HDCC openGear Product Line

3G/HD/SD-SDI Captioning Solution

Installation Guide
(All Standards for openGear Hardware)

HDCC Main Board Release: Revision E

Part Number 821150, Revision C

Wohler CONFIDENCE.

VIDEO AUDIO CAPTIONING LOUDNESS

31055 Huntwood Avenue
Hayward, California
94544 USA

1 800 5 WOHLER
+1 (510) 870-0810
Fax +1 (510) 870-0811

www.wohler.com
info@wohler.com

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Customer Support

Wohler Technologies, Inc.
31055 Huntwood Avenue
Hayward, CA 94544
www.wohler.com

Phone: 510-870-0810
FAX: 510-870-0811
US Toll Free: 1-888-596-4537
(1-888-5-WOHLER)
Web: www.wohler.com
Sales: sales@wohler.com
Support: support@wohler.com

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This document is intended to be printed on a duplex printer, such that the copy appears on both sides of each page. This ensures that all new chapters start on a right-facing page.

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Table of Contents

CHAPTER 1
Hardware Installation

Introduction

Overview

Thank you for purchasing Wohler's HDCC card, a product that provides a variety of captioning functions. This document explains how to install your new card into the openGear chassis.

Topics

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.

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

Your HDCC card is designed for a Ross DFR-8321 openGear frame or any other compatible frame.

Hardware

- HDCC card
- Rear panel
- Screws
- Washers

Installing the Card and Rear Panel

To install the adaptor into the frame:

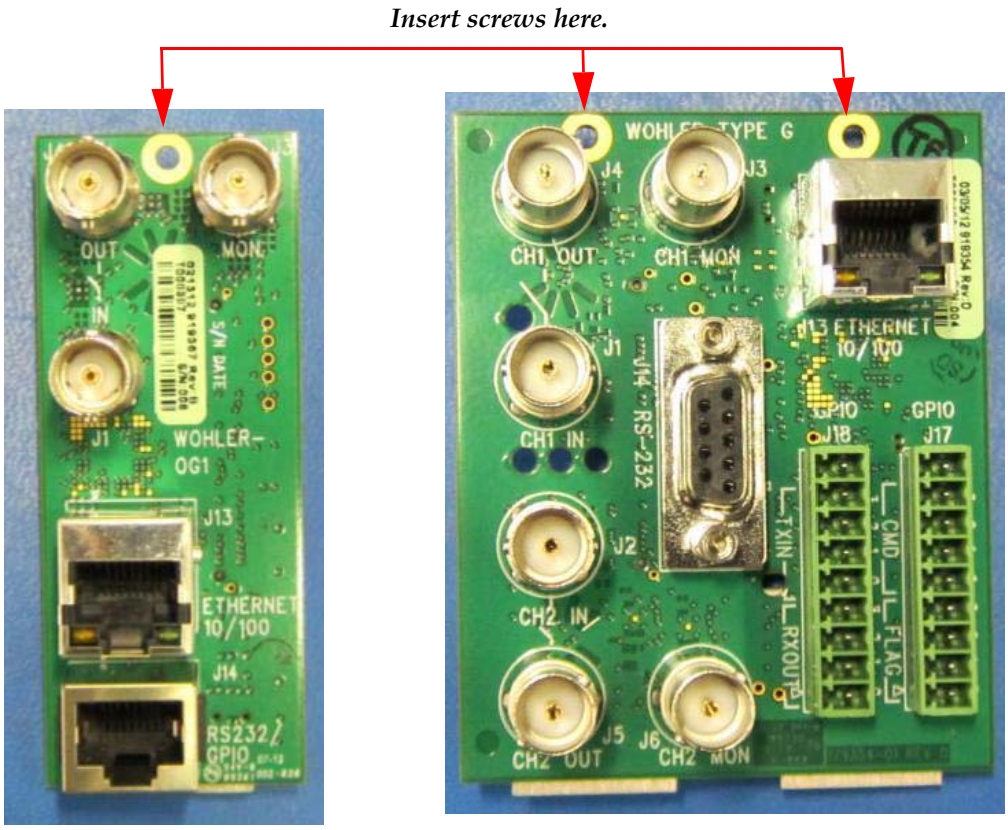
1. Ensure that the Ross DFR-8321 frame is properly installed.
2. Power down the frame.

Important: Each dual-channel HDCC card occupies four slots of the Ross DFR-8321 chassis. Each single-channel HDCC card occupies two slots.

3. Insert the screws into the two corner holes of the rear panel. Refer to Figure 1–1 below.

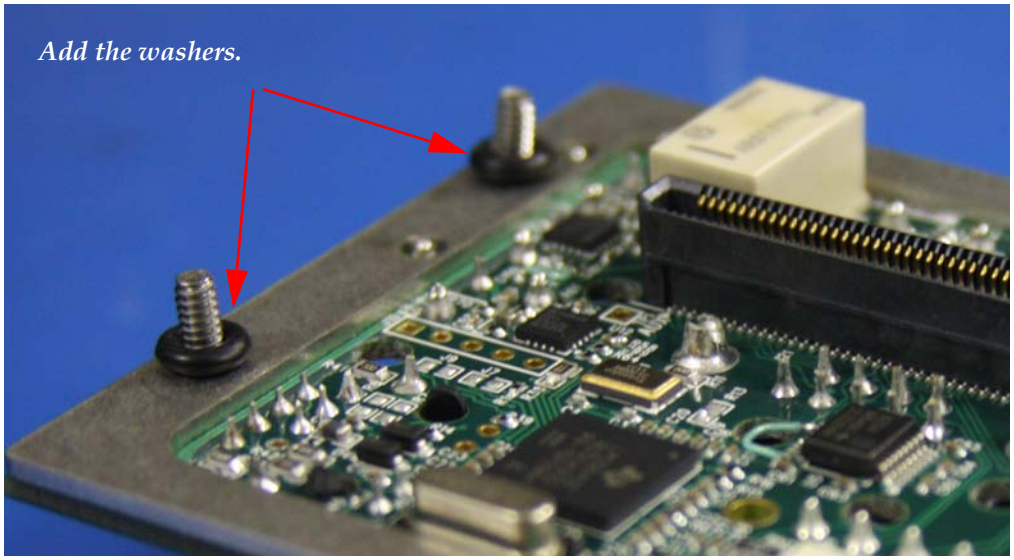
Note: The next few pages illustrate the installation of an OG-2 rear panel. (See Figure 1–1 below.) The OG-1 rear-panel installation is similar, but smaller.

Figure 1–1 The OG1 (left) and OG2 (right) Rear Panels



4. After you have inserted the screws into the rear panel, place the rubber washers on the screws. Refer to Figure 1–2 on page 5.

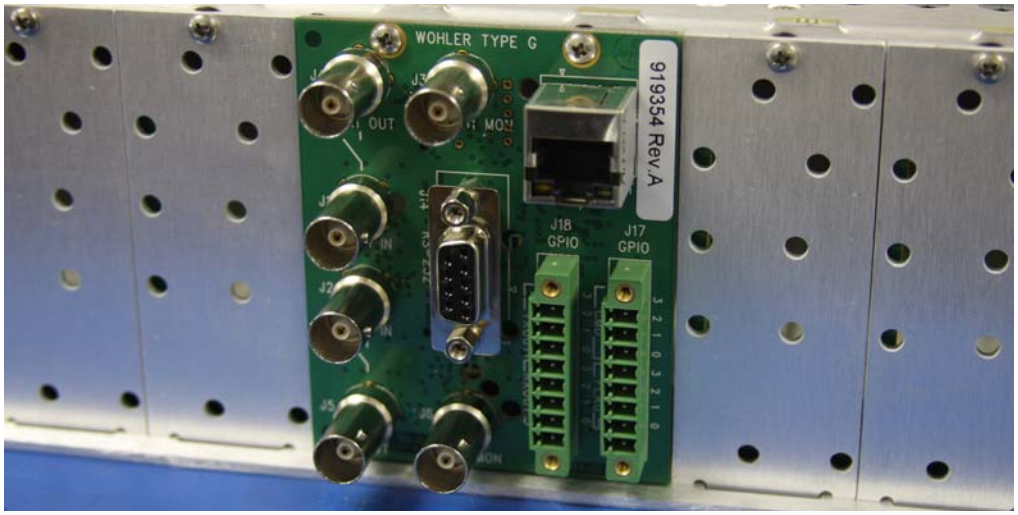
Figure 1–2 Adding the Washers



5. With the rear of the chassis facing you, sit the rear panel into the base slot and tighten the top screws.

   Note: The HDCC card can be installed into any odd-numbered slot from 3 to 19. Refer to Figure 1–3 below.

