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**GPIB
ENET**

Operating Manual

**GPIB and Ethernet
Interface for
XG Series
Programmable DC
Power Supplies**

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XG 850 Watt Series Programmable DC Power Supply

Operating Manual

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Date and Revision

November 2007 Revision A

Part Number

M370078-01

Product Numbers (FGAs)

XG6-110	XG60-14
XG8-100	XG80-10.5
XG12-70	XG100-8.5
XG20-42	XG150-5.6
XG33-25	XG300-2.8
XG40-21	XG600-1.4

Part Numbers for Rack Mount Kits

Rack Mount Kit	Part Number
Dual XG 850 Watt	RM-D-XG1
Single XG 850 Watt	RM-S-XG1
Rack mount rails for XG Series	RM-XG

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About This Manual

Purpose

This Operating Manual provides explanations and procedures for programming the XG 850 Watt Series Programmable DC Power Supply from the GPIB interface and connecting and configuring the power supply to the Ethernet.

Scope

The Manual covers the GPIB and Ethernet interface options only. Refer to the *XG 850 Watt Series Programmable DC Power Supply Operating Manual (Part number: M370078-01)* for installation, operating procedures, setup, calibration and troubleshooting for your power supply.

Audience

The Manual is intended for the user who is familiar with electronic power supplies, Constant Current and Constant Voltage operating modes and the control of output power. The user should be familiar with practicing safe techniques while making supply or pin connections. The user should also have experience with network-based communications software and protocols.

Organization

This Manual is organized into two chapters, two appendices, and provides Warranty and Product information.

Chapter 1, “GPIB” provides information and procedures on programming the XG 850 Watt Series Programmable DC Power Supply from the GPIB (General Purpose Interface Bus) interface.

Chapter 2, “Ethernet (ENET)” provides information and procedures to connect and configure the power supply to the ENET.

Appendix A, “Troubleshooting” provides troubleshooting information for the combined ENET and RS-485 communication and for ENET communication.

Appendix B, “Links” provides the Web site links for relevant third party vendors.

Conventions Used

The following conventions are used in this Manual.



WARNING

Warnings identify conditions or practices that could result in personal injury or loss of life.



CAUTION

Cautions identify conditions or practices that could result in damage to the unit or other equipment.

Important: Important notes provide information that is important for you to know. They are not as serious as Cautions or Warnings.

Related Information

For related materials on this product, see also:

- *XG 850 Watt Series Programmable DC Power Supply Operating Manual (Part number: M370078-01).*
- *XG 850 Watt Series Programmable DC Power Supply Rack Mount Kit Options (Part number: M370078-05).*
- *XG 850 Watt Series Programmable DC Power Supply: Quick Reference Guide (Part number: M370078-04).* This document is included with your power supply and provides a quick start on using the front panel interface.

More information about Xantrex Technology Inc. as well as its products and services is available at **www.programmablepower.com**.

Important Safety Instructions



WARNING: High Energy and High Voltage

Exercise caution when using a power supply. High energy levels can be stored at the output voltage terminals on a power supply in normal operation. In addition, potentially lethal voltages exist in the power circuit and on the output and sense connectors of a power supply with a rated output greater than 40 V. Filter capacitors store potentially dangerous energy for some time after power is removed.



WARNING

Operate the power supply in an environment free of flammable gases or fumes. To ensure that the power supply's safety features are not compromised, use the power supply as specified in this manual and do not substitute parts or make any unauthorized modifications. If service is necessary, please return the power supply to the factory Authorized Service Center. See “Return Material Authorization Policy” on page WA-3.



WARNING: Limitations on use

The XG 850W GPIB and Ethernet Interface Option is not intended for use in connection with life support systems or other medical equipment or device.

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1

GPIB

Chapter 1, “GPIB” provides information and procedures on programming the XG 850 Watt Series Programmable DC Power Supply from the GPIB (General Purpose Interface Bus) interface.

Overview

The power supply can be programmed from a remote terminal using a GPIB interface. Communication over the GPIB interface meets IEEE 488.2 standards and are Standard Commands for Programmable Instrumentation (SCPI) compliant.

Codes and Standards

The GPIB interface of the XG 850 Watt Series Programmable DC Power Supply has been implemented according to IEEE Std 488.1-1987, IEEE Standard Digital Interface for Programmable Instrumentation. The communication protocol complies with IEEE 488.2-1992.

GPIB Interface Description and Required Cable Size

The GPIB interface is an 8-bit parallel data bus having a host of bus commands for synchronization and up to one megabyte data transfer rate. Use standard IEEE-488, 26 AWG GPIB cable up to 3 metres in length.

GPIB Pin Description

The GPIB port is a special GPIB female connector. See Figure 1-1.

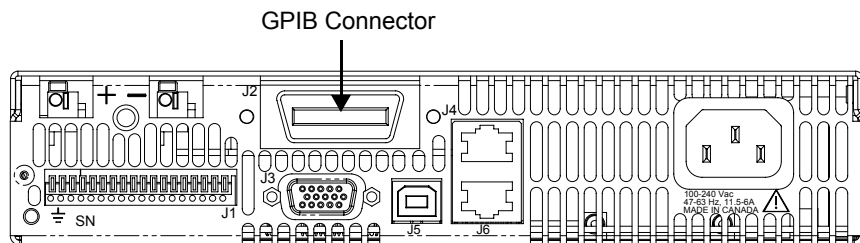


Figure 1-1 GPIB Connector and Pins

Table 1-1 identifies the pin name and describes the pin functions.

Table 1-1 GPIB Pin Description (J2)

Pin #	Name	Function	Note
1	DIO1	DIO1	Data
2	DIO2	DIO2	Data
3	DIO3	DIO3	Data
4	DIO4	DIO4	Data
5	EOI	End of Identify	Control
6	DAV	Data Valid	Handshake
7	NRFD	Not Ready for Data	Handshake
8	NDAC	No Data Accepted	Handshake
9	IFC	Interface Clear	Control
10	SRQ	Service Request	Control
11	ATN	Attention	Control
12	-	Shield	Chassis
13	DIO5	DIO5	Data
14	DIO6	DIO6	Data
15	DIO7	DIO7	Data
16	DIO8	DIO8	Data
17	REN	Remote Enable	Control
18	-	DAV Return	Chassis
19	-	NRFD Return	Chassis
20	-	NDAC Return	Chassis
21	-	IFC Return	Chassis
22	-	SRQ Return	Chassis
23	-	ATN Return	Chassis
24	-	Signal Ground	Chassis

Communication with Your Device

This section provides information on selecting the GPIB interface as the communication port used on the XG, and it also provides an example of how commands can be sent and received. The details of the IEEE 488.2 and SCPI status reporting register structures and a complete list of commands available can be found in the *XG 850 Watt Series Programmable DC Power Supply Operating Manual (M370046-01)*.

Selecting a Communication Port

To select the GPIB as the communication port:

1. Turn the 9-position Mode control to PGM.
rE is displayed in the output voltage display.
2. Turn the rotary Adjust/Enter control to select the GPIB communication port.
3. Press the rotary Adjust/Enter control.
Addr is displayed on the output voltage display.
4. Turn the rotary Adjust/Enter control to select the desired address between 1 to 30. For the purpose of this example, 10 will be selected.
5. Press the rotary Adjust/Enter control to commit the new address.
6. Click Scan For Instruments on the GPIB Explorer toolbar. See Figure 1-2.
The power supply will be found as shown in Figure 1-2.

Important: This section uses the National Instruments™ MAX program to communicate with the XG. This is for demonstration purposes only. Any software that is capable of addressing a GPIB device and sending and receive text could be used in its place. Consult your GPIB card manufacturer to see if they provide an equivalent program.

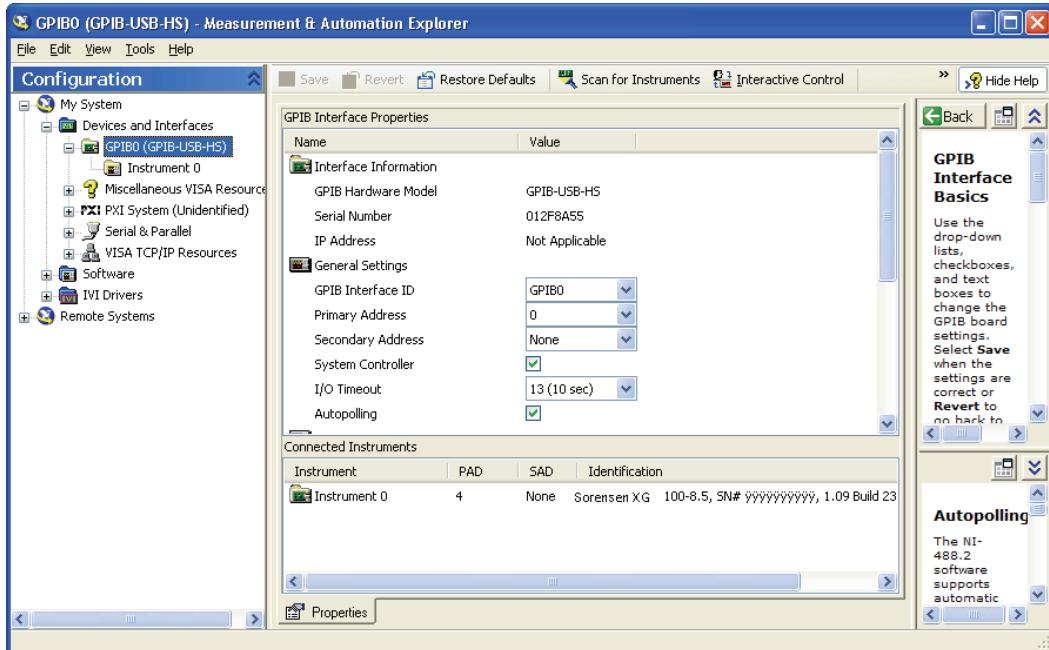


Figure 1-2 Scanning for Instruments

- In the right window, click on Instrument1 and review the device properties. See Figure 1-3.

