Networking ALPHA signs with ALPHA Ethernet Adapters
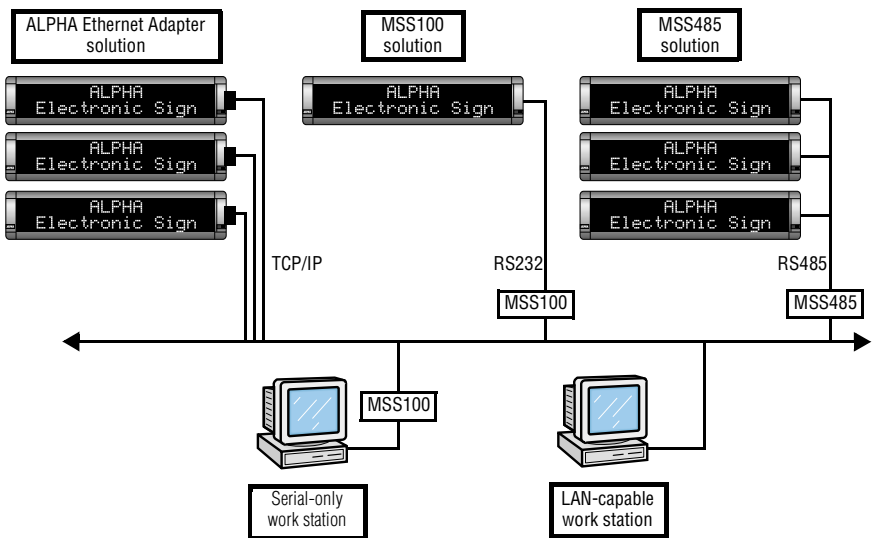
Contents

This document explains how to use ALPHA Ethernet Adapter serial servers to network ALPHA signs over an Ethernet Local Area Network (LAN). To send messages, you can use AlphaNET plus for Windows or Smart Alec software.

NOTE: Installation and setup for this product requires a network-literate Information Systems professional.

NOTE: **AlphaNET *plus* for Windows** is compatible with Windows 3.1, Windows 95, and Windows NT. **Smart Alec** 1.8 is compatible with Windows 95 and Windows NT. **Smart Alec** 2.1 is compatible with Windows 95, Windows 98, and Windows NT.

ALPHA Ethernet Adapter solution | MSS100 solution | MSS485 solution

ALPHA Electronic Sign

TCP/IP   RS232   RS485

MSS100   MSS485

Serial-only work station   LAN-capable work station

ADAPTIVE

Introduction

Why use serial servers?

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

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

Why use ALPHA Ethernet Adapters?

TCP/IP compatibility

The ALPHA Ethernet Adapter supports a variety of TCP/IP features, including **Telnet**. The **Telnet** terminal protocol 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 Ethernet 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.

Remote Configuration

The ALPHA Ethernet Adapter can be logged into and remotely configured via network login, **Telnet** login to the remote console port, or **EZWebCon**.

Multi-protocol support and centralized management

ALPHA Ethernet Adapters from Adaptive Micro Systems and serial servers from Lantronix can be used on networks running TCP/IP, IPX/SPX, and LAT. They can be set up and managed over a network using **EZWebCon** and **Redirector** software from Lantronix.

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 "Set up locations in Smart Alec 2.1" on page 48 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 the ALPHA Ethernet Adapter below for a list.

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.
- Allows a computer with only serial ports to communicate via a TCP/IP network, like a modem.
- Allows non-TCP/IP-aware software (such as AlphaNET *plus* for Windows) to communicate with ALPHA signs on TCP/IP networks.

MSS485

- Allows you to connect an RS485 network of up to 256 signs to a 10BASE-T TCP/IP network.

Valid Adaptive signs for the ALPHA Ethernet Adapter

The ALPHA Ethernet Adapter works with the following signs:

- BetaBrite (P1026)
- 215C, 215R
- 300C series
- 4000C, 4000R series (using RS232 jumper and jack)
- 7000C series (using RS232 jumper and jack)
- Personal Priority Display (PPD)

The ALPHA Ethernet Adapter may *not* work with the following signs, depending on your power source and electrical configuration:

- BetaBrite (P1036)
- 210C
- 220C
- AlphaVision
- Director

Resources needed

Software

Software needed includes:

- **Smart Alec**, version 1.8 or 2.1, *or*

  AlphaNET *plus* **for Windows**, version 1.2

Additional software which may be needed includes:

- **Lantronix Redirector,** version B1.2/201 or better (if using **AlphaNET** *plus* **for Windows**)
- **EZWebCon**
- **Telnet**

Information on how to acquire and install additional necessary software is provided in this manual as needed. (**Telnet** is available with all Windows® operating systems.)
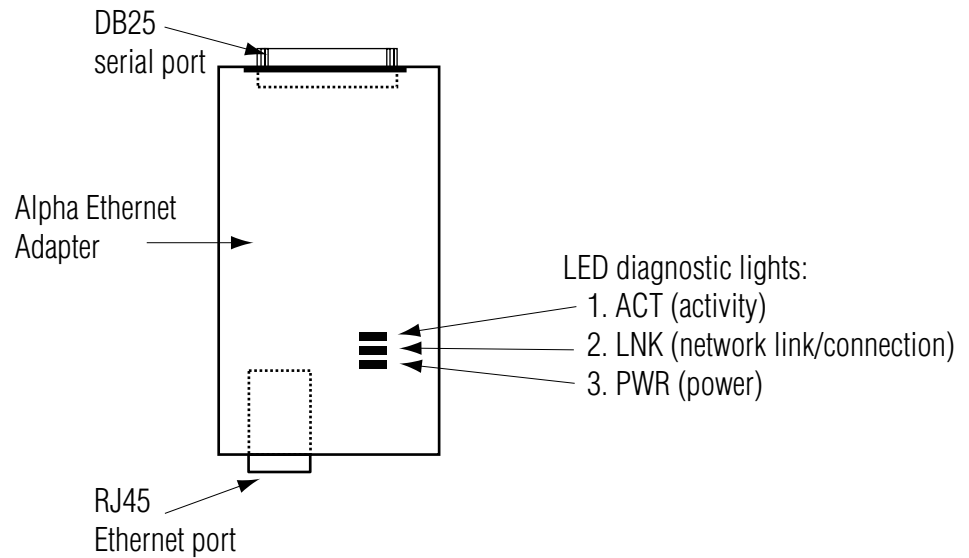
Hardware

Hardware needed includes:

- ALPHA Ethernet Adapter, *and/or*

  MSS100 (for either Modem mode or Local/Remote mode) with power supply and cable to PC

- Functional sign with Smart Alec firmware chip, *or*

  Functional sign with Alpha firmware chip

- Power supply for each sign
- Active 10BASE-T Ethernet port
- Ethernet cable
- DB25-to-RJ11 adapter
- RS232 cable
- PC connected to the Ethernet network

# Description of the ALPHA Ethernet Adapter serial server

ALPHA Ethernet Adapter components

The primary components of the ALPHA Ethernet Adapter are shown here.

DB25 serial port

Alpha Ethernet Adapter

LED diagnostic lights:
1. ACT (activity)
2. LNK (network link/connection)
3. PWR (power)

RJ45 Ethernet port

ALPHA Ethernet Adapter and connections

Below is a picture and description of the ALPHA Ethernet Adapter and its connections.

RJ11 cable

DB25-to-RJ11 adapter

Alpha Ethernet Adapter

LED diagnostic lights

Ethernet cable
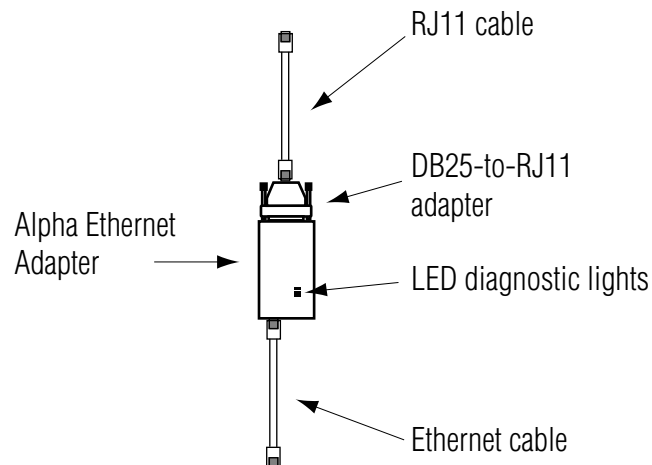
Ways to send messages using serial servers from Adaptive

Without an ALPHA Ethernet Adapter serial server, the typical way to send a message is from a PC to a sign directly attached to the PC. ALPHA Ethernet Adapter serial servers add the flexibility of linking into an Ethernet LAN to send messages. There are several ways to use an ALPHA Ethernet Adapter in a LAN.