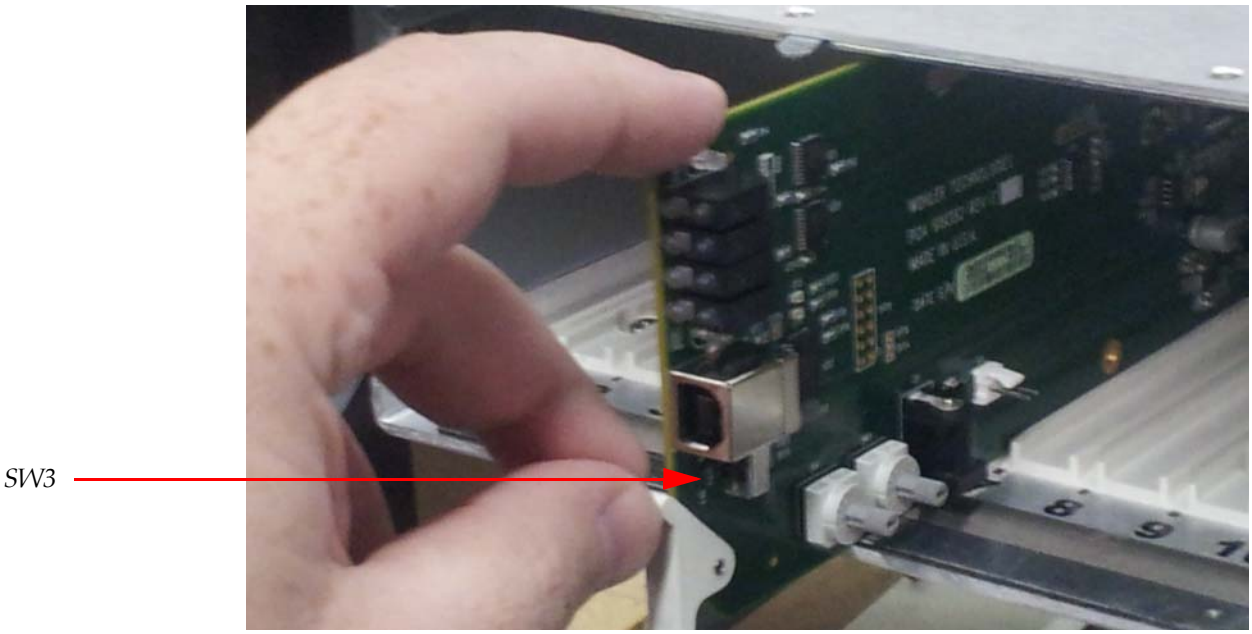
Figure 1–3 Installing the Rear Panel



6. Turn the DFR-8321 chassis so that the front panel is 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 LEDs are at the top and facing you (Figure 1–4 below) and then close the front panel.

Figure 1–4 Open DFR-8321 Frame



Note: Ensure that SW3 is in the **off** position. Refer to Accessing the Terminal via the USB Port (Front of Card) on page 33 for more information.

8. Attach at least one 3G/HD/SD-SDI video signal to one of the input BNCs on the rear panel.

Rear Panel DIP Switch

Both the OG1 and OG2 rear panels have a miniature DIP switch that controls the functioning of the ARM processor on each rear panel. The ARM handles TCP/IP communications (including virtual serial ports) with the card.

Important: These switches are set at the factory, so you shouldn't need to change their settings. Improper switch settings will render the card unusable.

Table 1–1 Rear Panel DIP Switch Position Functionality

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

SW1 (Switch 1) is set to **On** at the factory so that the card's IP address will be based on the ARM's internal configuration (by default, to use DHCP network settings). If SW1 is **Off**, the static IP address set by SW2 will apply.

SW3 controls whether the ARM boots normally (default) or it runs a boot loader. This options is only used for software upgrades.

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 2 on page 9.

After you have completed all the installation steps appropriate to your production environment (from this manual) continue on to the configuration manual for your HDCC card model.

CHAPTER 2
Setting Up Virtual Serial Ports

Introduction

Overview

This chapter describes how to create a virtual serial connection over a TCP/IP network.

Topics

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 HDCC 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 2–1 below.

Figure 2–1 HDCC to PC Connectivity

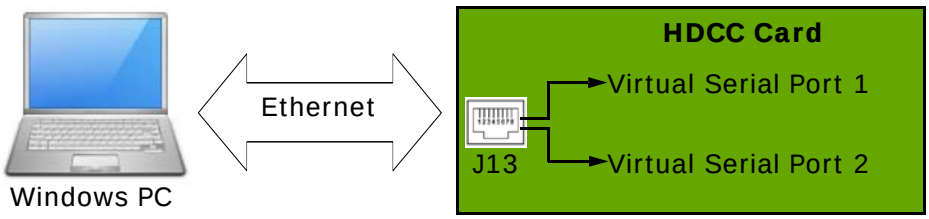


Figure 2–1 above provides a function overview of the virtual serial port configuration. You can use third party software (link provided below) to create a virtual serial port which will transfer serial data to and from the HDCC over Ethernet. From the PC user's perspective, the virtual serial ports are indistinguishable from the hardware serial ports.

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

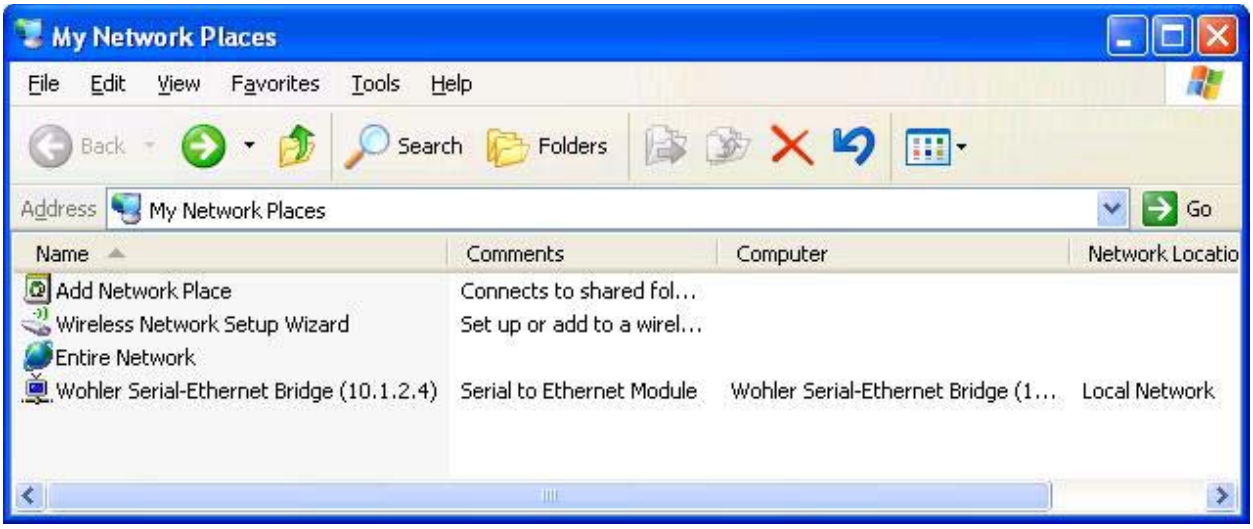
Required Information

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.

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 Windows-based computer you will be able to see the card in **My Network Places** as shown in Figure 2–2 below.

Figure 2–2 HDCC Shown in My Network Places



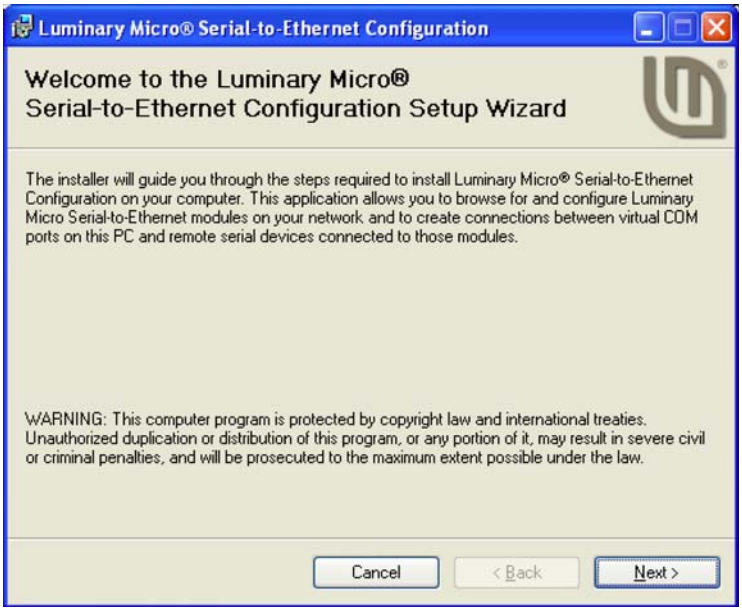
Double-clicking on the Wohler Serial-Ethernet Bridge (see Figure 2–2 above) will take you the card's configuration page where you can set a static IP address, if desired. Proceed to HDCC Configuration on page 16.

Alternatively, you can install the Luminary Micro S2E software to locate the card as described below. If you already know the card's address, proceed to ***HDCC Configuration***.