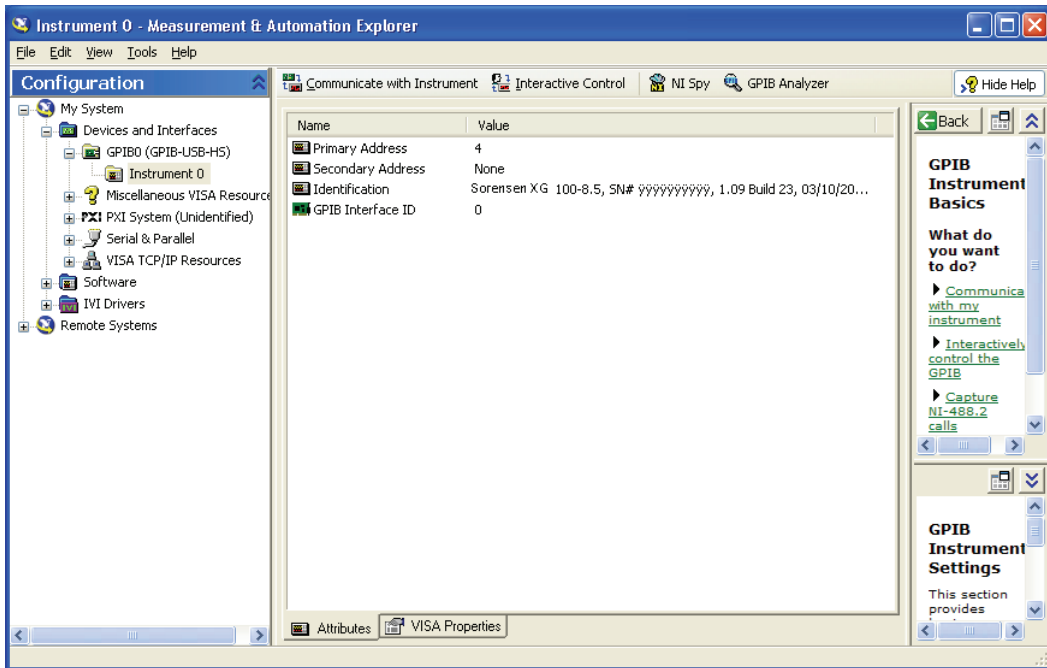


Figure 1-3 Instrument Properties

8. Click Communicate with Instrument in the GPIB Explorer toolbar. See Figure 1-3.
NI-488.2 Communicator appears. See Figure 1-4.

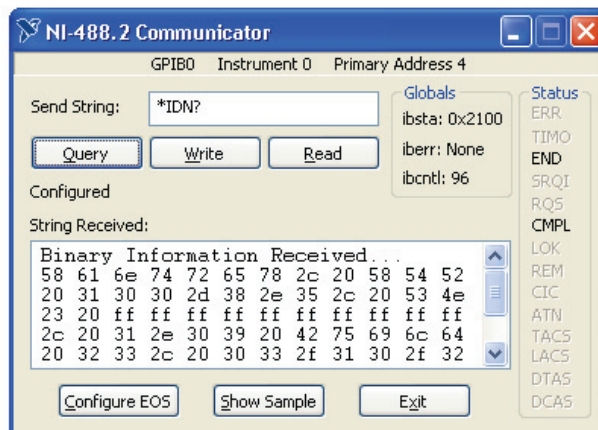


Figure 1-4 ID String Query

9. In the Send String box, enter *IDN? and click Query.

Important: If you press Enter while typing the string to be sent, the NI-488.2 Communicator program will exit.

10. The String Received window will show the ID string for the XG.

The ID string indicates the model, serial number, firmware version as well as the GPIB card firmware version. This will be shown in the text box below **String Received**. See Figure 1-4.

2

Ethernet (ENET)

Chapter 2, “Ethernet (ENET)” provides information and procedures to connect and configure the power supply to the ENET.

Overview

This chapter is intended for network administrators responsible for the configuration and maintenance of devices on the network. This chapter provides information for connecting and configuring the power supply to Ethernet.

Basic Section

This section describes the equipment and procedures to fully set up the simplest configuration of an XG unit with the ENET option and a single computer.

Important: The information in this section is applicable to the “Advanced Section” on page 2–26. Xantrex recommends that you read through this section even if the configuration doesn't match your final setup.

System Requirements

- Windows XP, Windows 2000, Windows NT4.0 (with service pack 6.0a or later), Windows ME, or Windows 98
- Internet Explorer 5.01 or later
- 30 MB hard drive space
- 64 MB RAM

Accessories

- Power supply with ENET port
- ENET RJ-45 and RJ-45 STP, Cat 5 cross-cable 9.84 feet (3 m) in length or longer®
- PC
- Installation CD

Communication Cable

Use a standard RJ-45 (see Figure 2-1) and RJ-45 cross-cable (see Figure 2-2).



Figure 2-1 Computer or HUB Plug

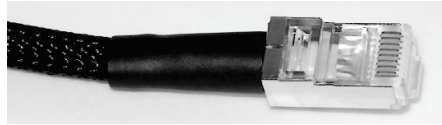


Figure 2-2 Power Supply Plug

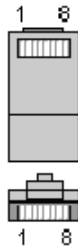


Figure 2-3 RJ-45 Plug

Table 2-1 Description of PIN on RJ-45 Plug

Pin#	Name	Description
1	TX+	Transmit data +
2	TX-	Transmit data -
3	RX+	Receive data +
4	Gnd	Ground
5	Gnd	Ground
6	RX-	Receive data -
7	Gnd	Ground
8	Gnd	Ground

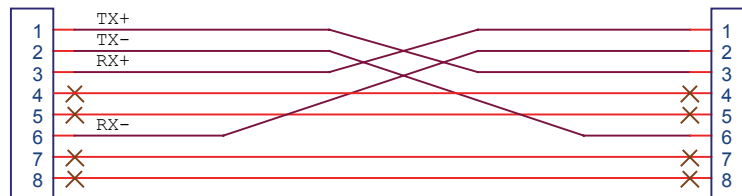


Figure 2-4 Scheme of ENET Cross-Cable

ENET Connector

The XPort® ENET connector is located on the rear panel of the power supply. See Figure 2-5.

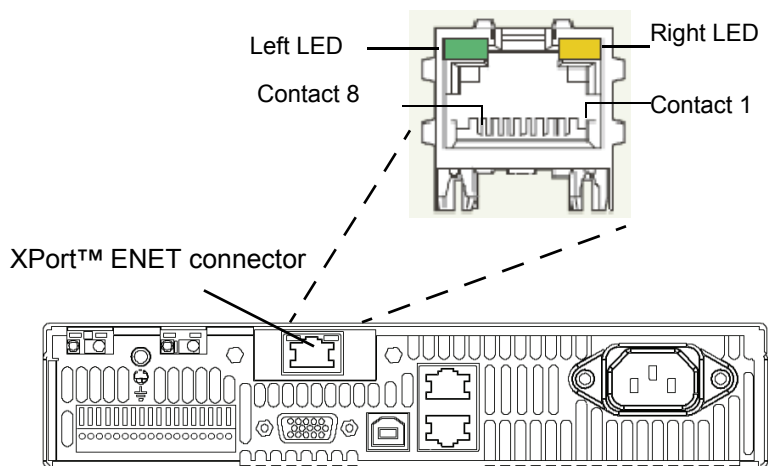


Figure 2-5 XPort® ENET Connector and LEDs

XPort™ LEDs

The device contains two bi-color LEDs built into the front of the XPort™ connector. See Figure 2-5.

Table 2-2 Description of LEDs

LED	Color	Description
Link LED (Left side)	Off	No link
	Amber	10 Mbps
	Green	100 Mbps
Activity LED (Right side)	Off	No activity
	Amber	Half-duplex
	Green	Full-duplex

Network Topology and Connection

The following section describes the network topology for the single computer and single XG power supply unit. The other possible network topologies will be discussed later in the “Advanced Section” on page 2–26. The additional topologies build on the configuration ideas present in this section by referencing the various setup instructions.

Single Computer and Single Power Supply Unit

Figure 2-6 shows the connection between the ENET unit and Local Computer through a crossover cable; however, a HUB could also be used with straight through Ethernet cables as well. Connect your computer to the ENET as shown in Figure 2-6, or if this topology does not match your configuration, refer to the “Advanced Section” on page 2–26 to identify the topology you wish to implement and follow the instructions described in that section.

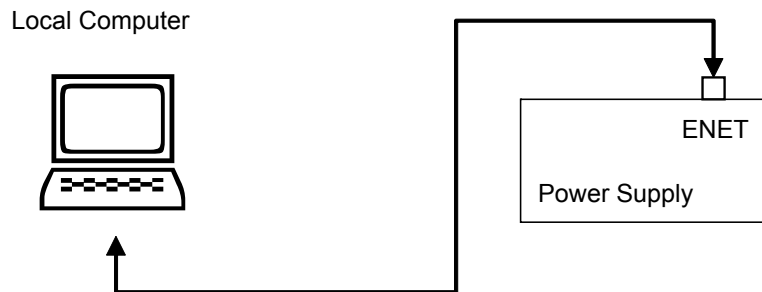


Figure 2-6 Single Computer, Single Power Supply

Setting Up the Computer

To set up the computer:

1. Open Explorer on the main computer, go to **Control Panel > Network Connections > Local Area connections**. See Figure 2-7.

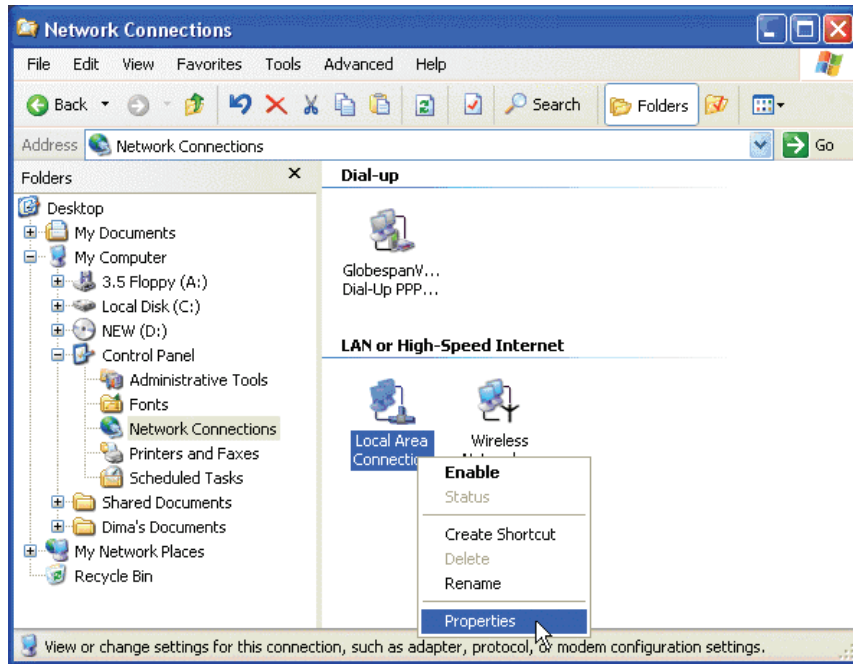


Figure 2-7 Configuring the Network Connection of the Computer

2. Right click on the mouse button and click on Properties.
The Local Area Connection Properties window appears. See Figure 2-8.