- In the *Single server mode*, an ALPHA Ethernet Adapter sends a message from one PC through a COM port (either physical or logical) over an Ethernet LAN to an ALPHA Ethernet Adapter and on to a sign.

- In the *Modem mode*, you can use an MSS100 serial server to emulate a modem sending messages *one-at-a-time* to one or more signs, each with an ALPHA Ethernet Adapter attached.

- In the *Local/Remote mode*, you can use an MSS100 as a "local/host" serial server to send messages *all at once* to one or more signs, each with a "remote" ALPHA Ethernet Adapter attached.

General steps to set up serial servers from Adaptive

1. First, install each serial server and assign each a unique network IP address.

2. Next, set up each serial server in the LAN in one of the modes listed above.

3. Finally, set up the messaging software – also in one of the modes listed above – to direct messages through the serial servers to a sign.

Installing a serial server and setting its IP address

For messages to be sent to the correct signs on the network, each sign 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 valid IP address for each serial server, either MSS100 or ALPHA Ethernet Adapter. This is usually assigned 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 identify a serial server by its Ethernet address and assign a specific IP address.

NOTE: **EZWebCon** can <u>not</u> be used to set the IP address in Windows 3.1.

Install EZWebCon software

1. Obtain the latest version of **EZWebCon** (free) from the ALPHA Ethernet Adapter CD or from the Lantronix Internet site (ftp.lantronix.com/priv/ezwebcon) 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.

Detect existing ALPHA Ethernet Adapters on the network
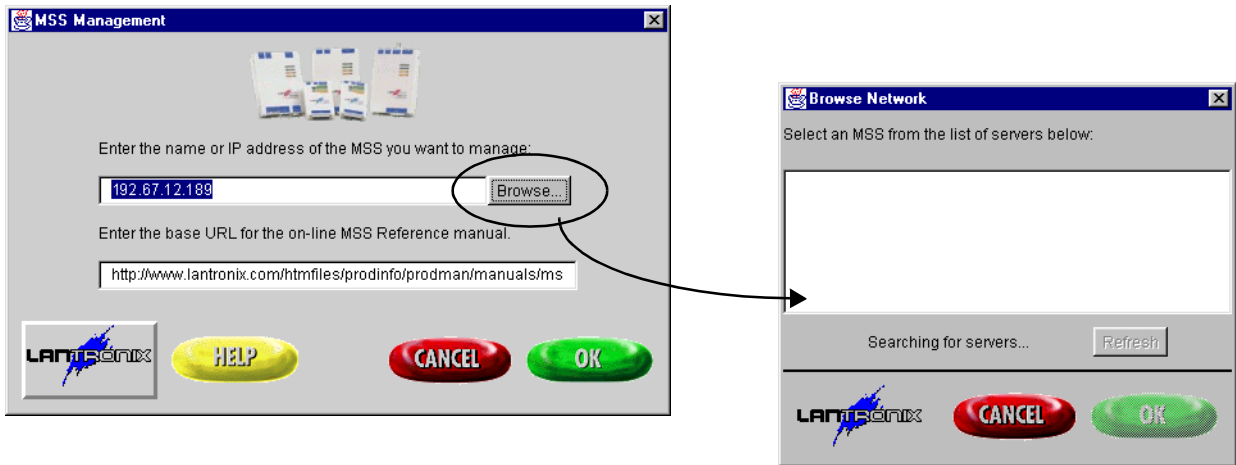
**1.** Run **EZWebCon** software.
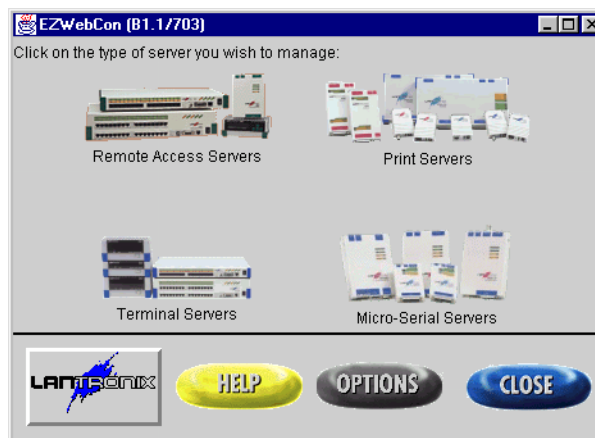
**2.** Click on the *Micro-Serial Servers* icon.
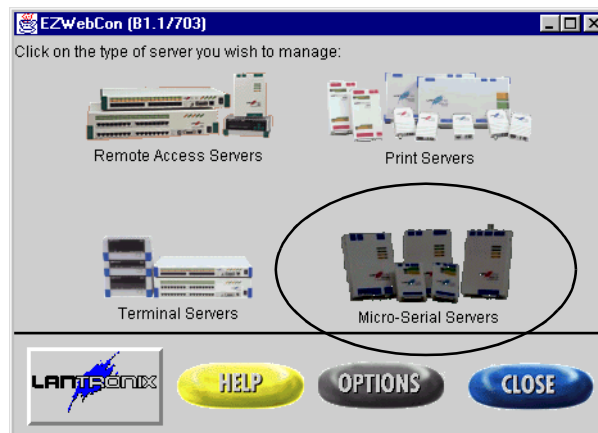
3. Click on *Browse* in the *MSS Management* dialog box to search for existing ALPHA Ethernet Adapters on the network.

4. When browsing is complete, note all IP addresses returned in the *Browse Network* dialog box. Any IP addresses returned are existing ALPHA Ethernet Adapters hooked to the network. You will need this list for comparison later. (The only way to print this is to press the **Print Screen** button and then paste into a drawing, paint, or word processing application.)
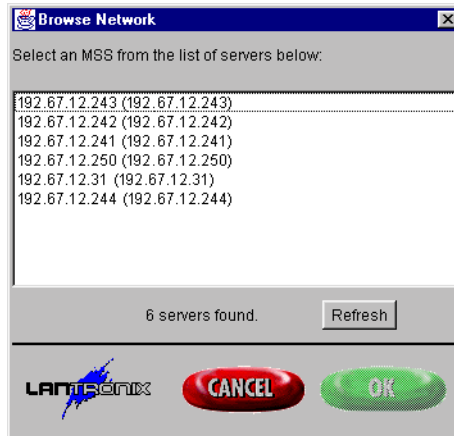
Connect the ALPHA Ethernet Adapter to sign and network
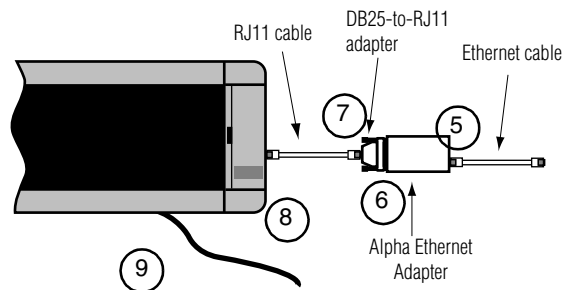
5. Connect an Ethernet cable to an active port and to the RJ45 Ethernet port on the ALPHA Ethernet Adapter.

6. Connect the ALPHA Ethernet Adapter to the DB25 connector.

7. Plug the RJ11 cable to the DB25 adapter.

8. Connect the other end of the RJ11 cable to a sign.

9. Connect an appropriate power supply to the sign.

> **NOTE:** The ALPHA Ethernet Adapter is now powered up and connected to the network. The LNK LED (middle LED) on the ALPHA Ethernet Adapter will be lit if you have a valid 10BASE-T network connection.

10. Check the LED lights on the ALPHA Ethernet Adapter:

The PWR LED should be solid green.

The LNK LED should be solid green with a valid network connection.

The ACT LED should be blinking green for normal operation. If it is blinking red, there is a problem.

> **NOTE:** If your network uses DHCP *and* DHCP is enabled on the ALPHA Ethernet Adapter, then the network DHCP server will automatically detect the ALPHA Ethernet Adapter and assign an IP address to it. In this case, you should go to Step 19 in "Use EZWebCon software to detect newly-connected Alpha Ethernet Adapter and IP address" on page 13.

