a functional block diagram of the 9910DA-4Q-3G. With the appropriate rear module, the 9910DA-4Q-3G can provide up to 16 DA video outputs.

Input/Output Formats

The 9910DA-4Q-3G provides the following inputs and outputs:

- **Inputs:**
 - **3G/HD/SD-SDI IN (A-D)** – four coaxial 3G/HD/SD-SDI / ASI video inputs
- **Outputs:**
 - **3G/HD/SD-SDI IN (1-16)** – up to 16 coaxial 3G/HD/SD-SDI / ASI video outputs. All outputs are non-inverting and can be used as SDI or ASI outputs.

Remote/Local Control

The 9910DA-4Q-3G is equipped with card-edge controls that allow limited control such as distribution mode. When card-edge control is enabled, DashBoard™ remote control is disabled (and vice-versa).

Distribution Modes Select

The 9910DA-4Q-3G uses four DA quadrants (each consisting of a 1x4 non-inverting DA). Using these four quadrants fed by an input-sourcing crosspoint, the card provides multiple distribution modes, allowing the card's distribution potential to be maximized as desired. While the DashBoard control allows fully flexible input crosspoint sourcing, the basic typically used modes are:

- Quad-Channel 1x4 DA
- Dual-Channel 1x8 DA
- Single-Channel 1x16 DA

Reclock Select (9910DA-4Q-3G-RCK Only)

Reclocking can be individually enabled or disabled for any of the 4-output card DA quadrants. (As shown in Figure 1-1, the card applies its four inputs to an output crosspoint block which in turn feeds up to four quad DA blocks, each with selectable reclock enable/disable.)

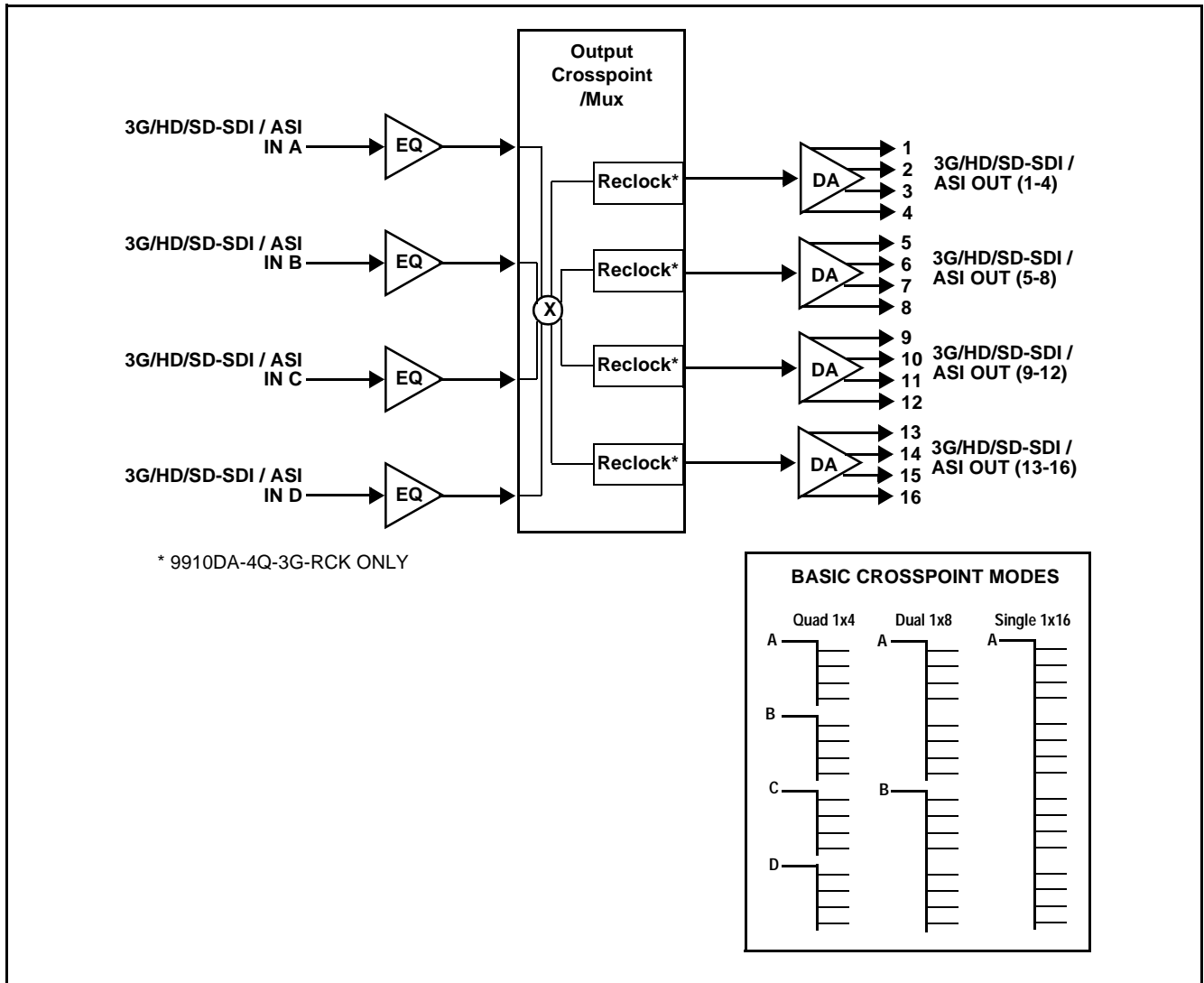


Figure 1-1 9910DA-4Q-3G Functional Block Diagram

9910DA-4Q-3G Rear I/O Modules

The 9910DA-4Q-3G physically interfaces to system video connections at the rear of its frame using a Rear I/O Module. The full assortment of 9910DA-4Q-3G Rear I/O Modules is shown and described in 9910DA-4Q-3G Rear I/O Modules (p. 2-6) in Chapter 2, “Installation and Setup”.

