Networking Alpha® signs on a TCP/IP network

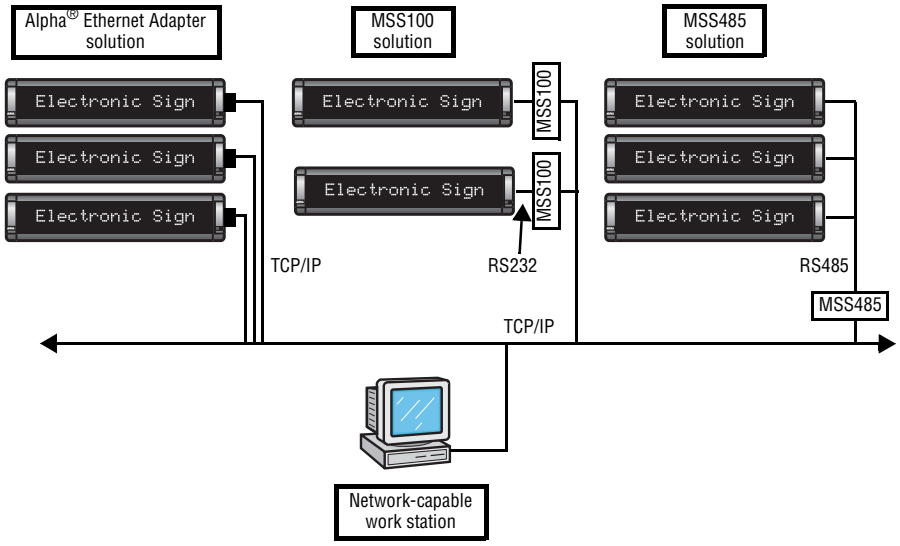
Contents

This document explains how to use the

- *Alpha® Ethernet Adapter*
- *Lantronix MSS100*
- *Lantronix MSS485*

to network Alpha® signs over a TCP/IP network. Also, to send messages to Alpha® signs over the network, you can use AlphaNet plus™ for Microsoft® Windows 1.3 (or later version) or Smart Alec® 3.0 software (or later version) or any other messaging software that is compatible with TCP/IP.

NOTE: **AlphaNet plus™ for Windows** is compatible with Microsoft® Windows 95, 98, NT, ME, and 2000. **Smart Alec®** 3.0 is compatible with Microsoft® Windows 95, 98, and NT. Installation and setup for this product requires a network-literate Information Systems professional.



For latest updates, go to:

http://www.adaptivedisplays.com/ethernet/

ADAPTIVE™

Adaptive Micro Systems • 7840 North 86th Street • Milwaukee, WI 53224 USA • 414-357-2020 • 414-357-2029 (fax) • www.adaptivedisplays.com

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9708-8093C

Introduction

Why use serial servers?

A serial server is an electronic device that provides TCP/IP connections for signs and other serial devices by converting serial data to and from TCP/IP format.

A serial server is an economical way to add Alpha® signs to an existing network. Instead of running separate cabling to create a sign network, Alpha® signs can be attached to an existing TCP/IP network using serial servers. This allows you to communicate with Alpha® signs across the room or around the world.

TCP/IP compatibility

A serial server supports a variety of TCP/IP features, including the **Telnet** terminal protocol. **Telnet** is an easy-to-use interface that creates terminal connections to any network host supporting **Telnet**.

Connectivity

The serial server connects devices directly to the TCP/IP network, which conserves physical ports on the host, allows the terminal to access more than one host, and simplifies terminal cabling.

Standard cabling and connectors from Adaptive™ Micro Systems can be used with the Alpha®Ethernet Adapter, the Lantronix MSS100, and the Lantronix MSS485.

Remote Configuration

A serial server can be logged into and remotely configured via network login, **Telnet** login to the remote console port, or **EZWebCon**.

Reloadable operating software

Alpha® Ethernet Adapters from Adaptive™ Micro Systems and serial servers from Lantronix are Flash-ROM serial servers. Flash-ROM serial servers store their operating software permanently on-board, so they do not need to download code unless new versions become available. Serial servers can also be configured to request a downloaded configuration file at boot time.

Extensive technical support services

Technical information and telephone support, as well as the latest software, is readily available from your dealer, Adaptive™ Micro Systems, and Lantronix. (See “Technical support” on page 47 for details.)

Types of serial servers available

Several serial servers are available for varying circumstances.

Alpha® Ethernet Adapter

- Allows you to connect an Alpha® sign to a 10BASE-T TCP/IP network.
- Needs no separate power supply. It gets its power directly from an Alpha® sign. Because of this, it is suitable for most, but not all, Alpha® signs. See "Valid Adaptive™ signs for an Alpha® Ethernet Adapter" below for a list.

Lantronix MSS100

- Allows you to connect an Alpha® sign to a 100BASE-T or 10BASE-T TCP/IP network.
- Has its own power supply, therefore is suitable for all Alpha® signs.

Lantronix MSS485

- Allows you to connect an RS485 network of up to 32 signs to a 10BASE-T TCP/IP network. (Using a repeater box can extend this limit. See the **Network Configurations** manual, (PN 9708-8046.)

Valid Adaptive™ signs for an Alpha® Ethernet Adapter

For the latest information, see TechMemo 99-0002 on the Adaptive™ web site.

The Alpha® Ethernet Adapter works with the following signs:

- 215C, 215R
- 220C (all shipped after February 1, 2000)
- 300C series
- 4000C, 4000R series (using RS232 jumper and jack)
- 7000C series (using RS232 jumper and jack)
- Alpha® Big Dot
- AlphaVision™ FS
- BetaBrite® one-line displays (P1026, P1036 and P1040), including 213C and BetaBrite® Window Display
- BetaBrite® Director (all shipped after July 1, 2000)
- Personal Priority Display™ (PPD™)

The Alpha® Ethernet Adapter does not work with the following signs:

- 210C
- 220C (all shipped prior to February 1, 2000)
- 420
- 790i
- AlphaEclipse™
- AlphaPremiere™
- AlphaVision™ CM, FM, 1.4", 2.1"
- AlphaVision™ Video Screen (VS)
- AlphaVision™ InfoTracker (IT) – works with MSS485 only
- AlphaTicker™ – works with MSS485 only
- BetaBrite Director® (all shipped before July 1, 2000)
- Solar™

Resources needed

Software

Valid messaging software includes:

- **Smart Alec®, version 3.0**
- **AlphaNet plus™ for Windows, version 1.3**
- **Alpha® Messaging Software**
- **BetaBrite® Messaging Software**
- **Gateway Messaging Software**
- **Alpha® Marquee ActiveX® control**

Additional software which may be needed includes:

- **EZWebCon** (Information on how to acquire and install **EZWebCon** is provided in "Method 1: EZWebCon" on page 8.)
- **Telnet** (Available with all Microsoft® Windows operating systems. See "Method 3: Telnet" on page 18)
- **Redirector** (for **Alpha® Messaging Software** or **BetaBrite® Messaging Software**. Available from Lantronix. See "Install Redirector" on page 35)

Hardware

Hardware needed includes:

- Alpha® Ethernet Adapter, *and/or*
  MSS100 with power supply, *and/or*
  MSS485 with power supply
- Functional sign with Alpha®, Smart Alec®, or Gateway firmware chip
- Power supply for each sign
- Active 10BASE-T TCP/IP port *and/or*
  Active 100BASE-T TCP/IP port
- TCP/IP network cabling
- DB25-to-RJ11 adapter
- RS232 cable
- PC connected to the network

References

You may find these other documents helpful:

- **Network Configurations (PN 9708-8046)**
- **Networking Alpha® Signs**
- **AlphaNet plus™ for Windows User Manual version 1.3 (PN 9708-8081)**
- **Smart Alec® User Manual version 3.0 (PN 9709-2030)**
- **Alpha® Marquee Control – ActiveX® Developer's Reference (PN 9709-2054)**
- **TechMemo 99-0002**

General steps for networking Alpha® signs on a TCP/IP network

Serial servers allow the flexibility of linking into a TCP/IP network to send messages to a sign.

1. First, assign each a unique IP address to each serial server.
2. Next, set up networking hardware, including the serial server.
3. Finally, perform tasks necessary to specific messaging software:
   - Set up the messaging software to direct messages through the serial servers to a sign. This is needed for **Smart Alec® version 3.0** and **AlphaNet plus™ for Windows version 1.3**.
   - Install and select settings for **Redirector software**. This is needed for **Alpha® Messaging Software** and **BetaBrite® Messaging Software**.
   - Set an MSS485 as a "local/host" serial server to send messages to one or more serial servers, each set as a "remote". This is needed for **Gateway Messaging Software**.

Assigning an IP address to a serial server

For messages to be sent to a specific sign on the network, each serial server must have a unique IP address associated with it. There are several methods for assigning an IP address that can be used depending on various circumstances. For some of these methods, installation of the serial server hardware must be done while assigning the IP address. For other methods, the IP address can be assigned after the serial server hardware is installed.

To assign an IP address, you will need to know two numbers:

1. The IP address to be assigned to each serial server, either Alpha® Ethernet Adapter, MSS100, or MSS485. The specific address is usually designated by an IS network administrator.

2. The hardware address of the serial server. This is found on a label on the back of the server.

The following methods for assigning an IP address are listed in order from the most simple and most often used to the least often used.

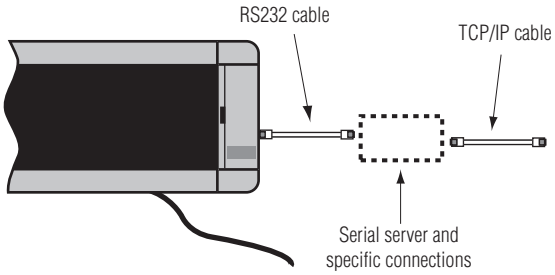
Method 1: EZWebCon

EZWebCon is one of the easiest ways to assign a specific IP address.

Install EZWebCon software

1. Obtain the latest version of **EZWebCon** from either the Alpha® Ethernet Adapter CD or the Lantronix CD or from the Lantronix Internet site (www.lantronix.com) for your network platform. Download this into an empty directory on the PC to be used.
2. After downloading, double-click on ezwebcon.exe in that folder on the PC.
3. The **EZWebCon** application will be unpacked and installed on your PC.

Connect the serial server to sign and network



4. Connect a TCP/IP cable to an active port and to the serial server according to the information for your specific serial server in "Connections for serial servers" starting on page 30.
5. Connect an appropriate power supply to the serial server. For an Alpha® Ethernet Adapter, this will be the sign with its power cable plugged into an outlet. For a Lantronix serial server, this will be its own power cable.
6. Check the LED lights on the serial server:

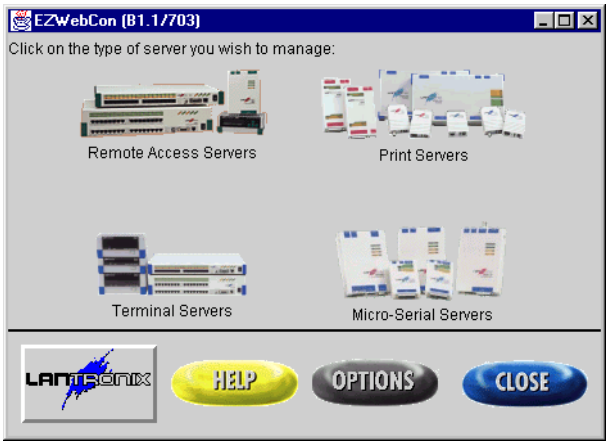
   The power LED should be solid green, indicating it is properly powered.

   The link LED should be solid green, indicating a valid network connection.

   The activity LED should be blinking green, indicating normal operation.

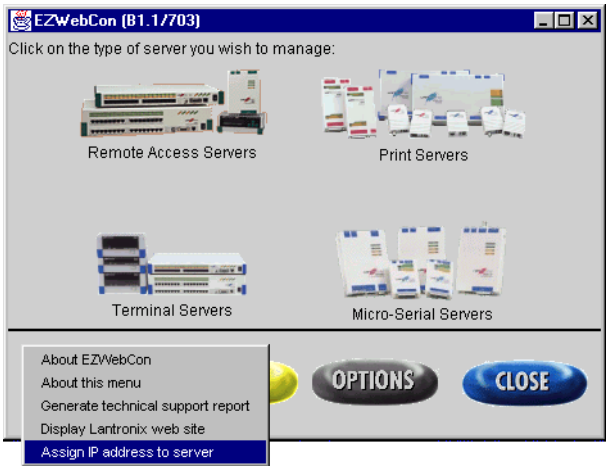
Use EZWebCon software to assign the IP address

7. Run **EZWebCon** software.



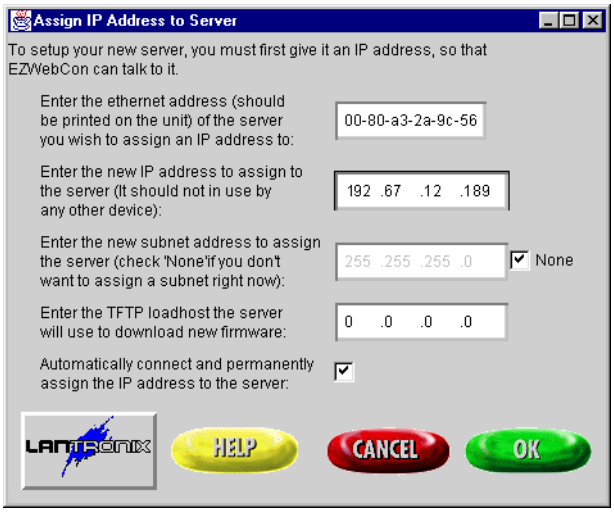
8. Right-click on the Lantronix logo button on the main screen for **EZWebCon**. This will display a pop-up menu.

