HDCC-GPINHL-OG1

VANC/Audio GPI Cue Inserter/Receiver with CEA-608/708 Monitoring

Configuration Guide Firmware Version: V1.10

Software Version: V0.17

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CHAPTER 1 Getting Started

Introduction

Overview

This chapter describes the basic captioning functions that you can perform using your Wohler HDCC-GPINHL-OG1 (for the Ross DFR-8321 frame).

Goals for This Chapter

\checkmark	Provide a Quick Start process that gives an overview of the
	installation.

- ✓ Identify the HDCC card's connectors.
- ✓ Understand the captioning functions the HDCC card performs.

Topics

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Chapter 1 Getting Started Product Description

Product Description

The HDCC-GPINHL is a versatile card for inserting/receiving GPI cues in the VANC or Audio area of an HD/SD-SDI video stream, as well as monitoring CEA-608/708 captions on the same signal.

You operate the HDCC-GPINHL-OG1 in a Ross[®] openGear[®] DFR-8321 frame. Refer to Chapter 2: Hardware Installation on page 9 for installation instructions.

When operated in the Ross frame, the card is configured and controlled through DashBoard[®] software. Refer to Using DashBoard on page 33 for instructions.

The HDCC-GPINHL-OG1 is a one-channel card; It allows a single HD/SD-SDI stream to pass through.

Figure 1–1 HDCC Card



Quick Start Guides

Figure 1–2 on page 3 illustrates the installation and configuration process for the Ross DFR-8321 frame.



Figure 1–2 Quick Start, Ross DFR-8321 Frame

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Chapter 1 Getting Started I/O Connections

I/O Connections

Front Edge

The HDCC card's front edge has a power LED (lit when power is applied), a USB port, and a USB override switch. There are also status LEDs and an override LED.



Figure 1–3 HDCC Front Edge

HDCC in Ross DFR-8321 Frame

The HDCC-OG1 consists of two main parts: the HDCC board which goes into a DFR-8321 slot, and the OG1 Rear Panel which is attached to the rear of the frame.

Figure 1–4 shows the input and output connectors of the Rear Panel supplied with the 1 HDCC card. The input is **CHA IN** and the output is **CHA OUT**. The monitoring output **CHA MON** provides a duplicate of the regular output to be sent to a monitor for display with burned-in captions.



Figure 1–4 OG1 Rear Panel

Chapter 1 Getting Started Functions

Relay Bypass

To prevent the loss of the broadcast signal in the event of power failure, the input is bypassed via a relay to its output, ensuring the signal will always pass through the card.

Figure 1–5 Relay Bypass - No Power Condition



Functions

GPI Cue Insertion

GPI Cue Insertion is the process of encoding signaling cues in the VANC or Audio Channels area of a video signal based upon inputs provided either by the GPI/O connector J14 or by the Dashboard user interface. Refer to Figure 1–6 on page 7.

These cues can prompt downstream equipment to either take action or to signal operators.

Chapter 1 Getting Started Functions



Connections	
Port	Data
CHA IN	SMPTE HD/SD-SDI video stream
CHA OUT	SMPTE HD/SD-SDI video stream with cues inserted
GPI IN	GPI cues provided via connector J14 or Dashboard user interface

GPI Cue Reception

GPI Cue Reception is the process of decoding signaling cues in the VANC or Audio Channels area of a video signal and outputting them to GPI/O connector J14. Refer to Figure 1–7.



Connections	
Port	Data
CHA IN	SMPTE HD/SD-SDI video stream with GPI cues encoded
СНА ОИТ	SMPTE HD/SD-SDI video stream with GPI cues present (same as CHA IN)
GPI OUT	Voltages corresponding to the state of the cue are presented on connector J14

Chapter 1 Getting Started Functions

Monitoring

The monitoring function allows you to verify the presence of captions on the **SDI** output by showing the captions on the video signal. Connect the **CHA MON** output to an SDI monitor to view the video with captions displayed. Refer to Figure 1–8.



Example: The caption data supplied on **CHA IN** is burned into the video stream and displayed on **CHA MON**.

Connections	
Port	Data
CHA IN	SMPTE HD/SD-SDI video stream with captions
	present.
CHA OUT	SMPTE HD/SD-SDI video stream with closed
	captions present (same as CHA IN).
CHA MON	SMPTE HD/SD-SDID video stream with burned-in
	captions to monitor.

Note: By default, **CHA OUT** is "clean" (no burned-in captions displayed) and **CHA MON** shows the captions "burned" into the video. The HDCC-GPINHL-OG1 can be configured to have both outputs burned-in or both clean, as well.

CHAPTER 2 Hardware Installation

Introduction

Overview

This chapter explains how to install your HDCC card in the Ross DFR-8321 frame.

Goals for This Chapter

- ✓ Install your HDCC card in a Ross DFR-8321.
- ✓ Set SW1 to configure a static IP address or DHCP for your HDCC card.

Topics

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Safety Instructions	10
Unpacking	10
Installing the HDCC in the Ross DFR-8321	11
Rear Panel DIP Switch	14
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Safety Instructions

- 1. Read, keep, and follow all of these instructions; heed all warnings.
- 2. Do not use this equipment near water or expose the equipment to rain or moisture.
- 3. Use only the adaptors specified by the manufacturer.
- 4. Unplug the equipment during lightning storms or when unused for long periods of time.
- 5. Refer all servicing to qualified service personnel. Servicing will be required under all of the following conditions:
 - The equipment has been damaged in any way.
 - Liquid had been spilled or objects have fallen onto the equipment.
 - The equipment has been exposed to rain or moisture.
 - The equipment does not operate normally.
 - The equipment has been dropped.

Unpacking

CAUTION! Static discharge can cause serious damage to sensitive semiconductor devices. Avoid handling the circuit boards in high static environments such as carpeted areas, and when synthetic or wool fiber clothing is worn. Always exercise proper grounding precautions when handling circuit boards.

Unpack each HDCC that you have received from its shipping container and check the contents against the packing list to ensure that all items are included. If any items are missing or damaged, please contact your Wohler sales representative immediately.

Installing the HDCC in the Ross DFR-8321

Requirements

Tools

To install and use the HDCC, you will need a small Phillips screwdriver for attaching the rear panel adaptor to the frame.

Chassis

Ross DFR-8321 openGear frame

Hardware

- HDCC card
- OG1 Rear Panel (single channel)
- Screw
- O-Ring

Chapter 2 Hardware Installation Installing the HDCC in the Ross DFR-8321

Installation

To install the HDCC board and OG1 Rear Panel in the frame, follow the steps below:

- 1. Ensure that the Ross DFR-8321 frame is properly installed.
- 2. Power down the frame.

Important: The OG1 requires two slots of the Ross DFR-8321 chassis.

3. Insert the screw into the two corner hole of the rear panel. Refer to Figure 2–1.

Figure 2–1

OG1 Rear Panel

Insert screw here.



4. After you have inserted the screw into the OG Rear Panel, place the O-ring on the screw. The O-ring will keep the screw from falling out during installation.

Important: The HDCC's IP address is determined by dip switch SW1 on the inner surface of the rear panel. You may want to set the switch positions on SW1 before installing the adapter in the frame. If so, skip ahead to Rear Panel DIP Switch on page 14, then come back here to finish the installation.

5. With the rear of the frame facing you, insert the rear panel into the base slot and tighten the top screw. Refer to Figure 2–2.

Figure 2–2 Rear Panel Installed



- 6. With the front of the frame facing you, press inward on both tabs to disengage the front panel from the chassis and pull the front panel towards you and then down.
- 7. Insert the card so that the ejector is at the bottom (Figure 2–3 on page 14) and then close the front panel.
 - **Note:** You can install the HDCC-OG1 card into any odd numbered slot. Again refer to Figure 2–3 on page 14.

Chapter 2 Hardware Installation Rear Panel DIP Switch

Figure 2–3 Install in DFR-8321 Frame



Note: Ensure that **SW3** is in the **Off** position.

Rear Panel DIP Switch

The Rear Panel has a miniature DIP switch, SW1, that sets the IP address of the card. SW1 is a slider-type DIP switch and is on the inside surface of the board.

Position 1 is set to **Off** at the factory so that the card's IP address will be based on the previously stored configuration (by default, to use DHCP network settings). If Position 1 is **On**, the static IP address set by Position 2 will apply.