Use EZWebCon software to assign the IP address

> **NOTE:** • If your network does *not* use DHCP *or* if DHCP is disabled on the ALPHA Ethernet Adapter, use this process (Step 11 through Step 18). (The ALPHA Ethernet Adapter comes with DHCP disabled.)
> • If your network uses DHCP *and* DHCP is enabled on the ALPHA Ethernet Adapter, then you should go to Step 19 in "Use EZWebCon software to detect newly-connected Alpha Ethernet Adapter and IP address" on page 13.

11. Click on the Lantronix logo button on the main screen for **EZWebCon**. This will display a pop-up menu.
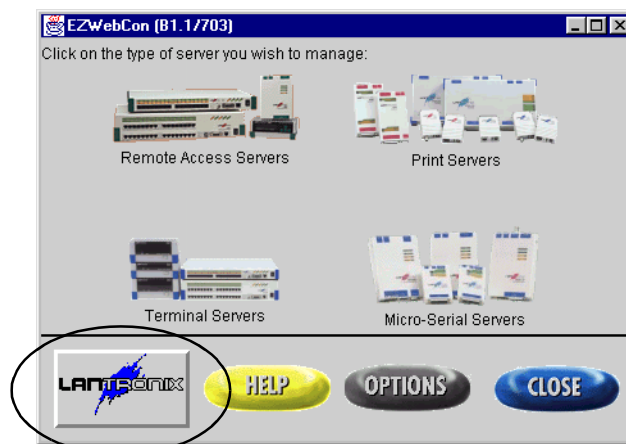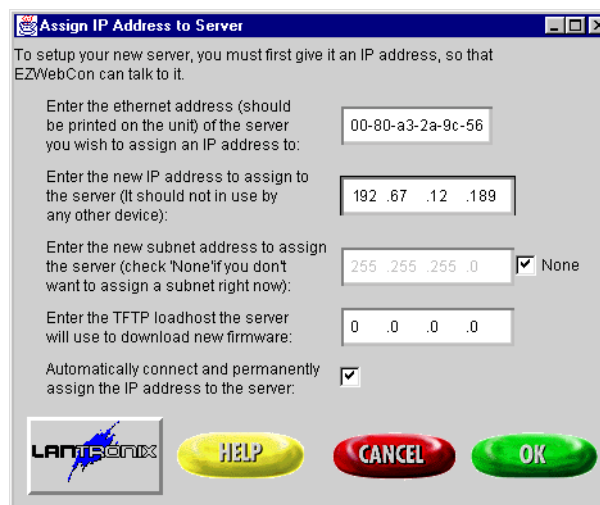
12. Choose *Assign IP address to server.*
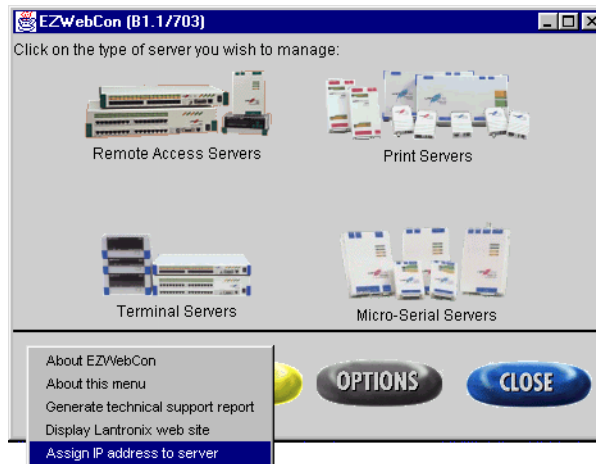
13. Enter the Ethernet (hardware) address of the ALPHA Ethernet Adapter. This will always begin with "00-80-a3".

HINT: This is case-sensitive and should be entered with lower-case letters, but you do not need to type the dashes.


14. Enter the new IP address.

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

15. 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.
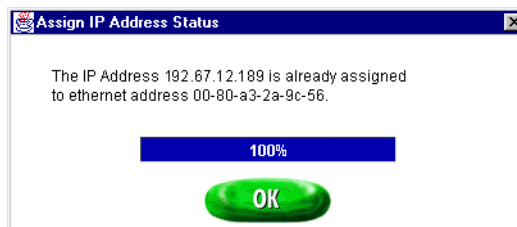
16. Click *OK.*

**17.** **EZWebCon** will check to see if the ALPHA Ethernet Adapter already has an assigned IP address.
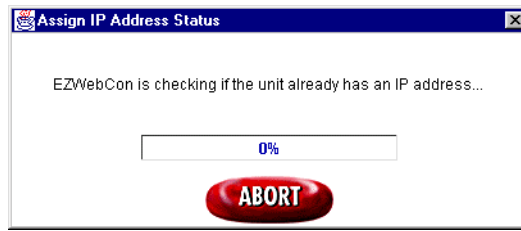
18. When EZWebCon has checked for an IP address:

- If it finds an IP address for this ALPHA Ethernet Adapter and it is the same as the one you are trying to assign, **EZWebCon** will simply tell you so. Click *OK*.

- 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.
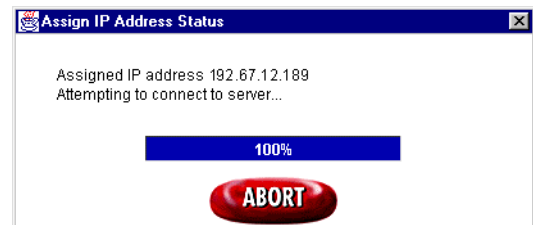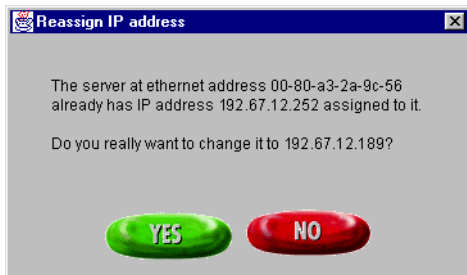
- Otherwise, it will assign the new IP address and will reboot the ALPHA Ethernet Adapter.
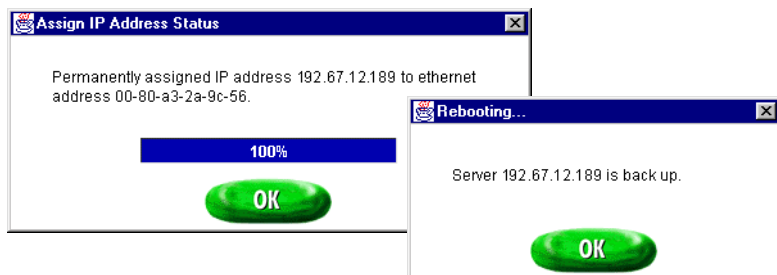
### Use EZWebCon software to detect newly-connected Alpha Ethernet Adapter and IP address

NOTE: • If your network uses DHCP *and* DHCP is enabled on the ALPHA Ethernet Adapter, use this process (Step 19 through Step 22).

• If your network does *not* use DHCP *or* if DHCP is disabled on the ALPHA Ethernet Adapter, you should have used the process "Use EZWebCon software to assign the IP address" using Step 11 through Step 18. (The ALPHA Ethernet Adapter comes with DHCP disabled. Call Adaptive Micro Systems' Technical Services if you wish to enable DHCP.)

19. Click on the *Refresh* button in the *Browse Network* dialog box of **EZWebCon**. The purpose of this step is to search for the newly-connected ALPHA Ethernet Adapter on the network.
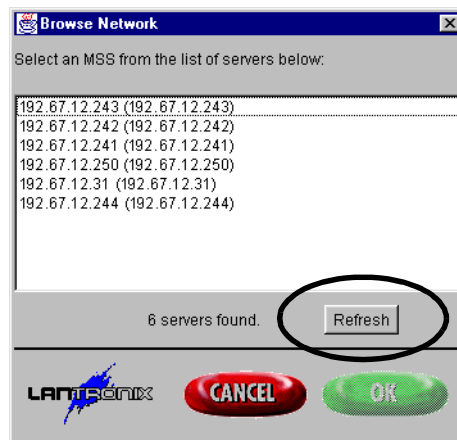
20. The IP address that the network DHCP server assigned to the ALPHA Ethernet Adapter should now be returned in the *Browse Network* dialog box in addition to any that were returned in Step 4.