Installing the S2E Configuration Software

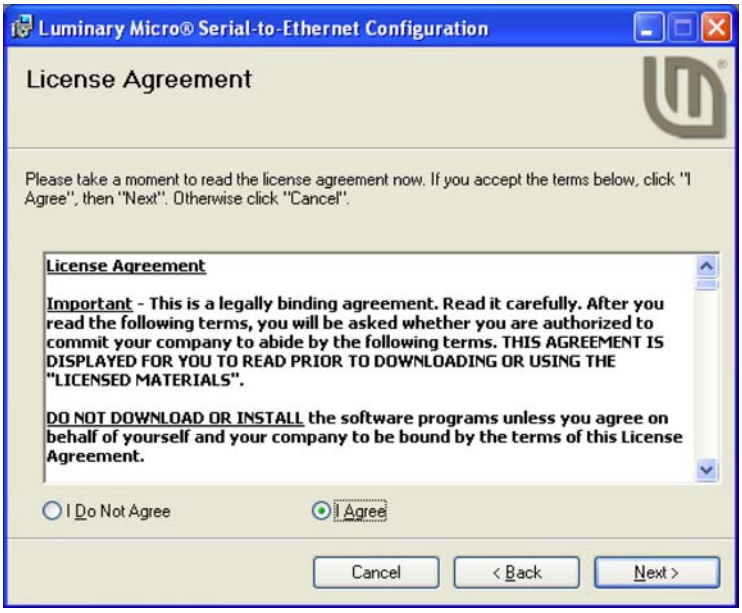
1. Place the Wohler CDROM into your CDROM drive.
2. Browse to the **/software/S2E** folder and double-click the **S2Esetup.exe** program.
3. When the **Welcome to the Luminary Micro...**dialog displays, click **Next**.

Figure 2–3 Welcome Dialog



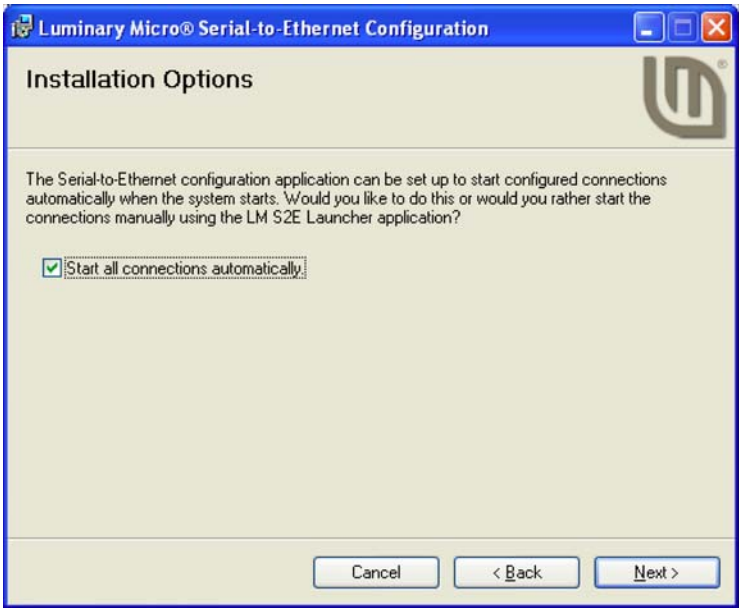
4. When the **License Agreement** dialog appears, click **I Agree** and then click **Next**.

Figure 2–4 License Agreement Dialog



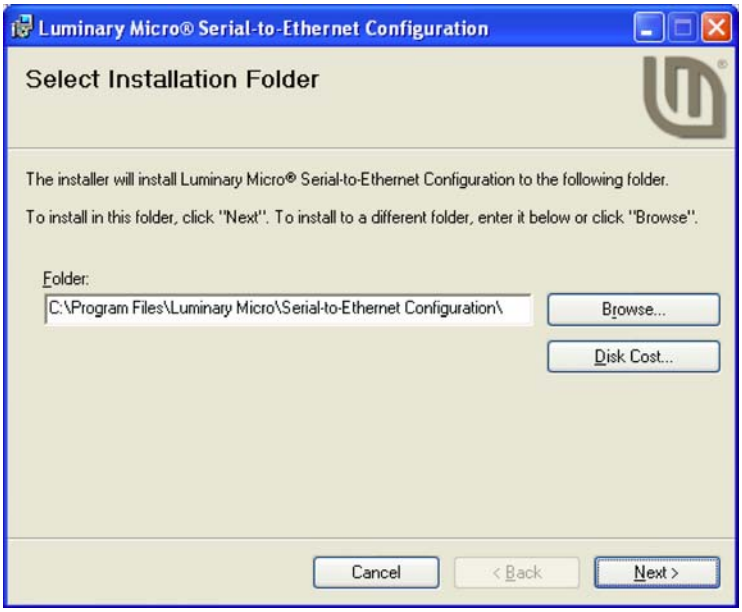
5. Verify that **Start all connections automatically** is checked, and then click **Next**.

Figure 2–5 Installation Options Dialog



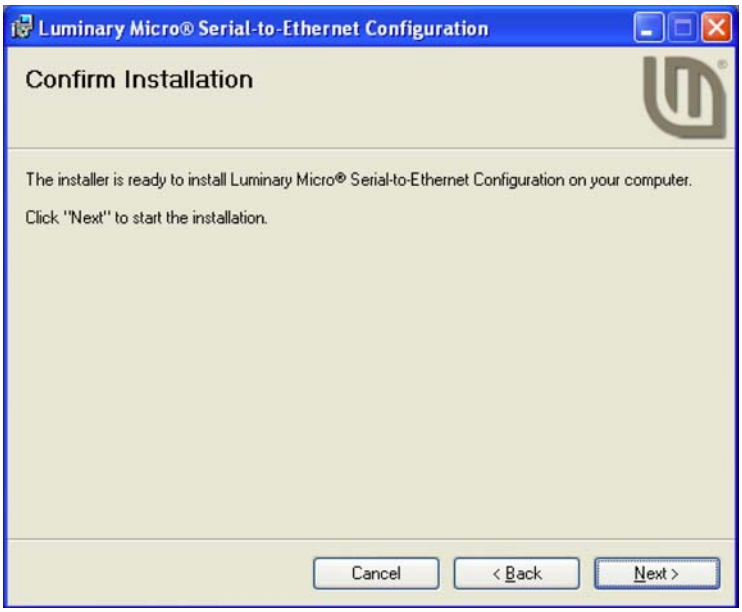
6. When the **Select Installation Folder** dialog appears, either accept the default or browse to the location of your choice, and click **Next**.

Figure 2–6 Select Installation Folder Dialog



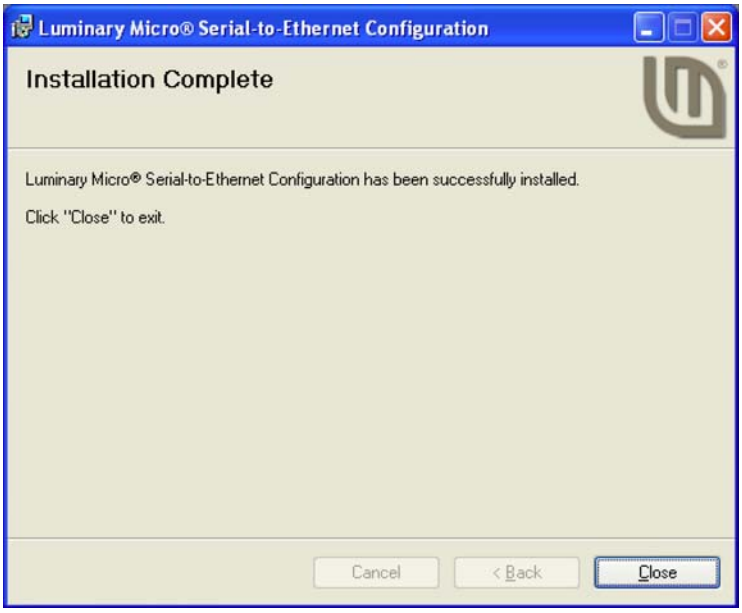
7. When the **Confirm Installation** dialog appears, click **Next**.