Position	Off	On	Default
1	Use internal settings for IP address.	Use static IP address determined by position 2.	Off
2	Static IP= 10.2.1.4	Static IP= 192.168.2.4	Off
3	Normal boot.	Execute boot loader.	Off
4	Not Used.		

Table 2–1Rear Panel DIP Switch PositionFunctionality

Important:	Position 3 should always be Off	
------------	---------------------------------	--

Important: If you're using the default static IP address, be aware that because the static IP addresses defined by the switch are *always* the same, no more than one HDCC card can be connected to the network **until** you change the card's (or frame's) TCP/IP settings (see next chapter).

Important: If you are setting up more than one HDCC card, you may need to clear your computer's ARP cache (that identifies which Ethernet MAC addresses are associated with which IP addresses) after you connect each HDCC card. Otherwise, you may be unable to connect because your cache contains outdated information.

To clear the cache, open a Windows command prompt and type: arp -d *

Next Steps

- 1. Connect the SDI, serial, and Ethernet cables as needed.
- 2. Set up virtual serial ports (VSPs) if needed. Refer to next chapter.

Chapter 2 Hardware Installation Next Steps

Important:	This concludes the procedure for installing the HDCC card and its rear panel.
	If you want to configure your Ethernet port to support serial communications, continue on to Chapter 3: TCP/IP Configuration and Virtual Serial Ports (VSPs) on page 17.

CHAPTER 3 TCP/IP Configuration and Virtual Serial Ports (VSPs)

Introduction

Overview

This chapter describes how to configure your HDCC card for use on a TCP/IP network and how to install virtual serial ports (VSPs) to communicate with you HDCC card.

Note: Unless there is a need to access the terminal with a virtual serial port, this chapter may be skipped. Refer to Chapter 6: Terminal.

Goals for This Chapter

✓	Configure your HDCC card's TCP/IP settings.	
\checkmark	Create Virtual Serial Ports (VSPs) to provide serial port-like	

 Create Virtual Serial Ports (VSPs) to provide serial port-like access to your HDCC card.

Topics

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Chapter 3 TCP/IP Configuration and Virtual Serial Ports (VSPs) Functional Overview

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Functional Overview

Virtual Serial Ports (VSPs) on the HDCC

Caption data is supplied to and received from the HDCC via serial ports. In addition to the RS-232 port (J14 on the rear panel) serial data is also accessible over the Ethernet port using virtual serial ports. The HDCC provides two virtual serial ports as shown in Figure 3–1 below.

Figure 3–1 HDCC to PC Connectivity



Figure 3–1 above provides a functional overview of the virtual serial port configuration. You can use third party software (link provided below) to create a virtual serial port which will transfer serial data to and from the HDCC over Ethernet. From the PC user's perspective, the virtual serial ports are indistinguishable from the hardware serial ports.

Once the virtual serial ports are operational, you can change the HDCC settings through DashBoard to control how these serial ports are routed to the captioning system.

Required Information

To set up a virtual serial port (VSP) you must know the HDCC card's IP address and telnet port numbers. Once you have this information, the serial port redirector software can be configured.

Chapter 3 TCP/IP Configuration and Virtual Serial Ports (VSPs) Finding the HDCC on the Network

Finding the HDCC on the Network

The HDCC card is factory set for **DHCP/AutoIP**. If you connect the HDCC card to a network with a DHCP server, the HDCC card's IP address will be assigned automatically. If you are using a Windowsbased computer you will be able to see the card in **My Network Places** as shown in Figure 3–2 below.

Figure 3–2 HDCC Shown in My Network Places



Note: The default IP address can be set by SW1. See the previous chapter

Assigning a Static IP Address/Enabling DHCP

Double-clicking on the Wohler Serial-Ethernet Bridge (see Figure 3–2 above) will open a web browser and take you the card's configuration page where you can set a static IP address, if desired.

Chapter 3 TCP/IP Configuration and Virtual Serial Ports (VSPs) Assigning a Static IP Address/Enabling DHCP

You can also reach the HDCC card configuration screen through a web browser by entering the IP address in the address bar. Refer to Figure 3–3 on page 20.

Important: The HDCC uses telnet ports 23 and 26 for Eth VSP1 and VSP2 respectively. We **highly** recommend that you do not change these port numbers. All subsequent instructions depend on these port values.

Figure 3–3 HDCC Configuration Page

Wohler HDCC-0	G1 - Windows Internet Explorer			
	ttp://192.168.1.82/	× 12	Bing	- 0
Eile Edit ⊻iew f	Favorites <u>T</u> ools <u>H</u> elp			
🚖 Favorites 🛛 🚔	😡 Suggested Sites 🔹 🙋 Get More Ad	ld-ons *		
🖉 Wohler HDCC-OG1	1		🖄 🔹 🖾 🕘 🖶 👘 🔹 Bage 🔹 Safety 🔹	T <u>o</u> ols + 🔞 +
	Vohier [®]		Wohler HDC	C-0G1
	Status & Config	guration		
Home	Name	Wohler HDCC-OG2		
Settings	Firmware Revision	8049		
	IP Address	192,168,1,82		
Update	MAC Address:	b4-ed-54-cc-00-02		
	Current port setting	5:		
		Port 0	Port 1	
	Baud Rate:	115200 bits/second	115200 bits/second	
	Data Size:	8 bits/character	8 bits/character	
	Parity	None	None	
	Stop Bits:	1 bit(s)	1 bit(s)	
	Telnet Port Number.	23	26	
	Copyright © 20 Copyright © 2009-20	11 Wohler Technologies, In 11 Texas Instruments Incom	c. All rights reserved. porated, All rights reserved.	
			🕑 Internet 🥠 🗸	🔍 100% 🔻

- 1. Click **Settings** on the left hand side of the screen (Figure 3–3 above).
- 2. When the **Settings** screen appears (Figure 3–4 on page 21) click the drop down in **Address Type** to change it to **Static IP** or **DHCP/AutoIP**. If you're using DHCP, skip to Set 6. Otherwise, continue to Step 3.
- 3. Enter the new **Static IP Address** for your network provided by your network administrator.
- 4. If needed, enter a different **Subnet Mask** (Figure 3–4 on page 21).

Chapter 3 TCP/IP Configuration and Virtual Serial Ports (VSPs) Assigning a Static IP Address/Enabling DHCP

5. If your network administrator provides you with a **Default Gateway**, enter that, too.

	Settings	
Home Settings Firmware Update	Name:Wohler HDCC-OG2Firmware Revision:8049IP Address:192.168.1.82MAC Address:b4-ed-54-cc-00-02	
	IP Address Selection	
	Static IP Address: 192 . 1	68 . 1 . 162
	Subnet Mask: 255 . 2	55 . 255 . 0
	Default Gateway.	
	General Configuration Settings	a sewings
	Module Name: Wohler HDCC-00	G2
	UPnP port number: 6432	e Settings
	Restore Factory Defaults	
	Restore all options to their fa	ctory default states: Restore Defaults

Figure 3–4 Settings Menu

WARNING! Verify that all information is correct for your network. The HDCC card will become unreachable on your network if the wrong information is set.If this occurs consult your IT department for assistance. You can set the

If this occurs consult your IT department for assistance. You can set the card to a known static IP address using the DIP switch on the rear panel. See Rear Panel DIP Switch on page 14 for details.

6. Once the information is accurate, click on the **Update Settings** button in the **IP Address Selection** section.

Chapter 3 TCP/IP Configuration and Virtual Serial Ports (VSPs) Assigning a Static IP Address/Enabling DHCP

Figure 3–5 IP Address Change

🖉 Wohler HDCC-OG1 - Windows Internet Explorer	
🕞 💽 🔻 🙋 http://192.168.1.82/	🔽 🗟 😽 🗙 🔽 Bing
Eile Edit View Favorites Iools Help	
🖕 Favorites 🛛 🙀 🌄 Suggested Sites 🔹 🔊 Get More Add-ons 🝷	
Wohler HDCC-OG1	🟠 🛪 🖾 - 🖃 🖶 🛪 <u>P</u> age + Safety + T <u>o</u> ols + 🔞 +
Wohler	Wohler HDCC-OG1
IP Address Change	
	Name: Wohler HDCC-OG2
Firr	nware Revision: 8049
	MAC Address: b4-ed-54-cc-00-02
The IP Address of this module is all current address. Please wait a few address.	out to change, making this configuration page inaccessible at the seconds then load the configuration page at the newly assigned web
The newly assigned address may b is enabled) or using the "LM S2E C	e determined using Windows "My Network Places" (if UPnP support configuration" application.
Copyright © 2011 Wohl Copyright © 2009-2011 Texas	er Technologies, Inc. All rights reserved. Instruments Incorporated. All rights reserved.
DDE	Internet

- 7. Close this window (Figure 3–5 above).
- 8. Set **SW1** Position 1 so that the card will use the TCP/IP configuration you just set.
- 9. Power cycle the card.

```
Important: If SW1 Position 1 is set to On, the card will continue to use its default static IP address.
```

Creating VSPs with the Lantronix Redirector

The Lantronix Redirector software allows you to create VSPs quickly and easily.

