



**Sorensen**  
**GPIB & Ethernet**  
**Interface for XG Series**  
**Programmable DC Power Supplies**  
Operation Manual



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## **Date and Revision**

December 2008 Revision B

## **Part Number**

M370078-06



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# Important Safety Instructions

Before applying power to the system, verify that your product is configured properly for your particular application.

	<b>Hazardous voltages may be present when covers are removed. Qualified personnel must use extreme caution when servicing this equipment. Circuit boards, test points, and output voltages also may be floating above (below) chassis ground.</b>
	<b>The equipment used contains ESD sensitive parts. When installing equipment, follow ESD Safety Procedures. Electrostatic discharges might cause damage to the equipment.</b>

Only *qualified personnel* who deal with attendant hazards in power supplies, are allowed to perform installation and servicing.

Ensure that the AC power line ground is connected properly to the Power Rack input connector or chassis. Similarly, other power ground lines including those to application and maintenance equipment *must* be grounded properly for both personnel and equipment safety.


Always ensure that facility AC input power is de-energized prior to connecting or disconnecting any cable.

In normal operation, the operator does not have access to hazardous voltages within the chassis. However, depending on the user's application configuration, **HIGH VOLTAGES HAZARDOUS TO HUMAN SAFETY** may be normally generated on the output terminals. The customer/user must ensure that the output power lines are labeled properly as to the safety hazards and that any inadvertent contact with hazardous voltages is eliminated.


Guard against risks of electrical shock during open cover checks by not touching any portion of the electrical circuits. Even when power is off, capacitors may retain an electrical charge. Use safety glasses during open cover checks to avoid personal injury by any sudden component failure.


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## SAFETY SYMBOLS

 **WARNING**  
Risk of Electrical Shock


 **CAUTION**  
Refer to Accompanying Documents

 Off (Supply)

 Direct Current (DC)

 Standby (Supply)


 Alternating Current (AC)

 On (Supply)

 Three-Phase Alternating Current

 Protective Conductor Terminal

 Earth (Ground) Terminal

 Fuse

 Chassis Ground

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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.





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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

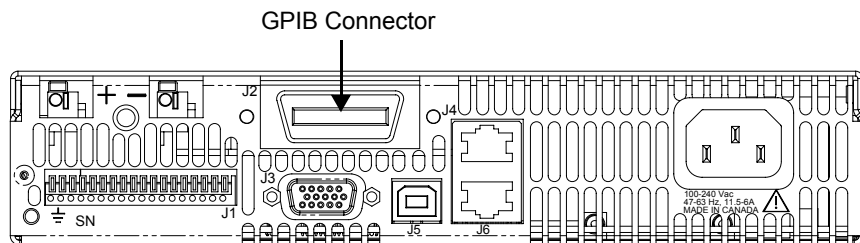
The GPIB interface of the XG 850 Watt Series Programmable DC Power Supply has been implemented according to IEEE Std 488.1-1987, IEEE Standard Digital Interface for Programmable Instrumentation. The communication protocol complies with IEEE 488.2-1992.

## 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.

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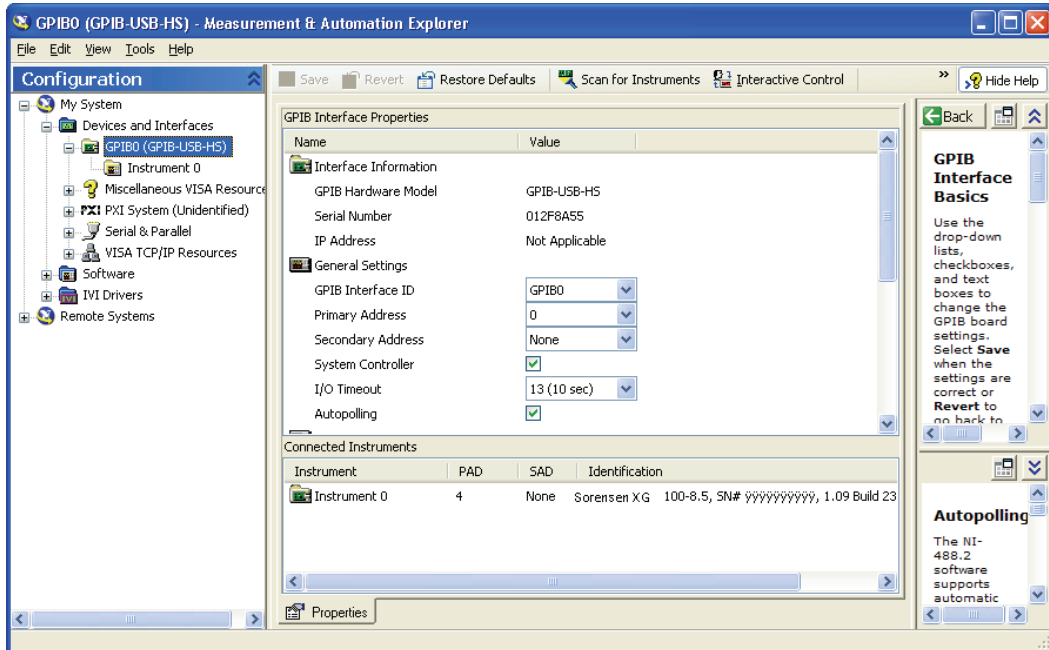


Figure 1-2 Scanning for Instruments

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

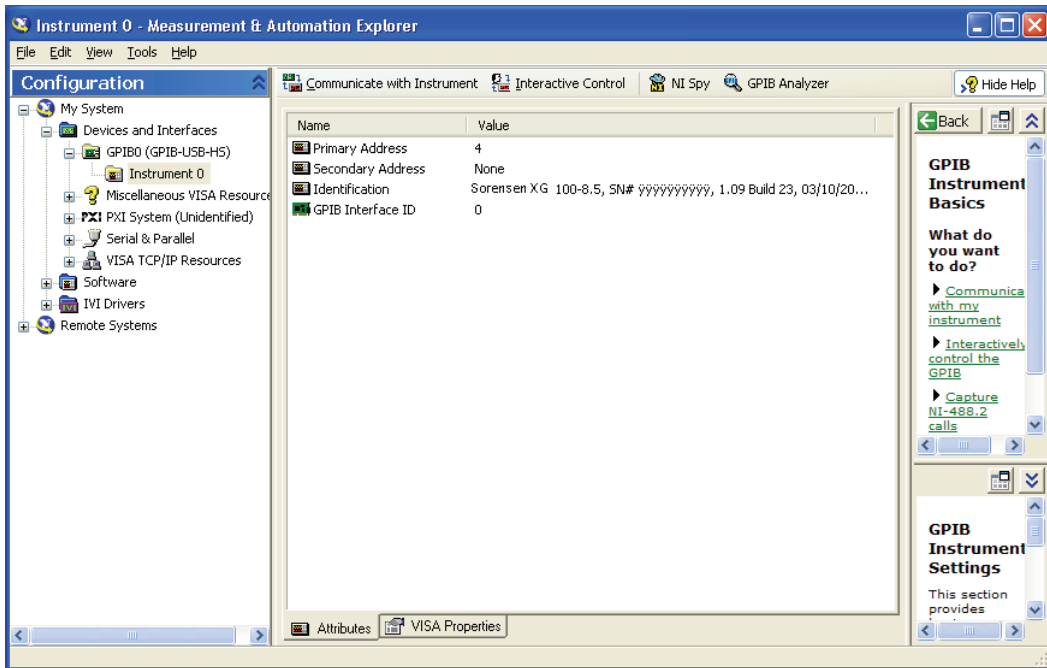


Figure 1-3 Instrument Properties

8. Click Communicate with Instrument in the GPIB Explorer toolbar. See Figure 1-3.

NI-488.2 Communicator appears. See Figure 1-4.