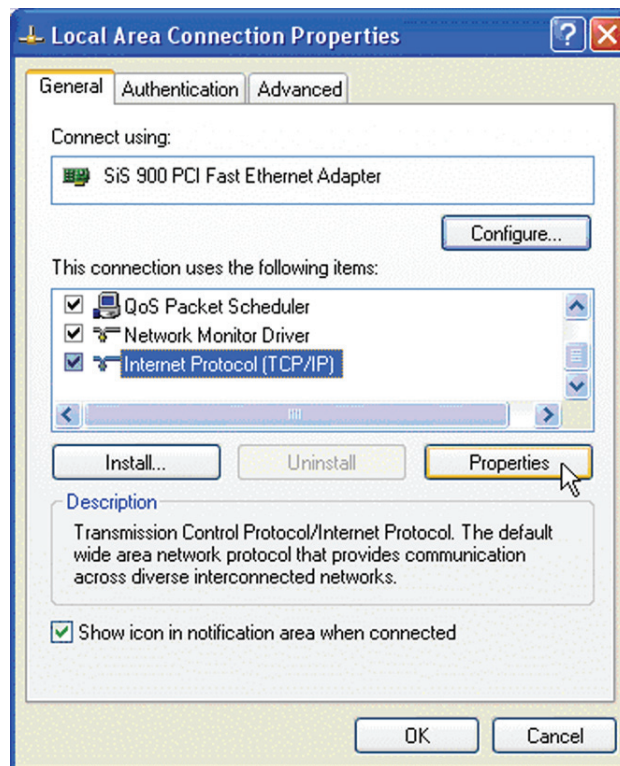


Figure 2-8 LAN Properties Dialog Box

3. Click the Internet Protocol (TCP/IP) check box and click Properties. See Figure 2-8.

The Internet Protocol (TCP/IP) Properties Dialog Box appears. See Figure 2-9.

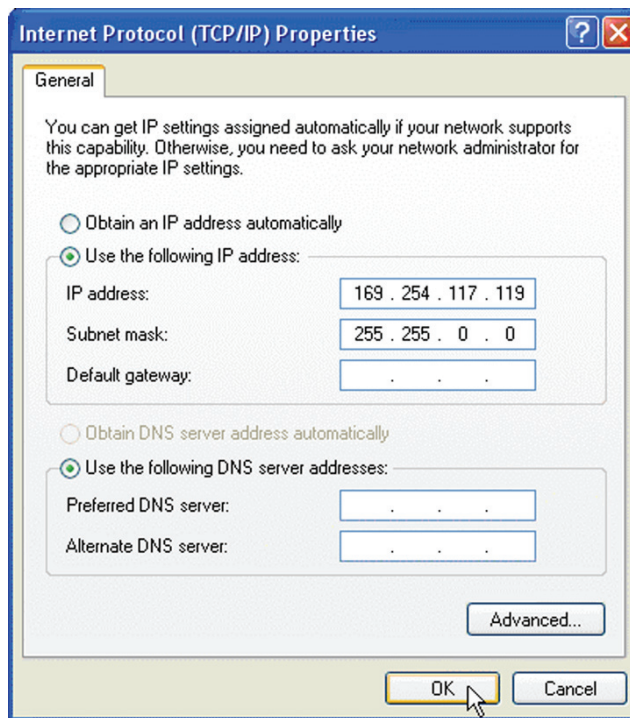


Figure 2-9 Internet Protocol (TCP/IP) Properties Dialog Box

4. Click on **Use the following IP address** option and type the appropriate IP address in the box, or select the **Obtain an IP address automatically** setting if your network is configured using DHCP.
5. Click **OK**.

Software Installations

To set up the ENET option card, the Lantronix® DeviceInstaller program needs to be installed on your PC. DeviceInstaller is an all-in-one utility for setting up various Lantronix devices on a network. Device Installer auto detects any devices on the network and allows for configuration of network settings. As a management tool, the DeviceInstaller allows for device monitoring and status verification of the ENET option card.

To install the DeviceInstaller:

1. Insert the DeviceInstaller CD into the CD ROM drive.

The CD should launch automatically.

If you need to manually launch the CD, click the Start button on the Task Bar and select Run. Enter the CD drive letter, for example, D:\Launch.exe. The DeviceInstaller Setup Wizard opens to guide the installation process. See Figure 2-10.

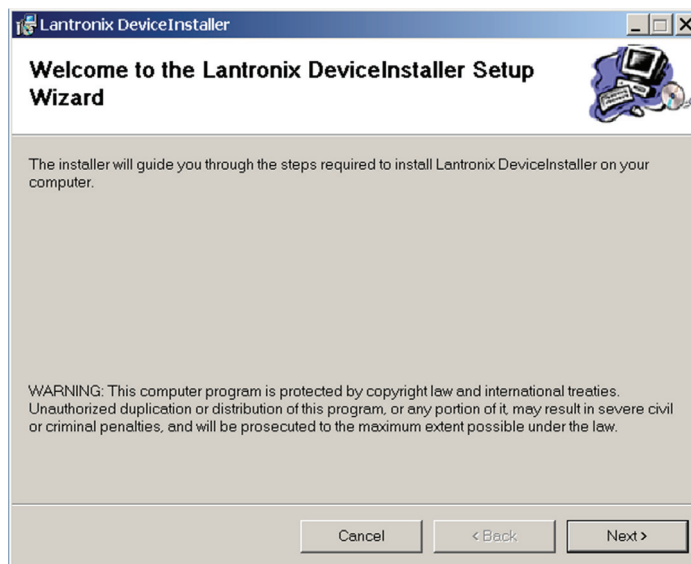


Figure 2-10 DeviceInstaller Setup Wizard

2. Click **Next** to open the Select Installation Folder window.
The Select Installation Folder window prompts for a destination folder for the installation.

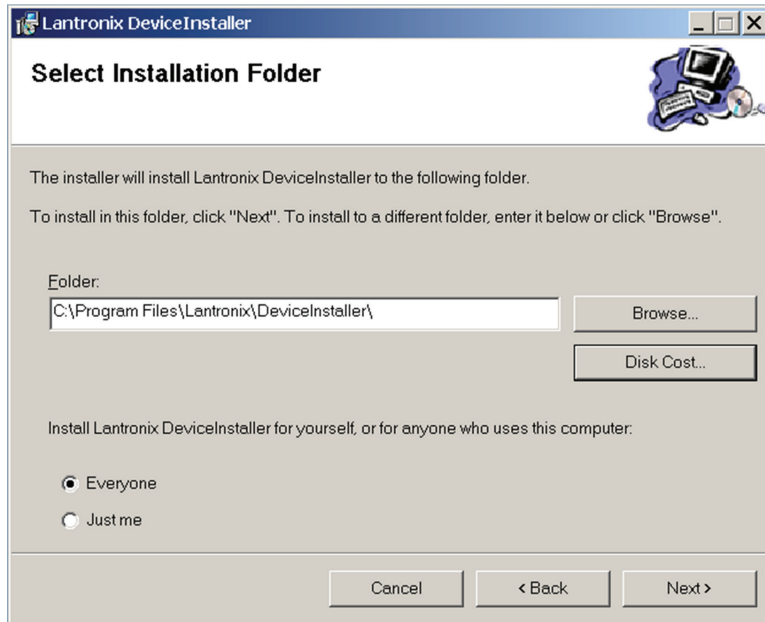


Figure 2-11 Select Installation Folder Window

3. Click **Next** to begin the installation.
The Installation Complete window displays when the installation is finished.
6. Click **Close** to exit.

Configuring the Device Using DeviceInstaller

The DeviceInstaller displays a list of the XG units with the ENET option that are on the network. When the DeviceInstaller initially starts, the device list is empty. Devices may be added by performing a search for the devices on the network or by adding them manually.

Selecting a Network Adapter

After the installation of DeviceInstaller to your PC, you must select which network adaptor you wish the DeviceInstaller to use for all its network communications.

To select the network adaptor:

1. Start **DeviceInstaller** by clicking **Start > All Programs > Lantronix > DeviceInstaller > DeviceInstaller**.
2. If this is the first time you have started the program after installing it and there are more than one network adaptors on the PC, you might be prompted to select the network adaptor as seen in Figure 2-12. If this prompt does not appear, click **Tools > Options...** to bring up the Options window shown in Figure 2-13.
3. Verify that the network adaptor that is connected to the network that you are running your XG unit (s) on, is selected.

Important: Only network adaptors that are enabled and have an Ethernet cable connected will be shown in this list. If one of your networks adaptors is not shown in this list, verify that it is enabled and has a network cable connected to it.

4. Click the **OK** button.

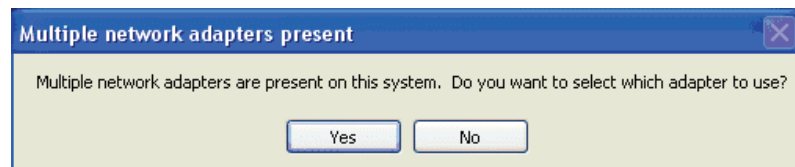


Figure 2-12 Multiple Network Adapters

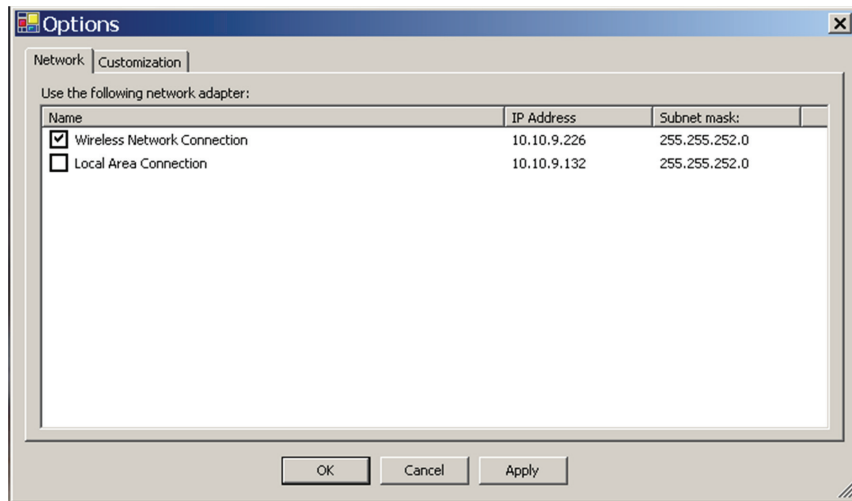


Figure 2-13 Selecting Network Adapter

Assigning an IP Address to the Power Supply Unit

If your system is auto-IP configured, the following warning message is displayed:

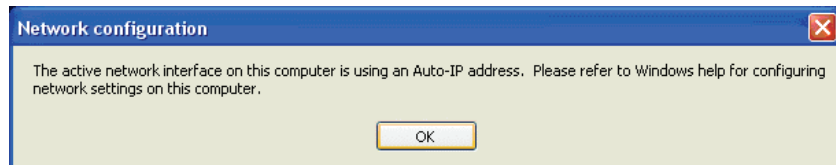


Figure 2-14 Auto-IP Address Message

Important: Auto-IP mode is acceptable only for the single computer and single power supply configuration.