Important: If you are using Microsoft Windows 7 or 8, this software will not work
for you. Instead, refer to Creating VSPs with later versions of
Windows.

Software Installation

	1. Launch your web browser and navigate to http:// ltxfaq.custhelp.com/app/answers/detail/a_id/928.
Important:	Download only the legacy version 3.1.0.4. Do not use a more recent version. None of them will connect to the card's Ethernet interface.

2. Scroll to the bottom of the page and click on the **http** link for the **Redirector**.

Figure 3–6 Redirector Download Location

If you need to control hardware handshaking lines directly on an MSS, ETS or SCSx00 product, the original Redirector is still available at the links below. These products use a proprietary protocol to control HW handshaking signals instead of TruPort Technology (RFC2217). Click one of the links below to download the **v3.1.0.4** Redirector:

	Download via FTP	Download via HTTP	Comment
Redirector	ftp	http	
Release Notes	ftp	http	Right-click and choose "Save Target As"

Download the Redirector.

3. Once the file is downloaded, double-click **red32.bit.exe** to install.

Figure 3–7 Open File - Security Warning

Open File - Security Warning	
The po run thi	ublisher could not be verified. Are you sure you want to is software?
	Name: red32bit.exe
	Publisher: Unknown Publisher
	Type: Application
	From: C:\Documents and Settings\sscott\My Documents\
	<u>R</u> un Cancel
Always ask before opening this file	
8	This file does not have a valid digital signature that verifies its publisher. You should only run software from publishers you trust. <u>How can I decide what software to run?</u>

4. When the initial installation screen displays (Figure 3–7 above) click **Run**.

Figure 3-8Lantronix Welcome Screen



5. When the **Welcome** screen displays (Figure 3–8 above) click **Next**.

Figure 3–9 InstallShield

InstallS	hield Wizard	
Redirector Setup is preparing the InstallShield® Wizard, which will guide you through the rest of the setup process. Please wait.		
	Cancel	

6. The **InstallShield** screen will quickly display and then return you to the Welcome screen. Click **Next** again.

Figure 3–10 Choose Destination Location

InstallShield Wizard	
Choose Destination Location Select folder where Setup will install files.	
Setup will install Lantronix Redirector in the following folder.	
To install to this folder, click Next. To install to a different folder, click Browse and se another folder.	lect
Destination Folder	
C:\Program Files\Lantronix\Redirector	wse
InstallShield	
< <u>B</u> ack (<u>Next</u> >)	Cancel

7. When the **Choose Destination Location** screen displays, accept the default and click **Next**.

The **Setup Status** screen (Figure 3–11 on page 26) will display and quickly complete the file installation.

InstallShield Wizard	
Setup Status	
Lantronix Redirector Setup is performing the requested operations.	
Installing:	
58%	
InstallShield	
Cano	cel

8. Before the wizard completes, take a moment to close all other applications on your PC before the system restarts your computer.

InstallShield Wizard	
	InstallShield Wizard Complete Lantronix Redirector Yes, I want to restart my computer now No, I will restart my computer later. After your computer reboots, start the Lantronix Redirector Config Help file from the Start menu, which will explain how to set up the redirector.
	< Back Finish Cancel

Figure 3–12 Wizard Complete

9. When the **InstallShield Wizard Complete** screen displays, verify that **Yes**,... is selected, and click **Finish**. The system will restart.

VSP Configuration

Now that the software is installed, you can set up VSPs.

1. After your computer reboots, launch the Lantronix Redirector by clicking the **Start** menu ⇔ **Programs** ⇔ **Lantronix** ⇒ **Redirector** ⇒ **Configuration**.

🐏 Lantronix Rec	director Configura	tion				
	Port Configuration					
Advanced	Redirect	COM3 To:				Move Up
Com Setup						Move Down
						hove bo <u>m</u> i
<u>5</u> ilent Mode						
		Port Settings Web (Configuration			<u>R</u> emove
L						
Status: Idle						
0	Disconnect	Help	Save	<u>C</u> lose		
Devices						
Search	Timeout: 1 s	econds				
(*=unreachable)					1	
* Device Name	Seria	Port Name	IP Address	TCP Port	MAC Address	Device Type
	1		1	1	1	

Figure 3–13 Lantronix Redirector Configuration

- **Important:** Each HDCC has provision for two virtual serial ports; each MC-1RU frame therefore has provision for four virtual serial ports (two HDCC cards times two VSPs per card). For each HDCC card, you will perform Steps 2 through 12 twice: once for VSP#1 and again for VSP#2.
 - 2. Click **Com Setup** on the left side of the screen.

Figure 3–14 Com Setup

1	Com Setup			
	Redirected Por	ts		
	Com1	Com11	Com21	
	Com2	Com12	Com22	
	Com3	Com13	Com23	ок
	Com4	Com14	Com24	
	Com5	Com15	Com25	Cancel
	Com6	Com16	Com26	
	Com7	Com17	Com27	
	Com8	Com18	Com28	
	🔽 Com9	Com19	Com29	
	Com10	Com20	Com30	
	<		>	

- 3. Assign an available **Com** port (in our example Com9 is selected) and click **OK**.
- 4. Click **Add IP** on the right side of the screen.

Figure 3–15 Wizard Complete

IP Service Setup
Host: TCPPort:
OK Cancel

- 5. In the **Host** field (Figure 3–15 above) enter the IP address of your HDCC card. (Use **My Network Places** to rediscover it if necessary.)
- 6. In the **TCPPort** field (Figure 3–15 above) enter the telnet port number and click **OK**.
- 7. For VSP#1, this will be 23. For VSP#2 this will be 26.
- 8. Click **Port Settings**.

Figure 3–16 Port Settings

Port Settings	X		
Timeout Reconnect	Force v2 Protocol		
🔲 Server Reconnect	🔲 No Net Close		
🦵 Inband Listen	Raw Mode		
7 📩 Connection Timeout	0 Reconnect Limit		
OK Can	cel <u>H</u> elp		

9. Check **Raw Mode** (Figure 3–16 above) and click **OK**.

Important: The virtual serial port will not function unless Raw Mode is enabled

10. Click **Advanced** at the top left corner of the application window.

Figure 3-17Advanced Settings

Advanced Settings	
TCP KeepAlive (ms): 7200000 I✓ Run as service	milliseconds
[OK]	Cancel

11. When the Advanced Settings dialog appears (Figure 3–17 above) check the **Run as service** box and click **OK**.

Figure 3–18 Service Installation

Servi	ce Installation	$\mathbf{\times}$
Com	Port Redirector insta	alled
	ОК	

12. When the **Service Installation** (Figure 3–18 above) dialog appears, click **OK**.

Config Info

Figure 3–19

Config	nfo 👂	<
Ų,	Reboot for changes to take affec	t
	CK I	

- 13. When the **Config Info** dialog displays (Figure 3–19 above) click **OK**.
- 14. When the application window reappears, click **Close** near the center of the screen.

Figure 3–20

Com Redirector Setup



15. When the **Com Redirector Setup** dialog appears (Figure 3–20) click **Yes**.

Figure 3–21

Config Info



- 16. When the **Config Info** dialog displays (Figure 3–21 above) click **OK**.
- 17. Reboot the computer to enable the VSPs. You should now have two available COM ports that will serve as serial connections to the HDCC card.
Chapter 3 TCP/IP Configuration and Virtual Serial Ports (VSPs) Creating VSPs with the Later Versions of Windows

Creating VSPs with the Later Versions of Windows

Windows 7 or 8 users need to install an alternative COM port redirector. There are many freeware/shareware possibilities, but Tactical Software's Serial/IP COM Port Redirector has been used successfully with both Windows 7 and 8.