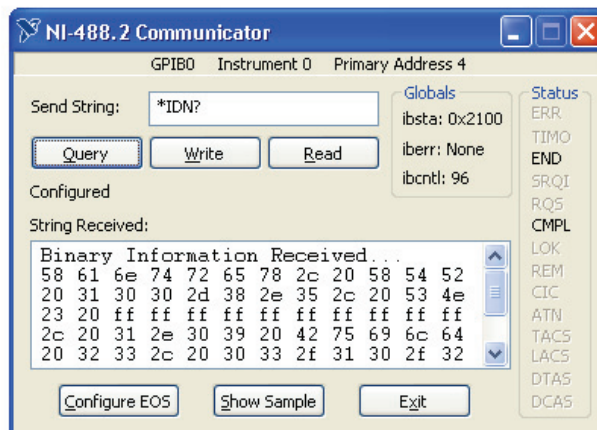


Figure 1-4 ID String Query

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. It is recommended 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

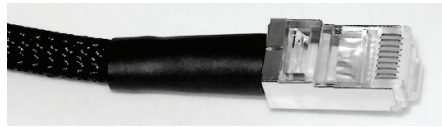


Figure 2-2 Power Supply Plug

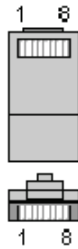


Figure 2-3 RJ-45 Plug

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

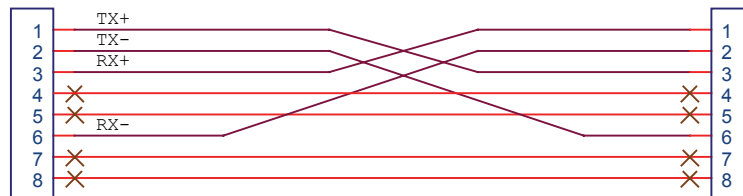
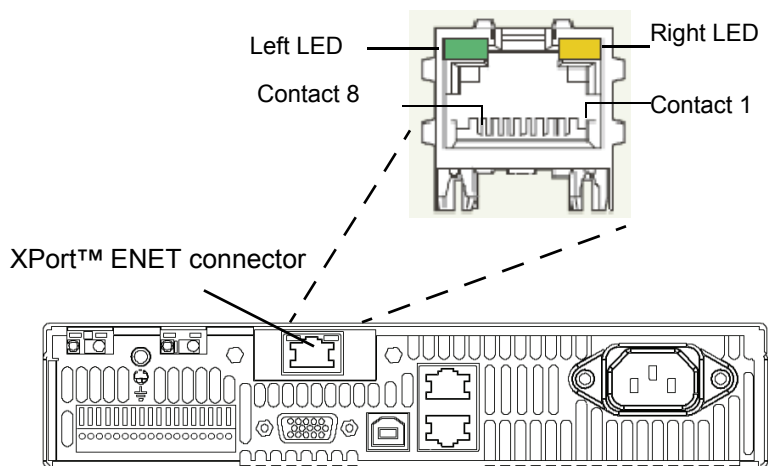


Figure 2-4 Scheme of ENET Cross-Cable

## 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



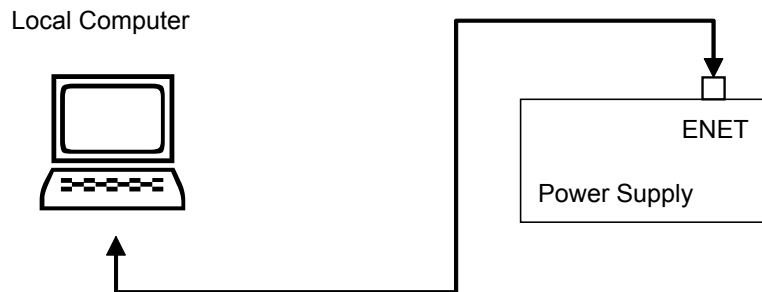
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## Network Topology and Connection

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.

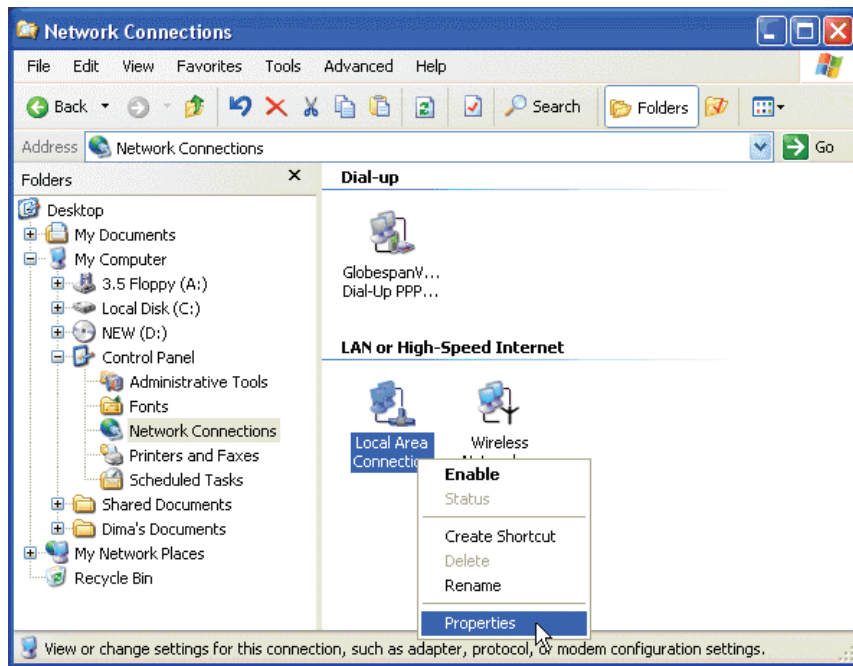


**Figure 2-6** Single Computer, Single Power Supply

## Setting Up the Computer

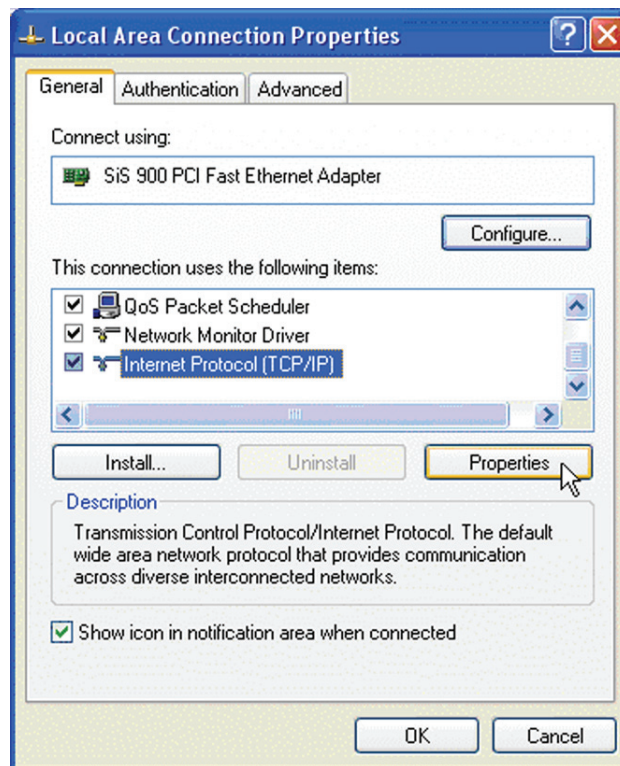
### To set up the computer:

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

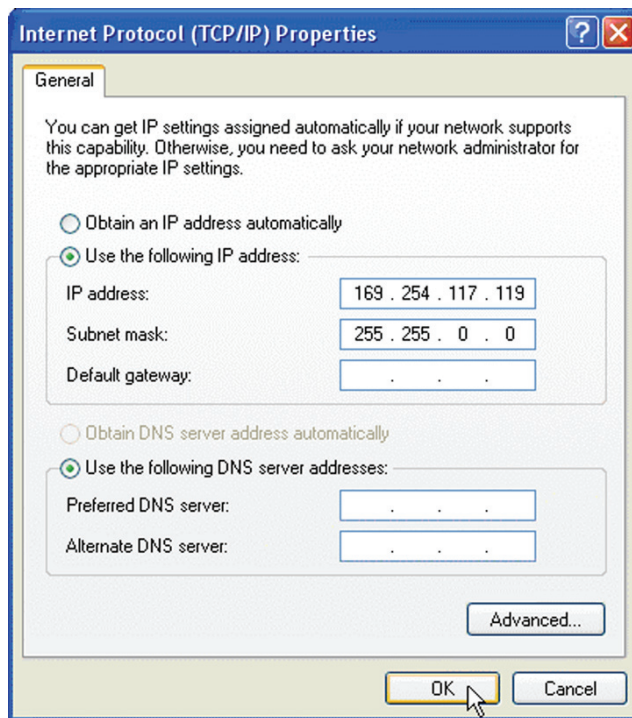
2. Right click on the mouse button and click on Properties.  
The Local Area Connection Properties window appears. See Figure 2-8.



**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

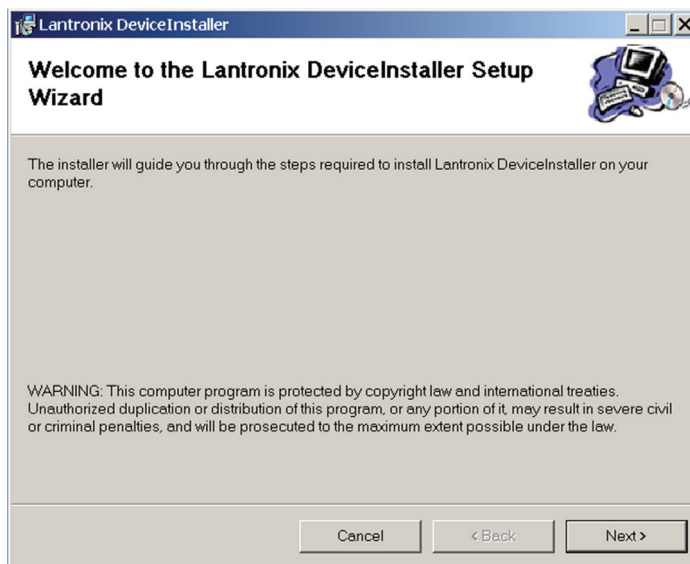
To set up the ENET option card, the Lantronix® DeviceInstaller program needs to be installed on your PC. DeviceInstaller is an all-in-one utility for setting up various Lantronix devices on a network. Device Installer auto detects any devices on the network and allows for configuration of network settings.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

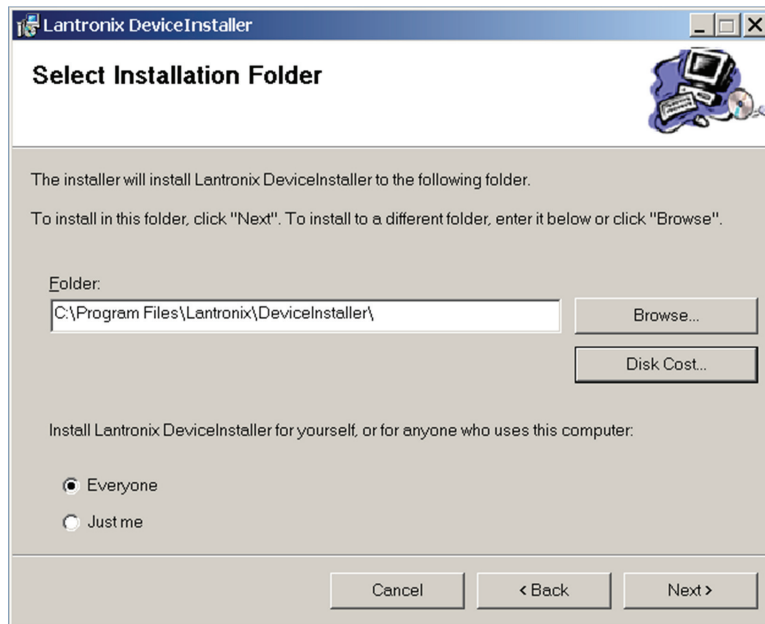
If you need to manually launch the CD, click the Start button on the Task Bar and select Run. Enter the CD drive letter, for example, D:\Launch.exe. The DeviceInstaller Setup Wizard opens to guide the installation process. See Figure 2-10.



**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

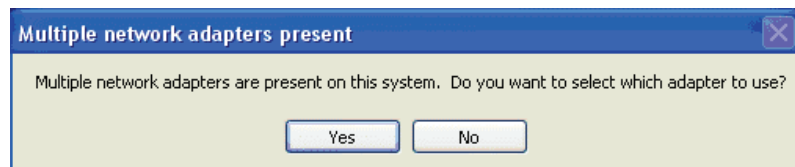
After the installation of DeviceInstaller to your PC, you must select which network adaptor you wish the DeviceInstaller to use for all its network communications.