Figure 2–7 Confirm Installation Folder Dialog



8. When the **Installation Complete** dialog appears, click **Close**.

Figure 2–8 Installation Complete Dialog



Running the Luminary Micro S2E Browser

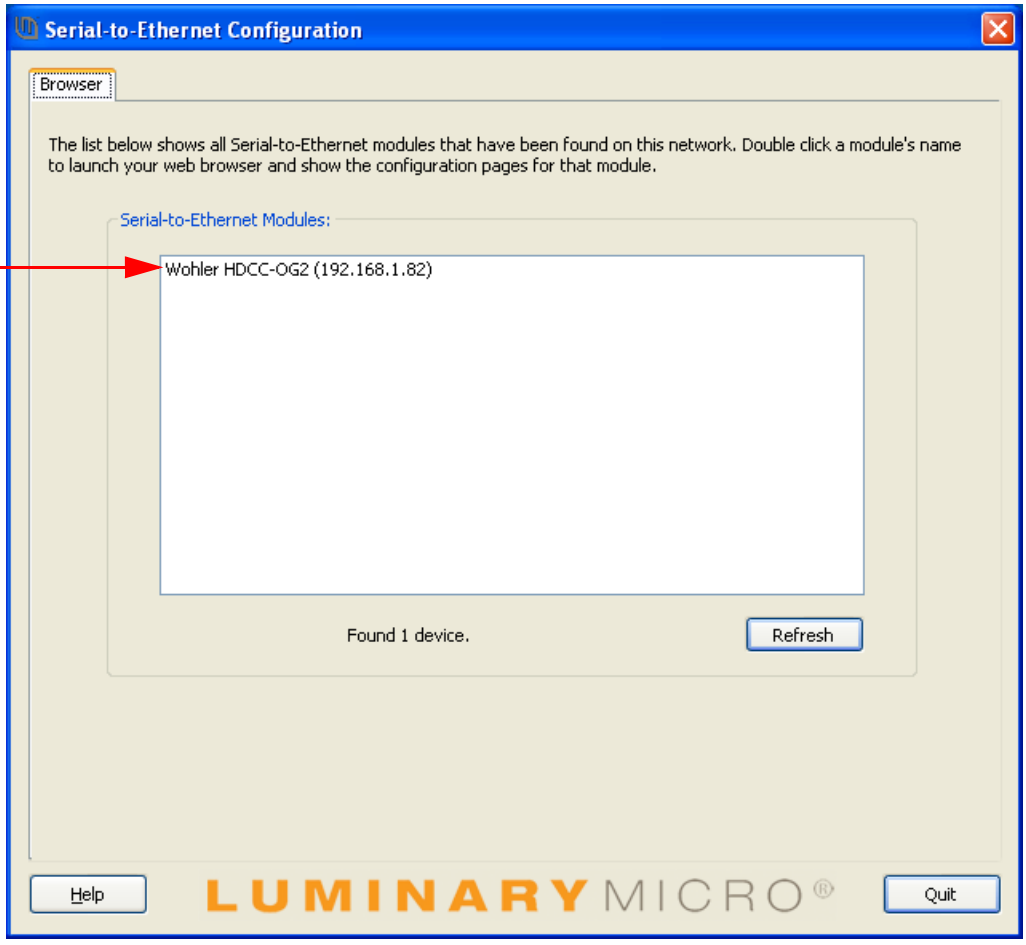
1. From the **Start** menu select **Luminary Micro ⇨ Serial to Ethernet Configuration ⇨ LM S2E Browser**.

2. Browse to the /software/S2E folder on the Installation CD and double-click the S2Esetup.exe program

   After the application searches the network, it will display all the HDCC cards it found by their current name and IP address as shown in Figure 2–9 on page 15.

Figure 2–9 Serial-to-Ethernet Configuration

Double-click the name of the card you're configuring.

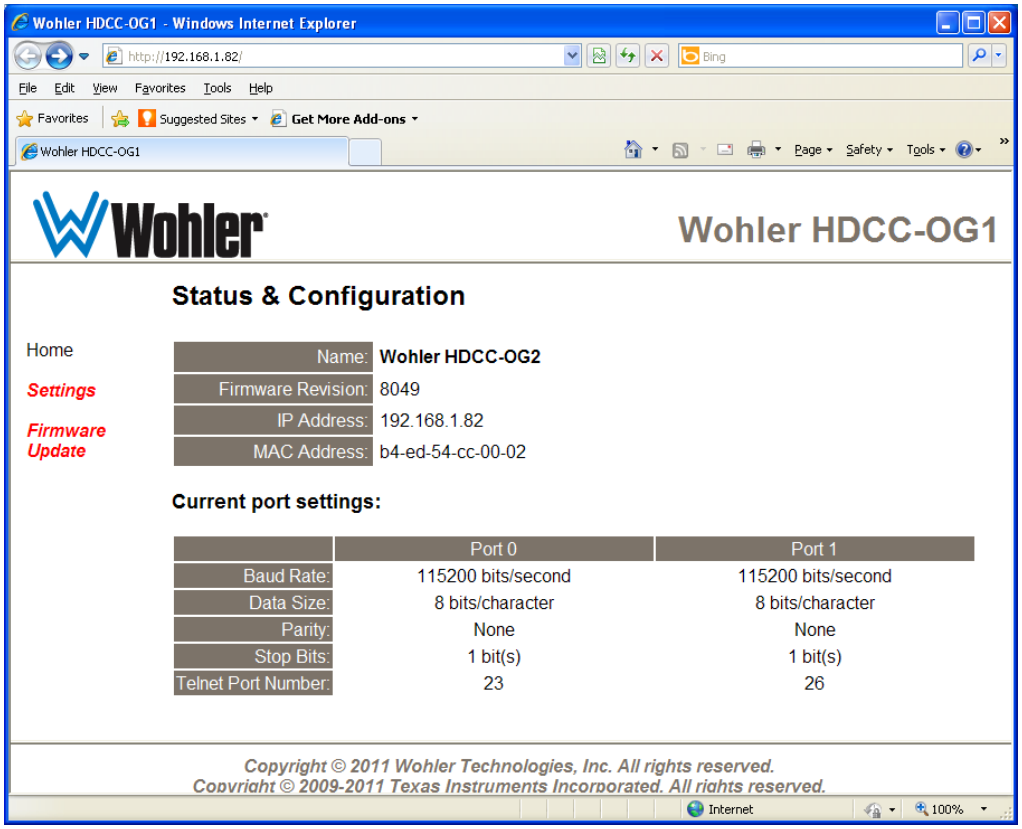


3. Double-click on the HDCC card name as shown in the **Serial-to-Ethernet Modules** pane in Figure 2–9 above. This will take you to HDCC Configuration below.

HDCC Configuration

You can reach the HDCC card configuration screen through a web browser by entering the IP address in the address bar. Refer to Figure 2–10 below.

Figure 2–10 Typical HDCC Configuration Page



Decision Point:

If you need to assign a static IP address (usually for a non-DHCP-enabled network) skip down to Assigning a Static IP Address on page 17.

Otherwise, once you have written down the IP address and the telnet port number for this card, continue on to Step 4 immediately below.

4. Write down the **IP Address**. In our example (Figure 2–10 above) the **IP Address** is 192.168.1.82.

5. Write down the **Telnet Port Number** for **Port 0** as shown at the bottom of Figure 2–10 above. In our example, the **Telnet Port Number** is 23.

6. Close the LM S2E Browser application.

Important Continue on to Installing the Lantronix Redirector on page 21.

Assigning a Static IP Address

1. Click **Settings** on the left hand side of the screen (Figure 2–10 on page 16).

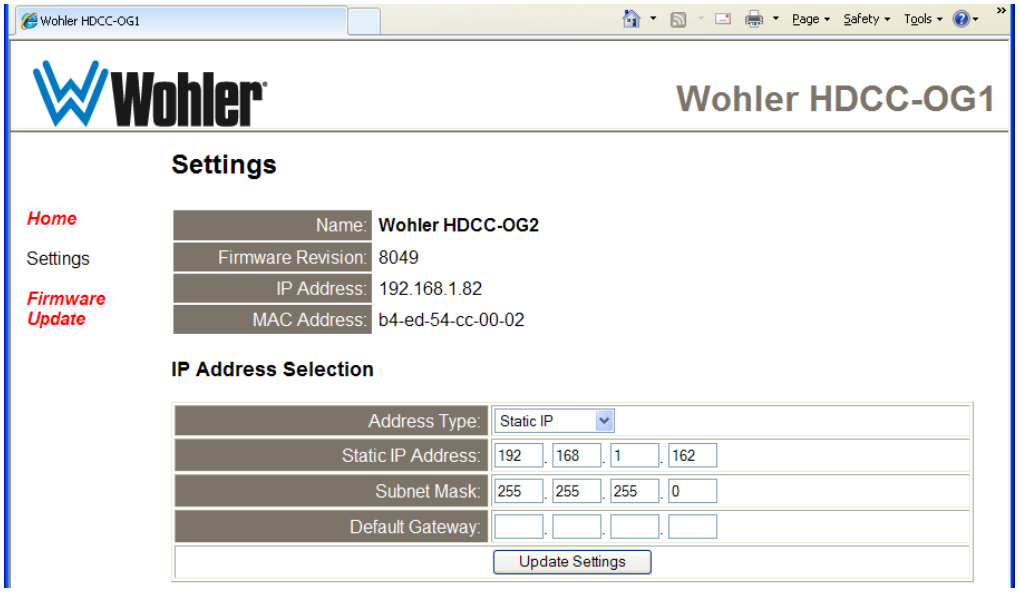
2. When the **Settings** screen appears (Figure 2–11 below) click the drop down in **Address Type** to change it to **Static IP**.