To assign an IP address to the power supply unit:

1. Click **OK** to dismiss the Auto-IP warning message. If you are not intending on using an Auto-IP, debug your network connection at this time.

The Lantronix DeviceInstaller window appears. See Figure 2-15.

2. Click **Search** to get a list of all the XG devices that can be reached from the network adaptor that you previously selected. If your XG unit (s) are powered up, they should appear in this list.

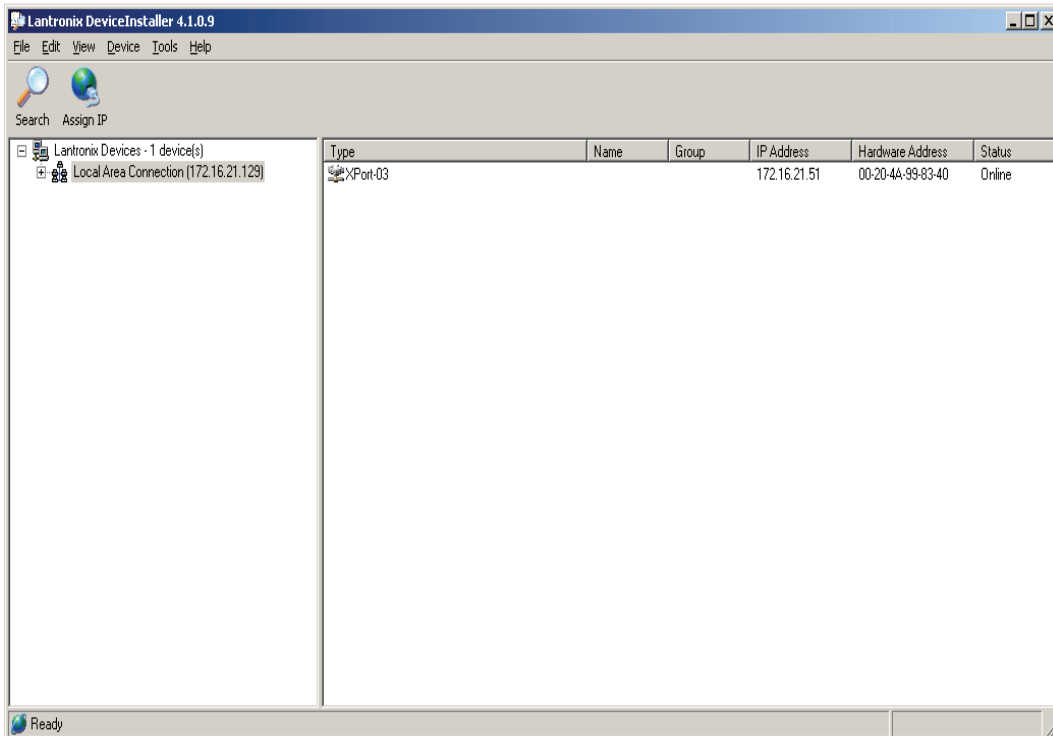


Figure 2-15 Searching for Power Supply IP Address

After a short delay, your power supply will be found. See Figure 2-15. If the power supply is not found or the found device is not reachable, contact your network administrator for details about network settings.

3. If the IP address shown and the method that the XG unit is using to obtain this address is correct, stop here and exit/close this window. Otherwise, continue to step 4.
4. Expand the Local Area Connection tree; if necessary, expand further until the IP address of the XG unit is displayed. Then left click the IP address; the screen should display as shown in Figure 2-16.

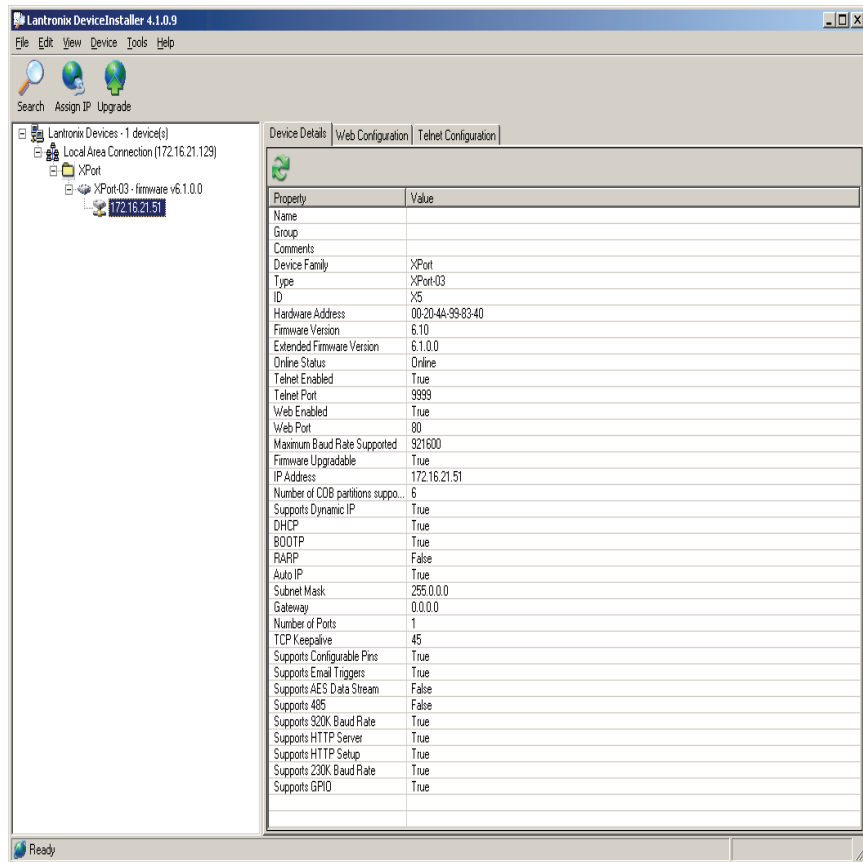


Figure 2-16 IP Address Details Window

Important: Do **NOT** use the Assign IP button in the tool bar, upper left of this window. The IP address is assigned using Steps 5 through 9 that follow.

5. In this window, click the Web Configuration tab, which will open a new window. See Figure 2-17.

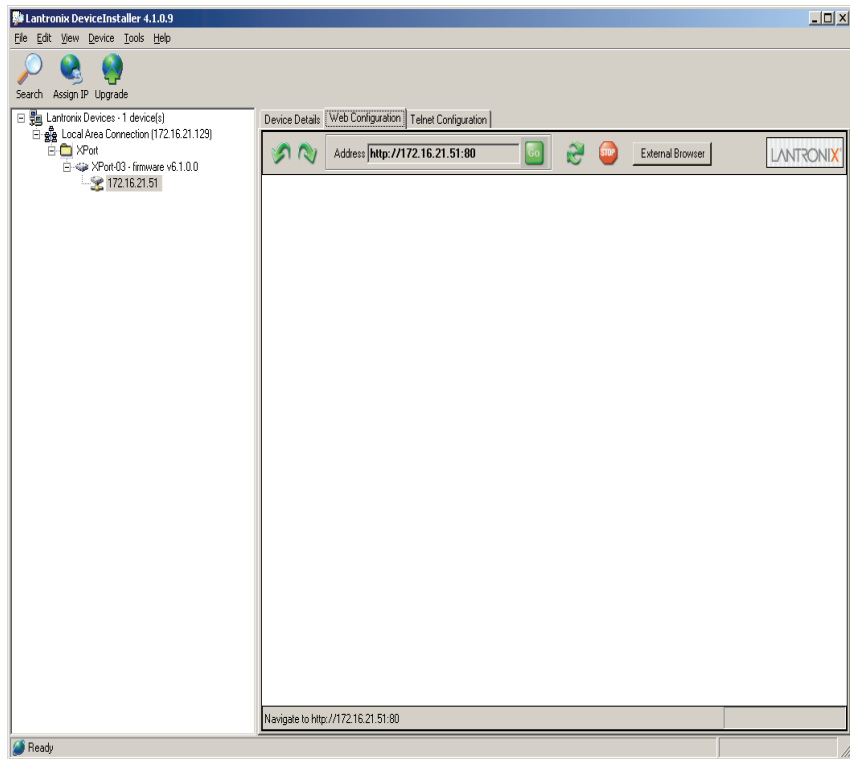


Figure 2-17 Entering the Lantronix Interface

6. Next to the Address field, click the green Go button.
7. You will be prompted for user name and password: ignore these fields (leave blank) and click OK. This brings up the Lantronix XPort® interface (Figure 2-18).