The product description can be found at: http:// www.tacticalsoftware.com/products/serialip/index.html.

The software is not free (a two port license costs \$150.00), but Tactical Software offers a free downloadable 30-day trial

Figure 3–22 Tactical Serial/IP Control Panel

192.168.1.98 c ad Copy S	23
s ud Copy S	
ard Copy S	
	Settings To
nt 📔	. Y
ding	
in .	
-	
	*
	<u> </u>
13	<u></u>
pe	
ections	
	ding on pe vections

With the software, you can configure two virtual COM ports. Both muse use the IP address of the card, port 23 should be used for Eth1, and port 26 for Eth2.

Important: Raw TCP connection must be selected or the VSP will not operate.

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CHAPTER 4 Using DashBoard

Introduction

Overview

This chapter explains how to use the DashBoard Control System[™] (the PC graphic user interface, from here on referred to as *DashBoard*) to configure your HDCC card.

Topics

Topics	Page
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Starting DashBoard	34
Configuring the Channel	37
Common Controls	36
The Setup Tab	42

Starting DashBoard

The operations of the HDCC card are controlled by the settings of internal registers, which are easily and intuitively configured with DashBoard.

- 1. Make sure your openGear[™] frame is installed, the HDCC card is installed within it, and DashBoard has been installed on a PC that is networked to the frame (see the Installation Guide).
- 2. Power up the frame to initialize the HDCC card's interface.

Important: Depending on the frame contents, the card may take several minutes to be ready.

- 3. Open the DashBoard application by double-clicking the desktop icon or selecting it from the Start menu.
- 4. When the application opens, it will discover any openGear frames on the network and display them in the left side window of the main screen (Figure 4–1 below) the DashBoard tree. Clicking on the frame's entry in this window will show cards that are installed within it.



DashBoard Tree



Frame 50084695003 - Slot 0 - MFC-8320-S Frame 50084695003 - Slot 11 - HDCC-X708WS Slot 15: WTLGPINHL1 (GPINHL1) Card state: OK Connection: ONLINE Product Product SD VANC Line for GPI Data, HD VANC Line for GPI Data,	F-062 (X708WST) (not connected) ChA SMPTE 296M 1280x720p 6C ChA Locked	Frame 50084895003 - Stot 15 - WTI-GPINHL: Video Input	Current User: (none)
Frame 50084695003 - Stot 0 - MFC-8320-S Frame 50084695003 - Stot 11 - HDCC-X708WS Stot 15: WTI-GPINHL 1 (GPINHL 1) Card state: OK Connection: OK Connection: ONLINE Input Video Format, Lock Status, SD VANC Line for GPI Data, HD VANC Line for GPI Data,	F-0.G.2 (x708WST) (not connected) ChA SMPTE 296M 1280x720p 6C ChA Locked	Frame 50084695003 - Stot 15 - WTI-OPINHL: Video Input	1 (GPINHL1) ×
Slot 15: WTI-GPINHL 1 (GPINHL 1) Card state: OK Connection: ONLINE Product SD VANC Line for GPI Data, HD VANC Line for GPI Data,	ChA (SMPTE 296M 1280x720p 6C ChA (Locked	Video Input OHz	<u> </u>
Card state: OK Connection: ONLINE Input Video Format, Lock Status, SD VANC Line for GPI Data, HD VANC Line for GPI Data,	ChA SMPTE 296M 1280x720p 60 ChA Locked	Video Input OHz	
Connection: ONLINE Input Video Format, Product Status, SD VANC Line for GPI Data, HD VANC Line for GPI Data,	ChA SMPTE 296M 1280x720p 60 ChA Locked	OHz	
Product Lock Status, SD VANC Line for GPI Data, HD VANC Line for GPI Data,	ChA Locked		
Product SD VANC Line for GPI Data, HD VANC Line for GPI Data,			
SD VANC Line for GPI Data, HD VANC Line for GPI Data,		Video Lines	
HD VANC Line for GPI Data,	ChA 13		
	ChA 13		
		Video Output Control	
Video Outputs,	ChA 😝 Normal	C Both Clean C Both	n Monitoring
Supplier Name WOHLER Technologies, INC,		GPI-in-VANC/Audio	
Product Type Name WTI-GPINHL1 Decoder GP Cue Source,	ChA 🔿 VANC	\Theta Audio Channels	
Serial Number 137780 Encode, VANC GPI Cue,	ChA 🔲		
Encode, Audio GPI Cue,	ChA 🔽		
Captioning Standard EIA-608/708 Audio Channel Pair for GPI Cues,	ChA 4	~	
GPI Cue Polarity,	ChA 🚱 Normal	○ Inverted	
Software Version 848243 v0.17		Software GPI Control	
FPGA Version 840083 v01.10 Software GPI 1,	ChA 🕅		
Software GPI 2,	ChA 🔲		
Software GPI 3,	ChA 🦳		
Software 6DI A	ChA		
Transmitted Cue (Soft/Phy) Polarity,	ChA 🤤 Normal	○ Inverted	
Transmitted Cue Source,	ChA 😡 Use Hardware GPI Inpu	uts 🔿 Use Software GPI Inpu	ıts
		VANC GPI Rx Control	
GPI Rx1 Polarity,	ChA \varTheta Normal (Active Low)	C Inverted (Active High)	~
Refresh	and a second		

Figure 4–2

DashBoard Main Screen (Top)

- **Note:** The Wohler HDCC-GPINHL-OG1 card will appear as **WTI-GPINHL1 (GPINHL1)** in the list of cards installed in the frame.
- 5. Double-click on the HDCC card in the list of cards and the user interface will appear in the main screen.
- **Important:** If the user interface does not immediately appear after double-clicking on the card's icon, the card may still be initializing. When controls respond to user input, the user interface is ready.
 - 6. If everything is in order, the **Card state** and **Connection** indicators in the left frame of the window will be green and product information will appear in the Product submenu (see Figure 4–3 below).

Chapter 4 Using DashBoard **Common Controls**

Figure 4–3 Center Pane

Card state: OK Connection: ONLI	NE
Product	
Supplier Name	WOHLER Technologies, INC.
Product Type Name	WTI-GPINHL1
Serial Number	137780
Captioning Standard	EIA-608/708
Functionality	Encoder/Decoder/VANC+Audio GPI
Software Version	848243 v0.17
FPGA Version	840083 v01.10

Figure 4–3 above shows some product details about the HDCC that may be helpful at a future date, including the software and FPGA firmware part numbers and revisions.

Since you have a single channel card, you'll only see **Channel 1**. The next section discusses how to configure the channel. The **Setup** menu allows you to configure the routing of the HDCC's serial ports and is discussed in a later section.

Common Controls

At the bottom of the screen (no matter which tab is selected) you can perform three systemic functions.

- **Upload**: Not currently used. •
- **Refresh**: Clicking this button causes the card to re-query all the settings. A screen indicating that the card is busy will appear while the system is refreshing.
- **Reboot**: Clicking this button causes the card to reboot. A screen • indicating that the card is busy will appear while the system is rebooting.

Configuring the Channel

Click the channel tab in DashBoard and change the settings in the Channel A submenu (see Figure 4–4 below) to customize your configuration.