Technical Specifications

Table 1-1 lists the technical specifications for the 9910DA-4Q-3G-RCK Quad-Channel Multi-Rate Reclocking DA with x4 Output Crosspoint and 9910DA-4Q-3G-EQ Quad-Channel Multi-Rate DA with x4 Output Crosspoint (Non-Reclocking) cards.

Table 1-1 Technical Specifications

Item	Characteristic
Part number, nomenclature	<ul style="list-style-type: none"> • 9910DA-4Q-3G-RCK Quad-Channel Multi-Rate Reclocking DA with x4 Output Crosspoint (Reclocking) card • 9910DA-4Q-3G-EQ Quad-Channel Multi-Rate DA with x4 Output Crosspoint (Non-Reclocking) card
Installation/usage environment	Intended for installation and usage in frame meeting openGear™ modular system definition.
Power consumption	< 10 Watts maximum
Installation Density	Up to 20 cards per 20-slot frame
Environmental: Operating temperature: Relative humidity (operating or storage):	32° – 104° F (0° – 40° C) < 95%, non-condensing
Frame communication	10/100 Mbps Ethernet with Auto-MDIX.
Indicators	Card edge display and indicators as follows: <ul style="list-style-type: none"> • Status/Error LED indicator • Input Presence LED indicators
3G/HD/SD-SDI / ASI Inputs	(4) 75Ω coaxial inputs (A thru D) SDI Formats Supported: SMPTE 259M, SMPTE 292M, SMPTE 424M SDI Return Loss: >15 dB up to 1.485 GHz; >10 dB up to 2.970 GHz
Receive Performance (Cable Length; Belden 1694A)	3 Gbps: 120m 1.485 Gbps: 160m 143-360 Mbps: 400m
3G/HD/SD-SDI / ASI Outputs	(4x4) 75Ω coaxial outputs (16 total). Each group of 4 outputs can be crosspoint connected to inputs A thru D. Signal Level: 800 mV nominal Return Loss: >15 dB at 5 MHz - 1.485 GHz Jitter (wideband): HD < 0.2 UI

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

Phone:	(217) 344-1243
Fax:	(217) 344-1245
Web:	www.cobaltdigital.com
General Information:	info@cobaltdigital.com
Technical Support:	support@cobaltdigital.com

Installation and Setup

Overview

This chapter contains the following information:

- Card-Edge Switches and Monitoring (p. 2-1)
- Installing the 9910DA-4Q-3G Into a Frame Slot (p. 2-4)
- Installing a Rear I/O Module (p. 2-5)

Card-Edge Switches and Monitoring

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.

Always use proper ESD handling precautions and equipment when working on circuit boards and related equipment.

Figure 2-1 shows and describes the card-edge switches which can be used to provide limited card control without requiring a remote control connection (local control).