3. Enter the new **Static IP Address** for your network provided by your network administrator.

4. If needed, enter a different **Subnet Mask** (Figure 2–11 below).

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

Figure 2–11 Settings Menu

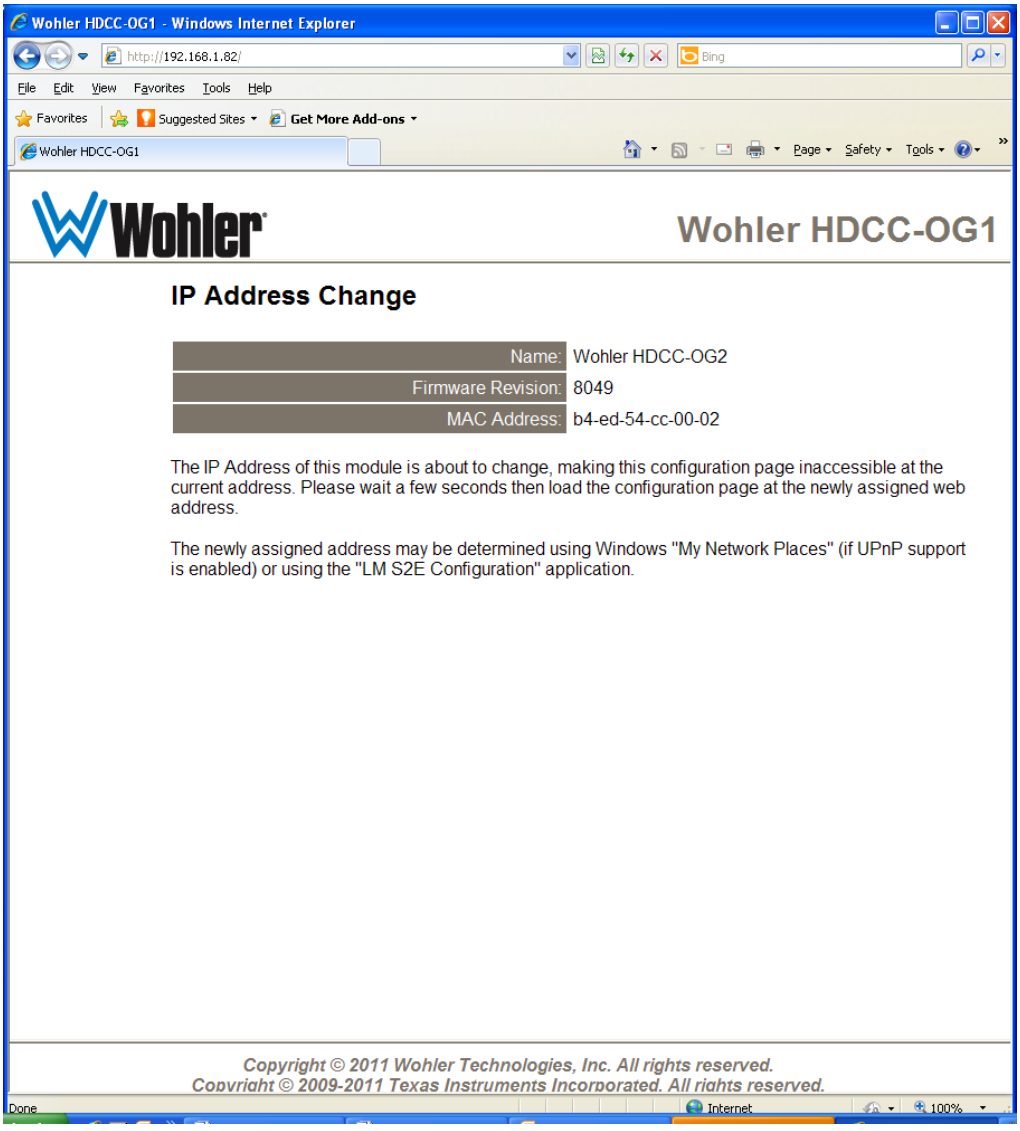


WARNING! Verify that all information is correct for your network. The HDCC card will become unreachable on your network if the wrong information is set.

If this occurs consult your IT department for assistance. You can set the card to a known static IP address using the DIP switch on the rear panel.. See Rear Panel DIP Switch on page 6 for details.

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

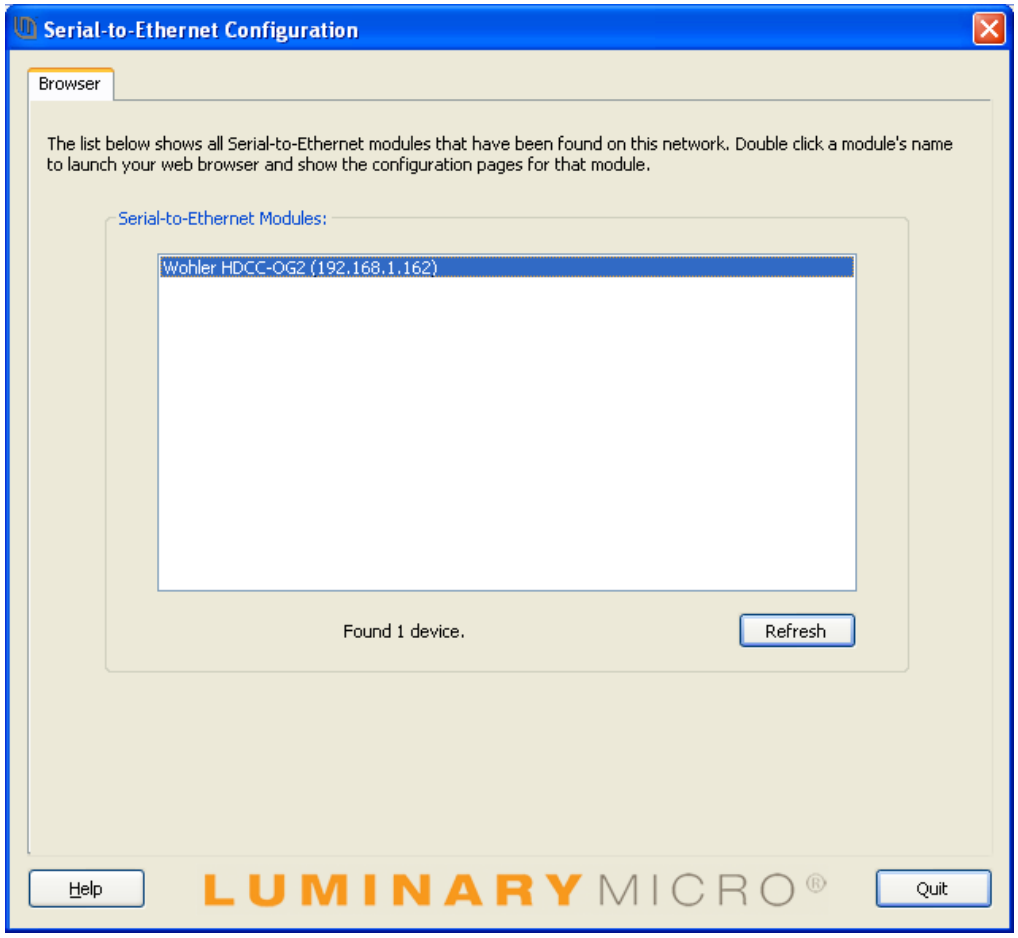
Figure 2–12 IP Address Change



7. Close this window (Figure 2–12 above).

8. Return to the LM S2E Browser application window (Figure 2–13 below) and click **Refresh** in the center right.

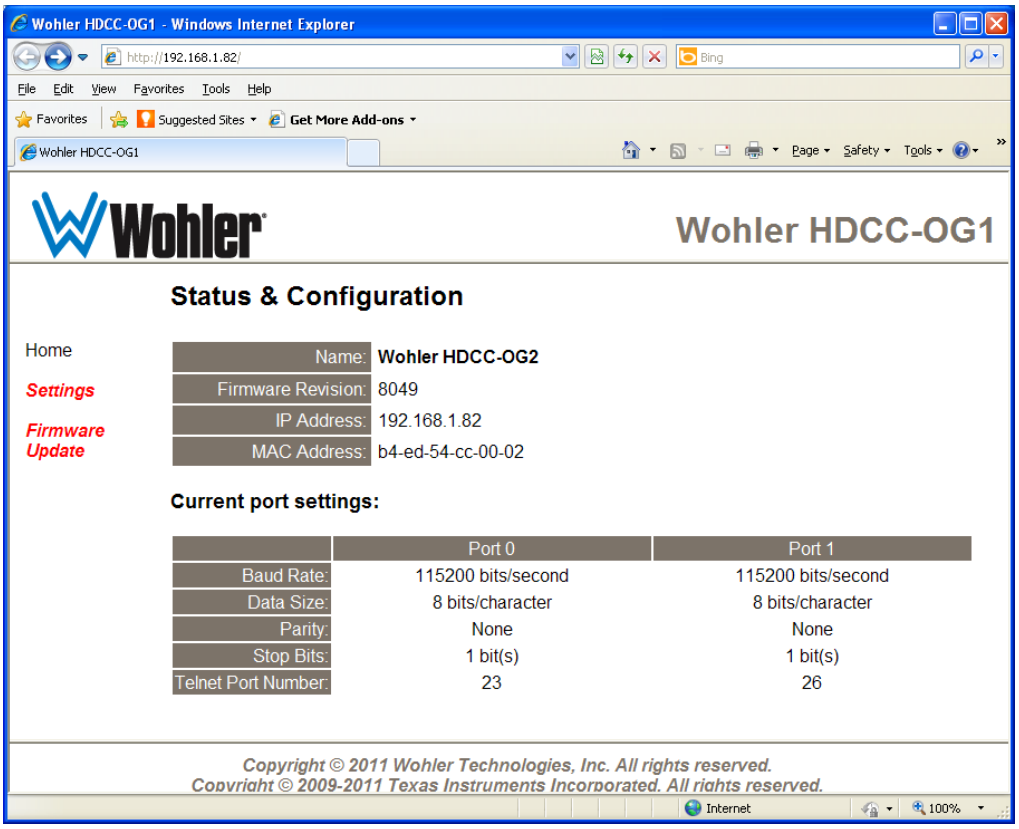
Figure 2–13 Serial-to-Ethernet Configuration



9. Write down the **IP Address** (in our example: 192.168.1.82). See Figure 2–14 below.

10. Write down the **Port 0 Telnet Port Number** (in our example: 23). See Figure 2–14 below.

Figure 2–14 Serial-to-Ethernet Configuration



11. Close the LM S2E Browser application.

Important: This concludes the instructions for modifying the IP address. Continue on to Installing the Lantronix Redirector on page 21.