9. Choose *Assign IP address to server.*



10. Enter the Ethernet (hardware) address of the serial server. This will always begin with "00-80-a3".

HINT: This is case-sensitive and must be entered with lower-case letters. You do not need to type the dashes.



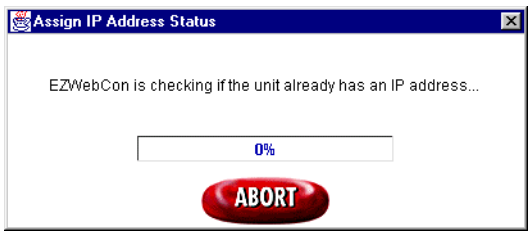
11. Enter the new IP address.

HINT: To correctly position the nodes of the address, type both the numbers and the decimal points.

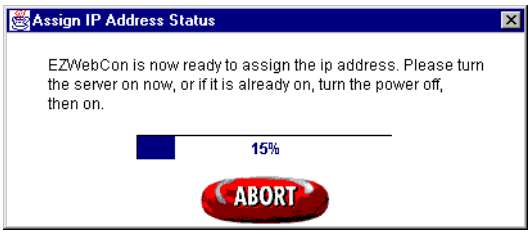
12. Leave *Subnet address* as "None". Leave *TFTP loadhost* as zeroes or set as needed for your system. Leave *Automatically connect and permanently assign the IP address* checked.

13. Click *OK*.

14. **EZWebCon** will check to see if the serial server already has an assigned IP address.

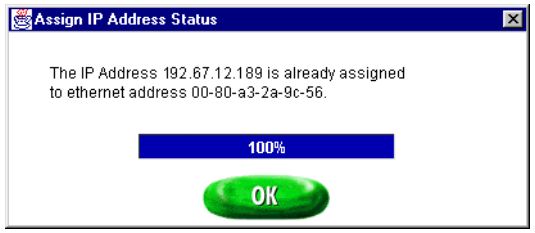


15. You may be prompted to reboot the serial server:

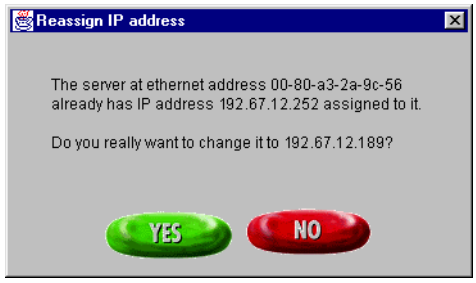


16. When **EZWebCon** has finished checking for an IP address, one or more of three things may happen:

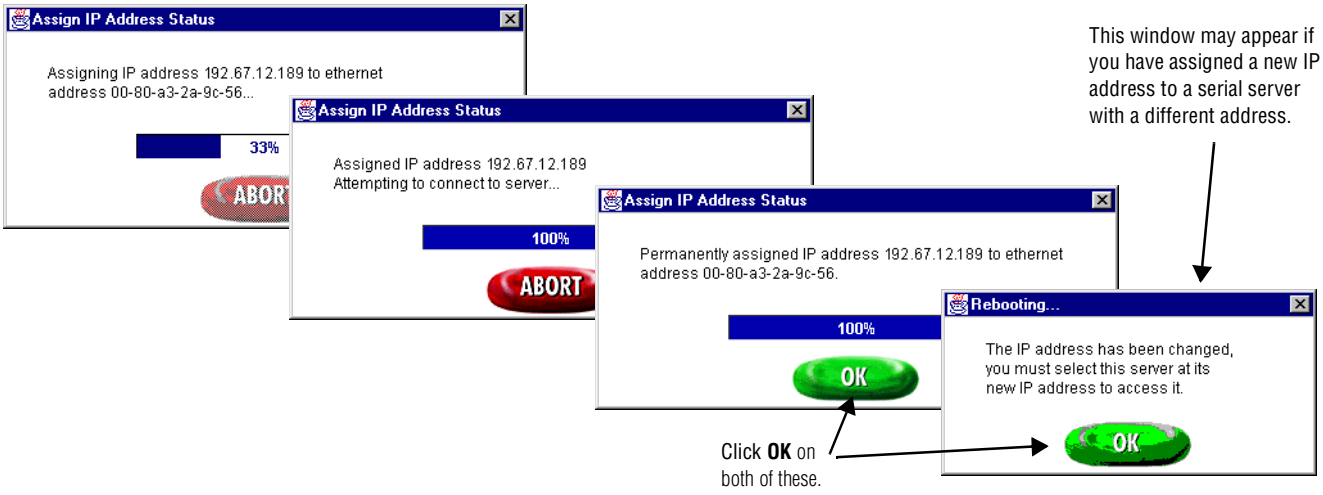
- If it finds an IP address for this serial server and it is the same as the one you are trying to assign, **EZWebCon** will simply tell you so. Click *OK*. You do not need to do anything else to set this IP address.



- If it finds an IP address and it is *not* the same as the one you are trying to assign, **EZWebCon** will ask if you really want to assign the new address. Choose *Yes* if you do.

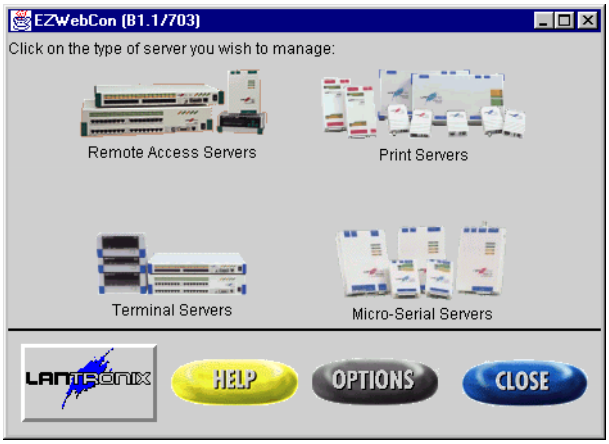


- If you chose *Yes* to assign a new address over an old address or if no address was found, it will assign the new IP address.

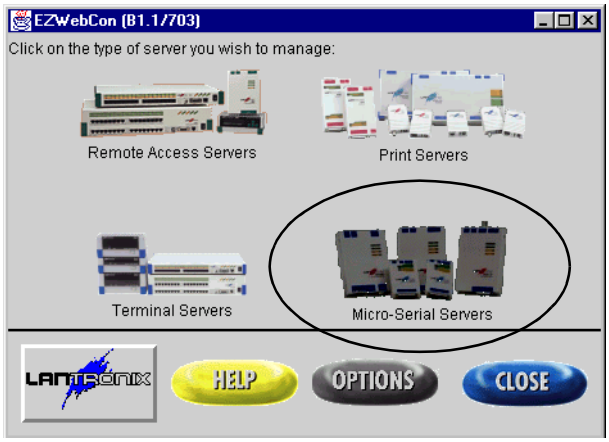


Use EZWebCon software to detect serial servers and IP addresses on the network (optional)

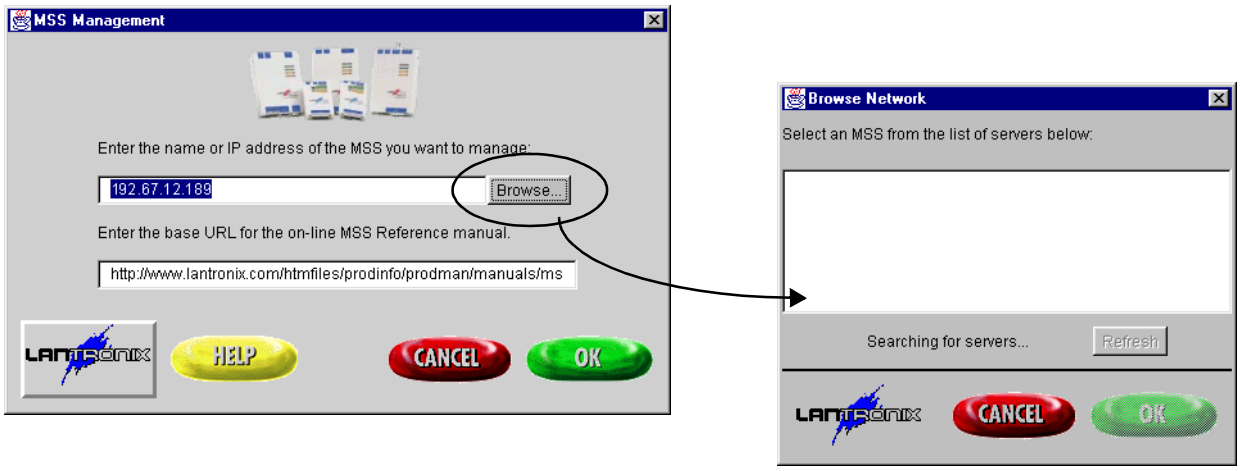
17. Run **EZWebCon** software if it's not already running.



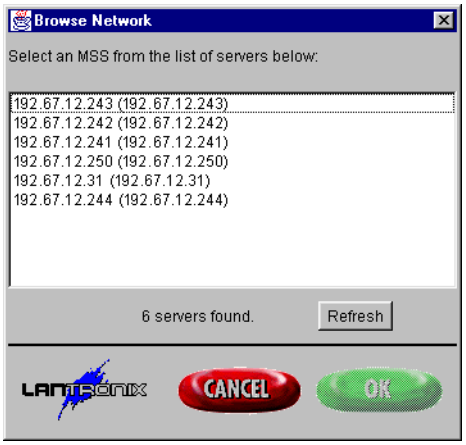
18. Click on the *Micro-Serial Servers* icon.



19. Click on *Browse* in the *MSS Management* dialog box to search for existing serial servers on the network.



20. When browsing is complete, the *Browse Network* dialog box shows IP addresses of existing serial servers on the network, including the IP address just assigned to this serial server. (The only way to print this is to press the **Print Screen** button and then paste into a drawing, paint, or word processing application.)



NOTE: If the IP addresses you just set is not returned, you can ping the serial server as described in the section for "Method 2: DOS/ARP command". If the IP address still is not detected, you must either assign an IP address to the serial server using a different method, or contact IS personnel with the hardware address on the back of the serial server. IS can then use network management software to locate the IP address.

NOTE: It may be a good idea to write the IP address directly on the serial server.

21. Close **EZWebCon**.

Method 2: DOS/ARP command

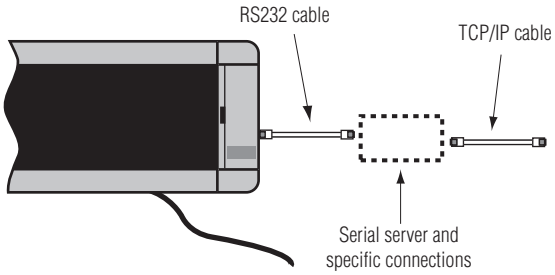
In a DOS window in Microsoft® Windows 95 and Windows NT, the **arp** command is a simple way to assign an IP address when none has been previously assigned. The **arp** command is used here in conjunction with the **ping** command. The **ping** command is used to test the connection with the serial server and to determine whether the new IP address has taken effect.

NOTE: The **arp** command will *not* work if any IP address has ever been assigned to the given hardware address. The **arp** command will not replace an existing IP address with another IP address. You can use **Telnet** to change or delete an existing IP address. Refer to "Method 3: Telnet" on page 18.

Obtain new IP address(es)

1. Obtain a valid IP address for each serial server. This is usually assigned by an IS network administrator.

Connect the serial server to sign and network

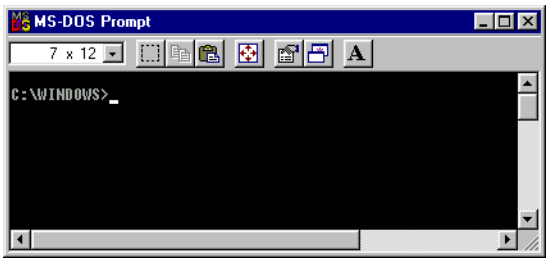


2. Connect the serial server according to the information for your specific adapter in "Connections for serial servers" starting on page 30.