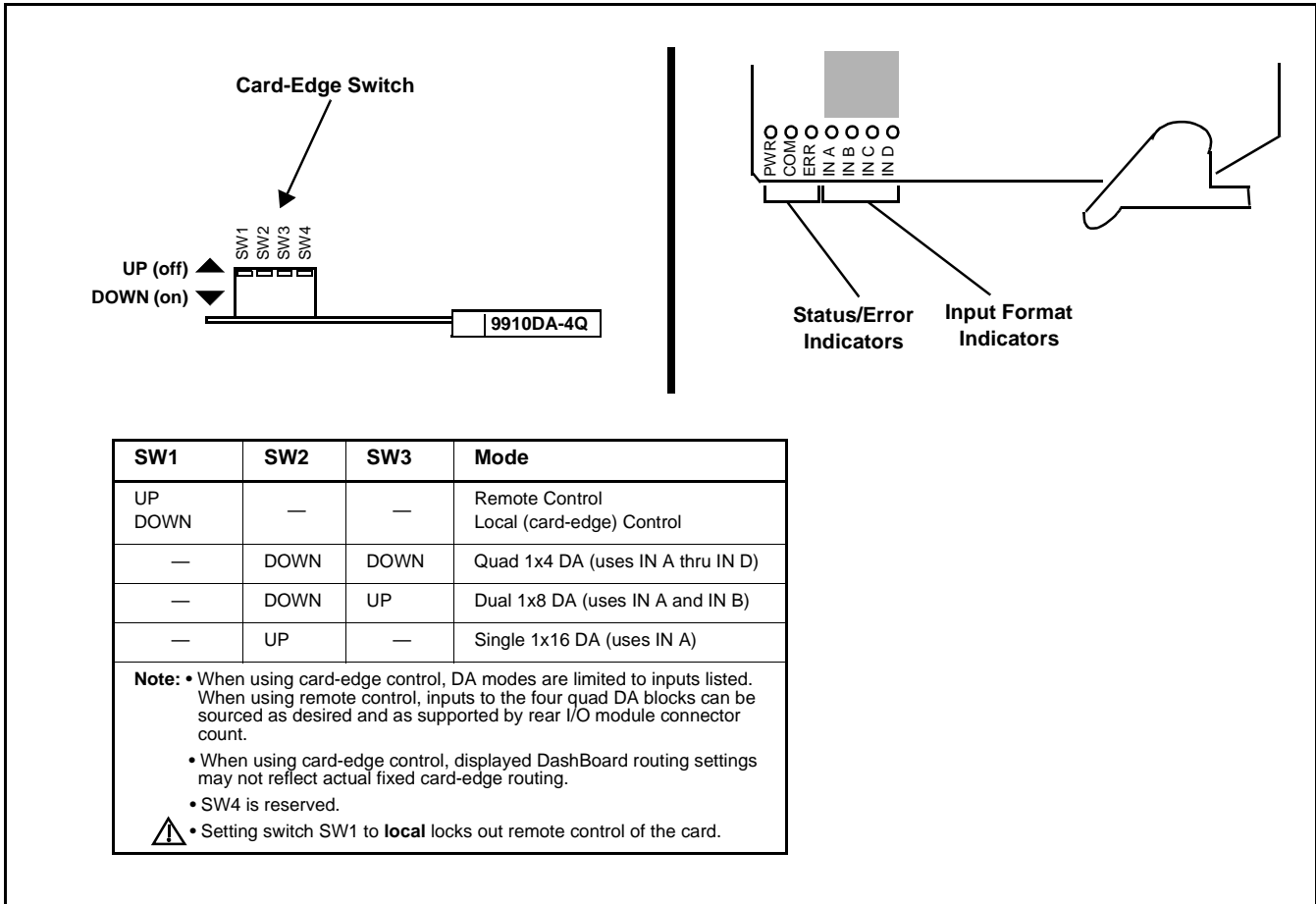







Figure 2-1 9910DA-4Q-3G Card-Edge Switches

Input/Output Routing With Card in Card-Edge (Local) Control Mode

When the 9910DA-4Q-3G is set for card-edge (local) control, only fixed quad 1x4, dual 1x8, and single 1x16 routing is available using dedicated input and output ports. When using any of these fixed modes, the rear I/O module used must be compatible with the mode. (See 9910DA-4Q-3G Rear I/O Modules (p. 2-7) for rear module details.) Figure 2-2 shows the fixed routing available using local control and compatible rear modules.

In card-edge (local) control mode, I/O routing is fixed to certain input and output ports. Also, when a mode is selected that uses less than the four maximum inputs (**SDI IN A** thru **SDI IN D**), only certain inputs are available.

The figure below shows I/O routing for the three fixed card-edge DA modes for various rear modules.

-  **SDI IN A I/O Routing Path**
-  **SDI IN A I/O Routing Path**
-  **SDI IN A I/O Routing Path**
-  **SDI IN A I/O Routing Path**
-  **Not available**

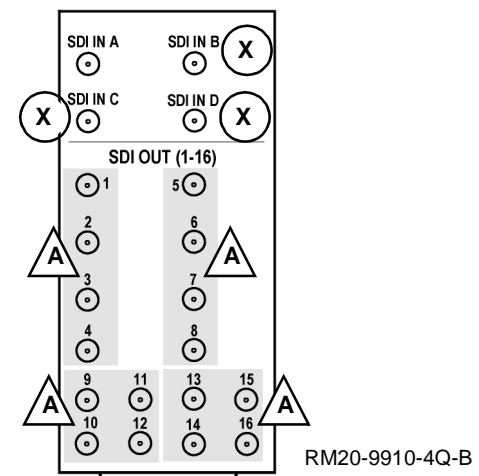
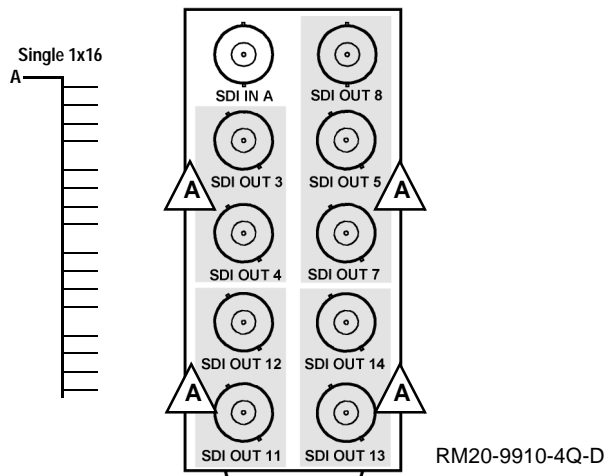
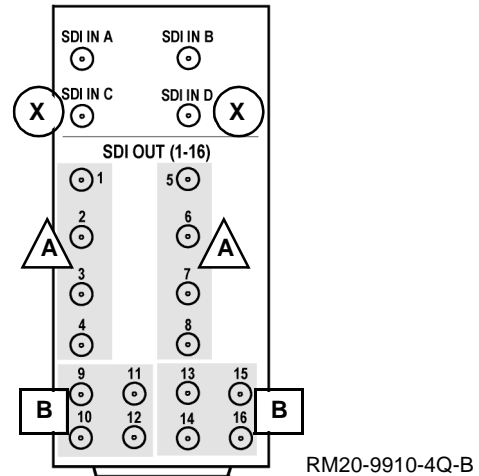
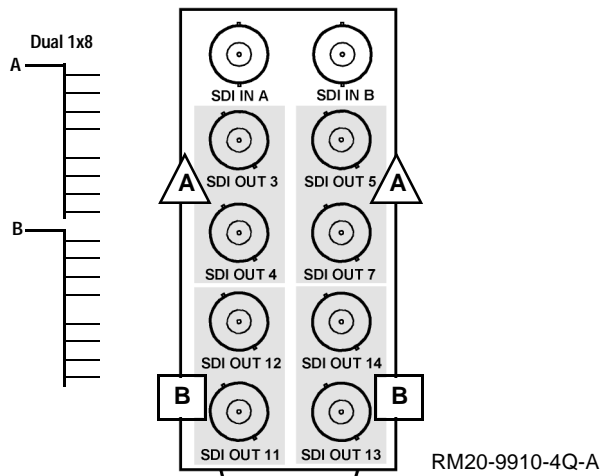
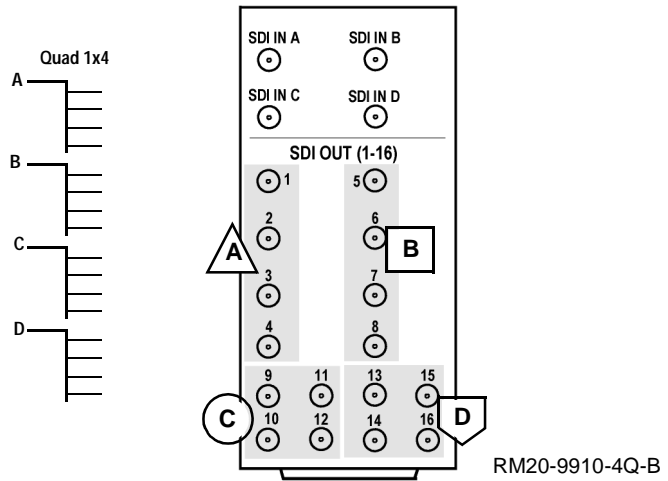