		204600 LOD 10	
		Video Input	
Input Video Format, ChA	SMPTE 296M 1280x720	ip 60Hz	
Lock Status, ChA	Locked		
		Video Lines	
SD VANC Line for GPI Data, ChA	13		
HD VANC Line for GPI Data, ChA	13		
		Video Output Cont	rol
Video Outputs, ChA	le Normal	O Both Clean	C Both Monitoring
		GPI-in-VANC/Audi	0
Decoder GP Cue Source, ChA	O VANC	\varTheta Au	dio Channels
Encode, VANC GPI Cue, ChA			
Encode, Audio GPI Cue, ChA			
Audio Channel Pair for GPI Cues, ChA	4	~	
GPI Cue Polarity, ChA	\Theta Normal	O Inv	erted
	£	Software GPI Cont	rol
Software GPI 1, ChA			
Software GPI 2, ChA			
Software GPI 3, ChA			
Software GPI 4, ChA			
	Normal	⊖ im	erted
ransmitted Cue (Soft/Phy) Polarity, ChA	le normai		ortou

Figure 4–4 Channel A (Top)

Chapter 4 Using DashBoard Configuring the Channel

Figure 4–5



Channel A Setup			
		VANC GPI Rx Contro	1
GPI Rx1 Polarity, ChA	\Theta Normal (Active Low)	⊖ Inve	rted (Active High)
GPI Rx2 Polarity, ChA	\Theta Normal (Active Low)	C Inve	rted (Active High)
GPI Rx3 Polarity, ChA	\Theta Normal (Active Low)	() Inve	rted (Active High)
GPI Rx4 Polarity, ChA	\Theta Normal (Active Low)	🔿 Inve	rted (Active High)
		VANC GPI Tx Contro	1
GPI Tx Source, ChA	\Theta GPI Mapped Input	() gpi	Mapped Input ORed with GPI Rx
GPI Tx1 Source, ChA	\varTheta External GPI 1	C External GPI 2	Not Connected
GPI Tx2 Source, ChA	C External GPI 1	\varTheta External GPI 2	○ Not Connected
GPI Tx3 Source, ChA	C External GPI 1	C External GPI 2	🕞 Not Connected
GPI Tx4 Source, ChA	C External GPI 1	C External GPI 2	○ Not Connected
GPI Tx1 Polarity, ChA	O Normal (Active Low)	() Inve	rted (Active High)
GPI Tx2 Polarity, ChA	\Theta Normal (Active Low)	() Inve	rted (Active High)
GPI Tx3 Polarity, ChA	😔 Normal (Active Low)	() Inve	rted (Active High)
GPI Tx4 Polarity, ChA	\Theta Normal (Active Low)	() Inve	rted (Active High)
	GPO Control		
External GPO 1 Source	\varTheta ChA GPI Rx1 🔿 C	hA GPI Rx2 🔿 ChA	GPI Rx3 🔿 ChA GPI Rx4
External GPO 2 Source	🔿 ChA GPI Rx1 🛛 😡 C	hA GPI Rx2 🔿 ChA	GPI Rx3 C ChA GPI Rx4

You'll notice that the submenu is divided into sections, each with a heading that describes the features below. Let's review each section.

Video Lines

- **SD VANC Line for GPI Data, CHA**: The line in the video ancillary area of SD video formats where GPI cues/data will be encoded/ detected.
- HD VANC Line for GPI Data, CHA: The line in the video ancillary area of HD video formats where GPI cues/data will be encoded/ detected.

Table 4–1Caption Lines

Specification	Register	Default
SD VANC Line for GPI Data	0Ah	0Dh
HD VANC Line for GPI Data	0Bh	0Dh

Video Output Control

Video Outputs, CHA: Selects how captions are displayed on outputs.

Table 4-2Caption Lines

Specification	Register	Default
Video Output	10h	00h

- **Normal:** The output is clean [no burned-in captions], monitor output has burned-in captions.
- **Both Clean** Neither output nor monitor output show burned-in captions.
- **Both Monitoring** Both output and monitor output show burned-in captions.

GPI-In-VANC/Audio

- **Decoder GP Cue Source, CHA**: Selects where received cues are to be found, either in the VANC or in the Audio Channels.
- Encode, VANC GPI Cue, CHA: Enables encoding of GPI cues in the VANC.
- Encode, Audio GPI Cue, CHA: Enables encoding of GPI cues in an Audio channel.
- Audio Channel Pair for GPI Cues, CHA: When encoding/ decoding GPI-in-Audio cues, which Audio channel is used.
- **GPI Cue Polarity, CHA**: Selects whether the GPI cue is active high (Normal) or active low (Inverted).

Chapter 4 Using DashBoard Configuring the Channel

Table 4–3Caption Lines

Specification	Register	Default
Audio GPI Settings	0Ch	96h

Software GPI Control

Software GPI [0-3] Polarity, CHA: These check boxes can set/reset a signalling cue if Use Software GPI Inputs (below) is checked.

Table 4-4Software GPI

Specification	Register	Default
Software GPI 1, CHA	0Dh[0]	
Software GPI 2, CHA	0Dh[1]	00b
Software GPI 3, CHA	0Dh[2]	0011
Software GPI 4, CHA	0Dh[3]	

Transmitted Cue (Soft/Phy) Polarity, CHA: This controls how an asserted software or physical GPI input will be interpreted (Note: This control applies IN ADDITION TO the separate GPI Tx [0-3] Polarity control below.)

Table 4–5GPI Tx [0-3] Polarity

Specification	Register	Default
Transmitted GPI Cue Polarity (Soft/Phy), CHA	0Dh[5]	00h

Transmitted Cue Source, CHA: Selects whether the GPI/O connector or the Dashboard user interface (refer to Table 4–4 above) will provide the input for transmitted GPI cues.

Table 4–6 Transmitted Cue Source

Specification	Register	Default
Transmitted Cue Source, CHA	0Dh[7]	00h

VANC GPI Rx Control

GPI Rx[0-3] Polarity, CHA: Selects how the polarity of received VANC cues will be interpreted, either Active High or Active Low.

Table 4–7 **Caption Lines**

Specification	Register	Default
VANC GPI Tx and Rx Polarity Control	0Fh	00h

VANC GPI Tx Control

- **GPI Tx Source, CHA**: Selects whether the transmitted bit will be either the bit provided from an External GPI (GPI Mapped Input) or will be the External GPI logically ORed with a received bit (GPI Mapped INPUT ORed with GPI Rx). The latter mode allows received bits to pass through when there are no active inputs on the External GPI.
- **GPI Tx[0-3] Source, CHA**: These controls map the transmitted bits to the External GPI that drives them (External GPI 0 or External GPI 1) or to none (None).
- GPI Tx[0-3] Polarity, CHA: These controls determine how External GPI inputs will be interpreted, either Active High or Active Low.

Table 4–8 **Caption Lines**

Specification	Register	Default
VANC GPI Tx and Rx Polarity Control	0Fh	00h

GPO Control

GPO[0-1] Source: These controls determine with which signals the board's external GP outputs will be driven (if any). The two outputs on the board may be driven from any of the four received (encoded) bits.

Table 4–9 **Caption Lines**

Specification	Register	Default
GPO-0 Mapping	4Eh	10b
GPO-1 Mapping	4Eh	1011

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The Setup Tab

The **Setup** tab allows you to set the Com port speed for both channels and reload the factory default settings.

- **Com Port Speed, CHA**: Click either 9600, 19200, 38400, or 115200.
- **Factory Default Settings**: Clicking the **Restore** button displays a confirmation dialog and then allows you to reload all the factory default settings of the card.

Figure 4–6 Setup Tab

annel A Setup				
COM Port Baud Rate, ChA	⊖ 9600 C	19200	○ 38400	O 115200
		Termina	Access	_
Eth COM Port Message	Notice: connectir a channel's outpu baud rate to 115.	ig Eth1/Eth it to Eth1/E 2k	2 to a channe th2 will force	I input or the channel's
Channel A Input	RS-232 Port	~		
Terminal Input	USB Port	~		
RS-232 Port Output	Channel A	~		
Eth1 VSP Output	Not Connected	~		
Eth2 VSP Output	Not Connected	~		
USB Port Output	Terminal	~		
Factory Default Settings	Restore			

CHAPTER 5 Using the General Purpose Inputs/Outputs

Introduction

Overview

This chapter describes the functionality of the GPI/O connectors on the adaptors.

Topics

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Connector Pin Assignments	47

Chapter 5 Using the General Purpose Inputs/Outputs Functionality

Functionality

The GPI interface allows the user to encode contact closure triggers into a HD or SD video stream frame accurately. The encoded data uses a proprietary algorithm designed to withstand severe degradation and prevent false triggering or releasing of GPIs. Error checking information is embedded within the GPI data stream which accomplishes this task and is far more advanced than simple CRC.

Typical triggers that users can encode from automation include (but are not limited to:

- ARC switching
- Commercial cue triggers (more accurate than the antiquated cue tone system)
- Machine control
- Regional commercial insertion cards

Typically the GPI data is encoded on Line 13 for both the HD-SDI signals and the SD-SDI signals. However, the HDCC is flexible enough to allow you to assign the lines on which you want the GPI data. See Video Lines on page 38 for details.