Installing the Lantronix Redirector

1. Launch your PC 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 2–15 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..."

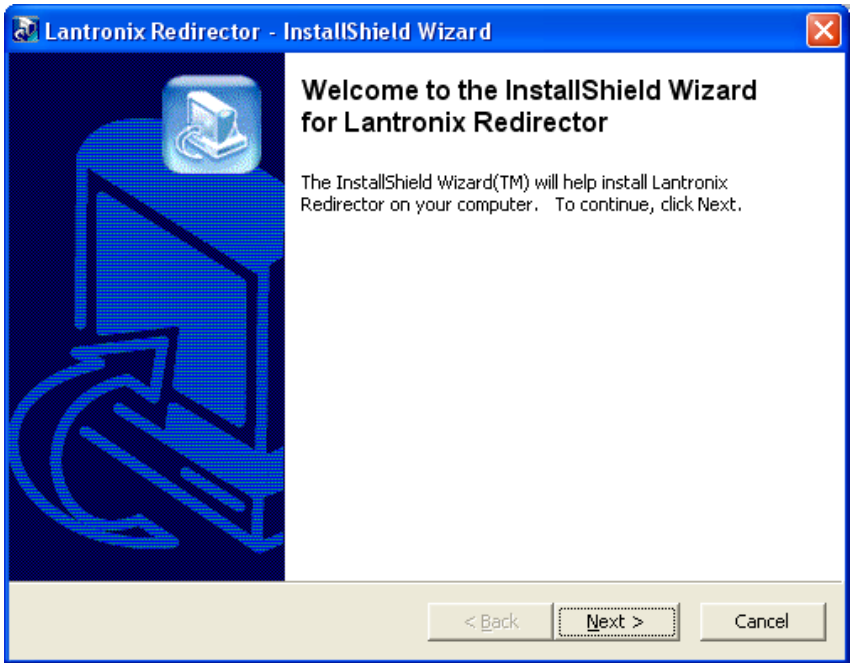
Download the Redirector.

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

Figure 2–16 Open File - Security Warning

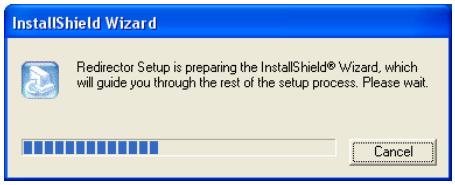
4. When the initial installation screen displays (Figure 2–16 above) click **Run**.

Figure 2–17 Lantronix Welcome Screen



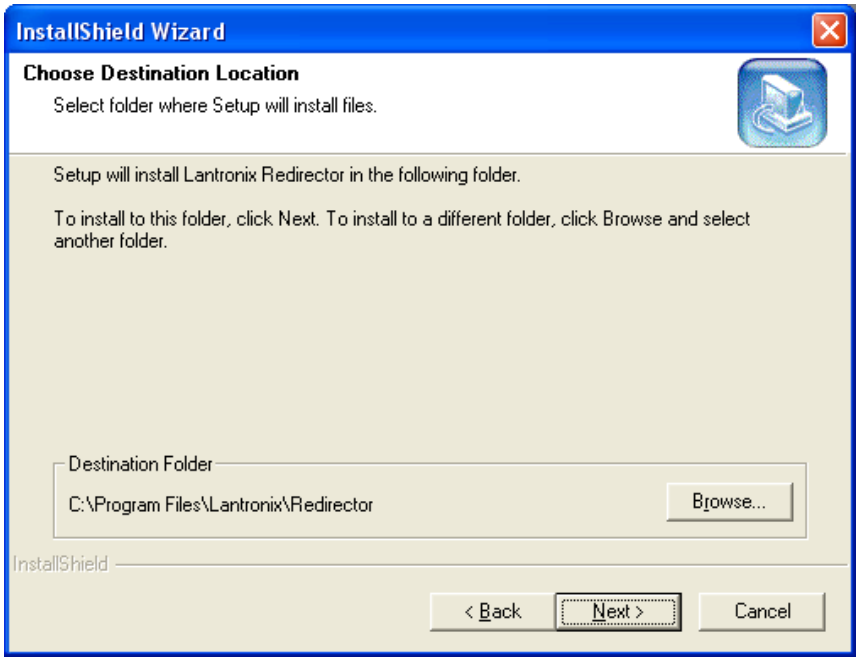
5. When the **Welcome** screen displays (Figure 2–17 above) click **Next**.

Figure 2–18 InstallShield



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

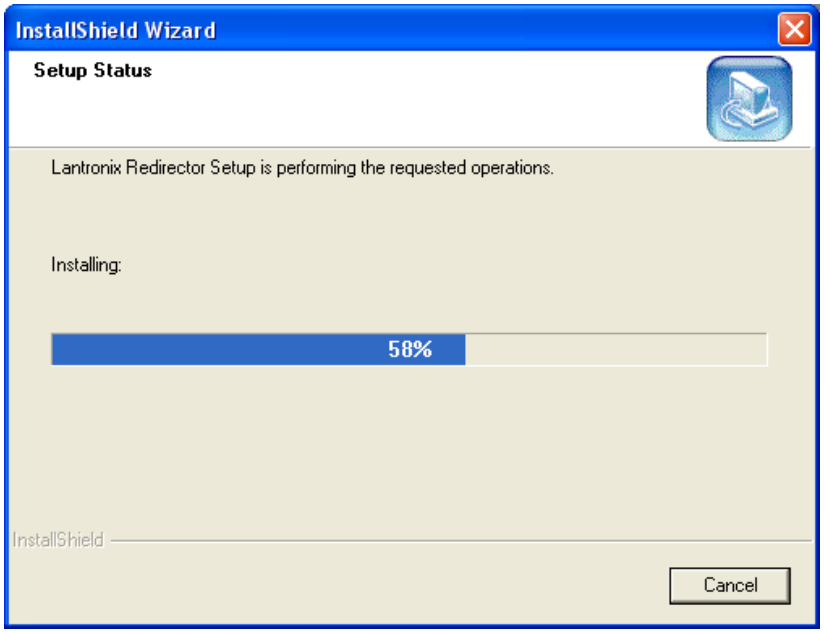
Figure 2–19 Choose Destination Location



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

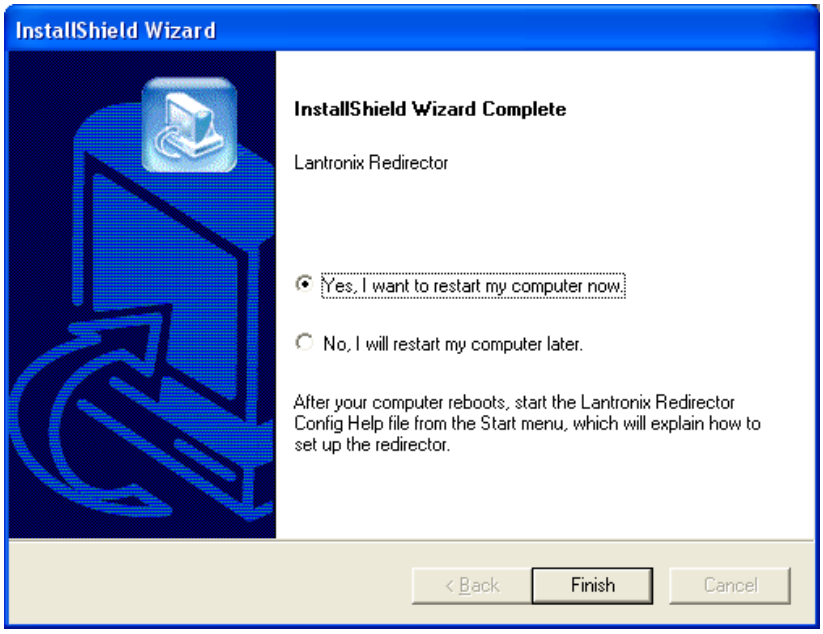
   The **Setup Status** screen (Figure 2–20 on page 23) will display and quickly complete the file installation.