   NOTE: Do *not* connect the power cable to the sign at this time!

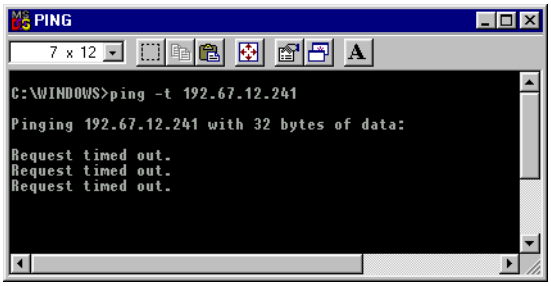
Set up DOS commands for assigning an IP address

3. Open up a DOS window on the PC: click on *Start* > *Programs* > *MS-DOS Prompt*.

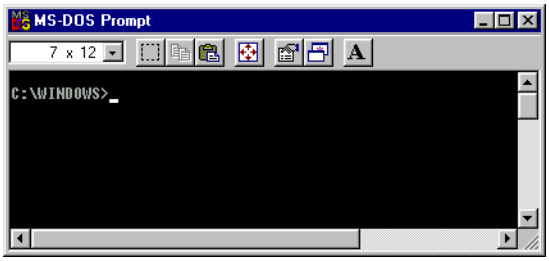


4. Type "ping –t *n.n.n.n*" (where *n.n.n.n* is the IP address to be assigned to the serial server) and press **Enter**.

NOTE: This will continuously **ping** this IP address, allowing you to monitor exactly when communication to the device is established. You can stop the execution of this **ping** command by pressing **Ctrl+c**.

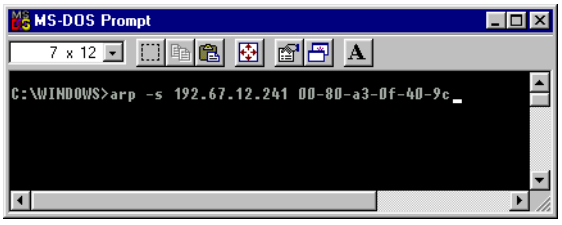


5. Open up another DOS window on the PC: click on *Start* > *Programs* > *MS-DOS Prompt* a second time.



6. Type "arp –s *n.n.n.n 00-80-a3-x-x-x* " (where *n.n.n.n* is the IP address of the serial server and *00-80-a3-x-x-x* is the hardware address of serial server.) **Do *not* press Enter at this time though!**

NOTE: You must first complete the next step to power up the unit before entering this command. The arp command typed here will be executed in Step 9 below.



Apply power to the serial server and to the sign

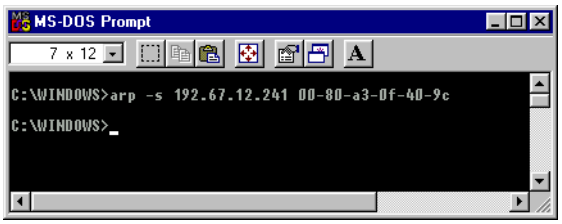
7. Connect an appropriate power supply to the serial server. For an Alpha® Ethernet Adapter, this will be the sign with its power cable plugged into an outlet. For a Lantronix serial server, this will be its own power cable.

8. Wait 30 seconds or until the activity light turns off and on only every two seconds. Both the sign and the serial server are now powered up and connected to the network.

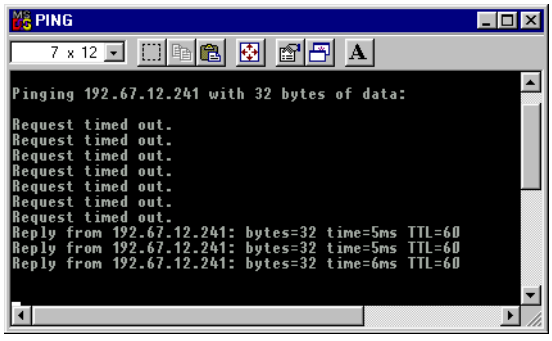
Assign the IP address

9. Press **Enter** at the DOS window with the "arp –s *n.n.n.n 00-80-a3-x-x-x*" command, which you set up in Step 6 above, to actually assign the IP address.

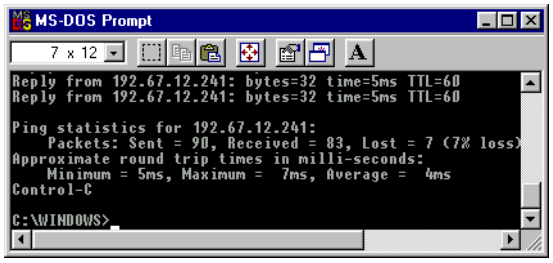
   NOTE: Once the serial server is initially powered up, you have only **two minutes** to assign it an IP address by pressing **Enter** at the DOS window with the "arp –s *n.n.n.n 00-80-a3-x-x-x*" command which you set up in Step 6. After two minutes, either an alternate method must be used or the serial server must be rebooted by removing and reapplying power to it.



10. You can watch the DOS window which has the **ping** command to determine when communication has been established. A "Reply from…" response will be displayed in the window with the **ping** command when successful IP assignment is achieved.



11. Go to the DOS window which has the **ping** command. Stop the execution of this command by pressing **Ctrl+c**.

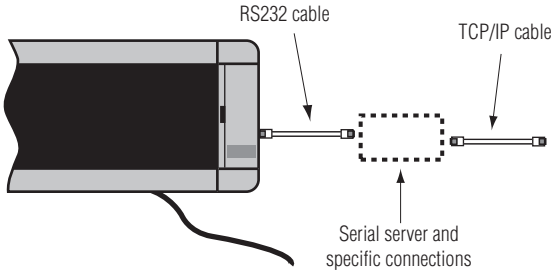


NOTE: The serial server will not save the learned IP address permanently. The time it is saved may vary depending on how your network is set up. This **arp** and **ping** procedure is intended as a temporary measure to enable EZWebCon to communicate with the serial server, or allow an administrator to **Telnet** into the serial server. Once logged in, the administrator can enter the **"**Change IPaddress" command to make the address permanent. See also "Reserving an IP address" on page 22 for instructions on determining and reserving an IP address.

Method 3: Telnet

Telnet is used to program a hardware device for parameters such as baud rate, stop bits, parity, and particularly an IP address. **Telnet** can be used to reassign an IP address directly when it has already been assigned an address by any means.

Connect the serial server to sign and network



1. Connect the serial server according to the information for your specific adapter in "Connections for serial servers" starting on page 30.
2. Connect an appropriate power supply to the serial server. For an Alpha® Ethernet Adapter, this will be the sign. For a Lantronix serial server, this will be its own power cable.
3. Check the LED lights on the serial server:

   The power light should be solid green, indicating it is properly powered.

   The link light should be solid green, indicating a valid network connection.

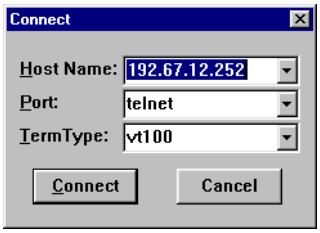
   The activity light should be blinking green, indicating normal operation.

Start Telnet

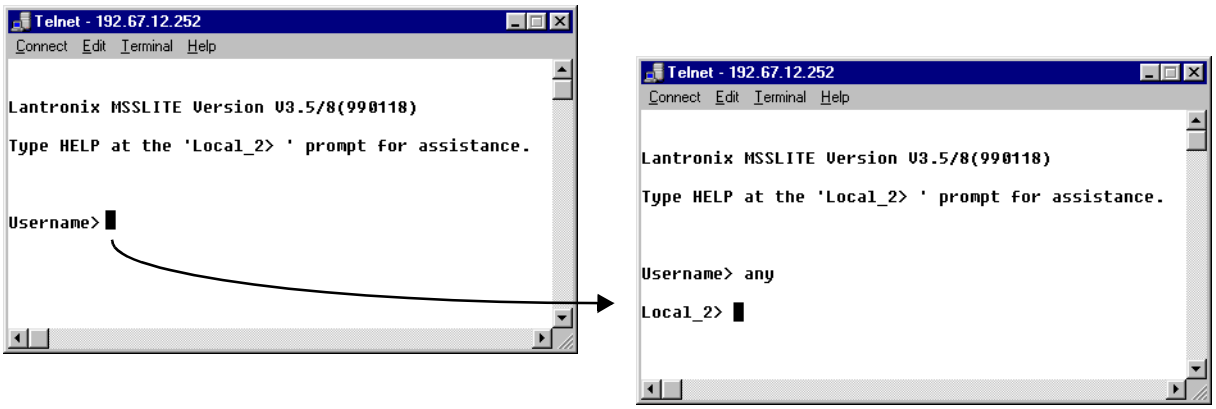
Telnet is fully functional on all PCs. To use **Telnet**, from **Start > Run**, type "Telnet". It will open a generic window for **Telnet**. You can also open a **Telnet** window for a specific serial server by typing "Telnet *n.n.n.n*" (where *n.n.n.n* is the currently-assigned IP address of the serial server) from **Start > Run**.

Change an IP address

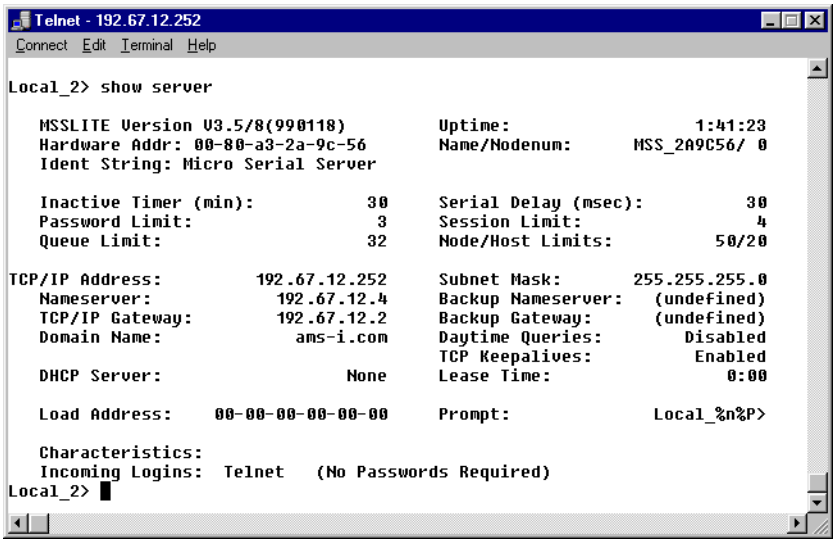
4. (Note: Skip this step if you opened a **Telnet** window for a specific serial server as above in "Start Telnet".) From the **Connect** menu, choose **Remote System…** and then select or type the IP address of the serial server. Use "telnet" for the *Port* and "vt100" for the *TermType*.



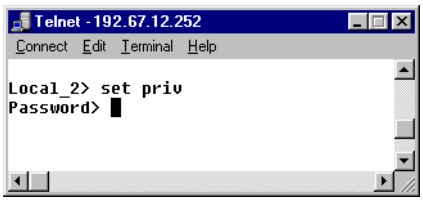
5. Type a username and press **Enter**. It doesn't matter what you type here, except that it must be different from that used by any other **Telnet** user on the network.



6. The "show server" command can provide confirmation that you've accessed the correct serial server and also provide statistics about that serial server.

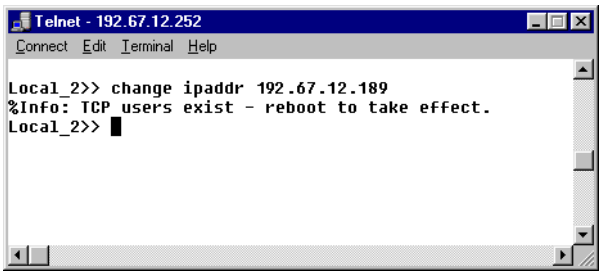


7. Type “set priv”. Press **Enter.** Then type the password. Press **Enter** again.The default password is “system”.

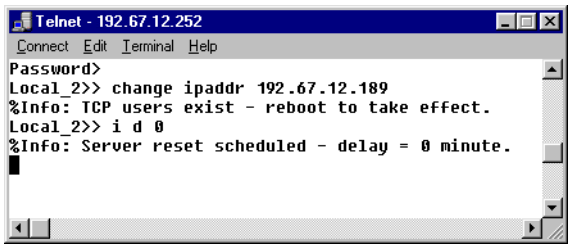


8. You now have access to the “super user” level of authority. This is required to set the IP address.

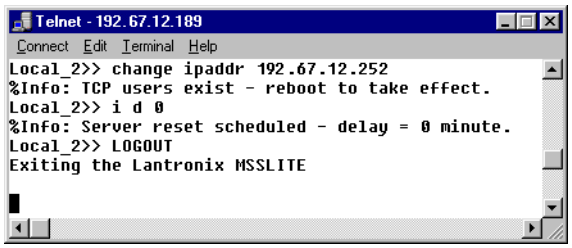
9. To assign a new IP address, type “change ipaddr *n.n.n.n*” (where *n.n.n.n* is the new IP address.)