You can also use the GPI interface to control other operational aspects of the card.

Figure 5–1 on page 45 illustrates the GPI/O signal flow through the HDCC. For our purposes, a GPI is an input signal to the HDCC card supplied by the user through the physical GPI/O port that can activate certain modes in the HDCC card, and/or can be encoded onto the outgoing SDI video stream to notify downstream equipment of some condition, event, or command. A GPO is a signal the HDCC card receives on the incoming SDI video stream that is output to the physical GPI/O port to signify some condition, event, or command generated by upstream equipment.

Chapter 5 Using the General Purpose Inputs/Outputs Functionality





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Chapter 5 Using the General Purpose Inputs/Outputs Functionality

GPIs

The GP inputs are designed to be asserted by switching the closures to ground. Asserting a GP input will result in that input state being encoded on the appropriate line of the video signal or the required function being activated.





GPOs

If the incoming SDI data stream contains GP data on the appropriate
line of the video signal, the corresponding GP output on the card can be
activated. The GP output is asserted when its voltage is high.Important:The GP outputs are optically isolated and "open collector" so the user
must provide the appropriate pull-up resistor for each GP output. See
Figure 5–3 below.

The HDCC-GPINHL-OG1 provides two GPOs. (See Connector Pin Assignments on page 47 for connectivity.)

Chapter 5 Using the General Purpose Inputs/Outputs **Connector Pin Assignments**





Connector Pin Assignments

Table 5-1RS-232/GPI/O Pin-Out Assignments			
Pin	Label	Interface	
1	Rx0	Open Collector GPO	
2	Not Connected		
3	Tx0+	Active Low GPI	
4	GND		
5	TX (Out)	RS-232	
6	RX (In)	RS-232	
7	Rx1	Open Collector GPO	
8	Tx1	Active Low GPI	

Chapter 5 Using the General Purpose Inputs/Outputs GPI/O Polarities

Figure 5–4

RS-232/GPI/O RJ-45 Pin-Out



WARNING! RS-232 voltage levels are present on pins 5 and 6. These voltages can damage digital components. Make certain the connectivity is RS-232-compatible before connecting.

GPI/O Polarities

You can control the polarities of the encoded GPIs, both at the receiving stage (Rx) and at the encoding stage (Tx).

GPI Encoded Polarity (Rx)

Channel	Register	Bit(s)	Values
1	0Fh	0 thru 1	See Table 5–2 below.

The polarity settings are listed in Table 5–2 below.

Table 5–2

2 Register 0Fh: GPI Rx Polarity

Bits	GPI	Active Low (default)	Active High
0	GPI-Rx 0	0	1
1	GPI-Rx 1	0	1

Chapter 5 Using the General Purpose Inputs/Outputs GPI/O Polarities

GPI Encoded Polarity (Tx)

Channel	Register	Bit(s)	Values
1	0Fh	4 thru 5	See Table 5–3 below.

You can set the polarity of the GPI as encoded on the data stream as shown in Table 5–3 below.

Table 5–3 Register 0Fh: GPI Tx Assertion Polarity

Bits	GPI	Active Low (default)	Active High
4	GPI-Tx 0	0	1
5	GPI-Tx 1	0	1

Enabling/Disabling GPI Transmission

Channel	Register	Bit(s)	Values
1	12h	7	0=Disable
1			1=Enable

The HDCC-GPINHL-OG1 can be configured to enable or disable transmission of GPI data by setting bit 7 of register 12h.

CHAPTER 6 Terminal

Introduction

Overview

This chapter describes how to access the Terminal to change the HDCC card's registers directly.

Goals for This Chapter

✓ Explain the purpose and operation of the Term

 \checkmark Explain how to access the Terminal with any serial connection.

Topics

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Chapter 6 Terminal Background

Background

The HDCC card's operation is governed by several registers. These registers are modified automatically when you use the DashBoard.

However, more advanced users may prefer to configure these registers manually. You can do so by accessing the Terminal via a number of ports: RS-232, Ethernet Virtual Serial Ports, and the USB port.

The sections below describe how to connect to the Terminal with each method.

Configuring the HDCC Card for **Terminal Access**

Figure 6–1 Terminal Main Menu

🖀 Multi-t	hreaded TTY						
<u>Eile E</u> dit	ITY Transfer E	telp					
Port	Baud 115200 💌 Comm Events	Parity None Flow Control	Data Bits 8	Stop Bits 1 Disconnect	✓ Local Echo ✓ Display Errors ✓ CR => CR/LF ✓ Autowrap	 ✓ No Reading ✓ No Writing ✓ No Events ✓ No Status 	
Wohler 4 Copyrigh All Righ E-Mail: MFG/OEM: PRODUCT SERIAL N Software Firmware Slot Pos Slot Pos Slot Pos Elt Chan [2] Chan [2] Uiew	D Broadcast t (c) 2011 ts Reserved wohl ID: WI-708 UMBER: XXXX : 848196 v0 : 847160 v0 ition=9 tage = 2.48 U = ge Register All Register All Register	Platform Wohler Tecl Ier.com er Technold M XX .49 2.45 .245 Settings texs	nnologies, ogies, Inc	Inc.			
[4] Proc [5] Rese Choice [t 1-5]:	r Messages					
Modem St	atus ⁷ DSR / FRING	F RLSD (CD)	Comm Status CTS Hold DSR Hold RLSD Hold	C XOFF Hold C XOFF Sent T> C EOF Sent R>	TX Char (Chars: 0 (Chars: 0	tatus message go e:	3

Access to the Terminal is controlled by the **BOOTOPT** jumper on the card as shown in Figure 6–2 on page 54. The sections below describe how it is used.

Chapter 6 Terminal Accessing the Terminal via the RS-232 Port

	Note:	If you're using the DFR-8321 frame, be aware that while the card is configured for Engineering Menu access, it will not be controllable from DashBoard. To restore DashBoard operation, power down the card, remove the jumper, and re-power the card.
	Note:	If you're using the Wohler MC-1RU frame, you can access the Terminal with the same serial port you use to connect to the HDCCRegEdit. (HDCCRegEdit is really a user interface that uses the Terminal.)
WARNING!	Use cauti Incorrect	on when modifying the HDCC card's register values. values may cause the card to behave unpredictably.

Accessing the Terminal via the RS-232 Port

- 1. In DashBoard's **Setup Menu**, set the Terminal input to **RS-232** and the RS-232 output to **Terminal**.
- 2. Power down the card, install the **BOOTOPT** jumper (see Figure 6–2 on page 54).
- 3. Verify the SW3 is set to **OFF**.
- 4. Connect a serial cable from your PC to the RS-232 connector on the rear panel.
- 5. Re-power the card.
- 6. Open a terminal emulator (e.g., HyperTerminal, PuTTY, etc.) with the serial COM port set to 115.2k, 8 data bits, 1 stop bit, no parity, and no handshaking.
- 7. Press the Enter key to display the Engineering Menu as shown in Figure 6–1 on page 52.
- 8. Power off the card, remove the **BOOTOPT** jumper, and re-power the card to restore normal operation. (See Figure 6–2 on page 54 for details.)

Chapter 6 Terminal Accessing the Terminal via the Virtual Serial Ports

Figure 6–2 BOOTOPT Jumper Location



BOOTOPT Jumper





BOOTOPT Jumper Installed = Access Engineering Menu

9. Go to the Engineering Menu functions below.

Accessing the Terminal via the Virtual Serial Ports

There are two virtual serial ports, Eth1 and Eth2. The instructions below are for Eth1 but are easily applied to Eth2.

- 1. In DashBoard's **Setup Menu**, set the Terminal input to **Eth1** and the Eth1 output to **Terminal**.
- 2. Power down the card, install the **BOOTOPT** jumper (see Figure 6–2 above) and re-power the card.

- 3. Verify the SW3 is set to **OFF**.
- 4. Verify that Eth1 is installed per Chapter 2 of this document.
- 5. Connect an Ethernet cable from your network to the Ethernet connector on the rear panel.
- 6. Open a terminal emulator (e.g., HyperTerminal, PuTTY, etc.) with Eth1's COM port set to 115.2k, 8 data bits, 1 stop bit, no parity, and no handshaking.
- 7. Press the Enter key to display the Main Menu. (See Figure 6–1 on page 52).
- 8. Power off the card, remove the **BOOTOPT** jumper, and re-power the card to restore normal operation. (See Figure 6–2 on page 54 for details.)