Figure 2–20 Setup Status



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

Figure 2–21 Wizard Complete

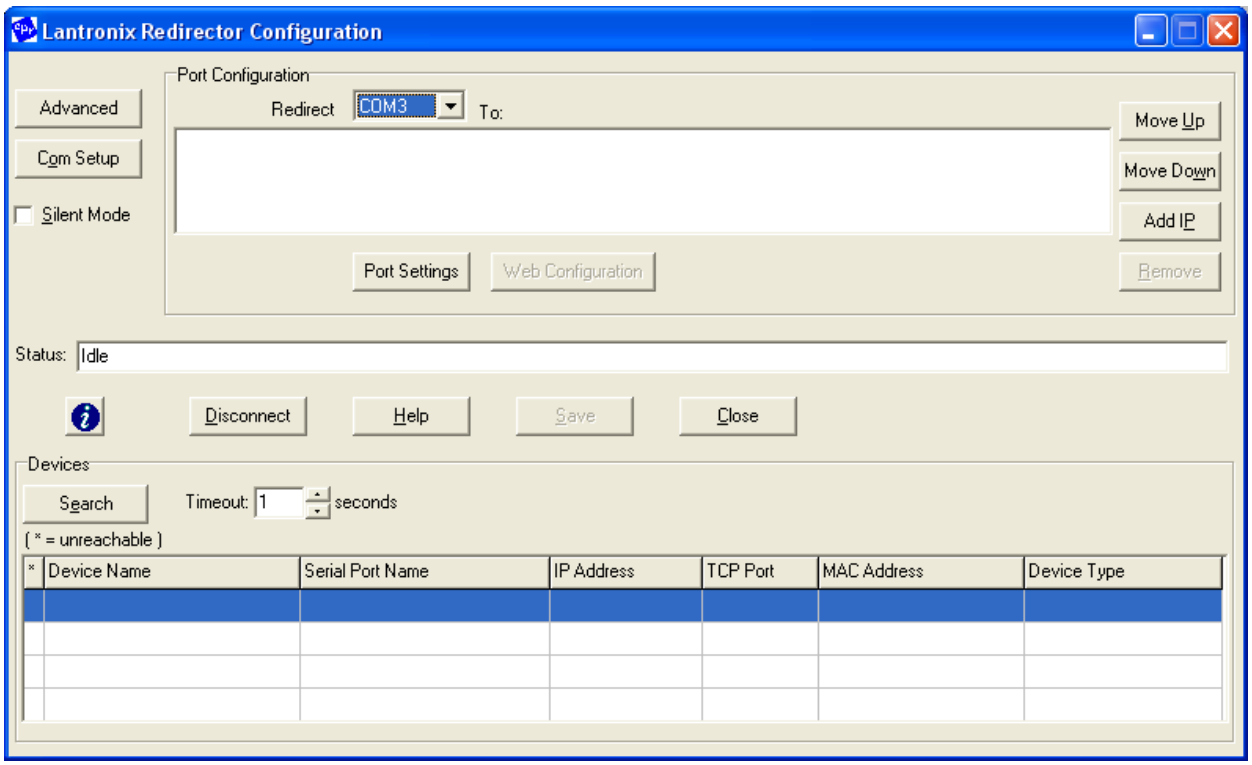


9. When the **InstallShield Wizard Complete** screen displays, verify that **Yes,...** is selected, and click **Finish**. The system will restart.

10. After your computer reboots, click on the **Start** menu and click **Programs**.

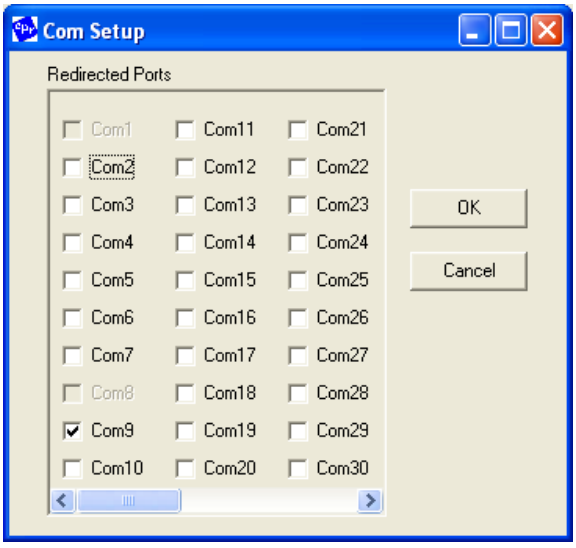
11. Mouse over to **Lantronix ⇨ Redirector ⇨ Configuration** to launch the Lantronix Redirector shown in Figure 2–22 on page 25.

Figure 2–22 Lantronix Redirector Configuration



12. Click **Com Setup** on the left side of the screen.

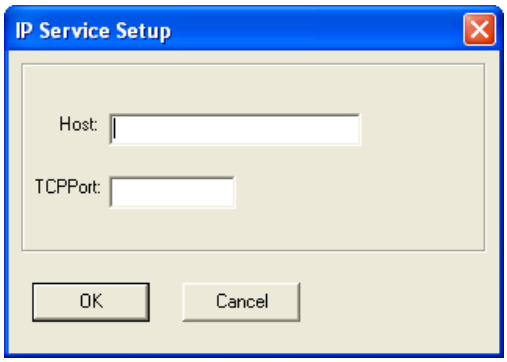
Figure 2–23 Com Setup



13. Assign an available **Com** port (in our example Com9 is selected) and click **OK**.

14. Click **Add IP** on the right side of the screen.

Figure 2–24 Wizard Complete

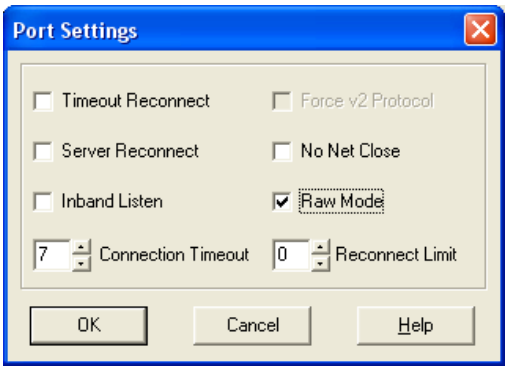


15. In the **Host** field (Figure 2–24 above) enter the IP address of the HDCC card that you wrote down.

16. In the **TCPPort** field (Figure 2–24 above) enter the telnet port number that you wrote down and click **OK**.

17. Click **Port Settings**.

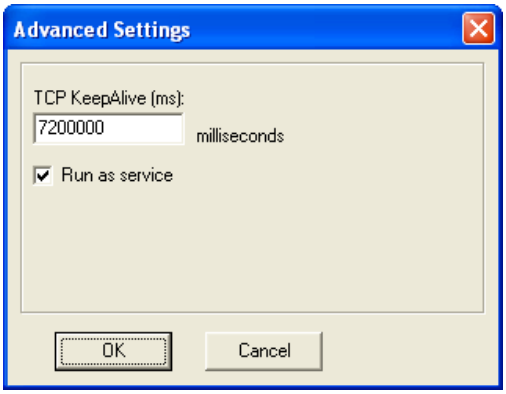
Figure 2–25 Port Settings



18. Check **Raw Mode** (Figure 2–25 above) and click **OK**.

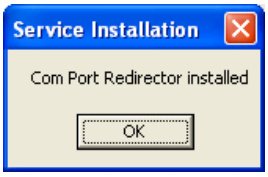
19. Click **Advanced** at the top left corner of the application window.

Figure 2–26 Advanced Settings



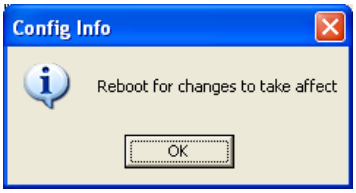
20. When the Advanced Settings dialog appears (Figure 2–26 above) check the **Run as service** box and click **OK**.

Figure 2–27 Service Installation



21. When the **Service Installation** (Figure 2–27 above) dialog appears, click **OK**.

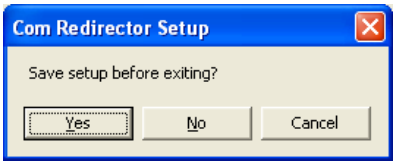
Figure 2–28 Config Info



22. When the **Config Info** dialog displays (Figure 2–28 above) click **OK**.

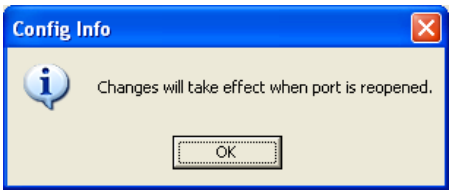
23. When the application window reappears, click **Close** near the center of the screen.

Figure 2–29 Com Redirector Setup



24. When the **Com Redirector Setup** dialog appears (Figure 2–29) click **Yes**.

Figure 2–30 Config Info



25. When the **Config Info** dialog displays (Figure 2–30 above) click **OK**.

CHAPTER 3
Accessing the Engineering Menu

Introduction

Overview

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

Topics

Background

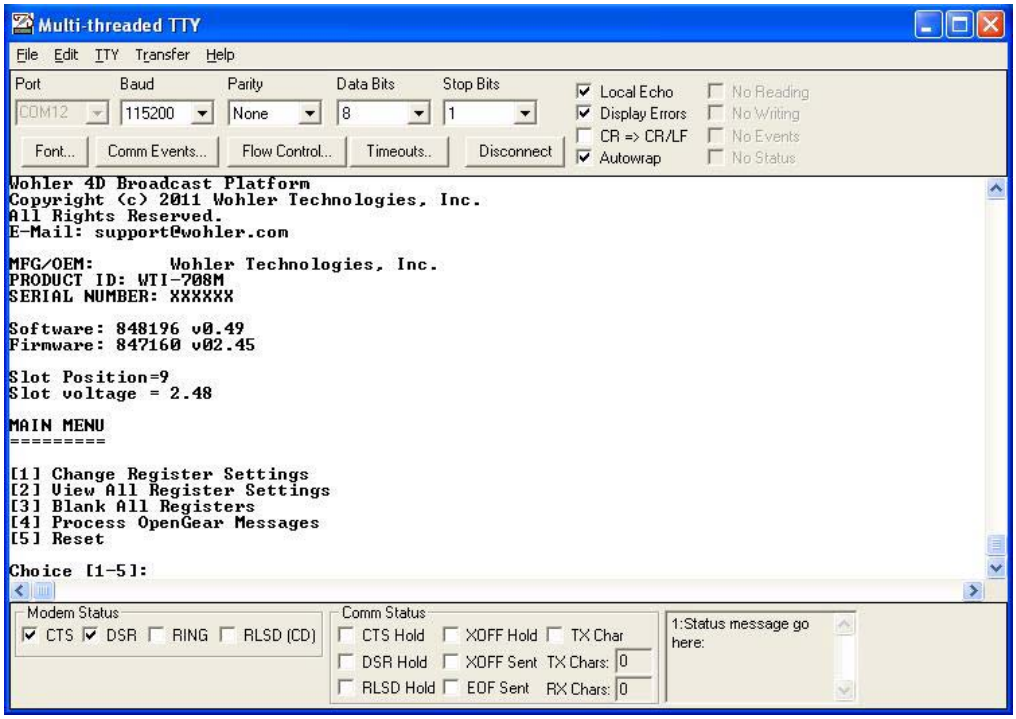
The HDCC card's operation is governed by several registers. These registers are modified automatically if you use the DashBoard user interface.