#### 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

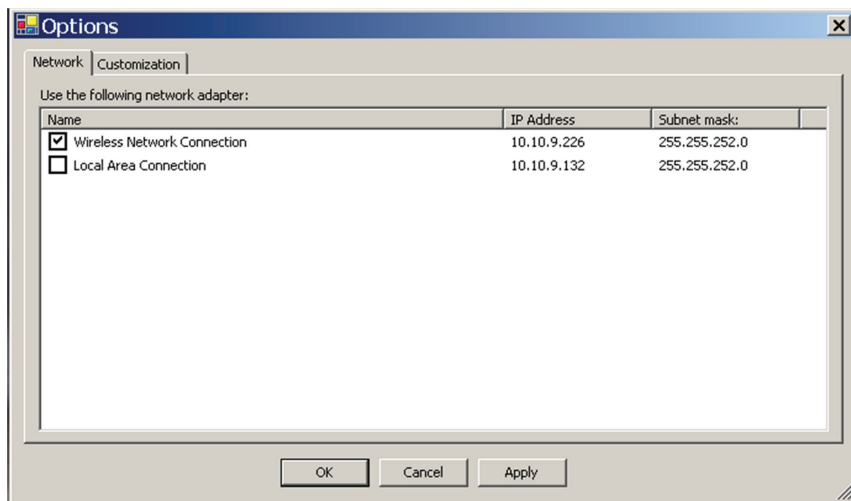


Figure 2-13 Selecting Network Adapter

## Assigning an IP Address to the Power Supply Unit

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

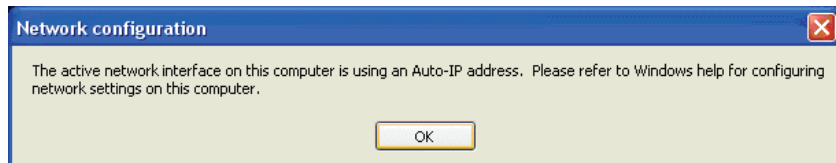


Figure 2-14 Auto-IP Address Message

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

---

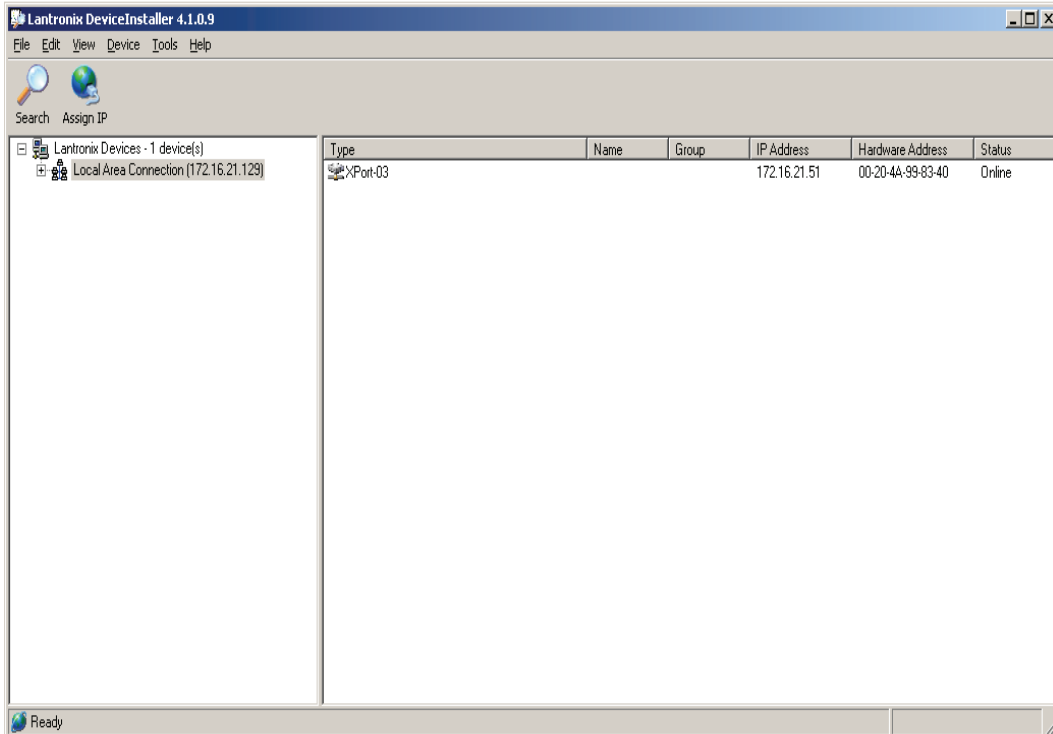
### To assign an IP address to the power supply unit:

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.



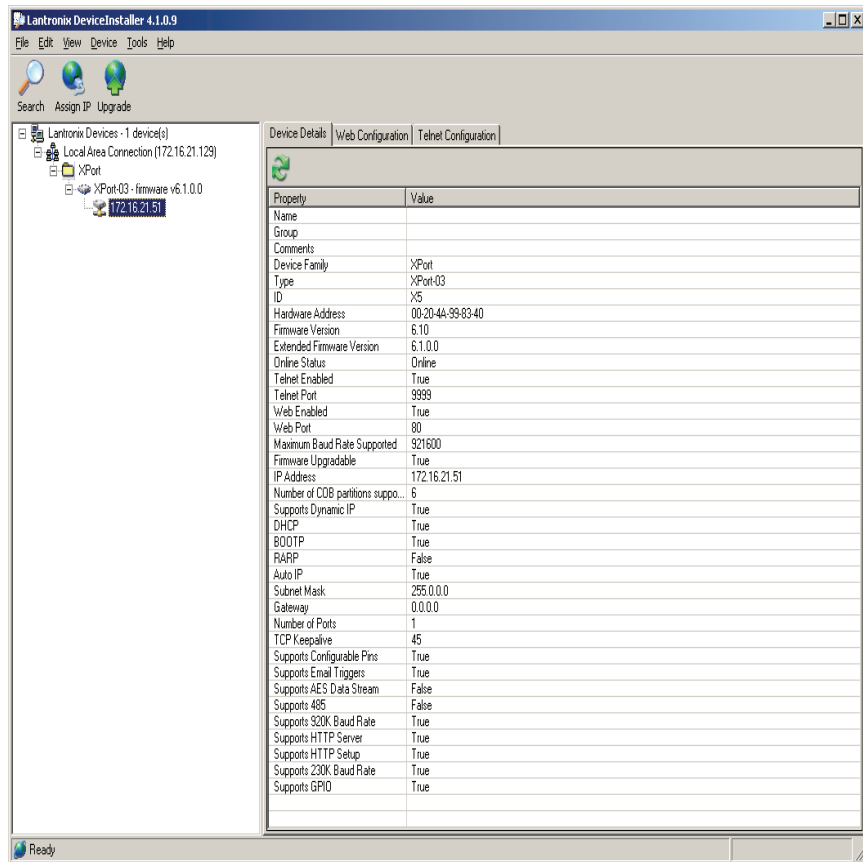
2. Click **Search** to get a list of all the XG devices that can be reached from the network adaptor that you previously selected. If your XG unit (s) are powered up, they should appear in this list.



**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.

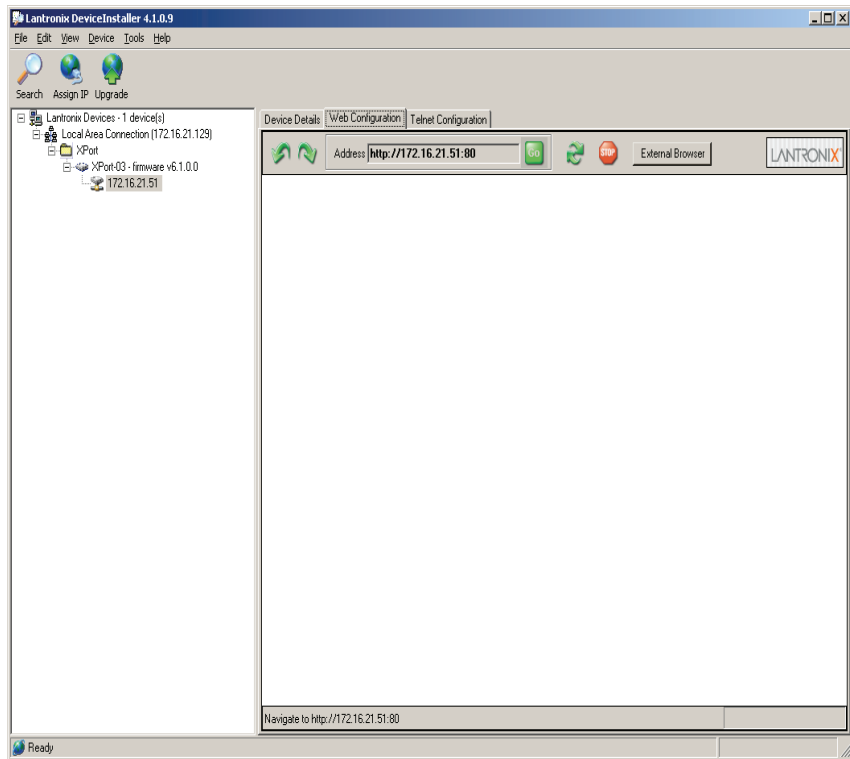
3. If the IP address shown and the method that the XG unit is using to obtain this address is correct, stop here and exit/close this window. Otherwise, continue to step 4.
4. Expand the Local Area Connection tree; if necessary, expand further until the IP address of the XG unit is displayed. Then left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