Figure 2-2 Input/Output Routing (Card-Edge (Local) Control Mode)

Installing the 9910DA-4Q-3G 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.

Note: If installing the 9910DA-4Q-3G 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. 2-5) for rear I/O module installation procedure.

CAUTION

If required, make certain Rear I/O Module(s) is installed before installing the 9910DA-4Q-3G 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 9910DA-4Q-3G 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 9910DA-4Q-3G into a frame slot as follows:

1. Determine the slot in which the 9910DA-4Q-3G 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 9910DA-4Q-3G Rear I/O Modules (p. 2-7).
9. Repeat steps 1 through 8 for other 9910DA-4Q-3G cards.

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.

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 9910DA-4Q-3G is to be installed.

If installing the 9910DA-4Q-3G in a slot already equipped with a suitable I/O module, omit this procedure.

Install a Rear I/O Module as follows:

1. On the frame, determine the slot in which the 9910DA-4Q-3G is to be installed.
2. In the mounting area corresponding to the slot location, install Rear I/O Module as shown in Figure 2-3.

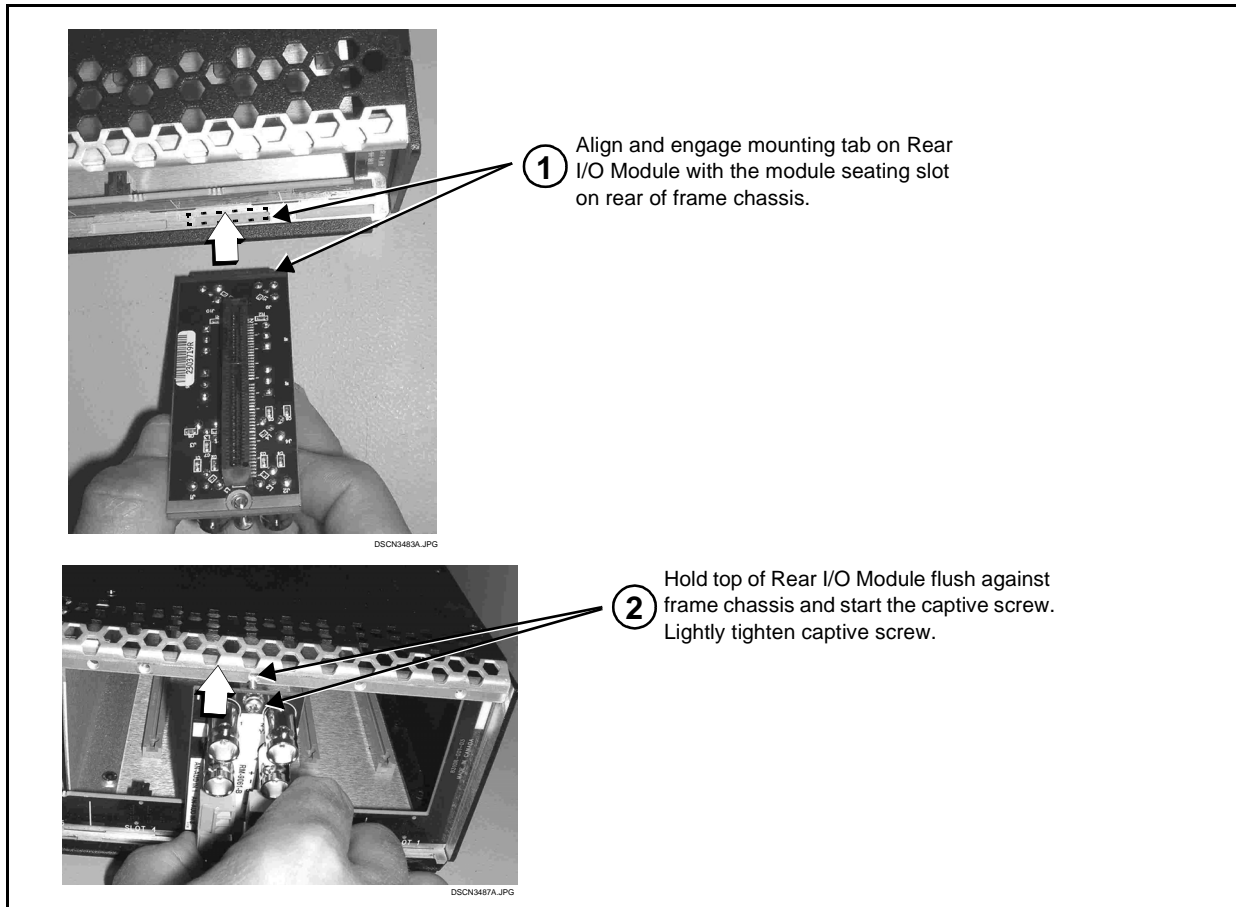


Figure 2-3 Rear I/O Module Installation

9910DA-4Q-3G Rear I/O Modules

Table 2-1 shows and describes the full assortment of Rear I/O Modules specifically for use with the 9910DA-4Q-3G cards.