NOTE: If there are no new IP addresses returned, you must either program an IP address to the ALPHA Ethernet Adapter using **Telnet**, or contact IS personnel with the hardware address on the back of the ALPHA Ethernet Adapter. IS can then use network management software to locate the IP address that DHCP assigned.
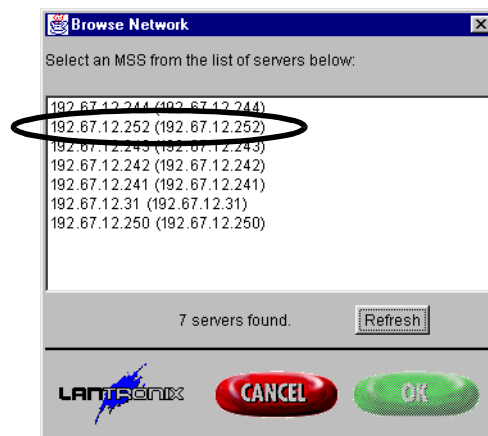
21. Note the IP address that the network DHCP server assigned to the ALPHA Ethernet Adapter, for use later.

> **NOTE:** It may be a good idea to write the IP address directly on the ALPHA Ethernet Adapter.

22. Close EZWebCon.

Method 2: 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 assign an IP address directly. **Telnet** can also be used to "erase" an existing assigned IP address so that the **arp** command (see "Method 3: DOS/ARP command" on page 19) can assign a new IP address.

Connect the ALPHA Ethernet Adapter to sign and network
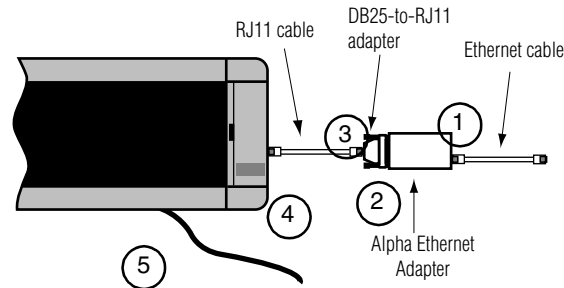
1. Connect an Ethernet cable to an active port and to the RJ45 Ethernet port on the ALPHA Ethernet Adapter.

2. Connect the ALPHA Ethernet Adapter to the DB25 connector.

3. Plug the RJ11 cable to the DB25 adapter.

4. Connect the other end of the RJ11 cable to a sign.

5. Connect an appropriate power supply to the sign.

    NOTE: The ALPHA Ethernet Adapter is now powered up and connected to the network. The LNK LED (middle LED) on the ALPHA Ethernet Adapter will be lit if you have a valid 10BASE-T network connection.

    NOTE: If your network uses DHCP *and* DHCP is enabled on the ALPHA Ethernet Adapter, then the network DHCP server will automatically detect the ALPHA Ethernet Adapter and assign an IP address to it.

6. Check the LED lights on the ALPHA Ethernet Adapter:

    The PWR LED should be solid green.

    The LNK LED should be solid green with a valid network connection.

    The ACT LED should be blinking green for normal operation. If it is blinking red, this indicates there is a problem.

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 ALPHA Ethernet Adapter by typing "Telnet *n.n.n.n*" (where *n.n.n.n* is the assigned IP address of the ALPHA Ethernet Adapter) from **Start > Run**.

Assign an IP address

1. 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*.

> **NOTE:** Skip this step if you opened a **Telnet** window for a specific ALPHA Ethernet Adapter as above in "Start Telnet".
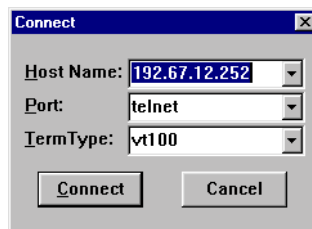
2. Type a username and press **Enter**. It doesn't matter what you type here, except that it must be different from that used by any other **Telnet** user on the network.
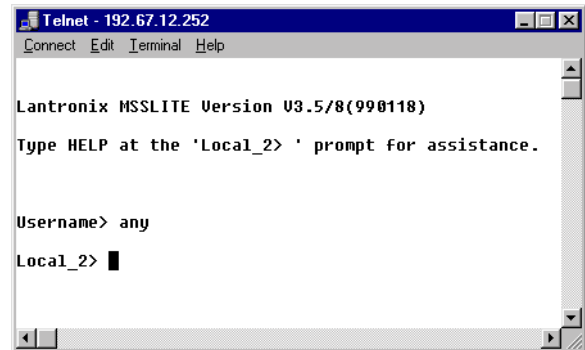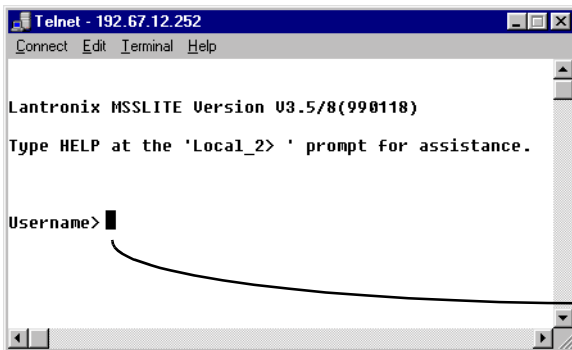
3. The "show server" command can provide confirmation that you've accessed the correct ALPHA Ethernet Adapter and also provide statistics about that serial server.

```
Telnet - 192.67.12.252                                          _ □ ✕
Connect  Edit  Terminal  Help

Local_2> show server

    MSSLITE Version V3.5/8(990118)        Uptime:               1:41:23
    Hardware Addr: 00-80-a3-2a-9c-56      Name/Nodenum:     MSS_2A9C56/ 0
    Ident String: Micro Serial Server

    Inactive Timer (min):        30       Serial Delay (msec):       30
    Password Limit:               3       Session Limit:              4
    Queue Limit:                 32       Node/Host Limits:       50/20

TCP/IP Address:        192.67.12.252      Subnet Mask:      255.255.255.0
    Nameserver:          192.67.12.4      Backup Nameserver:   (undefined)
    TCP/IP Gateway:      192.67.12.2      Backup Gateway:      (undefined)
    Domain Name:           ams-i.com      Daytime Queries:        Disabled
                                          TCP Keepalives:          Enabled
    DHCP Server:                None      Lease Time:                 0:00

    Load Address:    00-00-00-00-00-00    Prompt:              Local_%n%P>

    Characteristics:
    Incoming Logins:  Telnet   (No Passwords Required)
Local_2> █
```

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

```
Telnet - 192.67.12.252                 _ □ ✕
Connect  Edit  Terminal  Help

Local_2> set priv
Password> █
```

5. You now have access to the "super user" level of authority. This is required to change the IP address.

```
Telnet - 192.67.12.252                 _ □ ✕
Connect  Edit  Terminal  Help

Local_2> set priv
Password>
Local_2>> █
```

6a. To simply delete any currently-assigned IP address, type "change ipaddr 0.0.0.0"

```
Telnet - 192.67.12.252                     _ □ ✕
Connect  Edit  Terminal  Help

Local_2> set priv
Password>
Local_2>> change ipaddr 0.0.0.0
%Info: TCP_users exist - reboot to take effect.
Local_2>> █
```
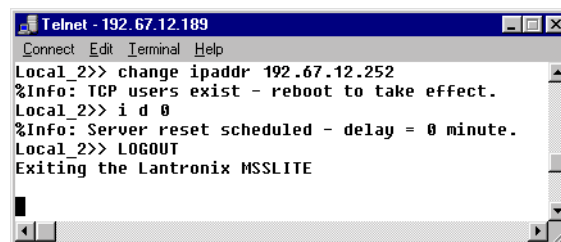
6b. To assign a new IP address, whether or not there is a currently-assigned IP address, type "change ipaddr *n.n.n.n*" (where *n.n.n.n* is the new IP address.)
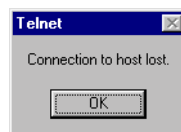
```
Telnet - 192.67.12.252
Connect  Edit  Terminal  Help

Local_2>> change ipaddr 192.67.12.189
%Info: TCP users exist - reboot to take effect.
Local_2>>
```
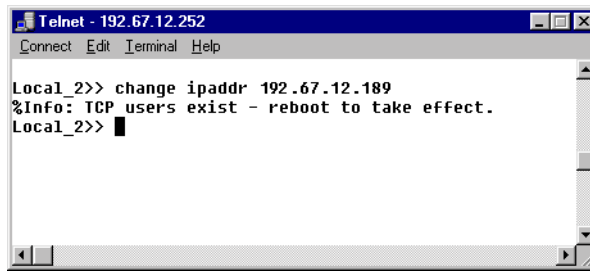
7. You should now reboot the ALPHA Ethernet Adapter. To do this, type "i d 0" with spaces between the characters. (The last character is a zero.)

```
Telnet - 192.67.12.252
Connect  Edit  Terminal  Help
Password>
Local_2>> change ipaddr 192.67.12.189
%Info: TCP users exist - reboot to take effect.
Local_2>> i d 0
%Info: Server reset scheduled - delay = 0 minute.
```
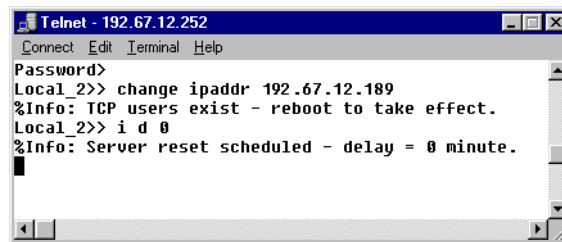
8. Because the ALPHA Ethernet Adapter will no longer be at the same address as when you connected to it using **Telnet**, **Telnet** officially logs you out of that connection.

```
Telnet - 192.67.12.189
Connect  Edit  Terminal  Help
Local_2>> change ipaddr 192.67.12.252
%Info: TCP users exist - reboot to take effect.
Local_2>> i d 0
%Info: Server reset scheduled - delay = 0 minute.
Local_2>> LOGOUT
Exiting the Lantronix MSSLITE
```