Accessing the Terminal via the USB Port (Front of Card)

There are two methods of accessing the Terminal via USB: the first requires configuration via DashBoard; the second uses SW3 on the card's front edge to override any software settings.

The following instructions are configuration via DashBoard.

- 1. In DashBoard's **Setup Menu**, set the Terminal input to **USB** and the USB output to **Terminal**.
- 2. Power down the card, install the **BOOTOPT** jumper (see Figure 6–2 on page 54), connect a USB cable between the host computer and the HDCC's USB connector, and re-power the card.
- 3. Verify the SW3 is set to **off**.
- 4. Connect a USB cable from your network to the USB connector on the front edge of the HDCC card.
- 5. Install the USB-Serial interface software as prompted.

- 6. Open a terminal emulator (e.g., HyperTerminal, PuTTY, etc.) with USB serial port set to 115.2k, 8 data bits, 1 stop bit, no parity, and no handshaking.
- 7. Press the Enter key to display the Main Menu. (See Figure 6–1 on page 52).
- 8. Power off the card, remove the **BOOTOPT** jumper, and re-power the card to restore normal operation. (see Figure 6–2 on page 54)

The following instructions show how to access the terminal without DashBoard configuration.

- 1. Power down the card, set **SW3** to **On**, install **BOOTOPT** jumper, connect a USB cable from your host computer to the USB connector on the front edge of the HDCC card, and re-power the card. (See Figure 6–2 on page 54 for details.)
- 2. Install the USB-Serial interface software as prompted.
- 3. Open a terminal emulator (e.g., HyperTerminal, PuTTY, etc.) with USB serial port set to 115.2k, 8 data bits, 1 stop bit, no parity, and no handshaking.
- 4. Press the Enter key to display the Main Menu. (See Figure 6–1 on page 52).
- 5. Power off the card, remove the **BOOTOPT** jumper, set SW3 to OFF (Refer to Figure 2–3 on page 14.), and re-power the card to restore normal operation. (See Figure 6–2 on page 54 for details.)

Main Menu

The Main Menu provides several functions for quick and easy modifications. You can also find software and firmware version listed above the menu. Refer to Figure 6–3 on page 57 and the following descriptions of each menu option for details.

Figure 6–3 Main Menu



Important: Refer to Appendix A for a detailed list of registers.

- 1. **Change Register Settings**: Allows you to modify any available register value.
- 2. **View All Register Settings**: Shows you the register list and all of the current values for each.
- 3. Blank All Registers: Sets all registers to zero.
- **WARNING!** Without further register modifications, the card will be unusable after the registers are erased. Use only with extreme caution/discretion.
 - **Note:** Some registers are READ ONLY and will display a value even after you select option **[3] Blank All Registers**.
 - 4. **Process OpenGear Messages**: Disables the Main Menu and returns control of the HDCC card to DashBoard to start processing openGear messages.

- 5. **Reset**: Reboots the hardware.
- **Note:** If the **BOOTOPT** jumper is not removed, the card will boot back to the Main Menu.

APPENDIX A Register Set

Introduction

Overview

	The registers can be modified directly using the terminal. Refer to Chapter 6: Terminal on page 51.
IMPORTANT	We highly recommend that Dashboard be used for configuration changes. The registers should be modified directly only when absolutely necessary.

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Appendix A Register Set Accessing the Engineering Menu

Accessing the Engineering Menu

To access the Engineering Menu, refer to the *Hardware Installation Guide* (part number 821150).

Modifying the Register Settings

WARNING! If a register is not listed in Table A–1 below, do not modify it. Doing so will cause unpredictable results.

Table A-1 Register Table Summary

CH1	Description
00h	Not Used
01h	Not Used
02h	Not Used
03f	Not Used
04h	Not Used
05h	Not Used
06h	Not Used
07h	Not Used
08h	Transmission Features
09h	Horizontal Timing Offset for GPI SD Insertion Line (Reserved)
0Ah	SD Line for VANC GPI Data Insertion
0Bh	HD Line for VANC GPI Data Insertion
0Ch	Audio GPI Settings
0Dh	Software GPI Settings
0Eh	Not Used
0Fh	VANC GPI Rx/Tx Polarity Control
10h	Special Features 2
11h	Not Used
12h	VANC GPI Data Insertion Control and Encoder Time-out
13h	VANC GPI Mapping for Tx
14h	Not Used
15h	Not Used
16h	Not Used
17h	Not Used
18h	Not Used

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CH1	Description
19h	Display Attributes—Reserved
1Ah	Not Used
1Bh	Not Used
1Ch	Not Used
1Dh	Not Used
1Eh	Not Used
1Fh	Not Used
48h	Transcode Settings
49h	Inbound Data Routing 1/2 —to Channels A and B
4Ah	Inbound Data Routing 2/2—to Registers
4Bh	Outbound Data Routing 1/2—to USB and Serial
4Ch	Outbound Data Routing 2/2—to Ethernet
4Dh	Not Used
4Eh	GPO 1 and 2 Mapping
4Fh	GPO 3 and 4 Mappings

Table A-1Register Table Summary

CH1	Description	Default
00h	Not Used	
01h	Not Used	
02h	Not Used	
03h	Not Used	
04h	Not Used	
05h	Not Used	
06h	Not Used	
07h	Not Used	

CH1		Default	
	Transmis <i>Min: N/A</i> -		
	Bit(s)	Function	
	7	Not Used	
		Com Port Speed	
08h		00 = 9600 baud	00h
	6:5	01 = 19200 baud	
		10 = 38400 baud	
		11 = 115200 baud	
	4:0	Not Used	
09h	Horizonta	al Timing Offset for GPI Insertion Line:	
	Reserved	—Do Not Change	
0Ab	SD Line	0Dh	
07 111	Min: 06h–	0DII	
ORh	HD Line	ODh	
UDIT	Min: 07h–	–Max: 19h	UDII

CH1		Default	
	Audio G	PI Settings	
	Min: N/A	—Max: N/A	
	Bit(s)	Function	
		Audio GPI Cues Encode	
	7	0 = Disabled	
		1 = Enabled	
	6	Not Used	
		Received GPI Cues Polarity	
	5	0 = Normal	
		1 = Inverted	
	4	GPI Cues Decoder Source	
		0 = GPI Cues in VANC	
0Ch		1 = GPI Cues in Audio Channels	96h
		Audio Channel Pair Number for GPI	
		000 Ardia Chargel Dair 1	
		001 = Audio Channel Pair 2	
	0.1	010 = Audio Channel Pair 3	
	3:1	011 = Audio Channel Pair 4	
		100 = Audio Channel Pair 5	
		101 = Audio Channel Pair 6	
		110 = Audio Channel Pair 7	
		111 = Audio Channel Pair 8	
	0	Not Used	

CH1	Description			Default
	Software <i>Min: N/A</i> -	G PI Settings —Max: N/A		
	Bit(s)			
		Transmitted	GPI Cues Source	
	7	0 = Use Hard	ware GPI Inputs	
		1 = Use Softw (Register 0Dł	vare GPI Bits n bits 3:0)	
0Dh	6:5	Not Used	,	00h
	4	Transmitted (Either from S GPI-IN) 0 = Normal 1 = Inverted Software GP		
0Eh	Not Used			
	VANC GI Min: N/A–	PI Tx and Rx — <i>Max: N/A</i>	Polarity Control	
	Bit(s)	Туре	Function	
	7	GPI Tx 3		
0Fh	6	GPI Tx 2		
	5	GPI IX I	0 – Normal (Active Low)	00h
	4	GPI IX U	1 Insurante d (A stive I ligh)	
	$\frac{3}{2}$	GPI Rx 2	1 = miverted (Active Hign)	
	1	GPI Rx 1		
	0	GPI Rx 0		
		1		