10. You should now reboot the serial server. To do this, type “i d 0” with spaces between the characters. (The last character is a zero.)



11. Because the serial server will no longer be at the same address as when you connected to it using **Telnet**, **Telnet** officially logs you out of that connection.



12. You then get this notification.

13. After clicking *OK*, and after the serial server completes rebooting, you can connect to the server using the new IP address if you wish to confirm the change with the **show server** command. Alternatively, you can exit **Telnet** and send messages.

Method 4: DHCP

Dynamic Host Configuration Protocol (DHCP) allows a device to use a dynamic IP address assigned at boot time from an available pool of addresses. With this method, you do not need to set the IP address in the hardware itself.

The serial server is shipped with DHCP disabled. However, if DHCP ever becomes enabled (such as after resetting the server, as described below) and if your network uses Dynamic Host Configuration Protocol (DHCP), then when the serial server is re-connected to the network and powered up, DHCP will automatically assign a dynamic IP address to the serial server. If you want to accept this assigned IP address and don't need to reassign another chosen address, you will still need see "Reserving an IP address" below for instructions on determining and reserving an IP address.

Reserving an IP address

Determine the IP address

So that you can send messages to the correct IP address, a system/network administrator must use the **DHCP Manager** (or similar) application to locate the serial server by its hardware address. The dynamic IP address is associated with the hardware address. This identification process can be involved on large networks.

Reserving the IP address

A system/network administrator can use the system/networking **DHCP Manager** application to set the dynamically-assigned address to a permanent lease. This will reserve the IP address as a static address for the particular hardware address. If you do not reserve the IP address, periodically DHCP will automatically reassign a new dynamic – and typically different – IP address to the serial server. The result is that messages will not be delivered to the serial server.

Resetting DHCP to "disabled"

To set the serial server so that DHCP is disabled:

1. Follow the information in "Method 3: Telnet" to "Start Telnet", on page 18.
2. Follow the steps in "Change an IP address" (starting on page 19) to type the username and "set priv". These are Step 4 through Step 8.
3. Next, to disable DHCP, type "change dhcp disabled".
4. To exit **Telnet**, choose **Exit** from the **Connect** menu.

Method 5: HyperTerminal

HyperTerminal may be used when, for some reason, you cannot access the serial server from the network. In this case, you will need to program the device directly using HyperTerminal and a null DB25F- or DB9F-to-DB25F serial cable (not supplied) from the PC to the server. (For an Alpha® Ethernet Adapter, however, you will need to split out two wires to connect the MSS device to an external power supply.) You will also need to use communication settings of 9600 baud, 8N1, and flow control set to either XON/XOFF or HARDWARE. For assistance, please call Technical Support at Adaptive™ Micro Systems.

NOTE: HyperTerminal is fully functional on all PCs, but you may need to install it with the Add/Remove Programs icon in the Control Panel.

Resetting a serial server

There may be times when you need to reset the serial server to its default factory settings. These default settings include setting DHCP to “enabled”.

To reset the serial server:

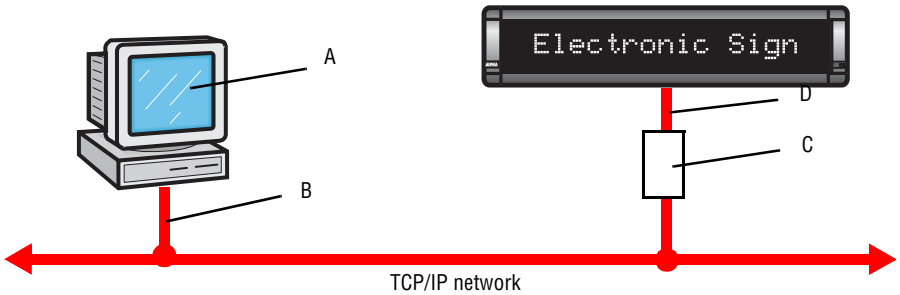
1. Remove power from the adapter, either the cable to the sign (Alpha® Ethernet Adapter) or its power cable (MSS100 or MSS485).
2. Using the point of a pen or a similar object, press and hold the reset button on the serial server and then reapply power to the sign. Continue to hold the reset button for 20 seconds after reapplying power.

Setting up the network hardware

Network configuration examples

Alpha® or BetaBrite® Messaging software with one sign

Use this setup when 1 sign needs to be connected to a network. This setup also requires the use of the **Redirector** software.

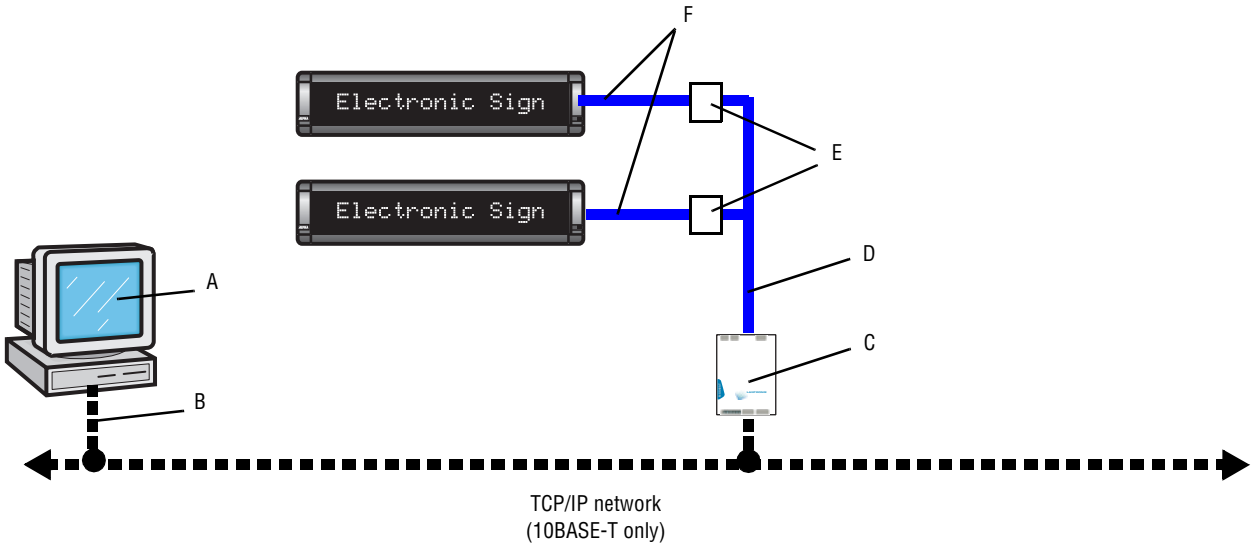


TCP/IP network
(10BASE-T using Alpha® Ethernet Adapter
or
10/100BASE-T using MSS100)

Item	Part No.	Description	Notes
A	1092-9102	Alpha® Messaging software	**Redirector** software must also be used. This is available from the Lantronix Web site. See "Installing and selecting Redirector settings" on page 35 for information.
	1102-9102	BetaBrite® Messaging software	
B	–	The computer must be connected to the TCP/IP network with a network card.	
C	1088-9120	Alpha® Ethernet Adapter kit	The Alpha® Ethernet Adapter is mounted on the back of the sign and draws its power from the sign itself (no separate power supply is needed.) The Alpha® Ethernet Adapter will need its own unique IP address. 10BASE-T only.
	1088-4113	MSS100 Micro Serial Server	The MSS100 has its own power supply. The MSS100 needs its own unique IP address. 10BASE-T or 100BASE-T.
	1088-4112	MSS485 Micro Serial Server	The MSS485 has its own power supply. The MSS485 needs its own unique IP address. 10BASE-T only. Applicable for the BetaBrite Director® (all shipped after July 1, 2000). Not applicable for the one-line BetaBrite® signs (P1026, P1036 and P1040).
D		For proper cabling, see "Connections for serial servers" on page 30.	

Alpha® Messaging software with one or more signs

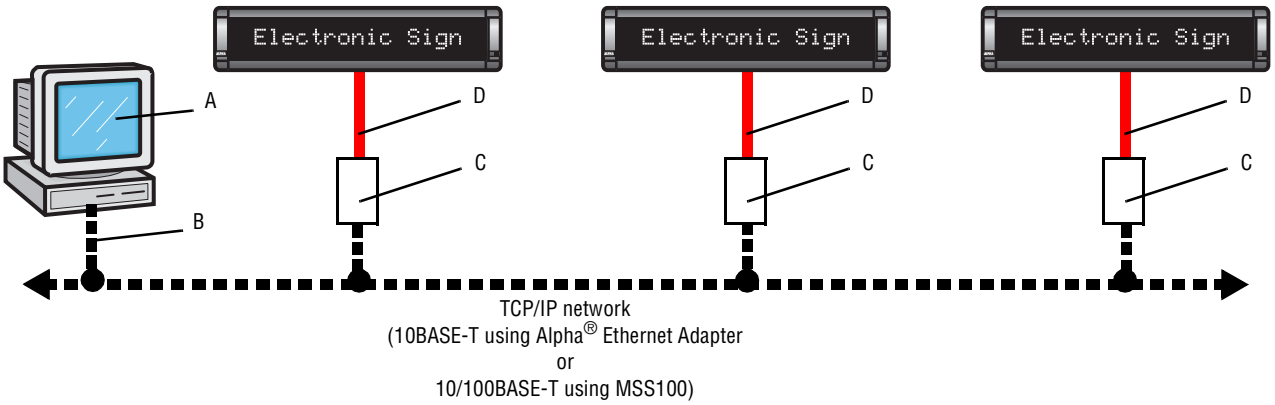
Use this setup when Alpha® Messaging Software is used to send messages to multiple signs need to be connected to a TCP/IP network and an RS485 network. Using the Redirector software, available from Lantronix, one MSS485 Micro Serial Server can be used, and up to 32 signs can be connected to each serial server. The total length of the RS485 network is limited to 4,000 feet at 9600 baud or 10,000 feet at 2400 baud except if a repeater box is used. Alpha® Messaging Software will send the same message to every sign in this network.



Item	Part No.	Description	Notes
A	1092-9102	Alpha® Messaging software	Redirector software must also be used. This is available from the Lantronix Web site. See "Installing and selecting Redirector settings" on page 35 for information.
B	–	The computer must be connected to the TCP/IP network with a network card.	
C	1088-4112	MSS485 Micro Serial Server	Used to connect a TCP/IP network and RS485 cabling. The MSS485 must be assigned an IP address which the Alpha® Messaging software uses to address this device. Only one MSS485 can be used, however, that MSS485 can address up to 32 signs.
D	1088-8000	RS485 cable (1000 foot spool)	Used to interconnect signs.
E	4331-0602	Modular Network Adapter	Used to interconnect signs.
F	1088-8624	8-foot RS485 cable	Plugs into the sign's RS485 jack. (The network of signs must *not* be terminated.)
	1088-8636	1-foot RS485 cable (recommended)	

AlphaNet plus™, Smart Alec®, or ActiveX software with one or more signs with a TCP/IP network only

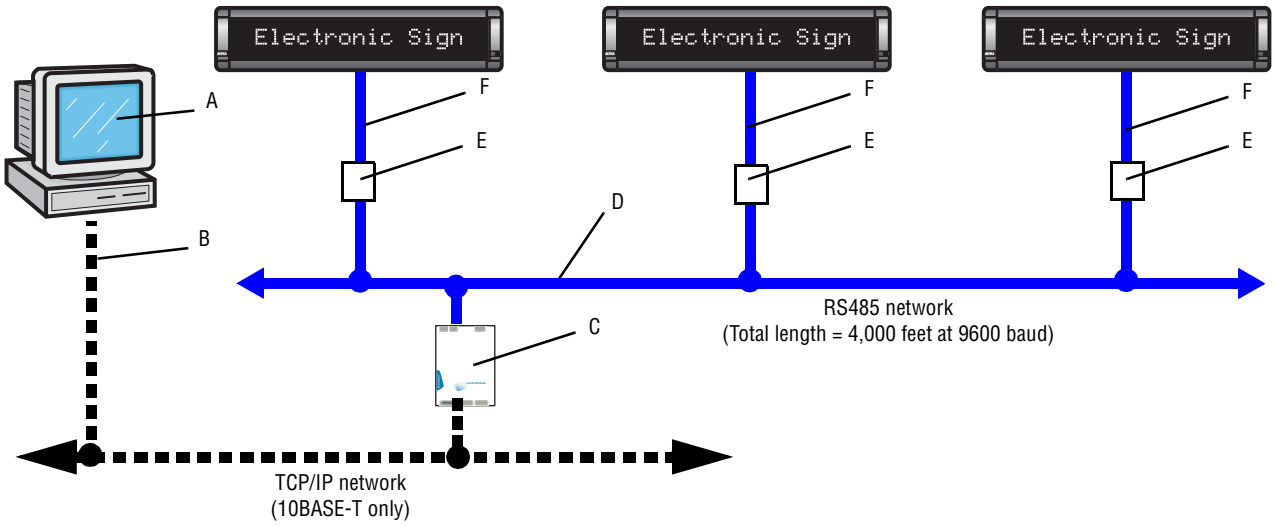
Use this setup when AlphaNet plus™ (version 1.3 or later), Smart Alec® (version 3.0 or later), or ActiveX (version 1.0 or later) software is used to send messages to multiple signs connected only to a TCP/IP network. The number of signs in this network is only limited by the number of available IP addresses. The potential length of the network is unlimited. These software applications have the ability to display a unique message on each of the signs in this network.