9. You then get this notification.

```
Telnet
Connection to host lost.
    OK
```

10. After clicking *OK*, and after the ALPHA Ethernet Adapter 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 3: DOS/ARP command

In a DOS window in 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 ALPHA Ethernet Adapter 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 2: Telnet" on page 15.

Obtain new IP address(es)

1. Obtain a valid IP address for each ALPHA Ethernet Adapter. This is usually assigned by an IS network administrator.

### Connect ALPHA Ethernet Adapter to sign and network
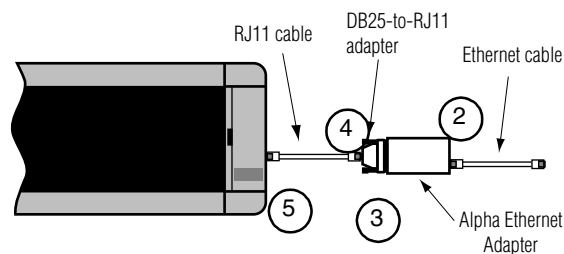
2. Connect an Ethernet cable to an active 10BASE-T Ethernet port and to the RJ45 Ethernet port on the ALPHA Ethernet Adapter.

3. Connect the DB25 adapter to the DB25 connector on the ALPHA Ethernet Adapter.

4. Connect the RJ11 cable to the DB25 adapter.

5. Connect the other end of the RJ11 cable to the sign.

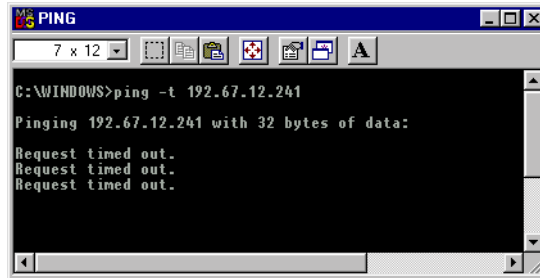> **NOTE:** Do *not* connect the power cable to the sign at this time!

Set up DOS commands for assigning an IP address

6. Open up a DOS window on the PC: click on *Start > Programs > MS-DOS Prompt*.
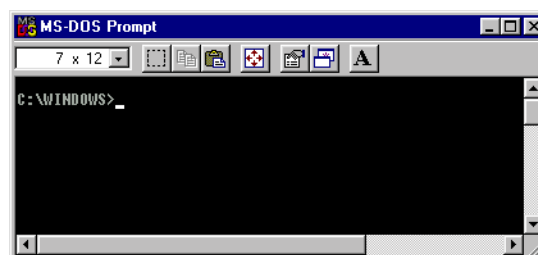
7. Type "ping –t *n.n.n.n*" (where *n.n.n.n* is the IP address to be assigned to the ALPHA Ethernet Adapter) and press **Enter**.

> **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**.

```
C:\WINDOWS>ping -t 192.67.12.241

Pinging 192.67.12.241 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
```

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

```
C:\WINDOWS>
```
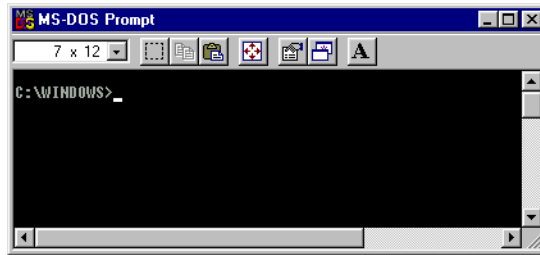
9. Type "arp –s *n.n.n.n 00-80-a3-x-x-x* " (where *n.n.n.n* is the IP address of the ALPHA Ethernet Adapter and *00-80-a3-x-x-x* is the hardware address of ALPHA Ethernet Adapter.) **Do *not* press Enter at this time though!**

> **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 11 below.

```
C:\WINDOWS>arp -s 192.67.12.241 00-80-a3-0f-40-9c
```

Method 3: DOS/ARP command
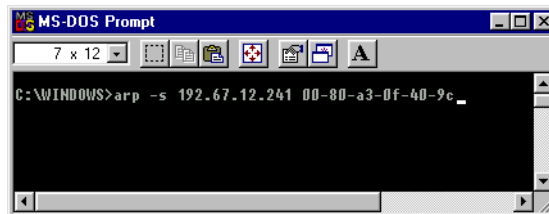
## Apply power to the ALPHA Ethernet Adapter and to the sign

10. Connect the appropriate power cable to the sign. Wait 30 seconds or until the ACT LED (top LED, closest to the DB25 serial port) turns off and on only every two seconds.

> **NOTE:** Both the sign and the ALPHA Ethernet Adapter are now powered up and connected to the network. The LNK LED (middle LED) on the ALPHA Ethernet Adapter will be lit if you have a valid 10BASE-T network connection.

Assign the IP address

11. 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 9 above, to actually assign the IP address.
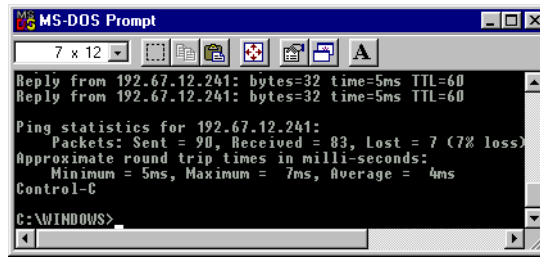
> **NOTE:** Once the ALPHA Ethernet Adapter is initially powered up, you have only **two minutes** to assign it an IP address by pressing **Enter** at the DOS window with the "arp –s *n.n.n.n 00-80-a3-x-x-x*" command which you set up in Step 9. After two minutes, either an alternate method must be used or the ALPHA Ethernet Adapter must be rebooted by removing and reapplying power to it.
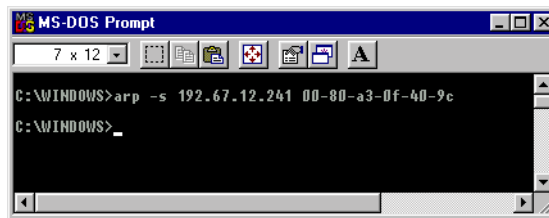
12. You can watch the DOS window which has the **ping** command to determine when communication has been established. A "Reply from…" response will be displayed in the window with the **ping** command when successful IP assignment is achieved.
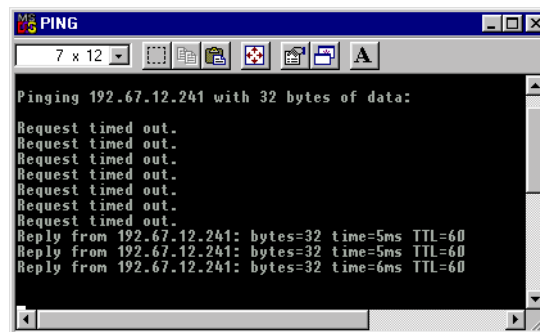
13. Go to the DOS window which has the **ping** command. Stop the execution of this command by pressing **Ctrl+c**.