Table 2-1 9910DA-4Q-3G Rear I/O Modules

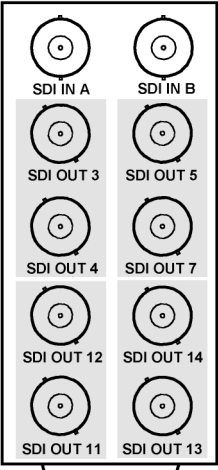
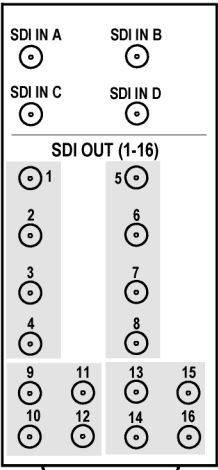
9910DA-4Q-3G Rear I/O Module	Description
<p>Note: Rear I/O Module output designations here correlate to output numbers for four DA quadrants as shown in the card block diagram (for example, SDI OUT 3 in diagrams below is tied to (driven from) DA quadrant “SDI Out (1-4)” in the block diagram; SDI OUT 5 in diagrams below is tied to (driven from) DA quadrant “SDI Out (5-8)” in the block diagram, and so on).</p> <p>As such, SDI outputs within a quadrant group can only be sourced from a particular input at one time (for example, if the card is set to feed SDI IN A to quadrant SDI Out (1-4), the rear module outputs 1 thru 4 will all output SDI IN A). Dissimilar inputs cannot be routed within a quadrant group (for example, SDI OUT 1 sourced from SDI IN A and SDI OUT 2 sourced from SDI IN B).</p>	
<p>RM20-9910-4Q-A</p> <p>Note: When this rear module is used DashBoard or local control should only be set to use SDI IN A and/or SDI IN B. Either of these inputs can be routed to any of the output quadrant groupings shown (grouping shown in shaded areas).</p> <p>When local control instead of DashBoard is used, input routing to output groups on this rear module is fixed.</p> <p>The outputs shown here are all that is available using this rear module, with these outputs being a reduced subset of the maximum 16 available outputs. (For example, this rear module offers a reduced subset of DA quadrant SDI Out (1-4) (shown in the block diagram) consisting of SDI OUT 3 and SDI OUT 4 only.)</p> <p>See Product Manual for more information.</p> 	<p>Provides the following connections:</p> <ul style="list-style-type: none"> • Two SDI/ASI video input BNCs (SDI IN A and SDI IN B) • Eight DA outputs: <ul style="list-style-type: none"> SDI OUT 3 / 4 SDI OUT 5 / 7 SDI OUT 11 / 12 SDI OUT 13 / 14
<p>RM20-9910-4Q-B</p> 	<p>Provides the following connections:</p> <ul style="list-style-type: none"> • Four SDI/ASI video inputs (SDI IN A thru SDI IN D) • 16 DA outputs (SDI OUT 1 thru SDI OUT 16) <p>Note: Available equipped with High-Density BNC (HDBNC) or DIN1.0/2.3 connectors as: RM20-9910-4Q-B-HDBNC or RM20-9910-4Q-B-DIN, respectively.</p>

Table 2-1 9910DA-4Q-3G Rear I/O Modules — continued

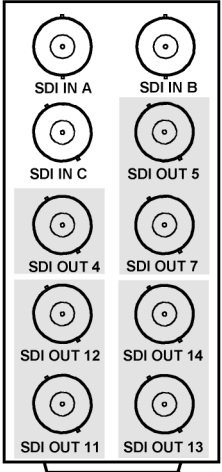
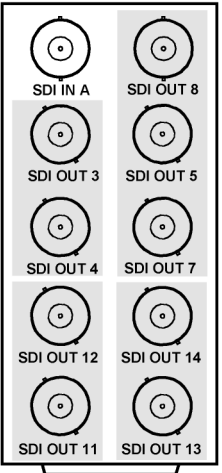
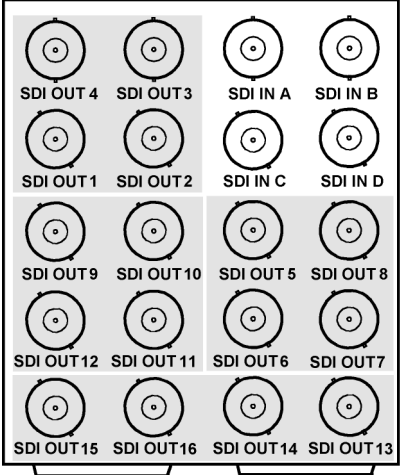

9910DA-4Q-3G Rear I/O Module	Description
<p>RM20-9910-4Q-C</p> <p>Note: When this rear module is used DashBoard or local control should only be set to use SDI IN A, SDI IN B and/or SDI IN C. Any of these inputs can be routed to any of the output quadrant groupings shown (groupings shown in shaded areas).</p> <p>When local control instead of DashBoard is used, input routing to output groups on this rear module is fixed.</p> <p>The outputs shown here are all that is available using this rear module, with these outputs being a reduced subset of the maximum 16 available outputs. (For example, this rear module offers a reduced subset of DA quadrant SDI Out (5-8) (shown in the block diagram) consisting of SDI OUT 5 and SDI OUT 7 only.)</p> <p>See Product Manual for more information.</p> 	<p>Provides the following connections:</p> <ul style="list-style-type: none"> • Three SDI/ASI video inputs (SDI IN A thru SDI IN C) • Seven DA outputs: <ul style="list-style-type: none"> SDI OUT 4 SDI OUT 5 / 7 SDI OUT 11 / 12 SDI OUT 13 / 14
<p>RM20-9910-4Q-D</p> <p>Note: When this rear module is used DashBoard or local control should only be set to use SDI IN A. This input can be routed to any of the output quadrant groupings shown (grouping shown in shaded areas).</p> <p>When local control instead of DashBoard is used, input routing to output groups on this rear module is fixed.</p> <p>The outputs shown here are all that is available using this rear module, with the outputs being a reduced subset of the maximum available 16 outputs. (For example, this rear module offers a reduced subset of DA quadrant SDI Out (1-4) (shown in the block diagram) consisting of SDI OUT 3 and SDI OUT 4 only.)</p> <p>See Product Manual for more information.</p> 	<p>Provides the following connections:</p> <ul style="list-style-type: none"> • One SDI/ASI video inputs (SDI IN A) • Nine DA outputs: <ul style="list-style-type: none"> SDI OUT 3 / 4 SDI OUT 5, / 7 / 8 SDI OUT 11 / 12 SDI OUT 13 / 14