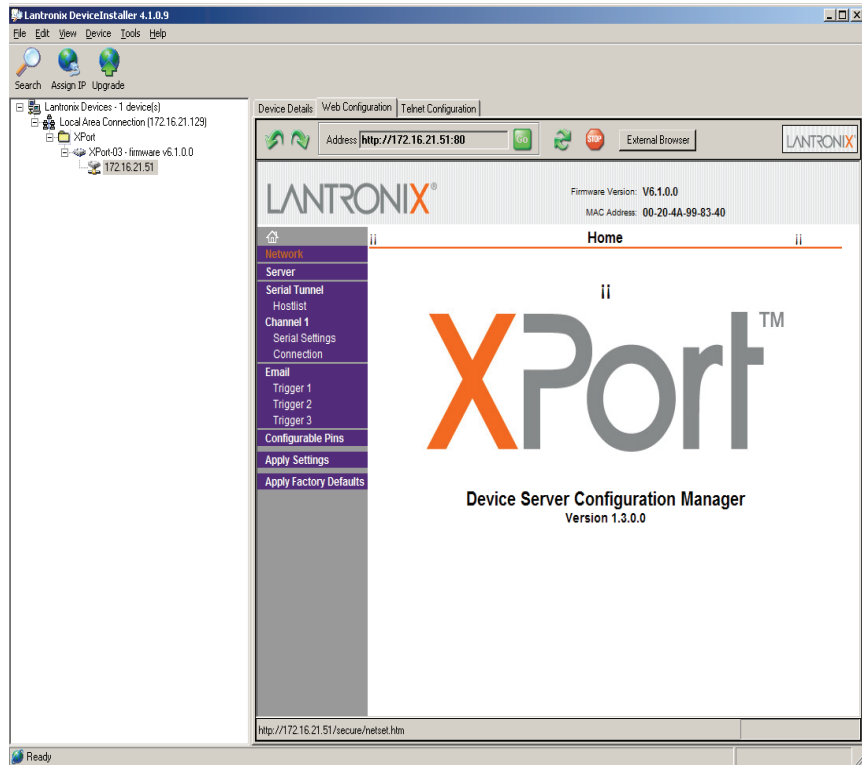


Figure 2-18 Lantronix XPort® Interface

8. At the top of the sidebar menu click Network. See Figure 2-19.

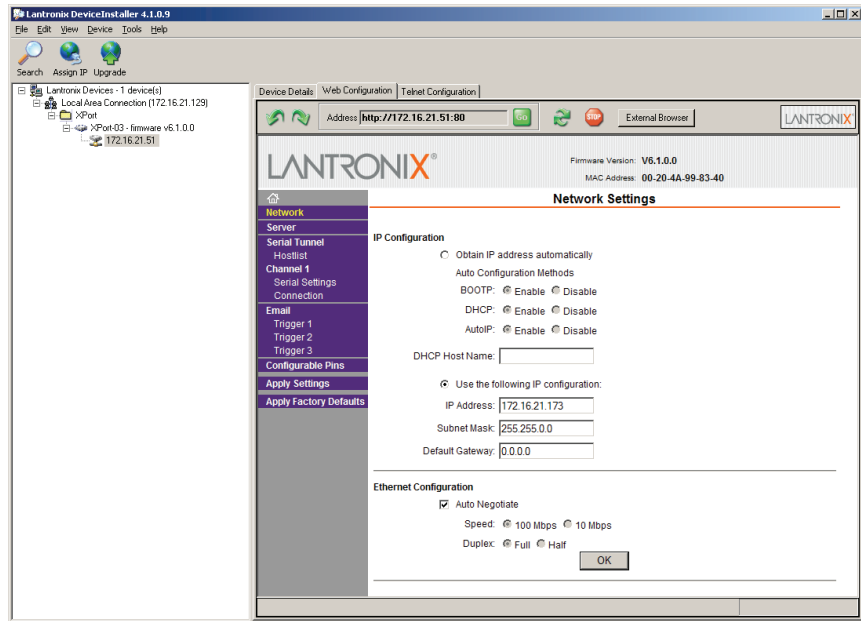


Figure 2-19 Assigning IP Settings

9. In the IP Configuration section, click the radio button next to “Use the following IP configuration.”

Important: If you are working within a network system, please contact the network administrator for the appropriate information to complete the IP Address, Subnet Mask and Default Gateway fields

10. Click OK at the bottom of the page to complete the task.
11. Repeat this procedure for every power supply. Every device must have a unique fixed IP address.

Selecting ENET as the Communication Port

Once the XG unit with the ENET option has the option card configured, you’ll need to configure the XG to use the ENET option card as the active communication port.

To select ENET as the communication port:

1. Turn the 9-position Mode control to PGM.
 rE is displayed in the output voltage display.

Ethernet (ENET)

2. Turn the rotary Adjust/Enter control to select the *LAN* communication port.
3. Press the rotary Adjust/Enter control.
Addr is displayed on the output voltage display.
4. Turn the rotary Adjust/Enter control to select the desired address between 1 to 30.
5. Press the rotary Adjust/Enter control to commit the new address.

Terminal Configuration

The terminal program allows for communication with the power supply. To use a terminal program, set it up using the parameters from the following sections. If you wish to use HyperTerminal, see “Setting Up a HyperTerminal Connection” for instructions.

Data Format

Serial data format is 8 bit, one stop bit. No parity bit. Flow control: none.

End of Message

The end of message is the Carriage Return character (ASCII 13, 0x0D). The power supply ignores the Line Feed (ASCII 10, 0x0A) character.

Setting Up a HyperTerminal Connection

To set up a HyperTerminal connection:

1. Start Windows HyperTerminal by clicking **Start >All Program >Accessories > Communications > HyperTerminal**. See Figure 2-20.

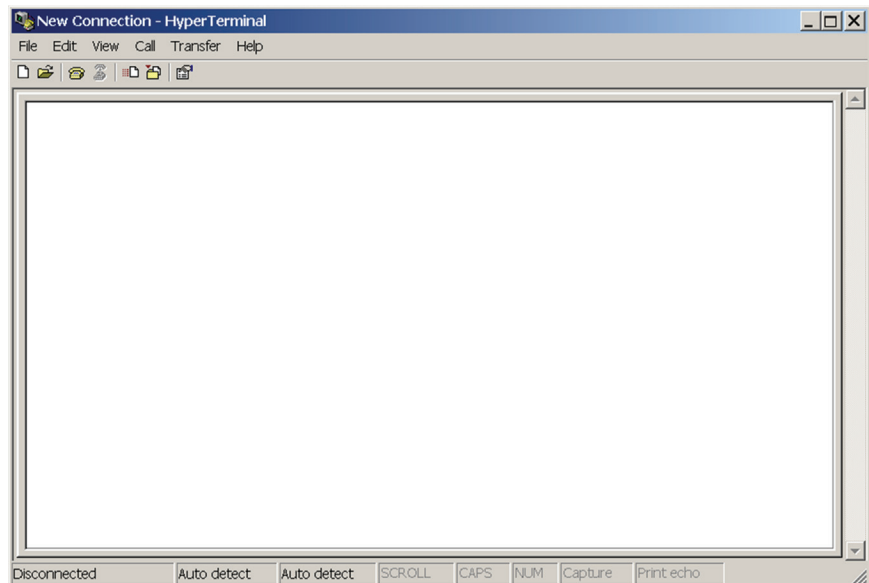


Figure 2-20 HyperTerminal Connection

2. Click **New** to create a new connection.

The Connection Description window appears. See Figure 2-21.

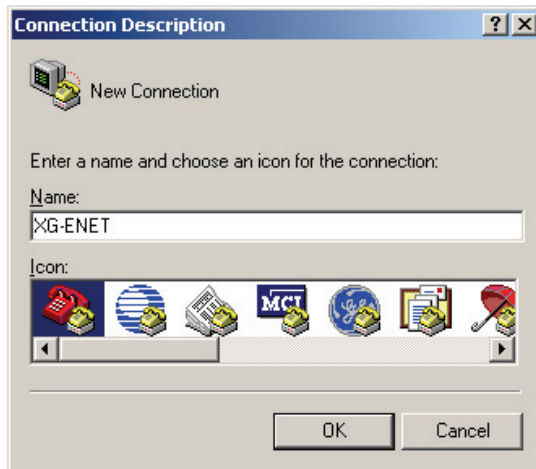


Figure 2-21 Connection Description Window

3. Enter the name of the connection and select the icon.
4. Click **OK**.

The new connection setup dialog box will appear. See Figure 2-22.

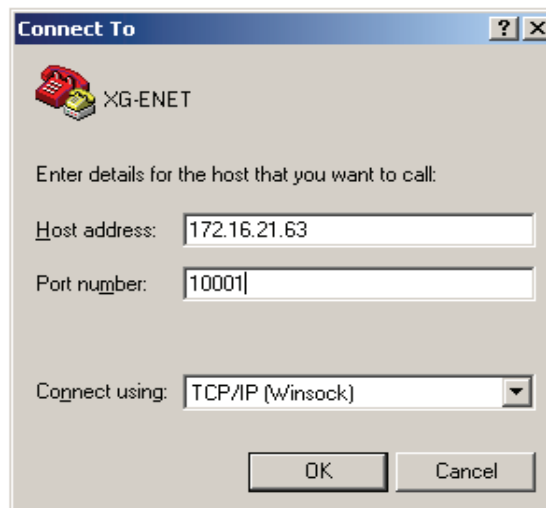


Figure 2-22 New Connection Dialog Box

5. In the **Connect using:** box, select “TCP/IP (Winsock)”.
6. In the **Host address** box, enter the IP address, obtained in step 14 of the section entitled “Assigning an IP Address to the Power Supply Unit” on page 2–12.
7. In the Port number box, enter “10001” as the value.
8. Click **OK**.

To specify the terminal connection properties:

1. Click **Disconnect** if necessary, and click **Properties** in the main HyperTerminal window. See Figure 2-23.

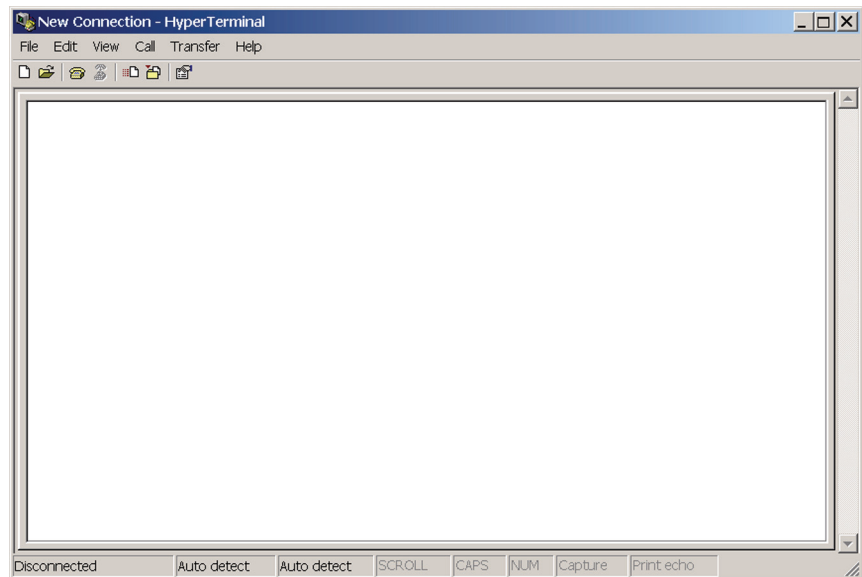


Figure 2-23 Main Terminal Window

2. In the ENET Properties window, click on XGthe **Settings** tab. See Figure 2-24.

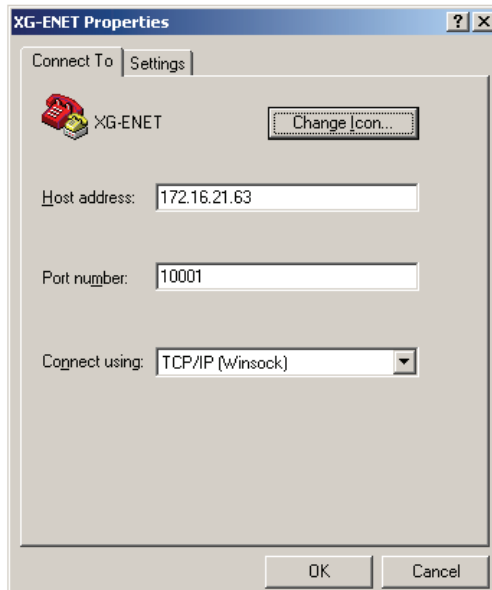


Figure 2-24 ENET Properties Window

The XG-ENET Properties dialog box appears. See Figure 2-25.