Item	Part No.	Description	Notes
A	1092-7827	AlphaNet plus™ for Microsoft® Windows	
	Contact Adaptive™ Customer Service	Smart Alec® software	
	1092-7825	Alpha® Marquee ActiveX Control	
B	–	The computer must be connected to the TCP/IP network with a network card.	
C	1088-9120	Alpha® Ethernet Adapter	Each Alpha® Ethernet Adapter is mounted on the back of the sign and draws its power from the sign itself (no separate power supply is needed.) Each Alpha® Ethernet Adapter needs its own unique IP address. (10BASE-T only)
	1088-4113	MSS100 Micro Serial Server	Each MSS100 has its own power supply. Each MSS100 needs its own unique IP address. (10BASE-T or 100BASE-T)
D		For proper cabling, see “Connections for serial servers” on page 30.	

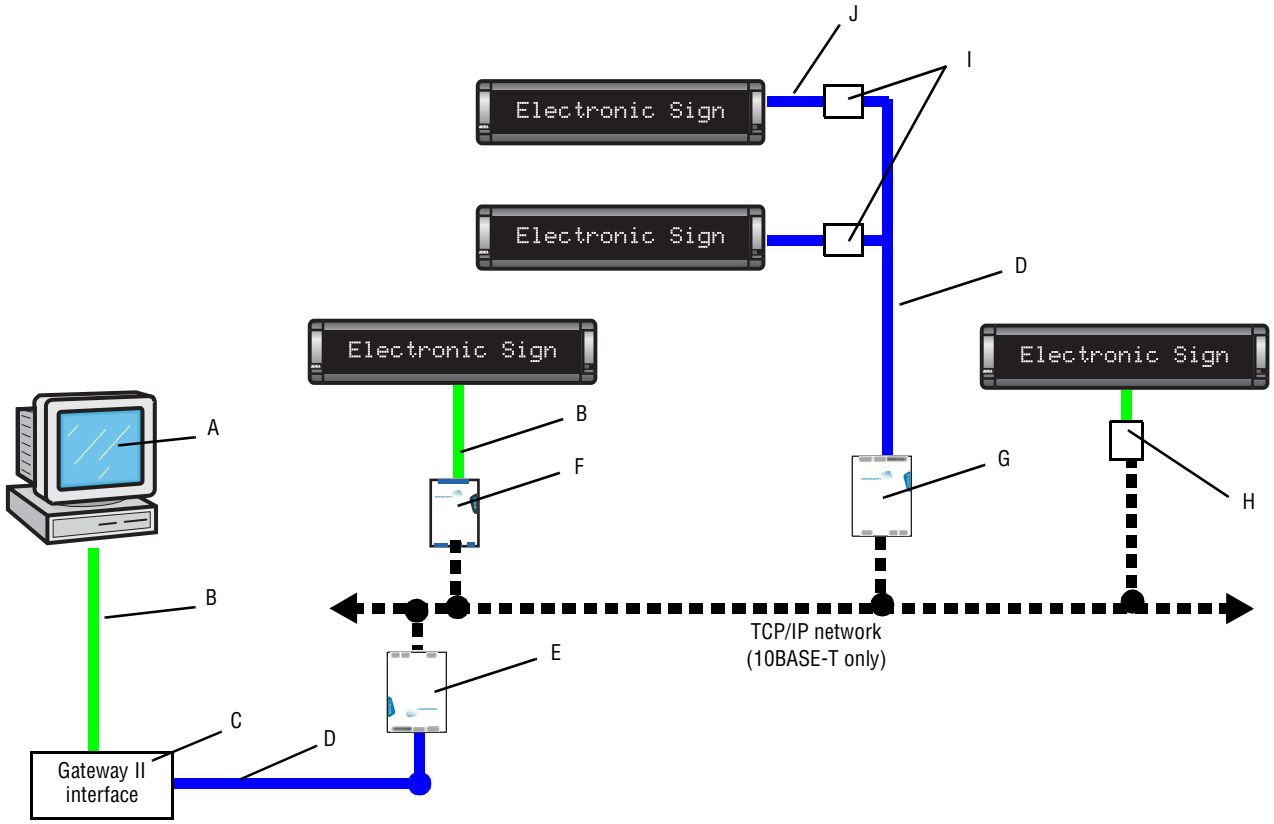
AlphaNet plus™, Smart Alec®, or ActiveX software with one or more signs with both TCP/IP and RS485 networks

Use this setup when AlphaNet plus™ (version 1.3 or later), Smart Alec® (version 3.0 or later), or ActiveX (version 1.0 or later) software is used to send messages to multiple signs on an RS485 network connected to a TCP/IP network. The number of signs in this network is only limited by the number of available IP addresses. The total length of the RS485 network is limited to 4,000 feet at 9600 baud or 10,000 feet at 2400 baud except if a repeater box is used. These software applications have the ability to display a unique message on each of the signs in this network.



Item	Part No.	Description	Notes
A	1092-7827	AlphaNet plus™ for Windows v1.3 software	
	–	Smart Alec® v3.0 software	Call Adaptive™ Customer Service for available demo, upgrade, or full version
	1092-7825	Alpha® Marquee ActiveX Control	
B	–	The computer must be connected to the TCP/IP network with a network card.	
C	1088-4112	MSS485 Micro Serial Server	Used to connect a TCP/IP network and RS485 cabling. Each MSS485 must be assigned an IP address which the software uses to address each device.
D	1088-8000	RS485 cable (1000 foot spool)	Used to interconnect signs.
E	4331-0602	Modular Network Adapter	Used to interconnect signs.
F	1088-8624	8-foot RS485 cable	Plugs into the sign's RS485 jack. (The network of signs must *not* be terminated.)
	1088-8636	1-foot RS485 cable (recommended)	

Gateway Messaging software with one or more signs on a network



Item	Part #	Description	Notes
A	1188-9207	Gateway Messaging software	
B	1088-8625	25' RS232 cable	Also requires 1088-9108 or 4370-0001C adapter to PC.
C	See Notes.	Alpha® Gateway II interface	This varies according to the specific industrial network. Input: 9600 baud, 8 bits, No parity, 1 stop bit, Flow Control = None Output: 9600 baud, 7 bits, Even parity, 2 stop bits, Flow Control = None
D	1088-8000	RS485 cable (1000 foot spool)	
E	1088-4112	MSS485 Micro Serial Server	Used to connect a TCP/IP network and RS485 cabling. Each MSS485 must be assigned an IP address. Must be set as "local/host" server. (See page 38.)
F	1088-4113	MSS100 Micro Serial Server	Each MSS100 has its own power supply. Each MSS100 needs its own unique IP address. Must be set as "remote" server. (See page 38.)
G	1088-4112	MSS485 Micro Serial Server	Used to connect a TCP/IP network and RS485 cabling. Each MSS485 must be assigned an IP address. Must be set as "remote" server. (See page 38.)
H	1088-9120	Alpha® Ethernet Adapter Kit (Includes cabling.)	Each Alpha® Ethernet Adapter is mounted on the back of the sign and draws its power from the sign itself (no separate power supply is needed.) Each Alpha® Ethernet Adapter needs its own unique IP address. Must be set as "remote" server. (See page 38.)
I	4331-0602	Modular Network Adapter	Used to interconnect signs.
J	1088-8636	1-foot RS485 cable (recommended)	Plugs into the sign's RS485 jack. (The network of signs must *not* be terminated.)
	1088-8624	8-foot RS485 cable	
For more information on RS232 and RS485 networking, see the document **Network Configurations** (9708-8046).			

Connections for serial servers

Alpha® Ethernet Adapter

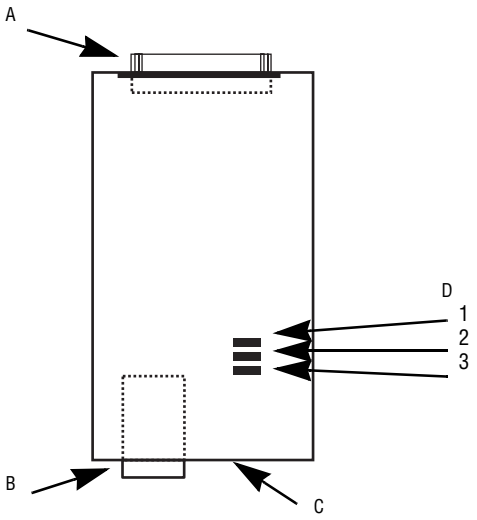


Table 1: Alpha® Ethernet Adapter components

Part	Description	Notes
A	DB25 serial port	
B	RJ45 TCP/IP port	
C	Reset button	
D	LED diagnostic lights	1. ACT (activity) 2. LNK (network link/connection) 3. PWR (power)

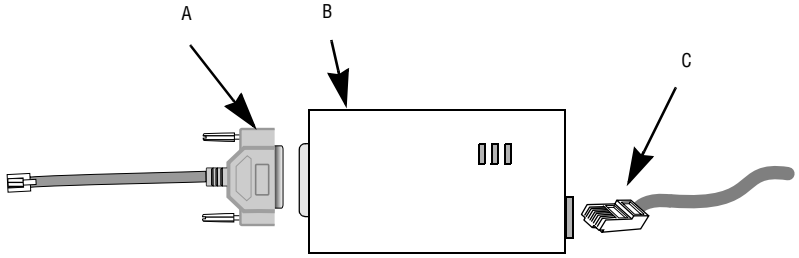


Table 2: Alpha® Ethernet Adapter connections

Part	Adaptive™ part number	Description	Notes
A	1088-9317	Ethernet cable 8-inch, RJ11-DB25 female	Connect to the sign.
B	1088-9120	Alpha® Ethernet Adapter Kit	
C	—	TCP/IP cable	Connect to 10BASE-T TCP/IP.

Lantronix MSS100

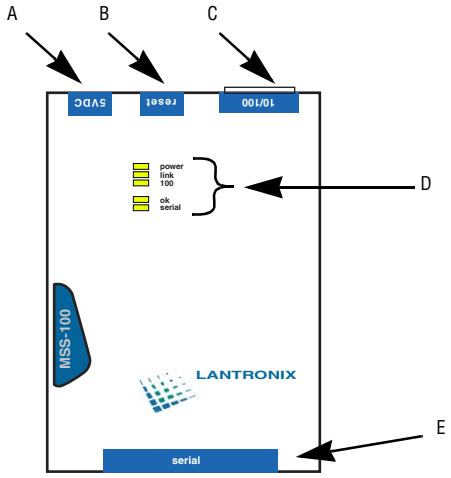


Table 3: MSS100 components

Part	Description	Notes
A	Power connection	5 volt only
B	Reset button	
C	RJ45 TCP/IP port	
D	LED diagnostic lights	1. power 2. link (network link/connection) 3. 100 4. ok 5. serial
E	DB25 serial port	For RS232 connection

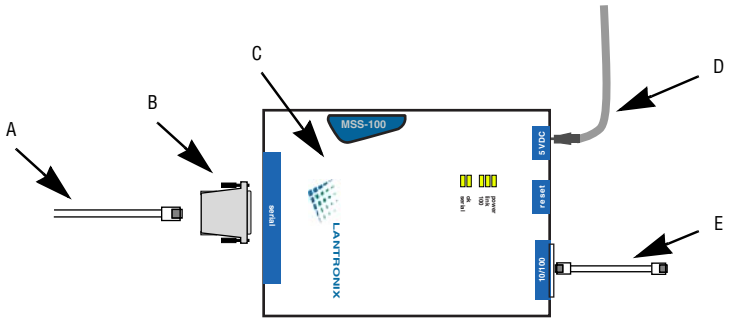


Table 4: MSS100 connections

Part	Adaptive™ part number	Description	Notes
A	1088-8625	25-foot, 6-conductor RS232 serial cable	Connect to the sign's RS232 port.
	1088-8627	50-foot, 6-conductor RS232 serial cable	
B	4370-0001C	DB25-to-RJ11 adapter	
C	1088-4113	MSS100 Micro Serial Server	
D	—	Power cable	Connect to power (5 volt only)
E	—	TCP/IP cable	Connect to 10BASE-T or 100BASE-T TCP/IP