CH1	Description	Default
10h	DescriptionSpecial Features—2Min: N/A —Max: N/A This register controls miscellaneous functions on the card including the video outputs. Bit(s) Function $Video Outputs:$ $00 = Normal$ $3:4^a$ $01 = Both$ outputs set to monitoring $10 = Both$ outputs are clean $11 = Not Used$ $VANC GPI Tx Source:$ $0 = GPI Mapped Input$ (See Registers 13h) $1 = GPI Mapped Input ORed withVANC GPI Rx$ aaNormal (default) = Monitoring O/P is 2. Clean = No burned-in captions on all O/Ps. Clean = No burned-in captions on any O/Ps.	00h
11h	Not Used	—
12h	VANC GPI Insertion Control and Insert Mode Time-out Min: N/A—Max: N/A Bit(s) Function VANC GPI Data Insertion 7 0 = Disable 1 = Enable 6:0 Not Used	00h

CH1	Description	Default
	VANC GPI Mapping for Tx Min: N/A—Max: N/A	
	Bit(s) GPI Tx Source Function	
13h	0:1 1 00 = External GPI 1/GP Tx	0 E4h
	2:3 2 $01 = External GPI 2/GP Tx$.1
	4:5 3 $02 = External GPI 3/GP Tx$	2
	6:7 4 $04 = \text{External GPI 4/GP Tx}$	3
14h	GPI Mapping for Per-Field Blank Control (Reserved)	
15h	Not Used	—
16h	Not Used	—
17h	Not Used	
18h	Not Used	_
19h	Display Attributes—Reserved	
1Ah	Not Used	
1Bh	Not Used	
1Ch	Not Used	
1Dh	Not Used	
1Eh	Not Used	
lFh	Not Used	
401		0.01
48h	Transcode Settings—Reserved	00h
49h	Bit(s) To Channel A 7:4 Not Used 3 USB 2 Ethernet 2 1 Ethernet 1 0 Carriel	1 B 11h
CH1	Description	Default
-------	---	---------
	Inbound Data Routing 2/2—to Registers	
	Min: N/A — Max: N/A	
	Bit(s) To Channel B	
4 4 1	7:4 Not Used	0.01
4Ah	3 USB	08h
	2 Ethernet 2	
	1 Ethernet 1	
	0 Serial	
	Outbound Data Routing 1/2—to USB and Serial	
	Min: N/A — Max: N/A	
	Bit(s) To USB	
	7 Not Used	
	6 Registers	
4Ph	5 Not Used	41h
4D11	4 Channel A	41h
	Bit(s) To Ethernet 1	
	3 Not Used	
	2 Registers	
	1 Not Used	
	0 Channel A	
	Outbound Data Routing 2/2—to Ethernet	
	Min: N/A — Max: N/A	
	Bit(s) To Ethernet 2	
4Ch	7 Not Used	
	6 Registers	
	5 Not Used	00b
	4 Channel A	UUN
	Bit(s) To Ethernet 1	
	3 Not Used	
	2 Registers	
	1 Not Used	
	0 Channel A	
4Dh	Timing Offset—Reserved	06h

Table A-2Register Settings, Descriptions, and Default Values

Appendix A Register Set Modifying the Register Settings

CH1		Description	Default
	GPO 1 an	nd 2 Source	
	Bit(s)	Function	
		GPO 1 Source:	
		$0000 = Ch \ 1 \ GPI \ Rx \ 0$	
	0:3	$0001 = Ch \ 1 \ GPI \ Rx \ 1$	
4Eh		$0010 = Ch \ 1 \ GPI \ Rx \ 2$	10h
		0011 = Ch 1 GPI Rx 3	
		GPO 2 Source:	
		$0000 = Ch \ 1 \ GPI \ Rx \ 0$	
	4:7	0001 = Ch 1 GPI Rx 1	
		0010 = Ch 1 GPI Rx 2	
		0011 = Ch 1 GPI Rx 3	
	CPO 3 ar	ad 4 Source	
	Min: N/A	—Max: N/A	
	Bit(s)	Function	
		GPO 3 Source:	
		$0000 = Ch \ 1 \ GPI \ Rx \ 0$	
	0:3	0001 = Ch 1 GPI Rx 1	
4Fh		0010 = Ch 1 GPI Rx 2	32h
		0011 = Ch 1 GPI Rx 3	5211
		GPO 4 Source:	
		$0000 = Ch \ 1 \ GPI \ Rx \ 0$	
	4:7	0001 = Ch 1 GPI Rx 1	
		0010 = Ch 1 GPI Rx 2	
		0011 = Ch 1 GPI Rx 3	

Table A-2Register Settings, Descriptions, and Default Values

APPENDIX B Specifications

Introduction

Overview

This chapter lists the specifications of the HDCC and provides the pinouts for its connectors.

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Specifications

Table B-1 Physical Specifications

Specification	OG
Dimensions (H x W x D)	Card: 3" x 12.75" x 0.5" (76.2 mm x 323.85 mm x 12.7 mm)
	Rear Panel: 2.5" (W) x 3.5" (H) x 1.5" (D) (63.5 mm x 88.9 mm x 38.1 mm)
Shipping Weight (combined)	1 lbs (.45 kg)
Supplied Accessories	Rear panel adaptor (OG only)
Power Requirements	Receives power from frame
Power Consumption	Approximately 10 W

Table B–2 Technical Specifications

Specification	1 Channel
Video Inputs	1 SD/HD-SDI autosensing on BNC
Video Outputs	1 HD/SD-SDI Closed Captioned (BNC)
video Outputs	1 HD/SD-SDI Open Captioned (BNC)
	1 Ethernet (RJ-45) 10/100 BaseTX
Caption Inputs/Outputs	1 RS-232 (DB-9)
	1 USB
Frame compatibility	Ross DFR-8321
Ameilable functions	Closed Caption OSD Monitoring
Available functions	GPI Cue Insertion and Reception
Supported closed caption	CEA-608, CEA-708 both encapsulated 608 and
specifications	native 708

Technical Functional Overview

Figure B–1 on page 71 illustrates the design of the HDCC.

Appendix B Specifications Technical Functional Overview



Figure B–1 HDCC Block Diagram

Appendix B Specifications Technical Functional Overview

APPENDIX C Troubleshooting

Introduction

Overview

This appendix provides instructions for correcting the most common problems.

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DashBoard

Table C-1Common DashBoard Problems and Solutions

Symptom	Possible Cause	Solution
	Frame not power up.	Apply power to frame.
Frame does not appear		Verify Ethernet/IP
in DashBoard.	No network connectivity.	connectivity between host PC
		and frame is established.
HDCC card does not	BOOTOPT jumper is in place	Remove BOOTOPT jumper,
appear in DashBoard.	beerer jumper is in place.	then power cycle the frame.

Network

Table C-2 Common Network Problems and Solutions

Symptom	Possible Cause	Solution
Cannot locate HDCC card in the Network folder of Windows Explorer.	No network connectivity to card.	Check settings of SW1 DIP switch on Rear Panel.

VSPs

Table C-3 Common VSPs Problems and Solutions

Symptom	Possible Cause	Solution
VSP input/output is not working.	VSP software settings are incorrect.	Set each VSP's IP address and port number correctly. Verify that Raw mode is selected.

GPI Cue Insertion

Table C-4Common Cue Insertion Problems and Solutions

Symptom	Possible Cause	Solution
	HD/SD Video Line for cues not set (if VANC).	Set SD/HD VANC Line for GPI Data, CHA to correct line.
GPI Cues not being inserted.	Insertion not enabled.	Check Encode, VANC GPI Cue, CHA (for VANC insertion) or Encode, Audio GPI Cue, CHA (for Audio insertion.
	Hardware/Software selection wrong.	Set Transmitted Cue Source, CHA correctly.
	GPI/O connector not correctly connected.	Verify input connections of J14.
GPI Cue is inverted	Input is opposite polarity.	Set Transmitted Cue (Soft/Phy) Polarity correctly.

GPI Cue Reception

Table C-5Common Cue Reception Problems and Solutions

Symptom	Possible Cause	Solution
GPI Cues not being received.	Decoder source not set correctly.	Set Decoder GP Cue Source, CHA to VANC or Audio Channels , as appropriate.
	Wrong Audio Pair Selected.	Set Audio Channel Pair to correct pair.
	GPI/O connector not correctly connected.	Verify output connections of J14.

Table C-5 Common Cue Reception Problems and Solutions

Symptom	Possible Cause	Solution
GPI Cue is inverted	Output is opposite polarity.	Set GPI Tx1-4 Polarity correctly.
	Output is not correctly mapped to received cue.	Make sure External GPO 1/ 2 Source is set to correct cue.