**Figure 2-16** IP Address Details Window

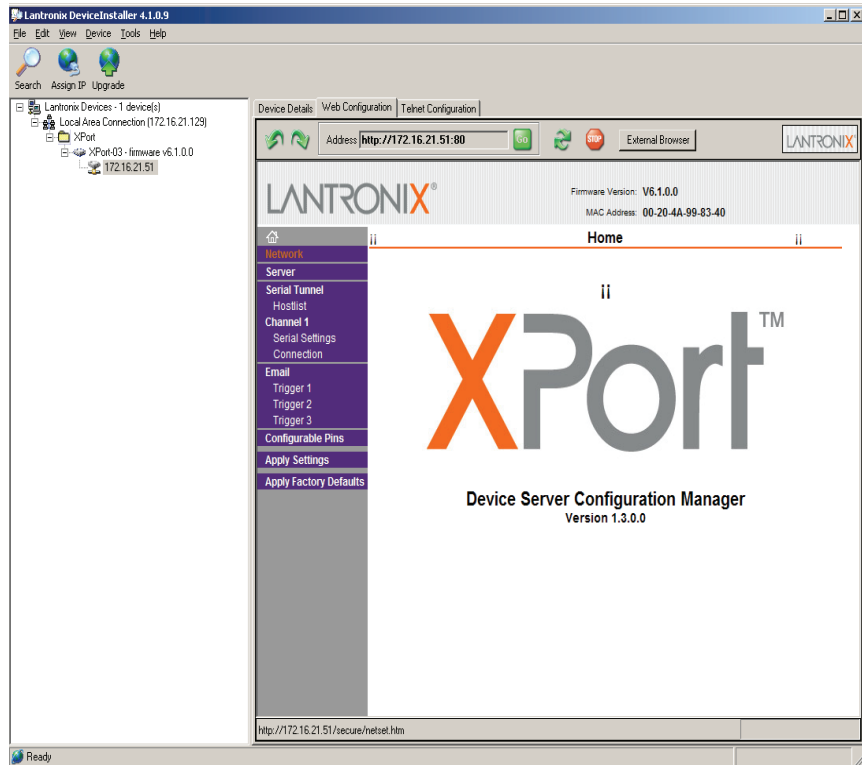
**Important:** Do **NOT** use the Assign IP button in the tool bar, upper left of this window. The IP address is assigned using Steps 5 through 9 that follow.

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



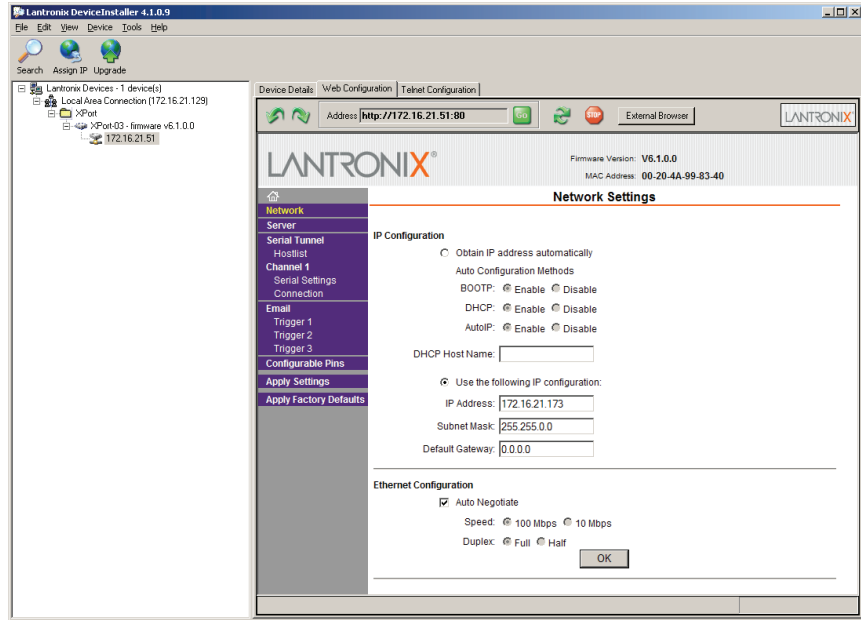
**Figure 2-17** Entering the Lantronix Interface

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.  
 $\overline{rE}$  is displayed in the output voltage display.

## Ethernet (ENET)

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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.

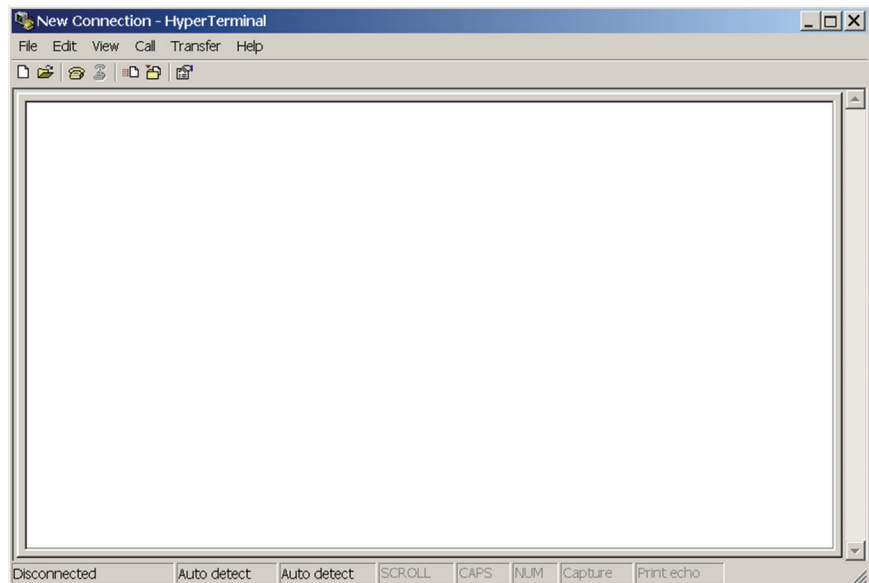
### End of Message

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:**

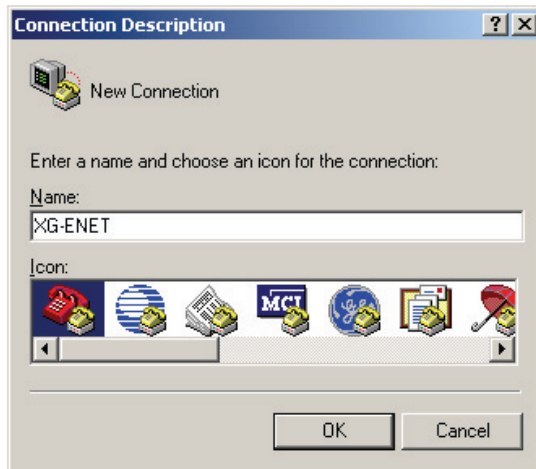
1. Start Windows HyperTerminal by clicking **Start >All Program >Accessories > Communications > HyperTerminal**. See Figure 2-20.



**Figure 2-20** HyperTerminal Connection

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

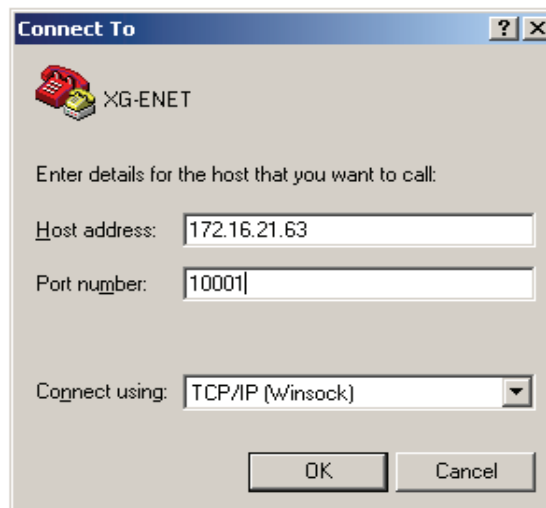
The Connection Description window appears. See Figure 2-21.