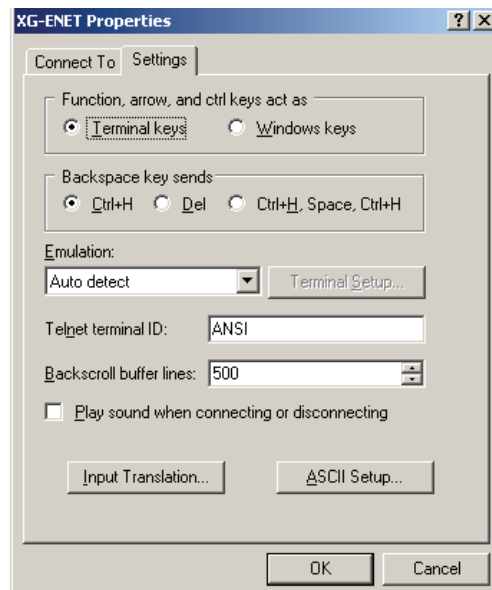


Figure 2-25 XG-ENET Properties Dialog Box

3. Click the **ASCII Setup** button.
The ASCII Setup dialog box will appear as shown in Figure 2-26.
4. Verify that the ASCII Sending and ASCII Receiving boxes are checked as shown in Figure 2-26.

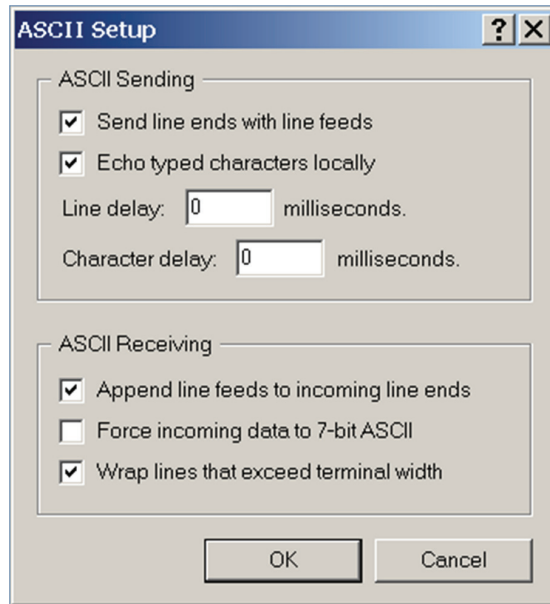


Figure 2-26 ASCII Setup Dialog Box

5. Click **OK**.

Establishing Communication with the Power Supply

To establish communication with the power supply:

1. In the main HyperTerminal window, click **Call**. See Figure 2-27.
2. To verify that the XG unit is connected and functioning, type the following command "`*ADR <#>; *IDN?`" where the `<#>` should be replaced by the address assigned to the power supply in the "Selecting ENET as the Communication Port" on page 2-17.
3. Verify that the XG unit responds with the ID string.
4. To save your session for future use, click **File > Save As....** See Figure 2-28.

Ethernet (ENET)

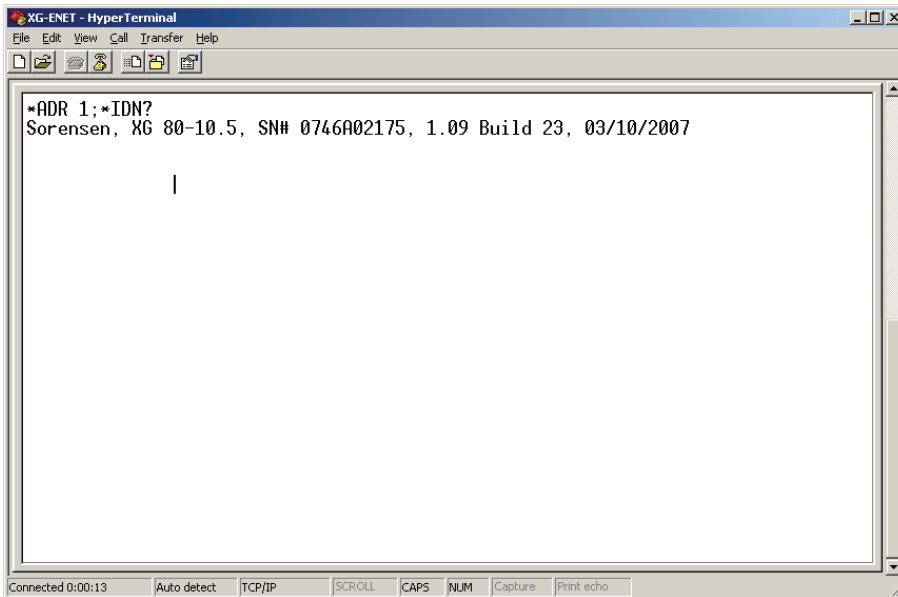


Figure 2-27 Main HyperTerminal Window

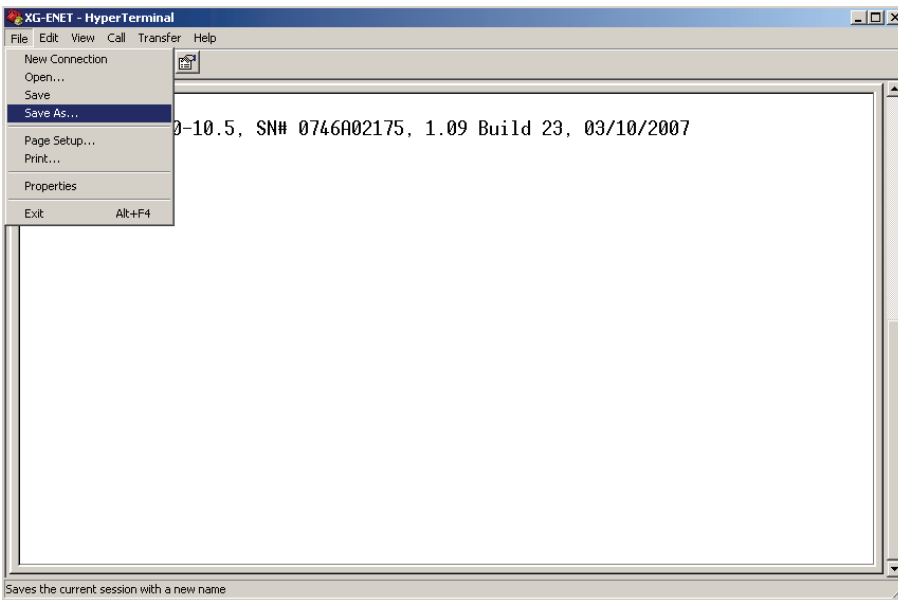


Figure 2-28 Saving Session

5. Type the name of the session. It is recommended that you include the IP in your naming convention so that it is clear which XG you are connecting to.
6. Click **Save**.

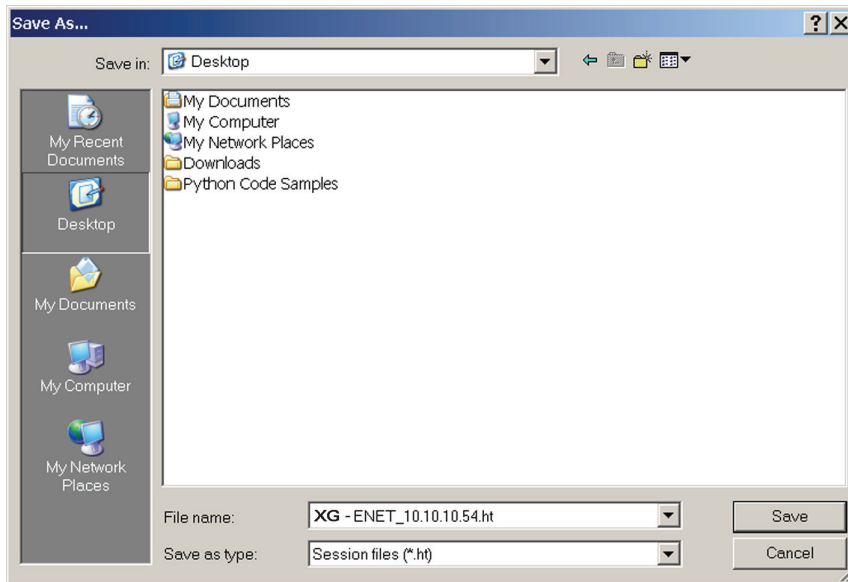


Figure 2-29 Saved Session

Congratulations! Your network is installed and functioning properly.

Advanced Section

The advanced section describes the setup and connection for various network topologies involving multiple power supplies.

Network Topology 1: Simple LAN

The simple LAN topology is the most common configuration for setting up the ENET option on the XG. The topology follows the typical star topology provided by a HUB and multiple XGs with the ENET option and one or more computers. Figure 2-30 shows this configuration.

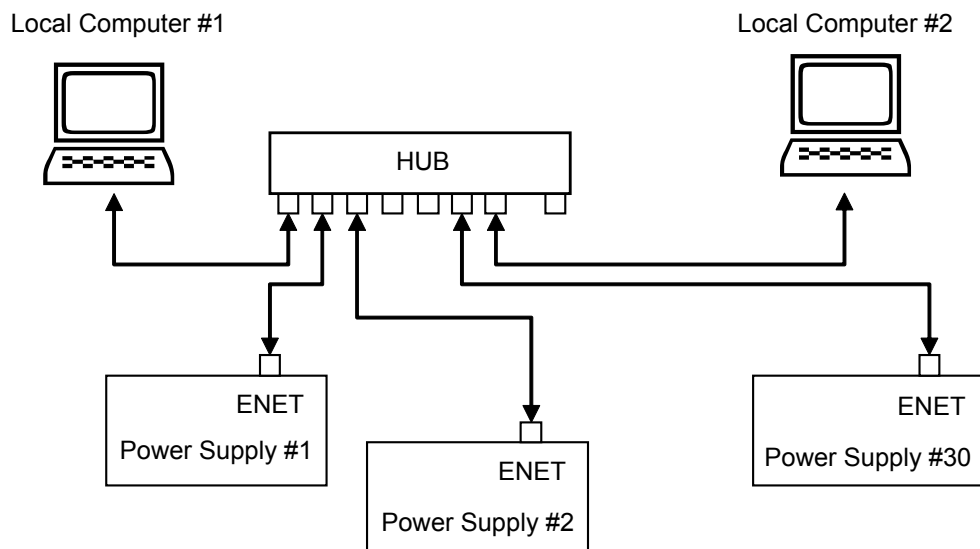


Figure 2-30 Multiple Power Supplies and Two Computers

All devices connects via the HUB. Every device must have a unique IP address, for example:

- Computer #1: 169.254.117.231
- Computer #2: 169.254.117.232
- Power supply #1: 169.254.117.220
- Power supply #2: 169.254.117.221
- Power supply #3: 169.254.117.222
- Power supply #30: 169.254.117.230.

You must set up every device manually.