Lantronix MSS485

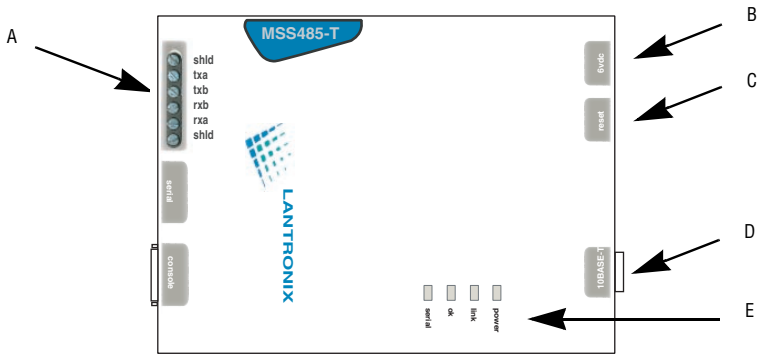


Table 5: MSS485 components

Part	Description	Notes
A	Wiring terminal block	See below
B	Power connection	6 volt only
C	Reset button	
D	RJ45 TCP/IP port	
E	LED diagnostic lights	1. power 2. link (network link/connection) 3. ok 5. serial

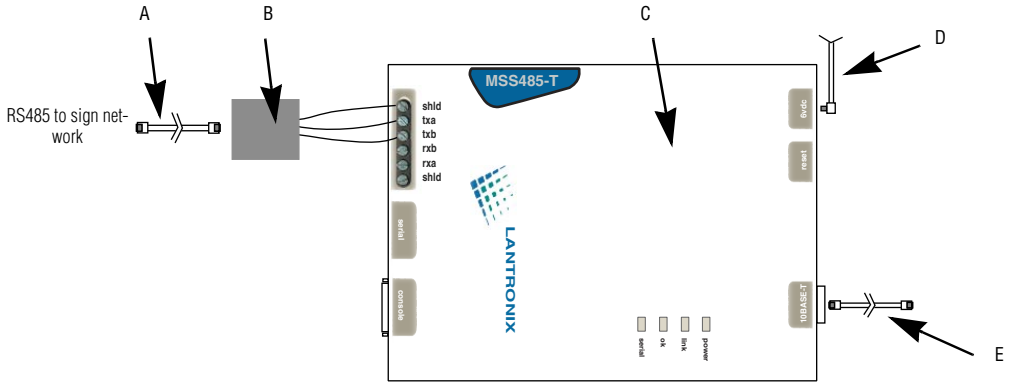
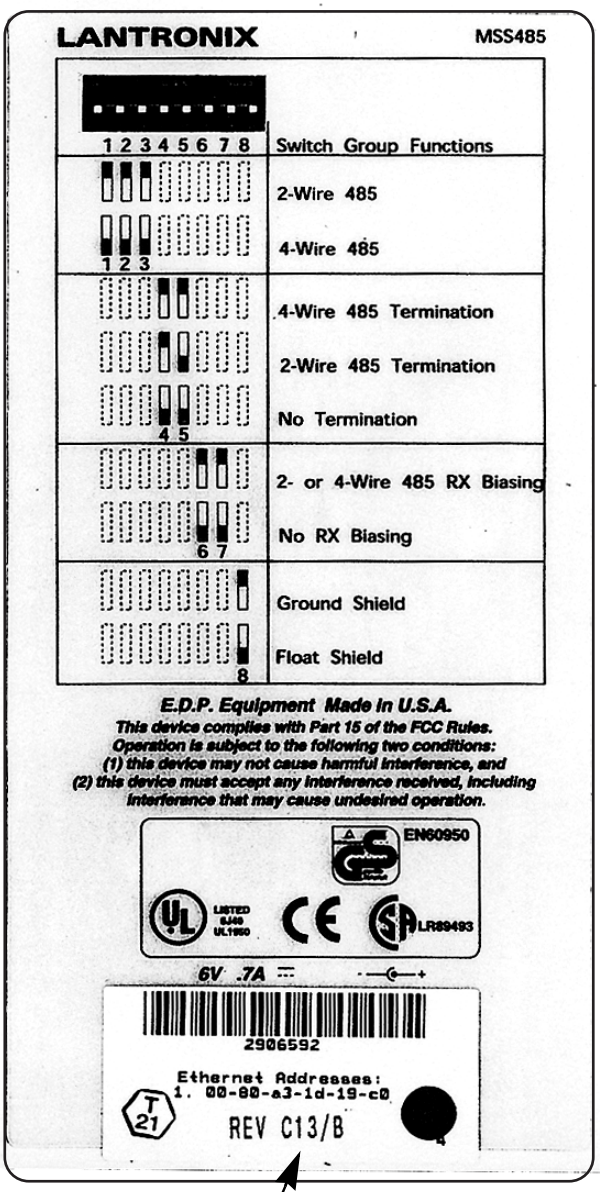


Table 6: MSS485 connections

Part	Adaptive™ part number	Description	Notes
A	1088-8624	8-foot, 4-conductor RS485 serial cable	Connect to the Modular Network Adapter
	1088-8636	1-foot, 4-conductor RS485 serial cable	
B	4331-0602	Modular Network Adapter	MSS485-to-MNA wiring: Shield to Shield TXA to RS485- TXB to RS485+ Refer to "RS485 Network Drop Using Modular Network Adapters" (PN9708-8021) for specific MNA connections.
C	1088-4112	MSS485 Micro Serial Server	
D	—	Power cable	Connect to power (6 volt only)
E	—	TCP/IP cable	Connect to TCP/IP 10BASE-T only

Lantronix MSS485 DIP switch settings

DIP switches are found on the back of the MSS485. Settings must be as follows and the sign network must *not* be terminated. Refer to **Network Configurations** (PN 9708-8046) for information about sign networking and termination.



Revision C13/B or later is needed.
Earlier versions may not work correctly.
If you are experiencing difficulty,
contact your customer account specialist.

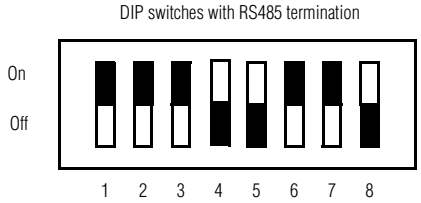


Table 7: Meanings of DIP switch settings for sign networks

Switch(es)	Setting	Meaning
1, 2, 3	On / On / On	2-wire RS485
4, 5	Off / Off	Sign network is *not* terminated.
6, 7	On / On	RX Biasing
8	Off	Float Shield

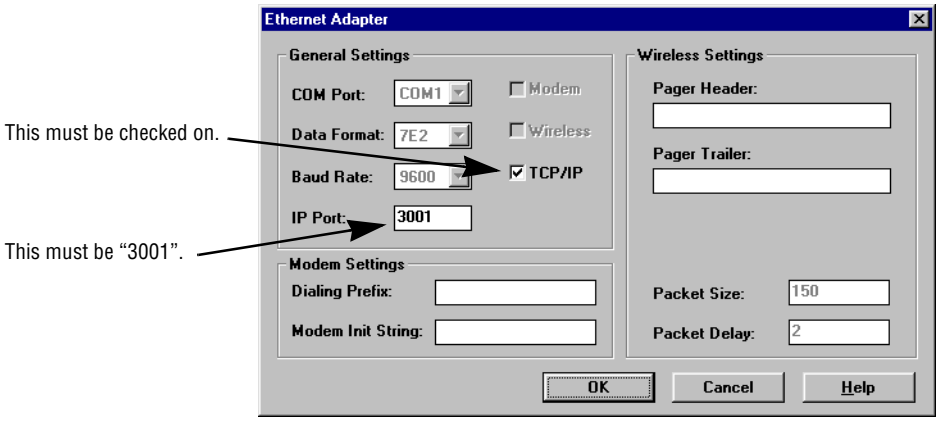
Setting up messaging software

A serial server receives a message from one PC over a network and sends it on to a sign. This method is used in conjunction with any software that can use the TCP/IP protocol. **AlphaNet plus™ for Windows** (version 1.3 or later) and **Smart Alec®** (version 3.0 or later) are both TCP/IP-compatible.

Create the device in the software

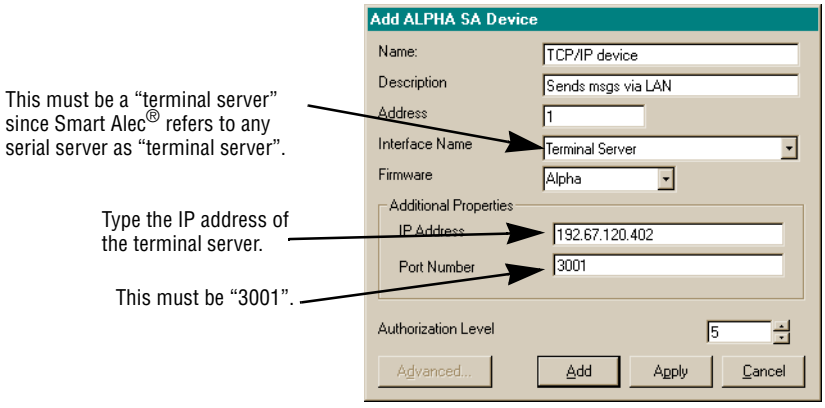
In your software, you must create a device which is to use a serial server and TCP/IP. Set the port number to 3001.

The **AlphaNet plus™ for Windows** screen for TCP/IP looks like this:



NOTE: For more information about using **AlphaNet plus™ for Windows**, refer to the **AlphaNet plus™ for Windows User Manual**, available with the purchased software and also on the Web at http://www.adaptivedisplays.com/alphanetplus/.

For **Smart Alec® 3.0**, the screen looks like this:



NOTE: For more information about using **Smart Alec® 3.0**, refer to the **Smart Alec® User Manual**, available with the purchased software and also at http://www.adaptivedisplays.com/smartalec/.

After setting up a TCP/IP device and a sign using that device, you can send messages to this sign as you normally would.

Installing and selecting Redirector settings

Lantronix **Redirector** software is needed for sending messages with **Alpha® Messaging Software** or **BetaBrite® Messaging Software** over a TCP/IP network to one or more signs.

Lantronix **Redirector** software is used to redirect messages normally sent through a PC COM port to a sign. **Redirector** associates the PC COM port with a network IP address for a serial server. The serial server, in turn, is connected to the sign and sends the message on to the sign. In other words, **Redirector** intercepts messages going to the COM port and sends them over the network to the serial server's serial port and to the sign.

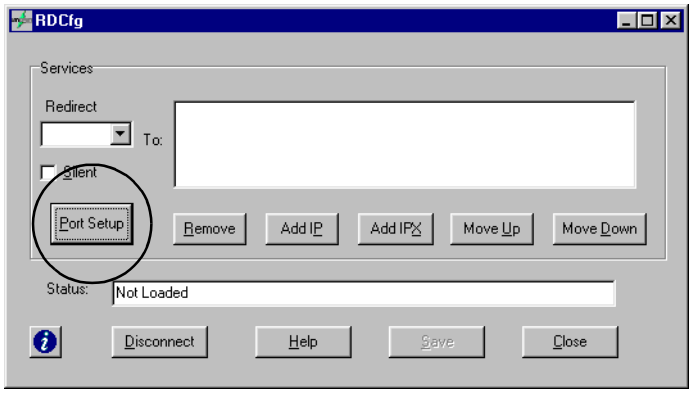
NOTE: The COM port you choose can not be in use by any other device, for example, an internal modem. To determine which ports are in use, from *Start* > *Settings* > *Control Panel*, choose *System* and go to the *Device Manager* tab. In the *Ports* directory, determine the COM ports currently in use. The **Redirector** application allows up to 40 logical COM ports to be redirected. You can redirect any except those currently in use. However, **Alpha® Messaging Software and BetaBrite® Messaging software** only recognize COM ports 1 through 4.

Install Redirector

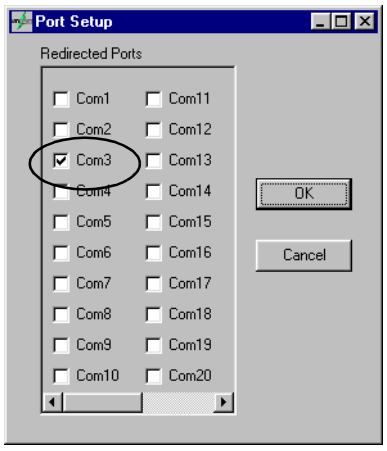
1. Obtain the latest version of **Redirector** from either the Alpha® Ethernet Adapter CD or the Lantronix CD or from the Lantronix Internet site (www.lantronix.com) for your network platform. Download this into an empty folder on the PC to be used.
2. After downloaded, double-click on redirector.exe in that folder on the PC.
3. The **Redirector** application will be unpacked and installed on your PC.