Table 2-1 9910DA-4Q-3G Rear I/O Modules — continued

9910DA-4Q-3G Rear I/O Module	Description
<p>RM20-9910-4Q-E</p> 	<p>Provides the following connections:</p> <ul style="list-style-type: none"> • Four SDI/ASI video inputs (SDI IN A thru SDI IN D) • 16 DA outputs (SDI OUT 1 thru SDI OUT 16)
<div style="display: flex; align-items: center;"> <div style="border: 1px solid black; padding: 10px; margin-right: 20px;">  <p style="text-align: center;">COBALT RM20-9001-B/S-DIN</p> <p style="text-align: center;">**SAMPLE-NOT FOR USE**</p> </div> <div> <p>Due to the density of connector placement on Rear Modules using high-density connectors (e.g., RM20-9001-B/S-DIN), these modules use a QR barcode label instead a regular label. Simply scan the image with a smart phone and a link to the rear module label (as shown in our catalog) will appear. (Smart phone must have a QR reader app such as QuickMark QR Code Reader or equivalent.)</p> <p>Not all devices may be able to acquire the image. If this occurs, use the device to access the web page for card/rear module to view the diagram.</p> </div> </div>	

This page intentionally blank

Operating Instructions

Overview

This chapter contains the following information:

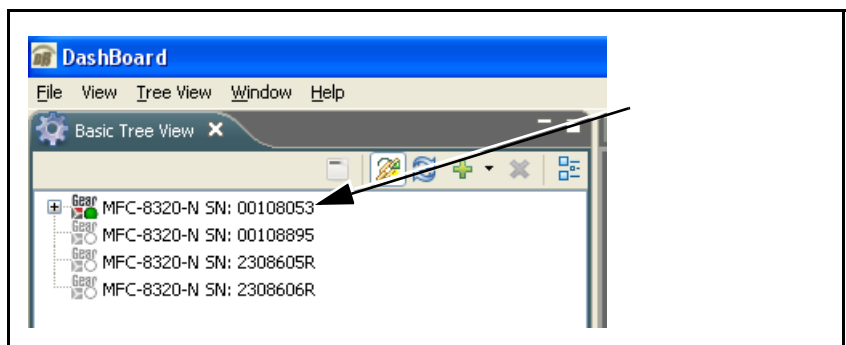
- Accessing the 9910DA-4Q-3G Card via Remote Control (p. 3-1)
- Checking 9910DA-4Q-3G Card Information and Status (p. 3-2)
- Card-Edge Controls and Indicators (p. 3-2)
- Troubleshooting (p. 3-6)

Accessing the 9910DA-4Q-3G Card via Remote Control

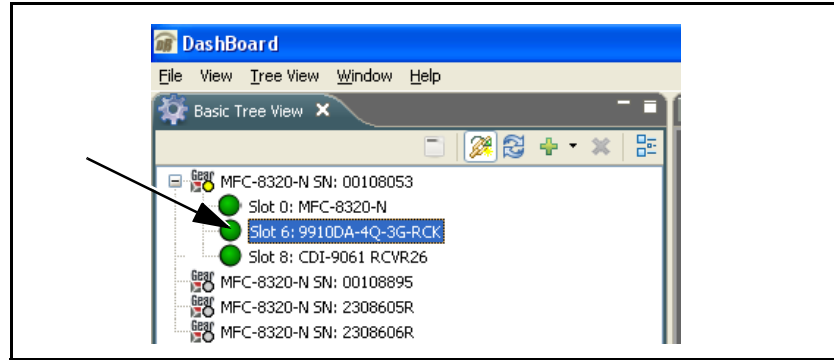
The 9910DA-4Q-3G card can be remote monitored via DashBoard™ or Cobalt® Remote Control Panel. Access the 9910DA-4Q-3G card using DashBoard™ or Cobalt® Remote Control Panel as described below.

Accessing the 9910DA-4Q-3G 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 9910DA-4Q-3G 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: 9910DA-4Q-3G-RCK”).



Checking 9910DA-4Q-3G Card Information and Status

The operating status of the 9910DA-4Q-3G card can be checked using DashBoard™. Figure 3-1 shows and describes the 9910DA-4Q-3G card information screen using DashBoard™.

The **Tree View** shows the cards seen by DashBoard™. In this example, Network Controller Card is hosting a 9910DA-4Q-3G card in slot 6.

Card Status/Info Display
This displays shows the 9910DA-4Q-3G operating status.

The Product Info sub-tab shows product identification and version, as well as power/temperature details and Cobalt mfg PN of the currently-installed rear module and compatibility of the rear module with this card (with green indicating a compatible rear module).

Figure 3-1 9910DA-4Q-3G Card Info/Status Utility

Card-Edge Controls and Indicators

If card edge control is to be used for card DA mode, refer to Card-Edge Switches and Monitoring (p. 2-1) in Installation and Setup, Chapter 2.