To set up for multiple power supplies and two computers:

1. Set up your computer as described in “Setting Up the Computer” on page 2–6. Repeat the procedure for each computer hooked up to the system.
2. Install the DeviceInstaller software on the PC you wish to use to configure the XG unit (s) with. See the instructions for “Software Installations” on page 2–9.
3. Configure each XG unit with an ENET option. See the instructions for “Configuring the Device Using DeviceInstaller” on page 2–11
4. Create terminal connections for each of the XG unit (s) with the ENET option that were configured in step 3. See the instructions for “Terminal Configuration” on page 2–19.
5. If more than one computer is going to be used, copy the *filename.ht* files saved in step 3 to a disk and copy them over to each computer that you will be using to access the XG unit (s) over the Ethernet. If copying the files is not possible, repeat step 3 for each computer that you wish to use.

The configuration is complete. You are now ready to use your system.

Controlling Your System

For every connected XG unit, create a separate terminal session. This should have been done according to the instructions in “Establishing Communication with the Power Supply” on page 2–23. Also, open a separate HyperTerminal session for each XG unit that you wish to control. An example of two XG units in a system is shown in Figure 2-31.

Ethernet (ENET)

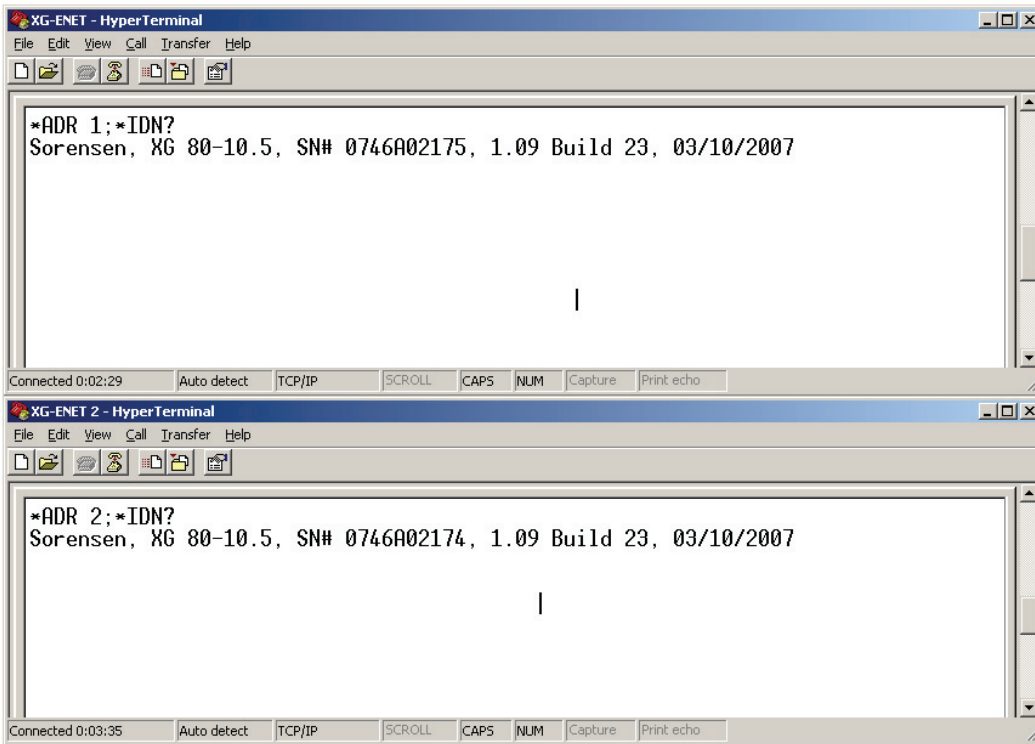


Figure 2-31 HyperTerminal Session

There are two HyperTerminal windows for controlling two power supply units. See Figure 2-31.

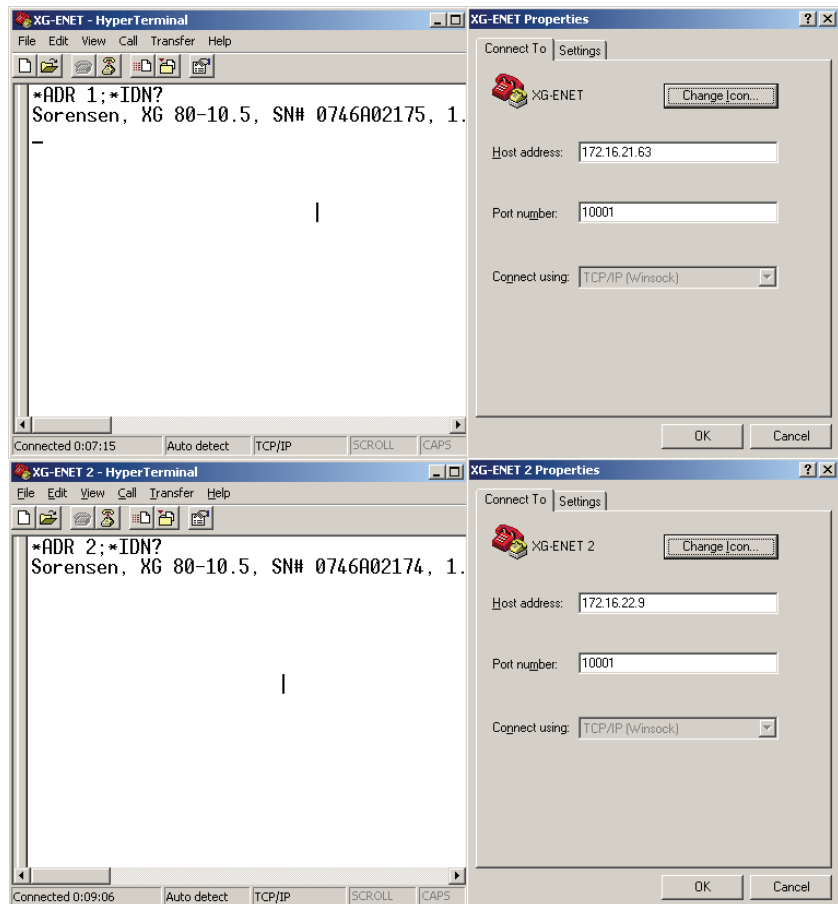


Figure 2-32 System with Two Connected Devices

Figure 2-32 shows a system with two connected devices.

Important: In this system configuration, every power supply needs a unique IP address, whereas the address defined from front panel (power supply's own address) may be arbitrary.

Network Topology 2: ENET and RS-485 Bus

Up to 30 units may be connected to the RS-485 bus. The first unit connects to the controller via ENET, and the other units are connected with the RS-485 bus.

Figure 2-33 shows the system of an XG unit with the ENET option and several XG units connected via the RS-485 bus. Each power supply must have its own address, defined from the front panel. Only one IP address is required for your network (excluding computers) and only one controlling program is required (one per XG with ENET option as noted in “Network Topology 1: Simple LAN” on page 2–26).

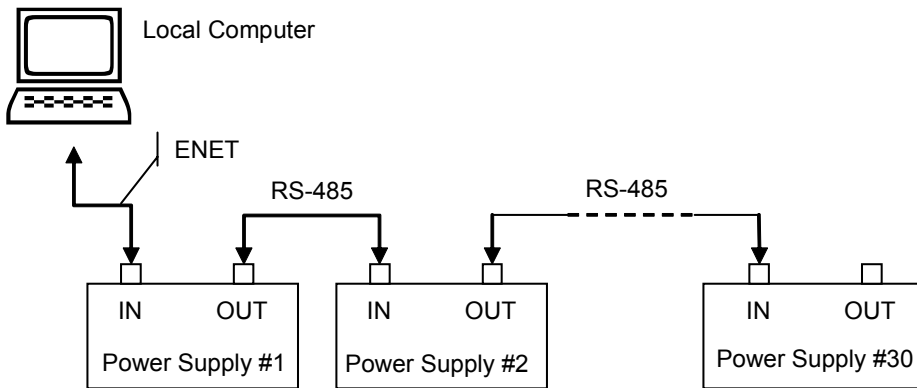


Figure 2-33 ENET and RS-485 Bus

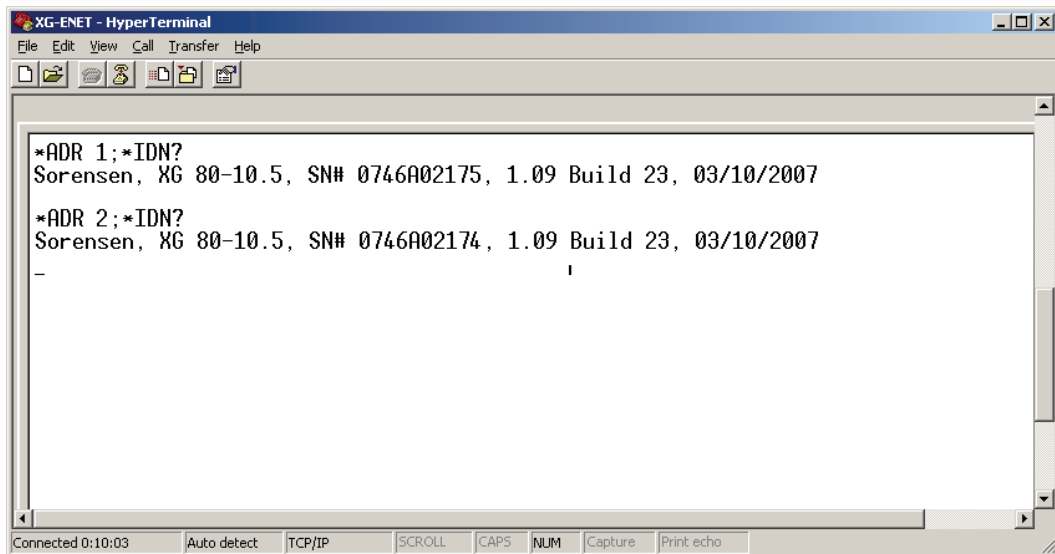


Figure 2-34 HyperTerminal Window

Figure 2-34 shows the HyperTerminal session for the combined configuration which is an ENET and RS-485 network. This figure also shows access to power supplies #2 and #10 sequentially.

Setting Up Your System

To set up your system:

1. Connect your system as shown in Figure 2-33, and turn every power supply unit to ON.
2. Set up your computer as described in “Setting Up the Computer” on page 2–6. Repeat this section for each computer hooked up to the system.
3. Install the DeviceInstaller software on the PC you wish to use to configure the XG unit (s) with. See the instructions for “Software Installations” on page 2–9.
4. Configure the ENET card of the master XG (power supply #1 in Figure 2-33). See the instructions for “Configuring the Device Using DeviceInstaller” on page 2–11.