NOTE: **The ALPHA Ethernet Adapter 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 ALPHA Ethernet Adapter, or allow an administrator to **Telnet** into the ALPHA Ethernet Adapter. Once logged in, the administrator can enter the **"**Change IPaddress" command to make the address permanent. See also "Reserving an IP address" on page 23 for instructions on determining and reserving an IP address.

Method 4: DHCP

Dynamic Host Control Protocol (DHCP) allows a device to use a dynamic IP address assigned at boot time from an available pool of addresses.

The ALPHA Ethernet Adapter is shipped with DHCP disabled. However, if DHCP ever inadvertently becomes enabled, and if your LAN uses Dynamic Host Communications Protocol (DHCP), when the ALPHA Ethernet Adapter is re-connected to the network and powered up, DHCP will automatically assign a dynamic IP address to the ALPHA Ethernet Adapter. 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 ALPHA Ethernet Adapter 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 ALPHA Ethernet Adapter. The result is that messages will not be delivered to the ALPHA Ethernet Adapter.

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 comm 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.
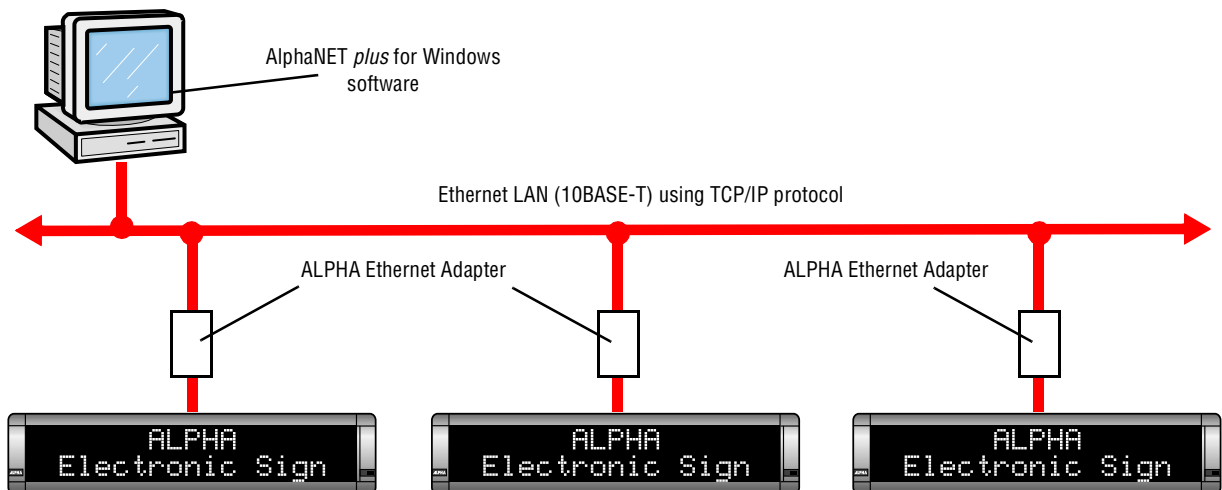
Single server mode

In the *Single server mode*, an ALPHA Ethernet Adapter sends a message from one PC through a COM port (either physical or logical) over an Ethernet LAN to an ALPHA Ethernet Adapter and on to a sign.

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 an ALPHA Ethernet Adapter. The ALPHA Ethernet Adapter, 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 ALPHA Ethernet Adapter's serial port and to the sign.

This mode is especially used in conjunction with **AlphaNET *plus* for Windows** software.

NOTE: The COM port you choose to use 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, **AlphaNET *plus* for Windows** only recognizes COM ports 1 through 4.

AlphaNET *plus* for Windows software

Ethernet LAN (10BASE-T) using TCP/IP protocol

ALPHA Ethernet Adapter

ALPHA Ethernet Adapter

ALPHA
Electronic Sign

ALPHA
Electronic Sign

ALPHA
Electronic Sign

Install Redirector

1. Obtain the latest version of **Redirector** from the ALPHA Ethernet Adapter CD or from the Lantronix Internet site (ftp.lantronix.com/priv/redirector) 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 (hardware)

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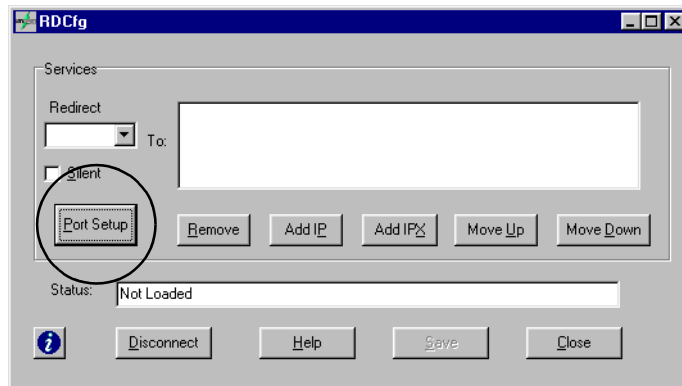

2. Choose an available COM port that you wish to redirect to the ALPHA Ethernet Adapter IP address. Click *OK*.
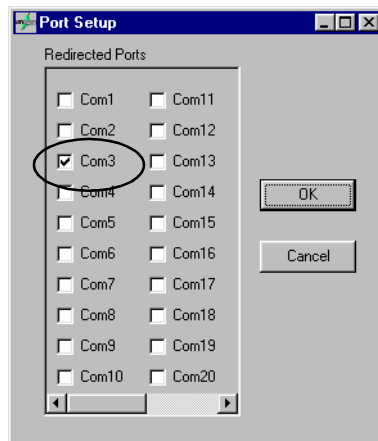

NOTE: If you need to use the same COM port for other purposes, you will need to *de*-select the COM port in the same way as the above two step. Then quit all applications and reboot the computer.
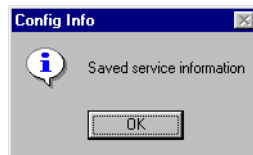
3. Click the *ADD IP* button. In the *IP Service Setup* dialog box, enter the IP address of the ALPHA Ethernet Adapter that **EZWebCon** detected in the *Host* prompt. In the *TCPPort* prompt, enter "3001", the valid number for any ALPHA Ethernet Adapter. Click *OK*.
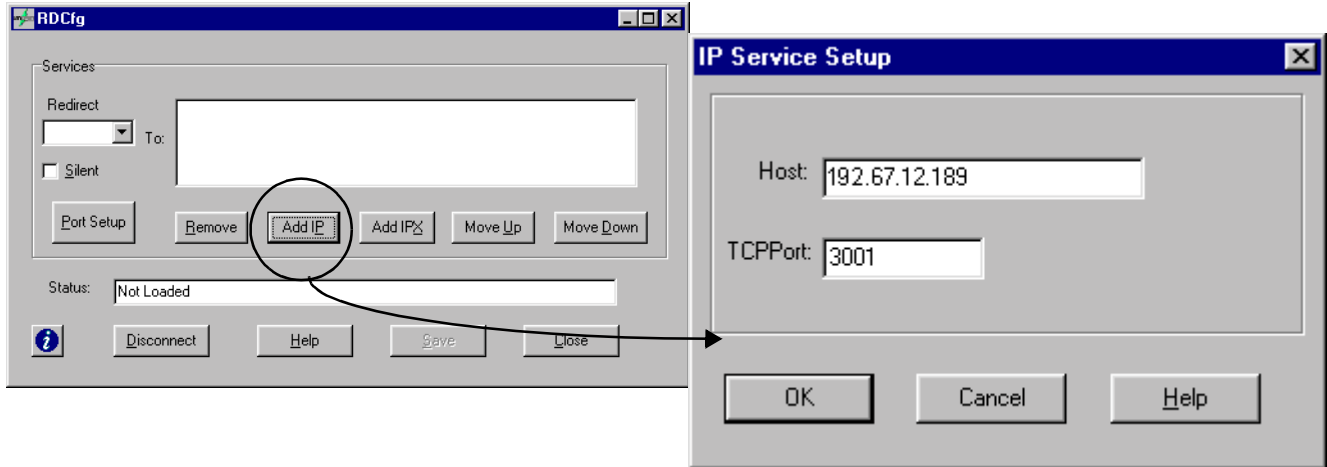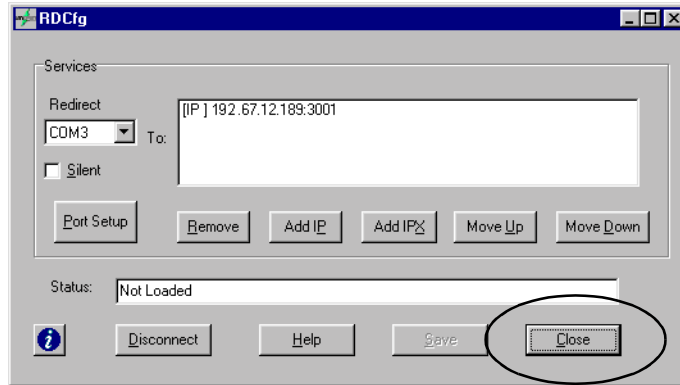
4. Click *Save* in the RDCfg dialog box.
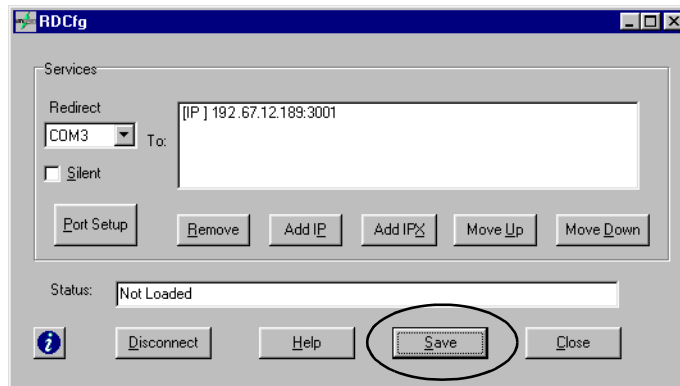
5. Click *OK* in the Config Info box.