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

The sections below describe each configuration.

Configuring the HDCC Card for Engineering Menu Access

Figure 3–1 Engineering Menu



Access to the Engineering Menu is controlled by the BOOTOPT jumper on the card as shown in Figure 3–2 below. The sections below describe how it is used.

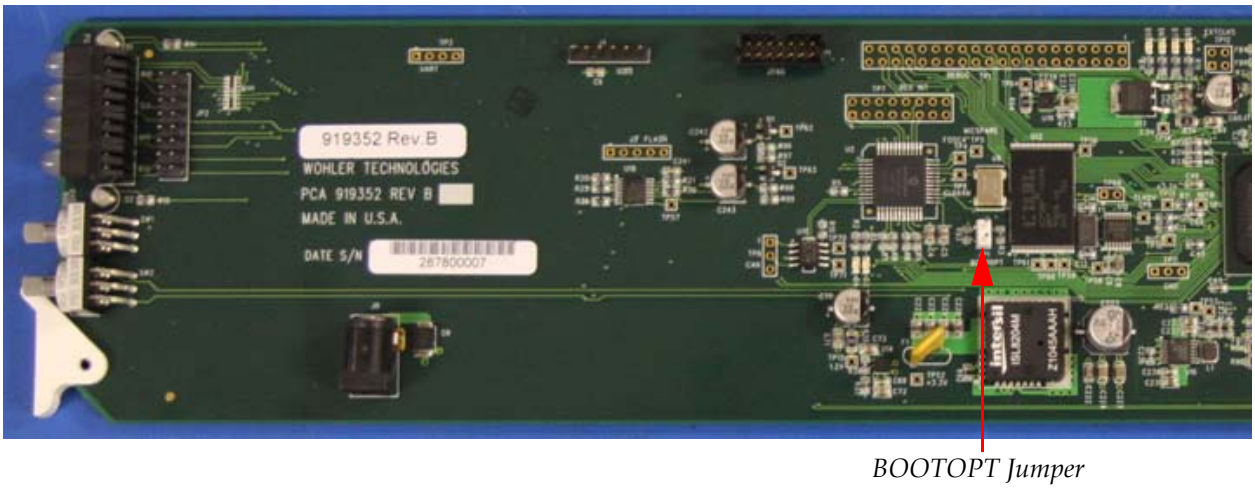
Note: While the card is configured for Engineering Menu access, it will not respond in DashBoard. To restore DashBoard operation, power down the card, remove the jumper, and re-power the card.

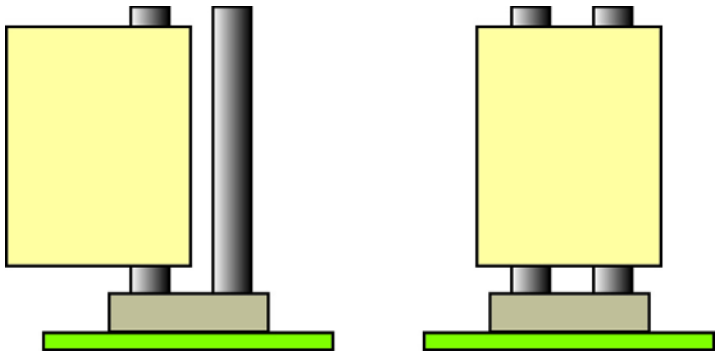
WARNING! Use caution when modifying the HDCC card's register values. Incorrect values may cause the card to behave unpredictably.

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 3–2 on page 32) and re-power the card.
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. 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.
6. Press the Enter key to display the Engineering Menu as shown in Figure 3–1 on page 30.
7. Power off the card, remove the BOOTOPT jumper, and re-power the card to restore normal operation. (See Figure 3–2 on page 32 for details.)

Figure 3–2 BOOTOPT Jumper Location





BOOTOPT Jumper Removed = Normal Operation

BOOTOPT Jumper Installed = Access Engineering Menu

8. 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 3–2 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 Engineering Menu. (See Figure 3–1 on page 30).

8. Power off the card, remove the BOOTOPT jumper, and re-power the card to restore normal operation. (See Figure 3–2 on page 32 for details.)

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

Important: Use caution when modifying the HDCC card's registers; doing so may cause unpredictable results.

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 3–2 on page 32) 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 Engineering Menu. (See Figure 3–1 on page 30).

8. Power off the card, remove the BOOTOPT jumper, and re-power the card to restore normal operation. (see Figure 3–2 on page 32)

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

1. Power down the card, set SW3 to **on**, install BOOTOPT jumper, and re-power the card. (See Figure 3–2 on page 32 for details.)

2. Connect a USB cable from your network to the USB connector on the front edge of the HDCC card.

3. Install the USB-Serial interface software as prompted.

4. 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.

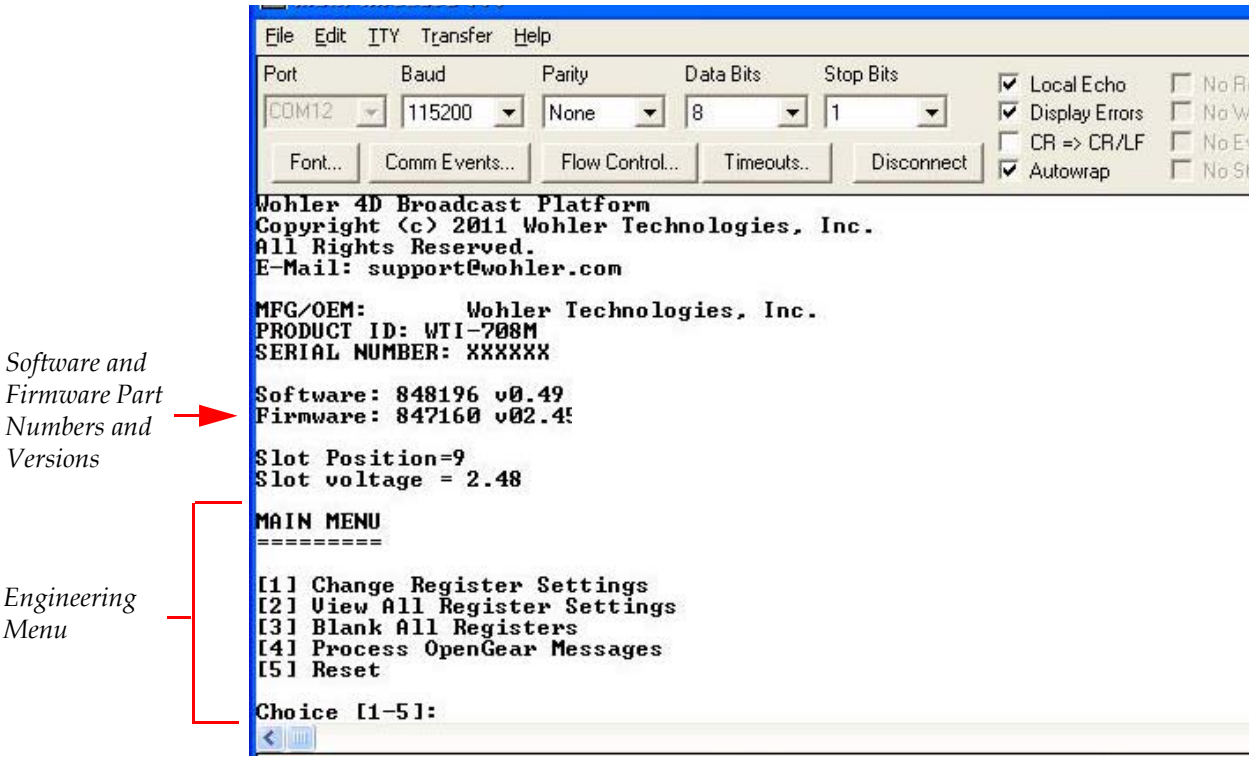
5. Press the Enter key to display the Engineering Menu. (See Figure 3–1 on page 30).

6. Power off the card, remove the BOOTOPT jumper, and re-power the card to restore normal operation. (See Figure 3–2 on page 32 for details.)

Engineering Menu

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

Figure 3–3 Engineering Menu



Important: Refer to the configuration guide for your product 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.

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 Engineering 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 return to the Engineering Menu.