**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.



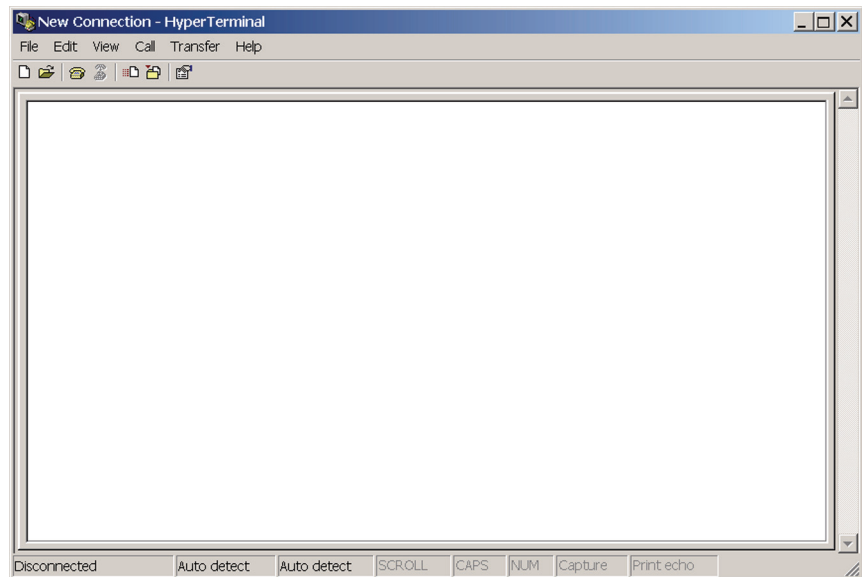
**Figure 2-22** New Connection Dialog Box



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**.

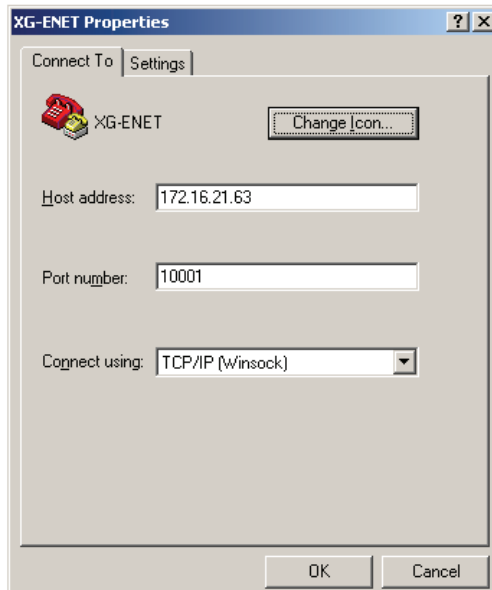
**To specify the terminal connection properties:**

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



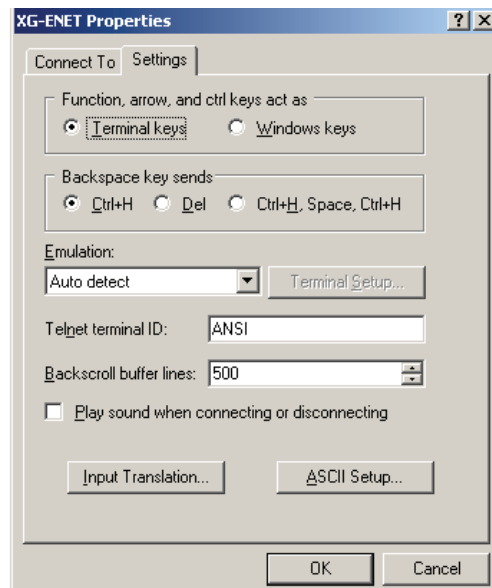
**Figure 2-23** Main Terminal Window

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



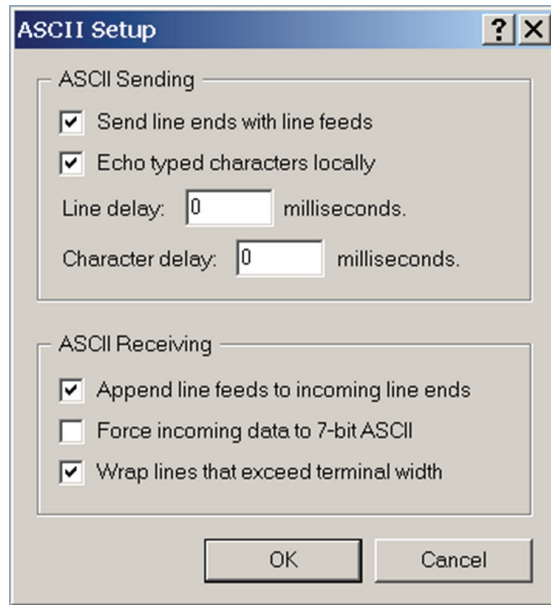
**Figure 2-24** ENET Properties Window

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**.

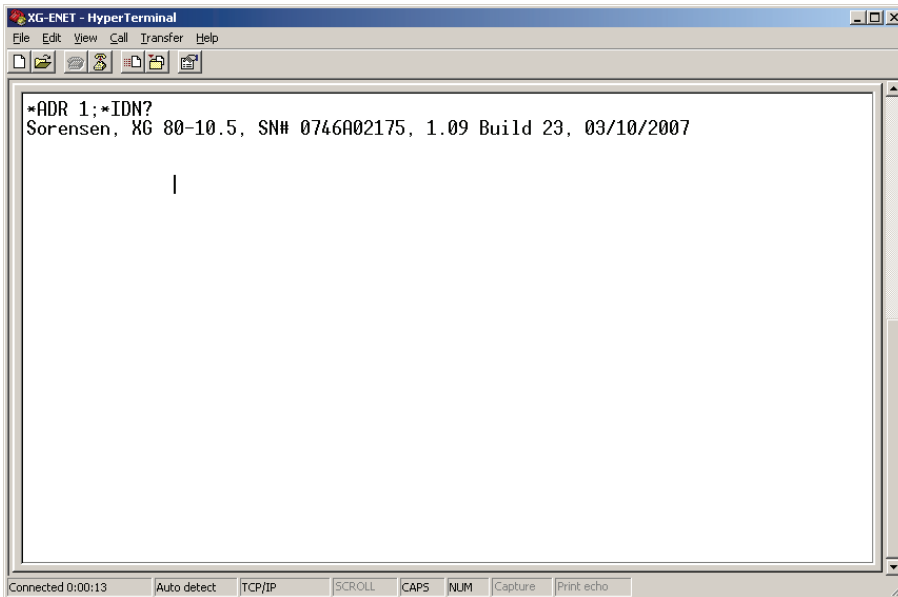
## Establishing Communication with the Power Supply

### To establish communication with the power supply:

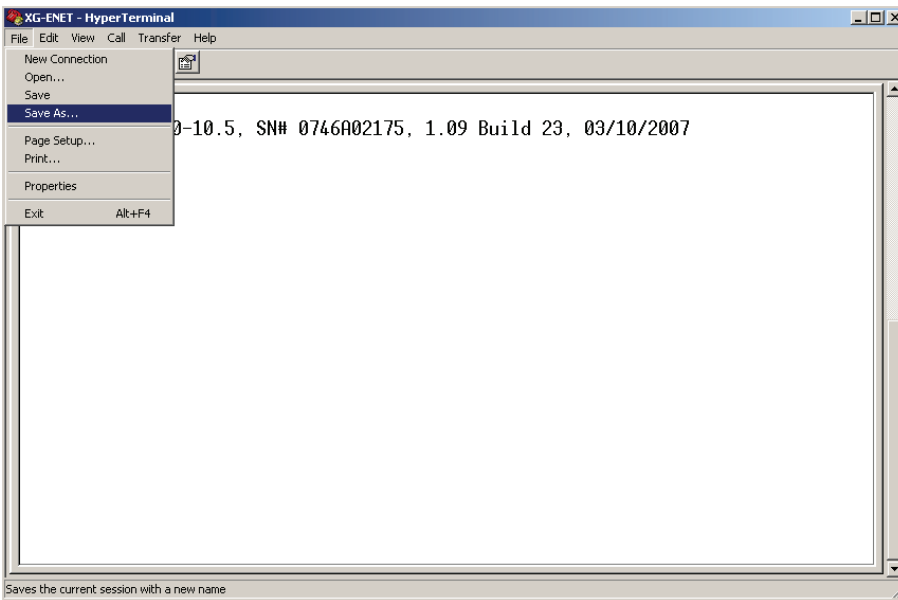
1. In the main HyperTerminal window, click **Call**. See Figure 2-27.
2. To verify that the XG unit is connected and functioning, type the following command "`*ADR <#>; *IDN?`" where the `<#>` should be replaced by the address assigned to the power supply in the "Selecting ENET as the Communication Port" 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)