9910DA-4Q-3G Function Menu List and Descriptions

Table 3-1 individually lists and describes each 9910-DA-4Q-3G function menu and its related list selections, controls, and parameters. Where helpful, examples showing usage of a function are also provided. Table 3-1 is primarily based upon using DashBoard™ to access each function and its corresponding menus and parameters.

Table 3-1 9910-DA-4Q-3G Function Menu List

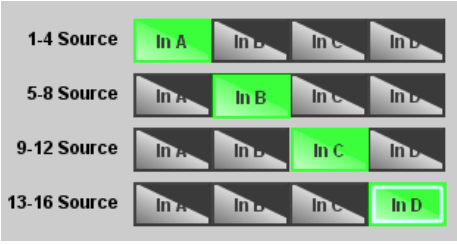
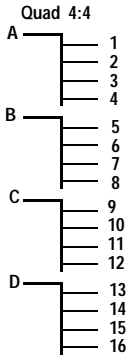
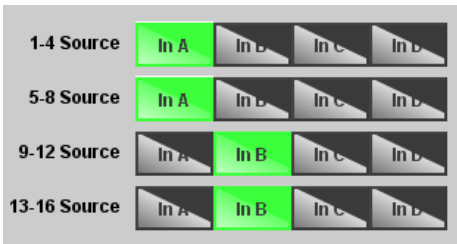
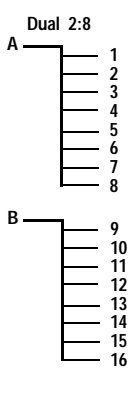
<div style="text-align: center; background-color: #333; color: white; padding: 5px; border: 1px solid black;"> <h3>Output Source</h3> </div>	<p>Provides card input-to-output crosspoint routing matrix controls and input failover selection.</p>
<p>• Output Source Select</p> 	<p>Selects the input routing for each of the four 4x DA output quadrants. Shown below are common muxing schemes, but any of the four 4x DA output quadrants can be sourced from any of the four card inputs.</p> <ul style="list-style-type: none"> • Settings shown here provides quad 4x4 DA function. 
	<ul style="list-style-type: none"> • Settings shown here provides dual 2x8 DA function. 

Table 3-1 9910-DA-4Q-3G Function Menu List — continued

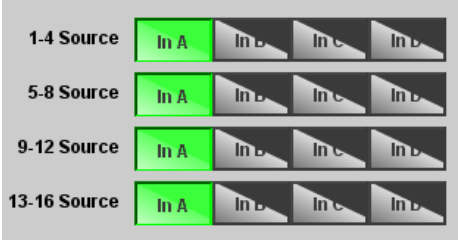
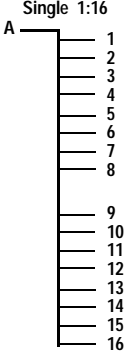
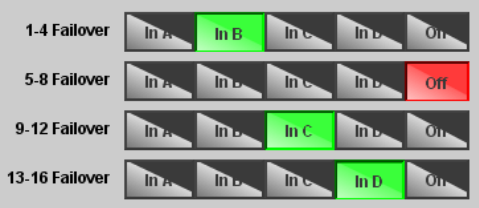
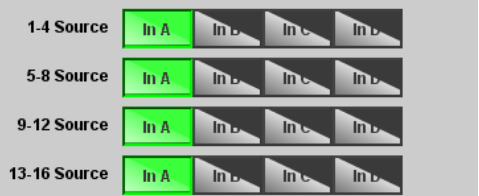
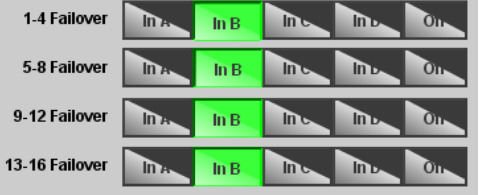
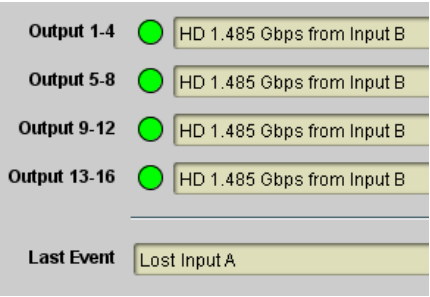

<div style="background-color: #333; color: white; padding: 5px; text-align: center; font-weight: bold;">Output Source</div>	(continued)
<p>• Output Source Select (cont.)</p> 	<p>• Settings shown here provides single 1x16 DA function.</p> 
<p>• Failover Select and Status</p> 	<p>Selects an alternate failover input source for each of the four DA quadrant. If failover is not desired for a particular quadrant, the quadrant can be set to Off (as shown in this example for the 5-8 quadrant).</p>
 	<p>Shown in this example, the card is set as a single 1:16 DA using primary source In A with failover to In B selected as the failover for all outputs.</p>
	<p>If a failover is in effect, the failover sourcing is shown on the card Status page (as shown in this example of all outputs now being sourced from Input B instead of Input A and a Last Event of "Lost Input A").</p>