Direct a COM port to a serial server with Redirector software

1. Run the Lantronix **Redirector** software. In the RDCfg Dialog box, click the *Port Setup* icon.

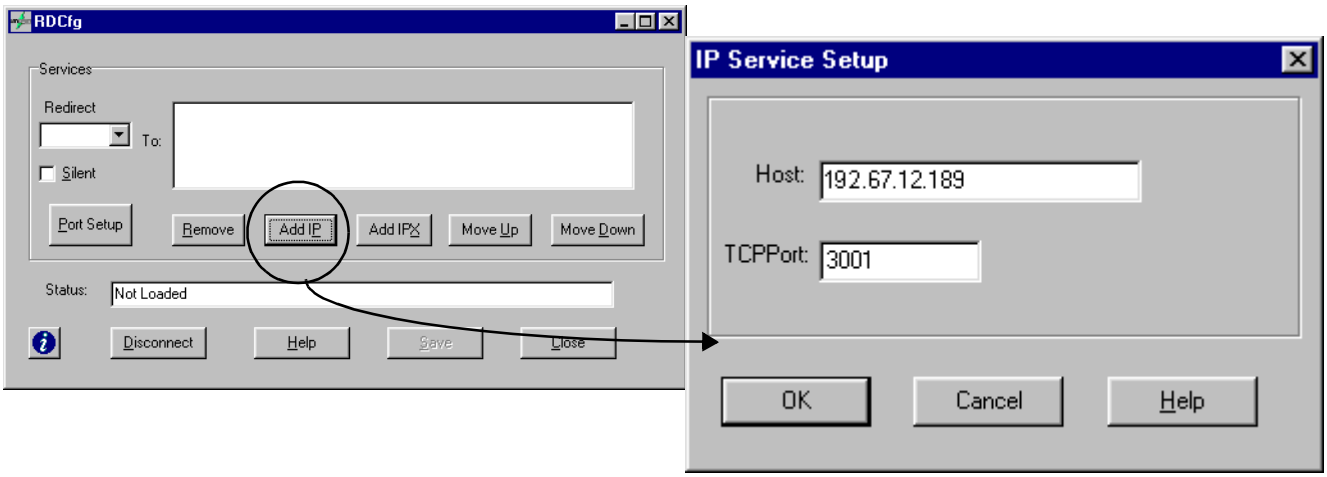


2. Choose an available COM port that you wish to redirect to the serial server IP address. Click *OK*.

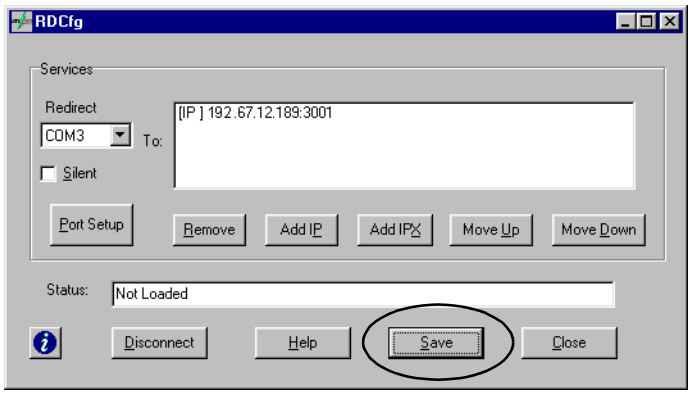


NOTE: If you need to use the same COM port for other purposes, you will need to *de*-select the COM port in the same way as the above two steps. Then quit all applications and reboot the computer.

3. Click the *ADD IP* button. In the *IP Service Setup* dialog box, enter the IP address of the serial server that **EZWebCon** detected in the *Host* prompt. In the *TCPPort* prompt, enter "3001", the valid number for any serial server. Click *OK*.

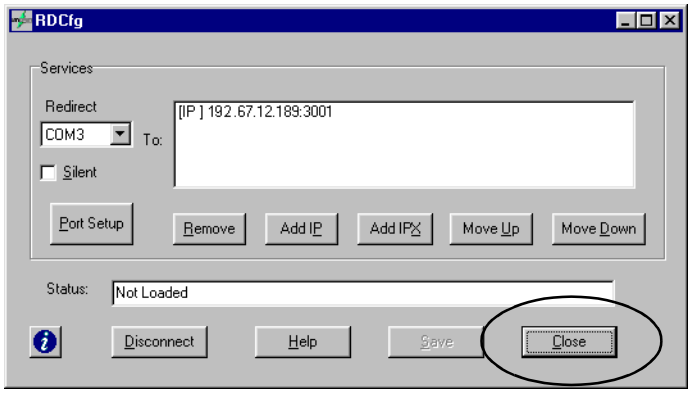


4. Click *Save* in the RDCfg dialog box.



5. Click *OK* in the Config Info box.

6. Click *Close* in RDCfg dialog box.



7. You may need to reboot the computer. You should now be able to access the sign using **Alpha® Messaging Software** or **BetaBrite® Messaging Software** via the network.

Setting serial servers for Gateway Messaging Software

To use **Gateway Messaging Software** to send messages over a TCP/IP network, you must use an MSS485 as a "local/host" serial server to send messages all at once to one or more signs, each with a "remote" serial server attached.

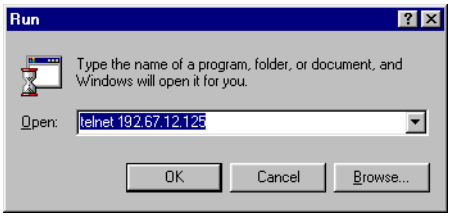
In this mode, you set one MSS485 as the local/host device. When setting up the MSS485, you assign it a fixed list of up to 12 IP addresses of serial servers. You set up each receiving serial server as a remote device. Then you can use the local/host device to send messages at one time to all the remote devices in the fixed list.

Set up the MSS485 to act as a local device

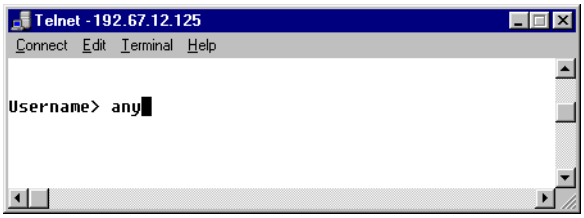
NOTE 1: You must program the MSS485 devices with IP addresses before setting them up.

NOTE 2: The version of the firmware of the MSS485 must be version B3.5/905 (dated 990518) or higher.

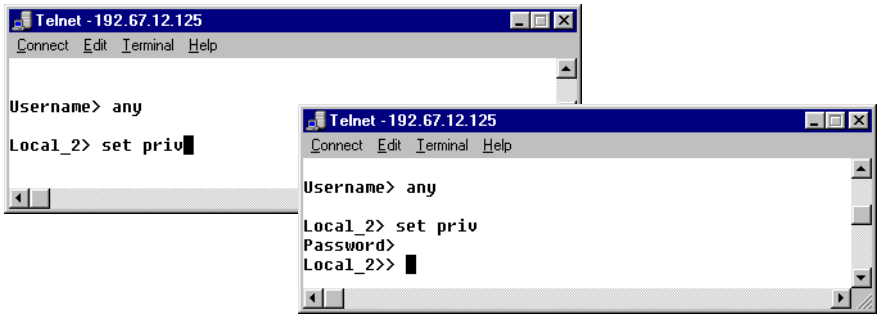
1. Choose *Start* > *Run*. Type "Telnet *n.n.n.n*" where *n.n.n.n* is the assigned IP address for the MSS485. Click *OK*.



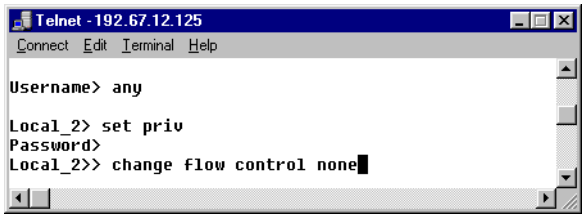
2. Type a user name and press **Enter**. It doesn't matter what you type here, except that it must be different from that used by any other **Telnet** user on the network.



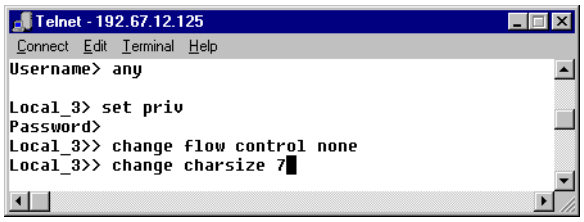
3. Type "set priv". Press **Enter.** Then type the password. Press **Enter** again.The default password is "system".



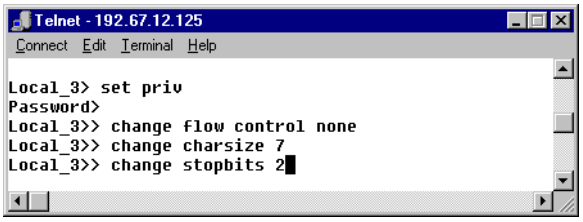
4. Type "change flow control none". Press **Enter**.



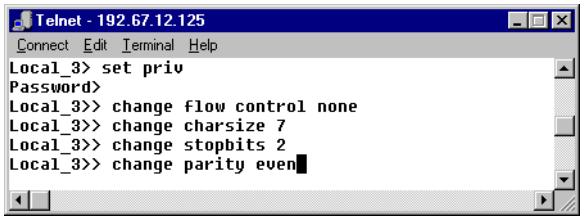
5. Type “change charsize 7”. Press **Enter**.



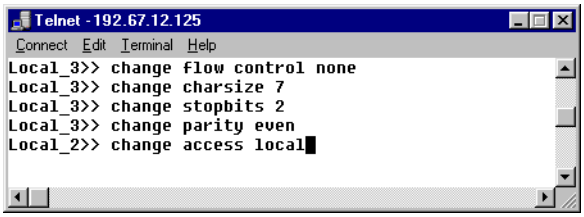
6. Type “change stopbits 2”. Press **Enter**.



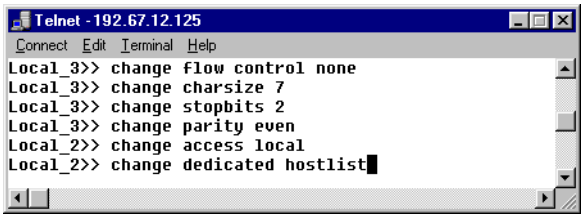
7. Type “change parity even”. Press **Enter**.



8. Type “change access local”. Press **Enter**.

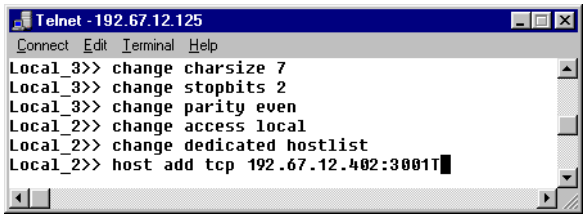


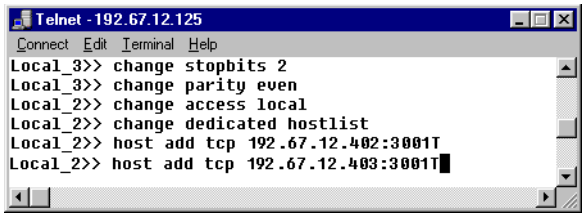
9. Type “change dedicated hostlist”. Press **Enter**.



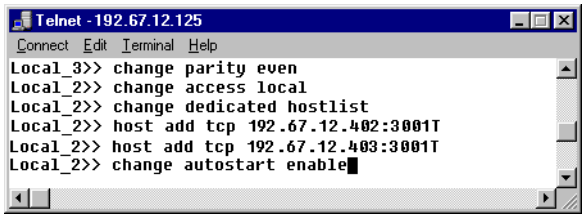
10. Type "host add tcp *n.n.n.n*:3001T" where *n.n.n.n* is the IP address of a serial server to be used in remote mode. Press **Enter**. *Do this step for each remote serial server which is to receive messages from the local MSS485.*

NOTE
There is a maximum of twelve (12) IP addresses that can receive messages from a local MSS485. However, if a remote serial server is an MSS485, there can be multiple signs receiving messages through that serial server.