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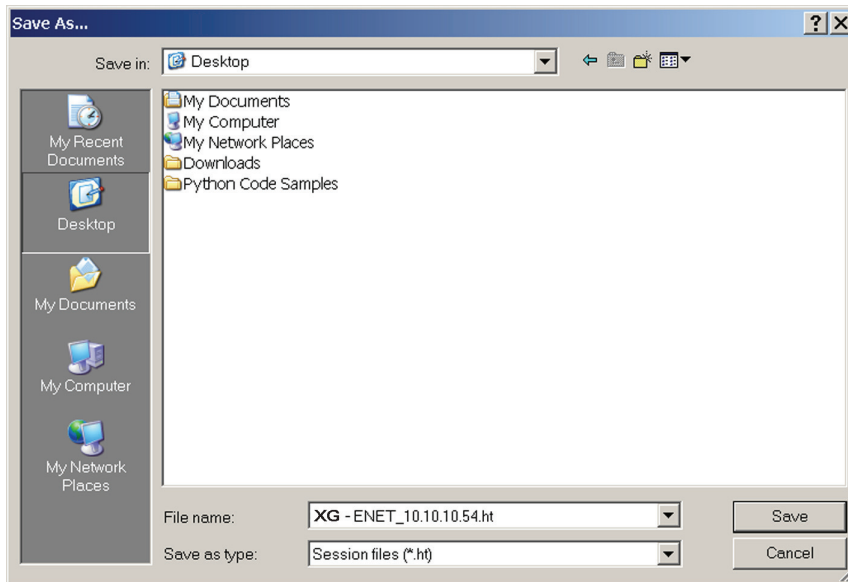


**Figure 2-27** Main HyperTerminal Window



**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

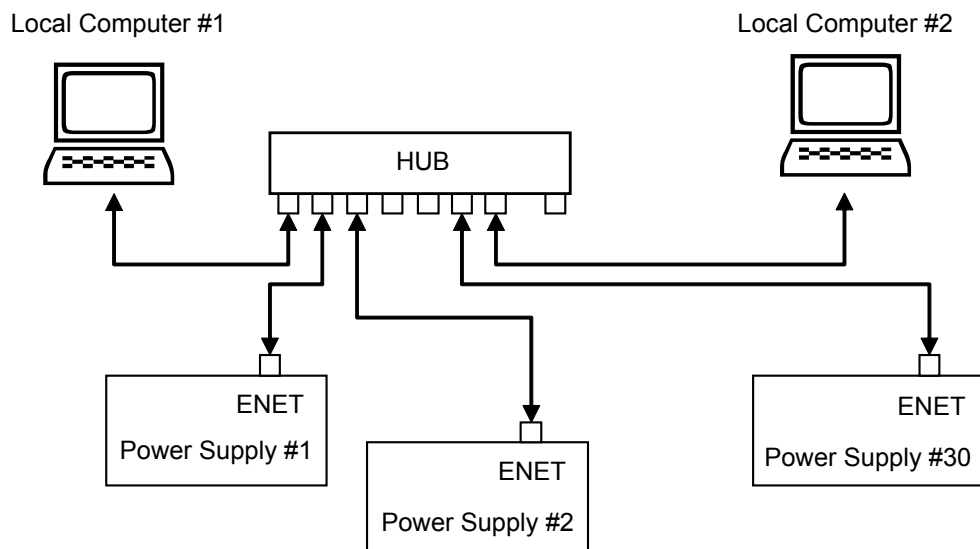
Congratulations! Your network is installed and functioning properly.

## 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.

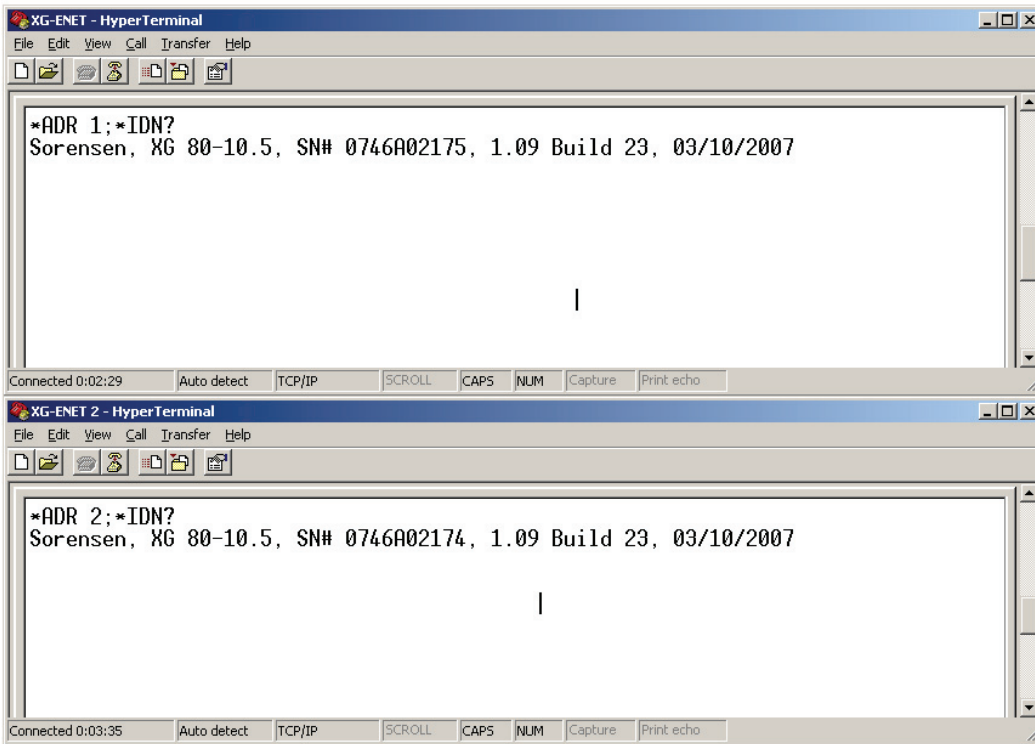
The configuration is complete. You are now ready to use your system.

**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)

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**Figure 2-31** HyperTerminal Session

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



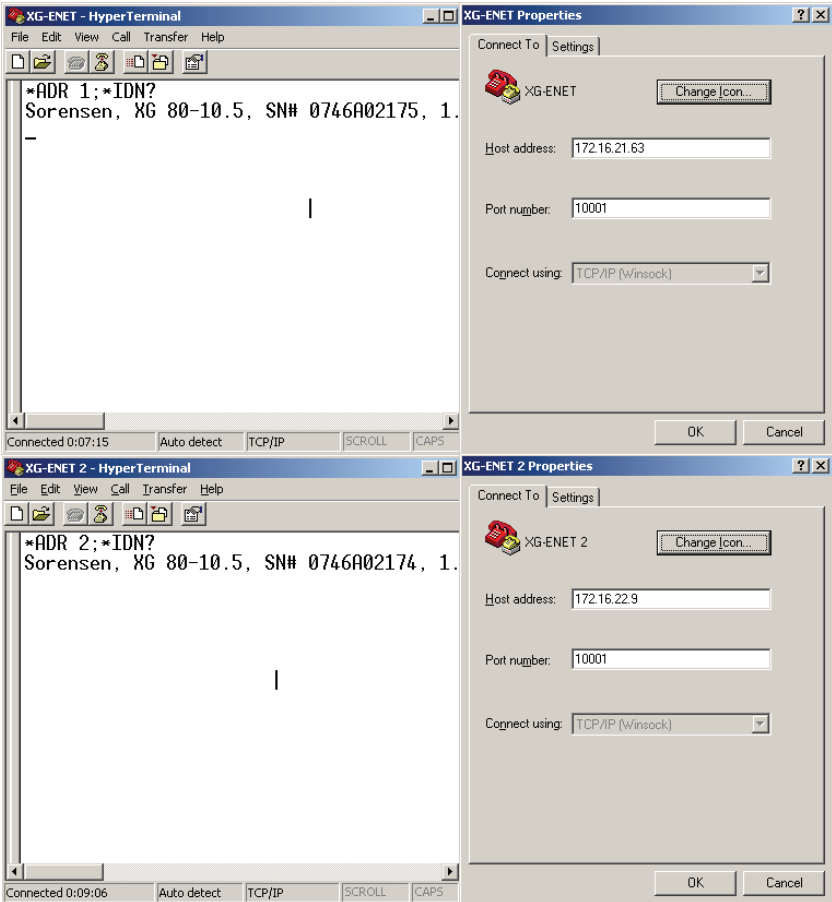


Figure 2-32 System with Two Connected Devices

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).