Table 3-1 9910-DA-4Q-3G Function Menu List — continued

<div style="background-color: #333; color: white; padding: 5px; text-align: center; font-weight: bold;">Reclock Output</div>	<p>(9910DA-4Q-3G-RCK only) Provides reclock enable/disable for each of the four DA quadrants.</p>																				
<p>• Reclock Enable/Disable</p> <div style="border: 1px solid #ccc; padding: 5px; background-color: #f0f0f0;"> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Reclock 1-4</td> <td style="text-align: center; padding: 2px;"><input type="button" value="Enabled"/></td> </tr> <tr> <td style="padding: 2px;">Reclock 5-8</td> <td style="text-align: center; padding: 2px;"><input type="button" value="Enabled"/></td> </tr> <tr> <td style="padding: 2px;">Reclock 9-12</td> <td style="text-align: center; padding: 2px;"><input type="button" value="Enabled"/></td> </tr> <tr> <td style="padding: 2px;">Reclock 13-16</td> <td style="text-align: center; padding: 2px;"><input type="button" value="Disabled"/></td> </tr> </table> </div>	Reclock 1-4	<input type="button" value="Enabled"/>	Reclock 5-8	<input type="button" value="Enabled"/>	Reclock 9-12	<input type="button" value="Enabled"/>	Reclock 13-16	<input type="button" value="Disabled"/>	<p>Sets reclocking as enabled or disabled for each of the four DA quadrants. In the example here with the card being used as a quad 1x4 DA with an ASI input feeding quadrant 13-16 with other inputs as SDI, Disabled setting for 13-16 accommodates ASI on this path while providing reclocking for the other paths that are passing SDI.</p> <p>Note: Reclocking Enabled provides automatic reclocking that sets reclocking automatically for SMPTE 259M, 292M, and 424M SDI signals. Disable setting forces disable regardless of signal detected.</p> <p> If passing signals such as ASI or MADI, it is recommended to set the path carrying these signal type to Disabled.</p>												
Reclock 1-4	<input type="button" value="Enabled"/>																				
Reclock 5-8	<input type="button" value="Enabled"/>																				
Reclock 9-12	<input type="button" value="Enabled"/>																				
Reclock 13-16	<input type="button" value="Disabled"/>																				
<div style="background-color: #333; color: white; padding: 5px; text-align: center; font-weight: bold;">Presets</div>	<p>Allows user control settings to be saved in a Preset and then recalled (loaded) as desired.</p>																				
<p>• Preset Save/Load Controls</p> <div style="border: 1px solid #ccc; padding: 5px; background-color: #f0f0f0;"> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;"></th> <th style="width: 30%; text-align: center;">Name</th> <th style="width: 15%; text-align: center;">Load</th> <th style="width: 15%; text-align: center;">Save</th> </tr> </thead> <tbody> <tr> <td>Preset 1</td> <td><input type="text" value="Route SDI 1x4"/></td> <td style="text-align: center;"><input type="button" value="Load"/></td> <td style="text-align: center;"><input type="button" value="Save"/></td> </tr> <tr> <td>Preset 2</td> <td><input type="text" value="Route SDI 1-3; 4 ASI"/></td> <td style="text-align: center;"><input type="button" value="Load"/></td> <td style="text-align: center;"><input type="button" value="Save"/></td> </tr> <tr> <td>Preset 3</td> <td><input type="text"/></td> <td style="text-align: center;"><input type="button" value="Load"/></td> <td style="text-align: center;"><input type="button" value="Save"/></td> </tr> <tr> <td>Preset 4</td> <td><input type="text"/></td> <td style="text-align: center;"><input type="button" value="Load"/></td> <td style="text-align: center;"><input type="button" value="Save"/></td> </tr> </tbody> </table> </div>		Name	Load	Save	Preset 1	<input type="text" value="Route SDI 1x4"/>	<input type="button" value="Load"/>	<input type="button" value="Save"/>	Preset 2	<input type="text" value="Route SDI 1-3; 4 ASI"/>	<input type="button" value="Load"/>	<input type="button" value="Save"/>	Preset 3	<input type="text"/>	<input type="button" value="Load"/>	<input type="button" value="Save"/>	Preset 4	<input type="text"/>	<input type="button" value="Load"/>	<input type="button" value="Save"/>	<p>Card Settings > Save button allows all custom user setting configurations to be saved to a Preset.</p> <p>Card Settings > Load button allows the saved preset to be loaded (recalled and applied).</p> <p>In the example here:</p> <ul style="list-style-type: none"> - Preset 1 would be set up to save quad 1x4 routing selection with reclocking enabled for all output quadrants. - Preset 2 would be set up to save quad 1x4 routing selection but in this preset, output quadrant 13-16 is saved with reclocking disabled.
	Name	Load	Save																		
Preset 1	<input type="text" value="Route SDI 1x4"/>	<input type="button" value="Load"/>	<input type="button" value="Save"/>																		
Preset 2	<input type="text" value="Route SDI 1-3; 4 ASI"/>	<input type="button" value="Load"/>	<input type="button" value="Save"/>																		
Preset 3	<input type="text"/>	<input type="button" value="Load"/>	<input type="button" value="Save"/>																		
Preset 4	<input type="text"/>	<input type="button" value="Load"/>	<input type="button" value="Save"/>																		

Troubleshooting

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 3-2 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	<ul style="list-style-type: none"> • On both the frame Network Controller Card and the 9910DA-4Q-3G, 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 9910DA-4Q-3G card. This can be observed using the DashBoard™ Card Info pane. <ul style="list-style-type: none"> • If display shows no power being consumed, either the frame power supply, connections, or the 9910DA-4Q-3G card itself is defective. • If display shows excessive power being consumed (see Technical Specifications (p. 1-6) in Chapter 1, “Introduction”), the 9910DA-4Q-3G card may be defective.
Check Cable connection secureness and connecting points	<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>
Card seating within slots	<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>
Check status indicators and displays	<p>On both DashBoard™ and the 9910DA-4Q-3G 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>
Check card-edge switch settings	<p>Refer to Chapter 2, Setup and Installation. Make certain switches are set for intended control mode (local or remote). If set for local, remote control is locked out.</p>
Troubleshoot by substitution	<p>All cards within the frame can be hot-swapped, replacing a suspect card or module with a known-good item.</p>

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. 1-8) in Chapter 1, “Introduction“ for contact information.

This page intentionally blank



Cobalt Digital Inc.

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