6. Click *Close* in RDCfg dialog box.

7. You may need to reboot the computer. You should now be able to access the sign via **AlphaNET** *plus* **for Windows** and/or **Smart Alec** via the network.
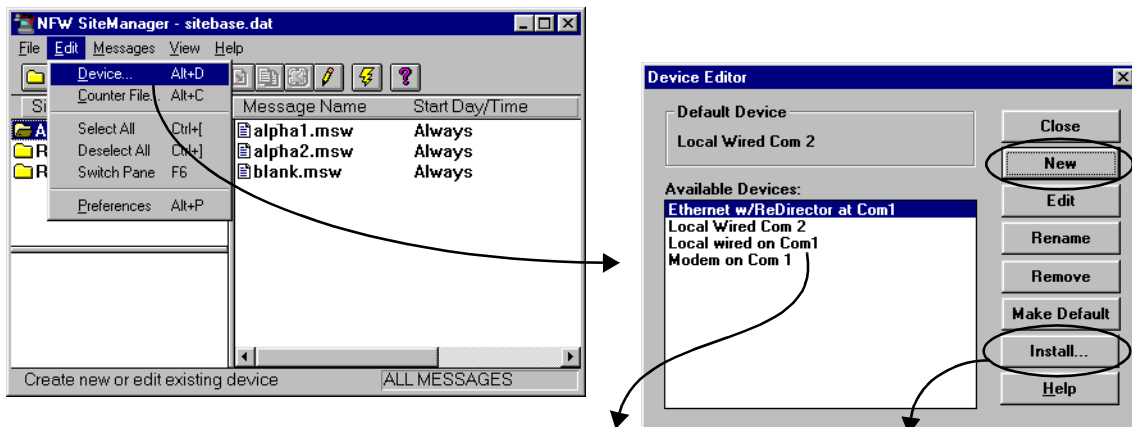
Direct a COM port to a serial server (software)

AlphaNET *plus* for Windows

Setting the device and COM port

For **AlphaNET** *plus* **for Windows**, in the *Site Editor*, you must choose the COM port that you chose to be redirected to the IP address of the ALPHA Ethernet Adapter.

**1.** Run the *Site Manager.* Choose *Edit > Device…* Click the *New* button.

Instead of creating a new device, you can select a wired device that is pre-installed, such as "Local wired on COM1". If you do so, skip to Step 4.

HINT: You can show all the pre-installed devices by clicking the Install button. You must then select one to make it available.

2. Provide a name for this ALPHA Ethernet Adapter and click *OK*.
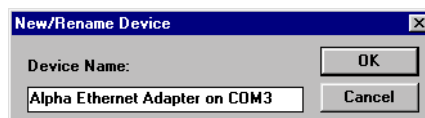
3. Choose the correct *COM port* for your computer. Set the *Data Format* at 8N1 (8 bits, no parity, 1 stop bit.) Set the *Baud Rate* at 9600. Click *OK*.
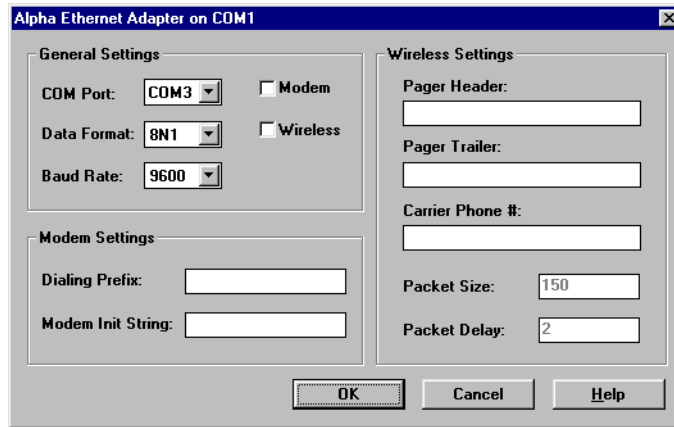
4. If this ALPHA Ethernet Adapter will be the primary transmission device, click on the *Make Default* button. If this ALPHA Ethernet Adapter is the *only* transmission device, you *must* make it the default.
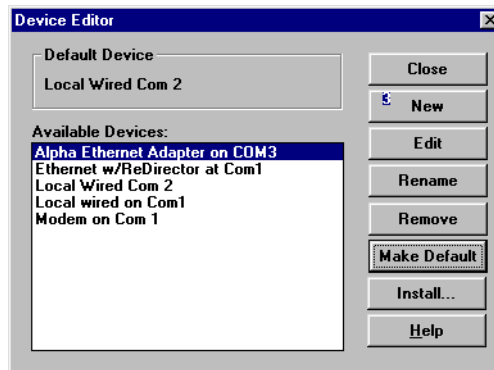
5. By confirming this selection, this ALPHA Ethernet Adapter will be designated the default device. Click *Yes* and then *Close*.
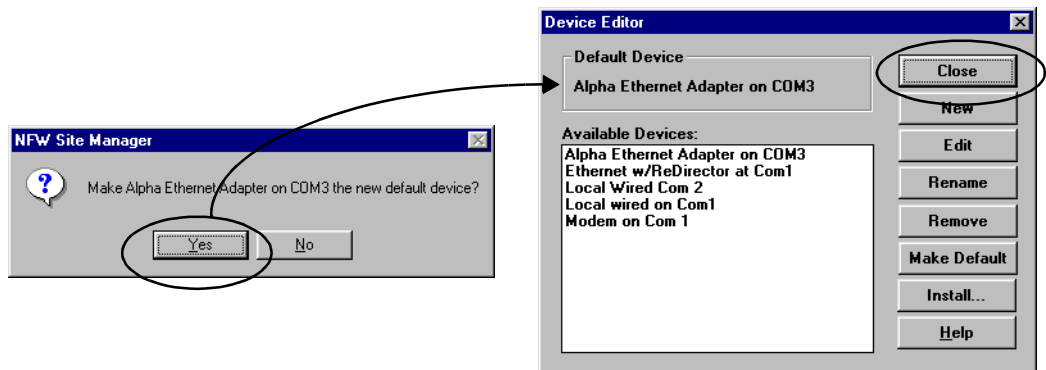
6. Choose the desired site (or create a new one.) Then choose *Open Site* from the *File* menu.
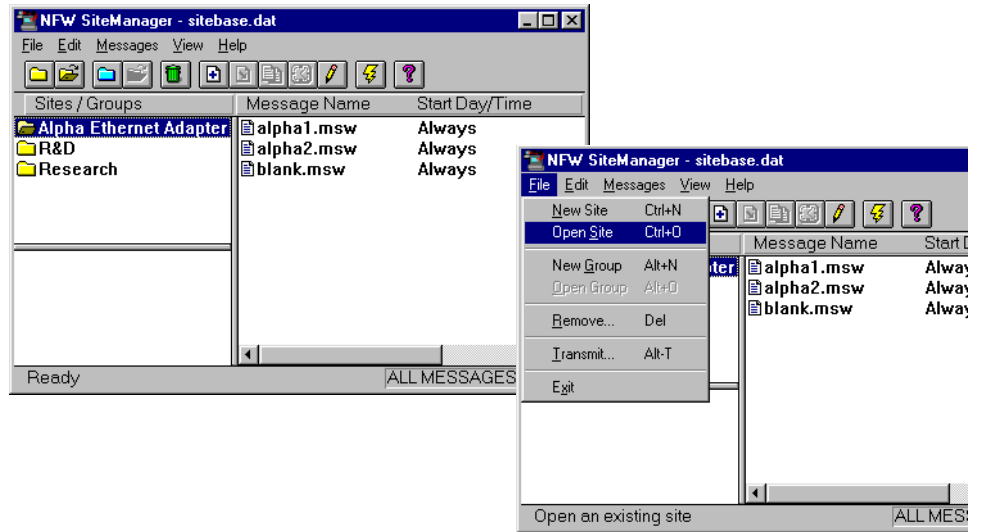
7. Choose the *Connect Device* that you just set up in the previous steps.
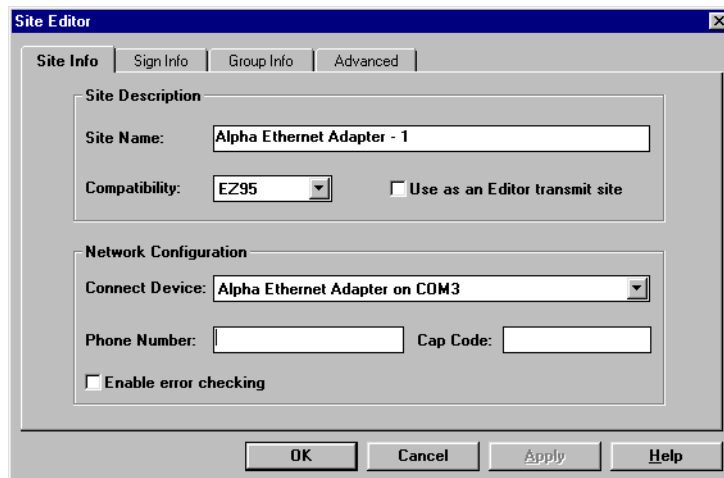
8. Click on the *Site Info* tab. Set the *Address List* to the serial address(es) of the sign(s). Click *OK*. By doing this, you can send messages to individual sign(s) in the address list.
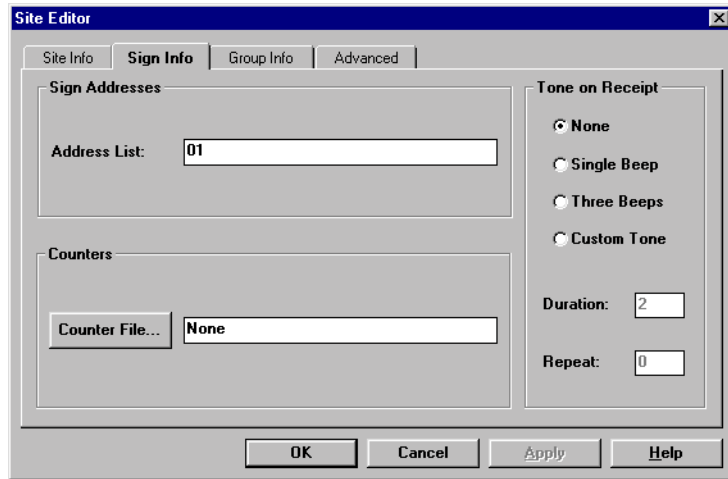
Sending messages from AlphaNET *plus* for Windows