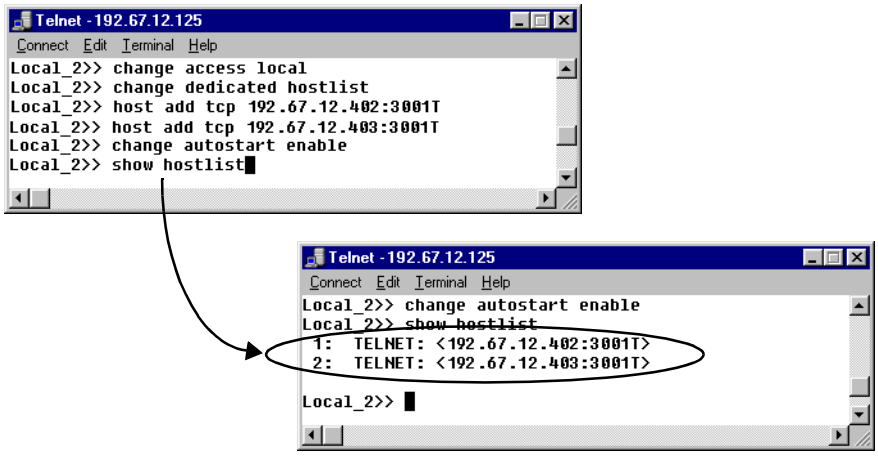




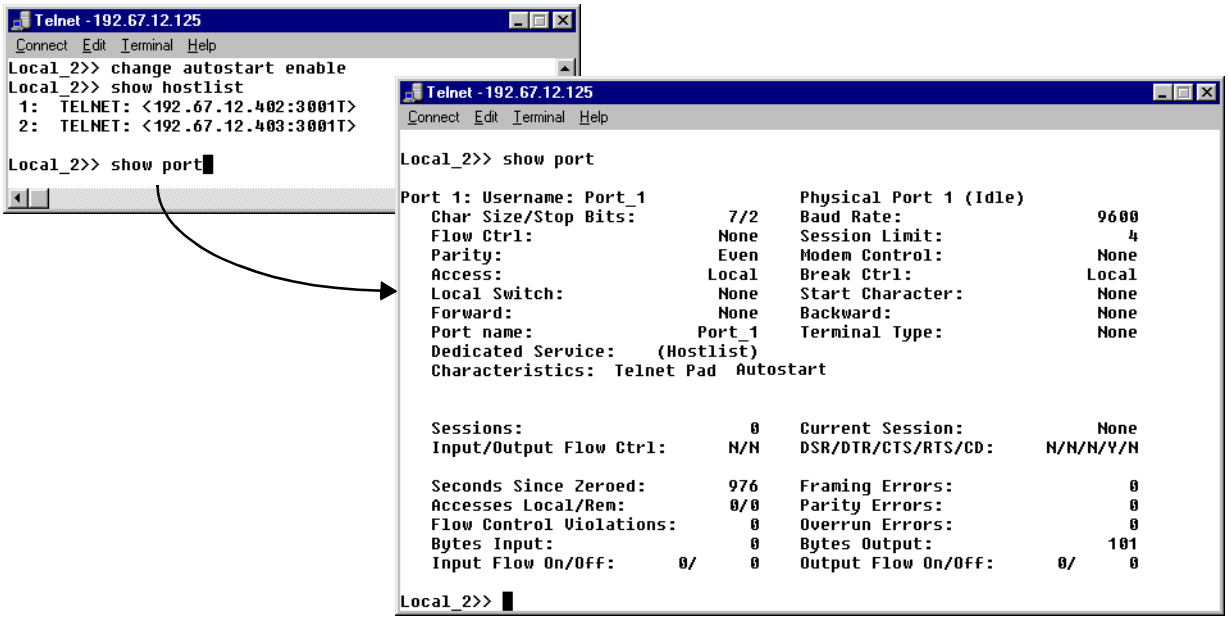
11. Type "change autostart enable". Press **Enter**.



12. Type "show hostlist". Press **Enter**. This will show the list of the remote serial server IP addresses you entered.



13. Type “show port”. Press **Enter**. This will show the current settings of the port.

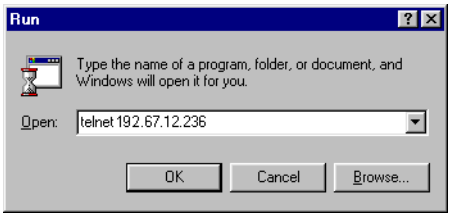


Set up serial servers to act as remote devices

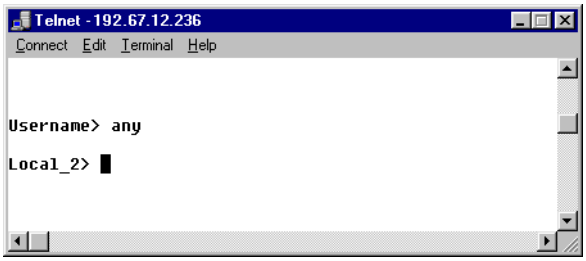
NOTE 1: You must have programmed *all* the serial servers with IP addresses before setting them up in remote mode.

NOTE 2: The version of the firmware of any serial servers must be version B3.5/905 (dated 990518) or higher.

1. Choose *Start* > *Run*. Type "Telnet *n.n.n.n*" where *n.n.n.n* is the assigned IP address for a remote serial server. Click *OK*.

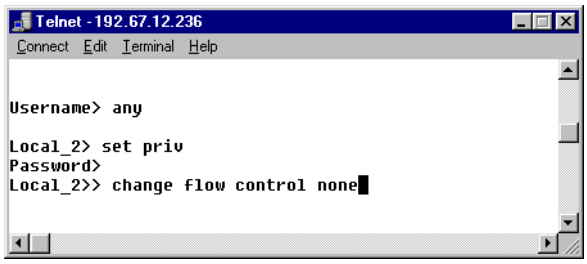


2. Type a username and press **Enter**. It doesn't matter what you type here, except that it must be different from that used by any other **Telnet** user on the network.

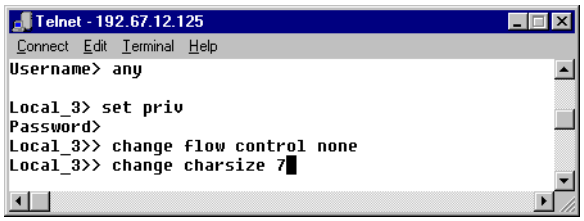


3. Type "set priv". Press **Enter.** Then type the password. Press **Enter** again.The default password is "system".

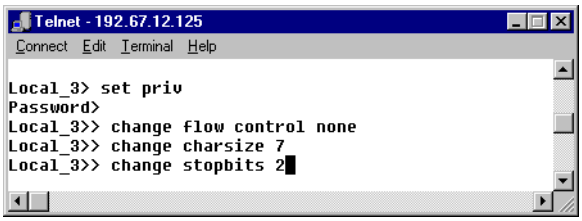
4. Type “change flow control none”. Press **Enter**.



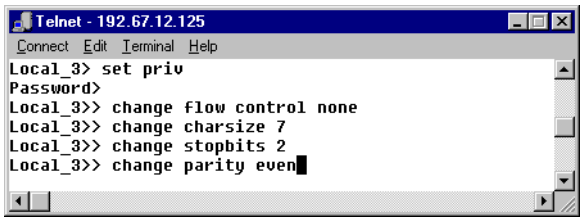
5. Type “change charsize 7”. Press **Enter**.



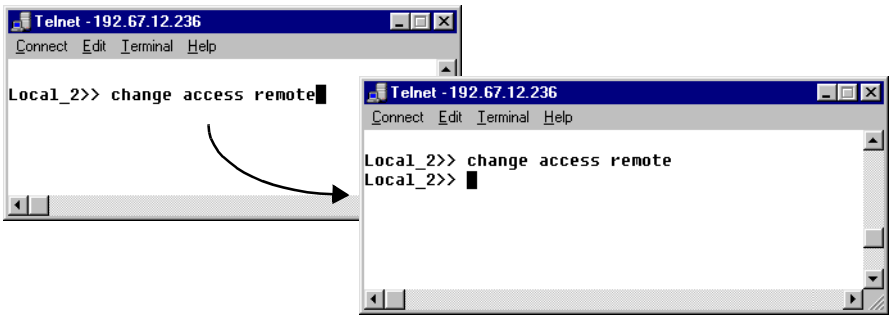
6. Type “change stopbits 2”. Press **Enter**.



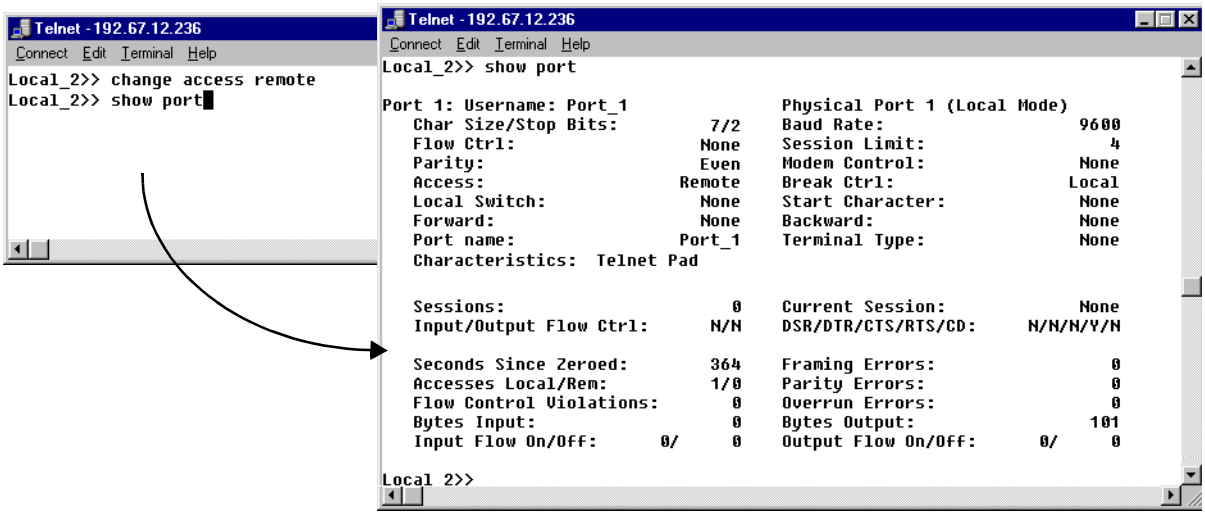
7. Type “change parity even”. Press **Enter**.



8. Type “change access remote”. Press **Enter**.



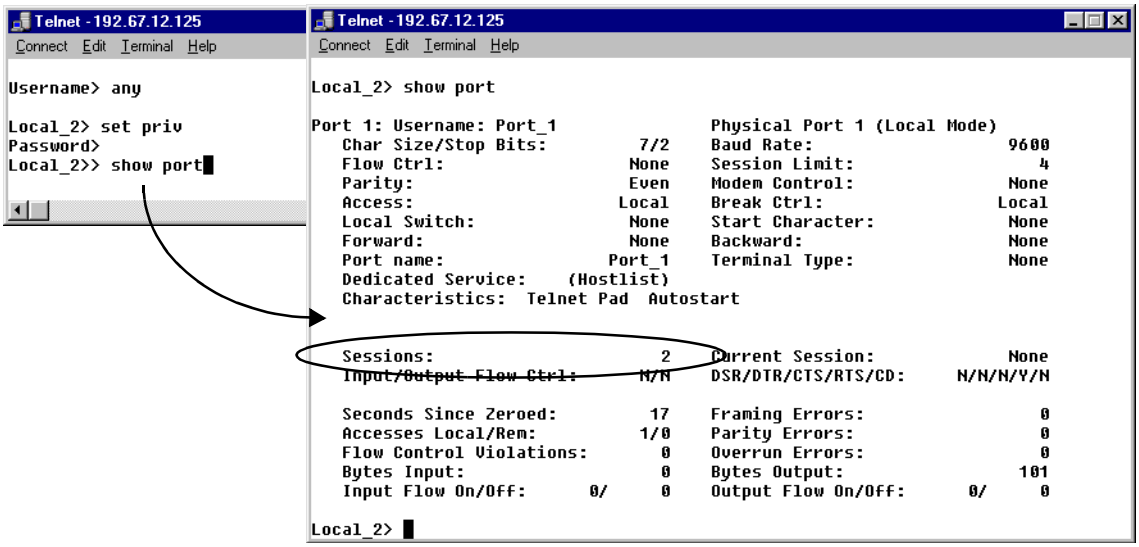
9. Type “show port”. Press **Enter**. show the current settings of the port.



10. Repeat Step 1 through Step 9 above for all of the serial servers to be used in remote mode.

Reset and check all devices

1. Remove power from all the remote serial servers and re-apply power.
2. Next, remove power from all the local MSS485 devices and re-apply power.
3. Choose *Start* > *Run*. Type "Telnet *n.n.n.n*" where *n.n.n.n* is the assigned IP address for the local MSS485 devices. Click *OK*.
4. Enter a username and password.
5. Type "show port". Press **Enter**. This will show the current settings of the port. In the settings, there is a *Sessions* entry. This number indicates how many remote serial servers you set up for the local MSS485 to send messages to.



Technical support

Support services

Technical information

Software is available at the Adaptive™ Internet World Wide Web site

http://www.adaptivedisplays.com.

Technical information, as well as the latest networking software, is available from the Lantronix Internet site:

http://www.lantronix.com

Technical support

For additional support, please contact your local dealer, or call the Technical Support department at Adaptive™ Micro Systems, Inc. at 1-800-558-7022 between the hours of 8:00 AM and 5:00 PM Central Standard Time.