5. Configure the master power supply which is the unit with the ENET option (power supply #1 in Figure 2-33) by following the instructions in “Selecting ENET as the Communication Port” on page 2–17.
6. The following Steps 7, 8 and 9 must be repeated for each slave unit.
7. For the slave unit that you are setting up, turn the 9-Position Mode Control Knob to $P9\bar{1}$.
rE is displayed in the output voltage display.
8. Turn the rotary Adjust/Enter control to select 5L# and press the rotary Adjust/Enter control.
9. Set a unique address and press the rotary Adjust/Enter control. See the *XG 850 Watt Series Programmable DC Power Supply Operating Manual (Part number: M370078-01)*, Chapter 5, “Multichannel Address Setting” section for a more detailed discussion of addressing. Once all slave units have been setup, proceed with the next step.
10. Set up the fixed IP address for the first unit using DeviceInstaller as described in “Assigning an IP Address to the Power Supply Unit” on page 2–12.
11. Create and set up a new HyperTerminal session as described in “Terminal Configuration” on page 2–19.
12. In the HyperTerminal session window, type the *ADR <#>; *IDN? command where the <#> should be replaced by the address assigned to the power supply in step 9. Press enter to send the command.
13. Verify that the unit responds with the ID string. Perform this test for each unit that is connected including the master unit.
14. If additional XG units are using Network Topology 2, repeat the setup procedure steps 1 to 14 for each ENET and RS-485 group.

Important: The IP address for each ENET and RS-485 group must be unique, but the RS-485 bus addresses can be reused for each unique ENET – RS-485 group.

A

Troubleshooting

Appendix A, “Troubleshooting” provides troubleshooting information for the combined ENET and RS-485 communication and for ENET communication.

Troubleshooting for ENET – RS-485 Communication

This section describes specific troubleshooting for the combined ENET – RS-485 communication only.

See “Troubleshooting for ENET Communication” on page A-3 for typical troubleshooting procedures for connecting and setting up ENET communications.

Table A-1 Troubleshooting for ENET – RS-485 Communication

Symptom	Check	Action
One of the power supply units is not responding.	The power supply is not turned on. The communication interface is not set as a slave unit (RS-485) or the address has not been set correctly.	Turn the power supply ON. Check that the RS-485 bus is selected as the communication interface and the address is correct.
Sequentially several units are not responding, e.g. from #21 to end.	RS-485 communication is disconnected at the first unit that is not responding.	Check your RS-485 communication. Try switching the cable linking this unit to the last unit that is known to have given a response.
All of the units are not responding.	The ENET communication is disconnected. The HyperTerminal session is not configured properly.	Check the ENET communication. Check the settings of the HyperTerminal session. Follow the instructions in the “Selecting ENET as the Communication Port” on page 2-17.

Troubleshooting for ENET Communication

This section describes typical troubleshooting for connecting and setting up the ENET communication.

Table A-2 Troubleshooting for ENET Communication

Symptom	Check	Action
DeviceInstaller does not detect your device.	Your ENET cable is not a cross cable. Power supply is not turned on. The network that your computer is on cannot reach the network that the XG with the ENET option is connected to. DeviceInstaller is not configured to use the Ethernet card on your computer that is connected to the network which has the XG with ENET option on it.	Use the correct ENET cross cable. Turn the power supply ON. Connect a laptop to the HUB or to the switch that the XG with the ENET option is connected to, and ping the computer you are trying to use DeviceInstaller on. If no response is seen, then contact your network administrator and find out if ICMP requests are being filtered on the network and a possible reason for not being able to contact the computer. See “Selecting a Network Adapter” on page 2–11.
Found device is not reachable.	Your network is not configured properly.	Contact your network administrator.
Typed text is not visible.	Echo mode is not active.	Select Echo typed characters locally in the ASCII Setup dialog box of HyperTerminal.

Table A-2 Troubleshooting for ENET Communication

<p>The power supply is not responding.</p>	<p>The communication port on the power supply unit is not selected properly.</p> <p>The address of the power supply unit is not valid. The address has not been selected using the *ADR <address>.</p>	<p>Select “ENET” as the communication port.</p> <p>Refer to the correct power supply address using the front panel.</p> <p>See the <i>XG 850 Watt Series Programmable DC Power Supply Operating Manual (Part number: M370078-01)</i>, Chapter 5: Remote Interface Addressing for a detailed explanation on how to use the *ADR command.</p>
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B

Links

Appendix B, “Links” provides the Web site links for relevant third party vendors.

Links

Lantronix, Inc. Web site	www.lantronix.com/index.html
XPort™ Embedded Device Server	www.lantronix.com/products/eds/xport/index.html
DeviceInstaller	http://www.lantronix.com/device-networking/utilities-tools/device-installer.html
Java virtual machine	http://java.sun.com/j2se/downloads.html

Warranty and Product Information

Warranty

What does this warranty cover? This Limited Warranty is provided by Xantrex Technology Inc. ("Xantrex") and covers defects in workmanship and materials in your XG 850 Watt Series Programmable DC Power Supply. This warranty period lasts for five (5) years from the date of purchase at the point of sale to you, the original end user customer. You require proof of purchase to make warranty claims.

What will Xantrex do? Xantrex will, at its option, repair or replace the defective product free of charge, provided that you notify Xantrex of the product defect within the Warranty Period, and provided that Xantrex through inspection establishes the existence of such a defect and that it is covered by this Limited Warranty.

Xantrex will, at its option, use new and/or reconditioned parts in performing warranty repair and building replacement products. Xantrex reserves the right to use parts or products of original or improved design in the repair or replacement. If Xantrex repairs or replaces a product, its warranty continues for the remaining portion of the original Warranty Period or 90 days from the date of the return shipment to the customer, whichever is greater. All replaced products and all parts removed from repaired products become the property of Xantrex.

Xantrex covers both parts and labor necessary to repair the product, and return shipment to the customer via a Xantrex-selected non-expedited surface freight within the contiguous United States and Canada. Alaska and Hawaii are excluded. Contact Xantrex Customer Service for details on freight policy for return shipments outside of the contiguous United States and Canada.

How do you get service? If your product requires troubleshooting or warranty service, contact your merchant. If you are unable to contact your merchant, or the merchant is unable to provide service, contact Xantrex directly at:

Telephone: 1 800 733 5427 (toll free North America)
1 858 450 0085(direct)

Fax: 1 858 458 0267

Email: sales@programmablepower.com
service@programmablepower.com

Web: www.programmablepower.com

Direct returns may be performed according to the Xantrex Return Material Authorization Policy described in your product manual. For some products, Xantrex maintains a network of regional Authorized Service Centers. Call Xantrex or check our website www.programmablepower.com to see if your product can be repaired at one of these facilities.

Warranty and Return

What proof of purchase is required? In any warranty claim, dated proof of purchase must accompany the product and the product must not have been disassembled or modified without prior written authorization by Xantrex.

Proof of purchase may be in any one of the following forms:

- The dated purchase receipt from the original purchase of the product at point of sale to the end user, or
- The dated dealer invoice or purchase receipt showing original equipment manufacturer (OEM) status, or
- The dated invoice or purchase receipt showing the product exchanged under warranty

What does this warranty not cover? This Limited Warranty does not cover normal wear and tear of the product or costs related to the removal, installation, or troubleshooting of the customer's electrical systems. This warranty does not apply to and Xantrex will not be responsible for any defect in or damage to:

- a) the product if it has been misused, neglected, improperly installed, physically damaged or altered, either internally or externally, or damaged from improper use or use in an unsuitable environment;
- b) the product if it has been subjected to fire, water, generalized corrosion, biological infestations, or input voltage that creates operating conditions beyond the maximum or minimum limits listed in the Xantrex product specifications including high input voltage from generators and lightning strikes;
- c) the product if repairs have been done to it other than by Xantrex or its authorized service centers (hereafter "ASCs");
- d) the product if it is used as a component part of a product expressly warranted by another manufacturer;
- e) the product if its original identification (trade-mark, serial number) markings have been defaced, altered, or removed.

Disclaimer

Product

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Exclusions

If this product is a consumer product, federal law does not allow an exclusion of implied warranties. To the extent you are entitled to implied warranties under federal law, to the extent permitted by applicable law they are limited to the duration of this Limited Warranty. Some states and provinces do not allow limitations or exclusions on implied warranties or on the duration of an implied warranty or on the limitation or exclusion of incidental or consequential damages, so the above limitation(s) or exclusion(s) may not apply to you. This Limited Warranty gives you specific legal rights. You may have other rights which may vary from state to state or province to province.

Return Material Authorization Policy

Before returning a product directly to Xantrex you must obtain a Return Material Authorization (RMA) number and the correct factory "Ship To" address. Products must also be shipped prepaid. Product shipments will be refused and returned at your expense if they are unauthorized, returned without an RMA number clearly marked on the outside of the shipping box, if they are shipped collect, or if they are shipped to the wrong location.

When you contact Xantrex to obtain service, please have your instruction manual ready for reference and be prepared to supply:

- The serial number of your product
- Information about the installation and use of the unit
- Information about the failure and/or reason for the return
- A copy of your dated proof of purchase

Record these details in "Information About Your System" on page WA-4.

Return Procedure

1. Package the unit safely, preferably using the original box and packing materials. Please ensure that your product is shipped fully insured in the original packaging or equivalent. This warranty will not apply where the product is damaged due to improper packaging.
2. Include the following:
 - The RMA number supplied by Xantrex Technology Inc. clearly marked on the outside of the box.
 - A return address where the unit can be shipped. Post office boxes are not acceptable.
 - A contact telephone number where you can be reached during work hours.
 - A brief description of the problem.
3. Ship the unit prepaid to the address provided by your Xantrex customer service representative.

If you are returning a product from outside of the USA or Canada In addition to the above, you MUST include return freight funds and are fully responsible for all documents, duties, tariffs, and deposits.

If you are returning a product to a Xantrex Authorized Service Center (ASC) A Xantrex return material authorization (RMA) number is not required. However, you must contact the ASC prior to returning the product or presenting the unit to verify any return procedures that may apply to that particular facility.

Out of Warranty Service

If the warranty period for your XG 850 Watt Series Programmable DC Power Supply has expired, if the unit was damaged by misuse or incorrect installation, if other conditions of the warranty have not been met, or if no dated proof of purchase is available, your unit may be serviced or replaced for a flat fee.

To return your XG 850 Watt Series Programmable DC Power Supply for out of warranty service, contact Xantrex Customer Service for a Return Material Authorization (RMA) number and follow the other steps outlined in “Return Procedure” on page WA-4.

Payment options such as credit card or money order will be explained by the Customer Service Representative. In cases where the minimum flat fee does not apply, as with incomplete units or units with excessive damage, an additional fee will be charged. If applicable, you will be contacted by Customer Service once your unit has been received.

Information About Your System

As soon as you open your XG 850 Watt Series Programmable DC Power Supply package, record the following information and be sure to keep your proof of purchase. See “Product Numbers (FGAs)” on page iii.

- Serial Number _____
- Purchased From _____
- Purchase Date _____

Xantrex Technology Inc.

1 800 733 5427 (toll free North America)

1 858 450 0085 (direct)

1 858 458 0267 (direct)

sales@programmablepower.com

service@programmablepower.com

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