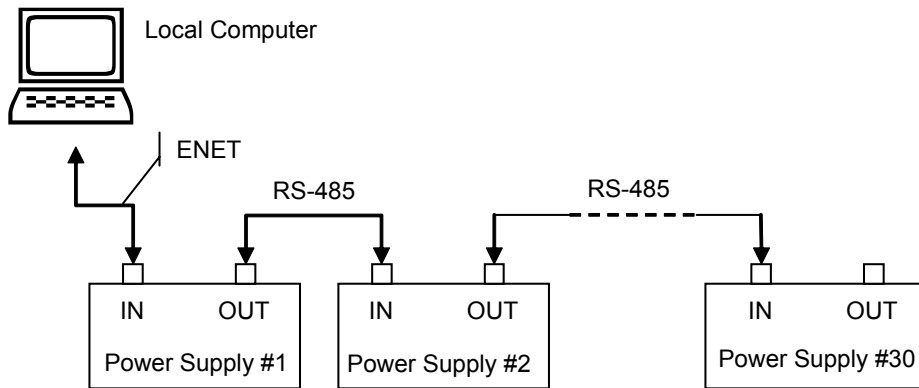
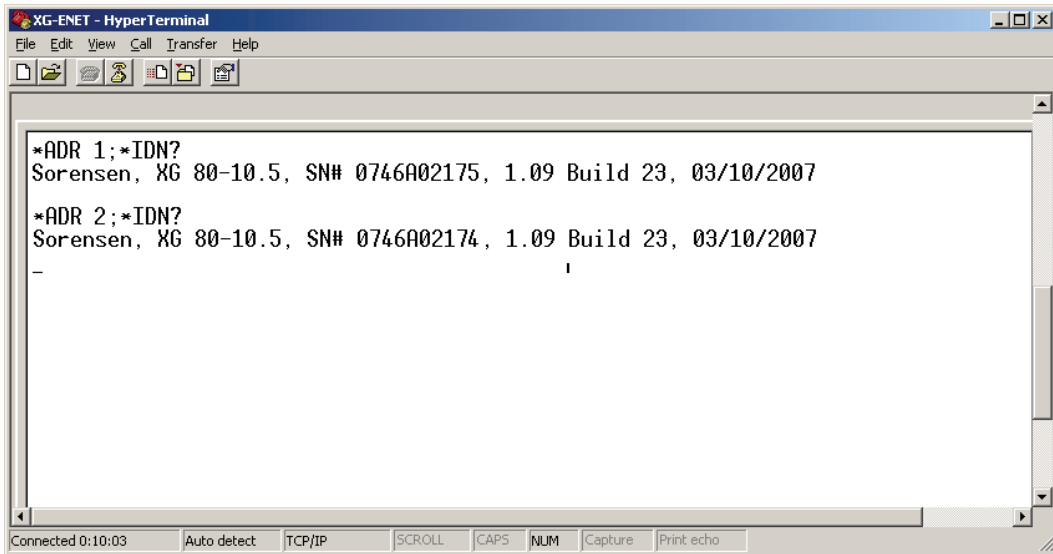


Figure 2-33 ENET and RS-485 Bus



**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  $5L\bar{A}$  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.

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**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.

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# 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.	<p>The power supply is not turned on.</p> <p>The communication interface is not set as a slave unit (RS-485) or the address has not been set correctly.</p>	<p>Turn the power supply ON.</p> <p>Check that the RS-485 bus is selected as the communication interface and the address is correct.</p>
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.	<p>The ENET communication is disconnected.</p> <p>The HyperTerminal session is not configured properly.</p>	<p>Check the ENET communication.</p> <p>Check the settings of the HyperTerminal session. Follow the instructions in the “Selecting ENET as the Communication Port” on page 2-17.</p>



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## 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 <b>Echo typed characters locally</b> 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 &lt;address&gt;.</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	<a href="http://www.lantronix.com/index.html">www.lantronix.com/index.html</a>
XPort™ Embedded Device Server	<a href="http://www.lantronix.com/products/eds/xport/index.html">www.lantronix.com/products/eds/xport/index.html</a>
DeviceInstaller	<a href="http://www.lantronix.com/device-networking/utilities-tools/device-installer.html">http://www.lantronix.com/device-networking/utilities-tools/device-installer.html</a>
Java virtual machine	<a href="http://java.sun.com/j2se/downloads.html">http://java.sun.com/j2se/downloads.html</a>

**Product Family: GPIB & Ethernet Interface for XG Series Programmable DC Power Supplies**

**Warranty Period: Five Years**

**WARRANTY TERMS**

AMETEK Programmable Power, Inc. ("AMETEK"), provides this written warranty covering the Product stated above, and if the Buyer discovers and notifies AMETEK in writing of any defect in material or workmanship within the applicable warranty period stated above, then AMETEK may, at its option: repair or replace the Product; or issue a credit note for the defective Product; or provide the Buyer with replacement parts for the Product.

The Buyer will, at its expense, return the defective Product or parts thereof to AMETEK in accordance with the return procedure specified below. AMETEK will, at its expense, deliver the repaired or replaced Product or parts to the Buyer. Any warranty of AMETEK will not apply if the Buyer is in default under the Purchase Order Agreement or where the Product or any part thereof:

- is damaged by misuse, accident, negligence or failure to maintain the same as specified or required by AMETEK;
- is damaged by modifications, alterations or attachments thereto which are not authorized by AMETEK;
- is installed or operated contrary to the instructions of AMETEK;
- is opened, modified or disassembled in any way without AMETEK's consent; or
- is used in combination with items, articles or materials not authorized by AMETEK.

The Buyer may not assert any claim that the Products are not in conformity with any warranty until the Buyer has made all payments to AMETEK provided for in the Purchase Order Agreement.

**PRODUCT RETURN PROCEDURE**

1. Request a Return Material Authorization (RMA) number from the repair facility (**must be done in the country in which it was purchased**):
  - **In the USA**, contact the AMETEK Repair Department prior to the return of the product to AMETEK for repair:  
Telephone: 800-733-5427, ext. 2295 or ext. 2463 (toll free North America)  
858-450-0085, ext. 2295 or ext. 2463 (direct)
  - **Outside the United States**, contact the nearest Authorized Service Center (ASC). A full listing can be found either through your local distributor or our website, [www.programmablepower.com](http://www.programmablepower.com), by clicking Support and going to the Service Centers tab.
2. When requesting an RMA, have the following information ready:
  - Model number
  - Serial number
  - Description of the problem

**NOTE:** Unauthorized returns will not be accepted and will be returned at the shipper's expense.

**NOTE:** A returned product found upon inspection by AMETEK, to be in specification is subject to an evaluation fee and applicable freight charges.

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