You are now ready to send messages to this sign using **AlphaNET *plus* for Windows**.

1. Send your message(s) as you normally would.

2. The **Redirector** will alert you that it is connecting to the ALPHA Ethernet Adapter serial server.
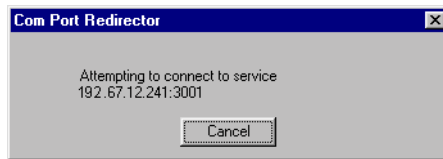
3. You will briefly receive this notice.
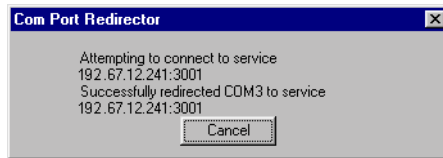
4. And this is the last notice. Normally you will not see these notices for more than a very brief time.
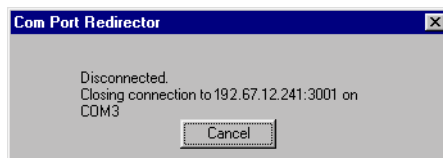
5. Any messages will be sent to the sign.

Smart Alec 1.8

When using Single server mode and **Smart Alec** version 1.8, you can access the sign as a LAN device location.

1. Create a new LAN location.
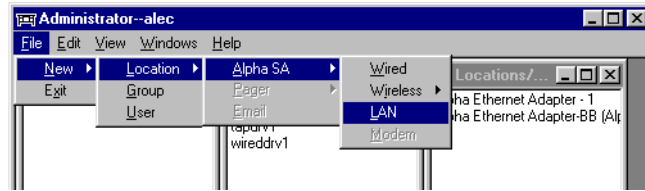
2. Assign a *Name*, *Address List*, and *IP Address* to this device for the ALPHA Ethernet Adapter. Then click on the *Advanced* button.

For the *Address List*, the address entered must match the address of the sign (e.g., address 00.)

For the IP address, enter the IP address assigned to the ALPHA Ethernet Adapter.
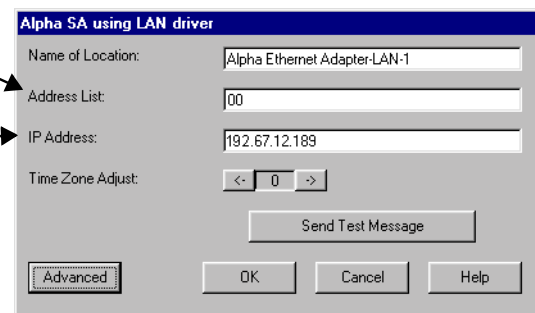
3. Click on the *Properties* button.
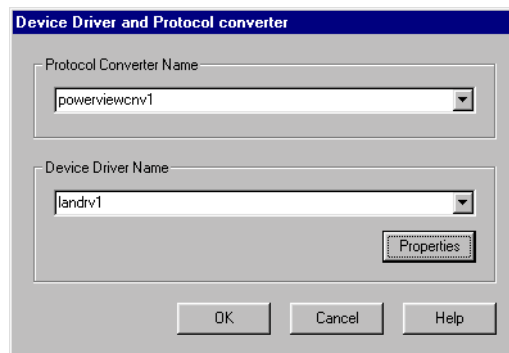
4. Type "3001" for the *Service Port*.
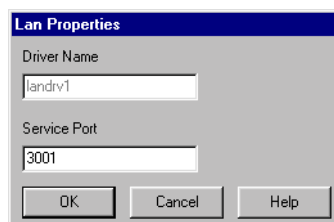
5. Choose *OK* until the *Location* is defined.

6. You are now ready to send messages to this ALPHA Ethernet Adapter site as you normally would in **Smart Alec** 1.8.

Smart Alec 2.1

When using Single server mode and **Smart Alec** version 2.1, you can access the sign as a terminal server.

1. In *Notification Device Interface Setup*, choose *File > New > Terminal Server.*

2. Assign a *Name, Description*, and *IP Address.* Click *Add.*

For the IP address, enter the IP address assigned to the ALPHA Ethernet Adapter.

3. In *Notification Device Setup*, choose *File > New > Alpha SA* device.

4. Complete the choices for this notification device. Choose "Terminal Server" for *Interface Category* and then your specific *Interface Name* as in Step 2 above. The *Interface Port Address* must be "3001". Click *Add.*

The *Interface Port Address* must be "3001".

5. You are now ready to send messages to this ALPHA Ethernet Adapter destination as you normally would in **Smart Alec** 2.1.

Modem mode

In the *Modem mode*, you can use an MSS100 serial server to emulate a modem sending messages one-at-a-time to one or more signs, each with an ALPHA Ethernet Adapter attached.
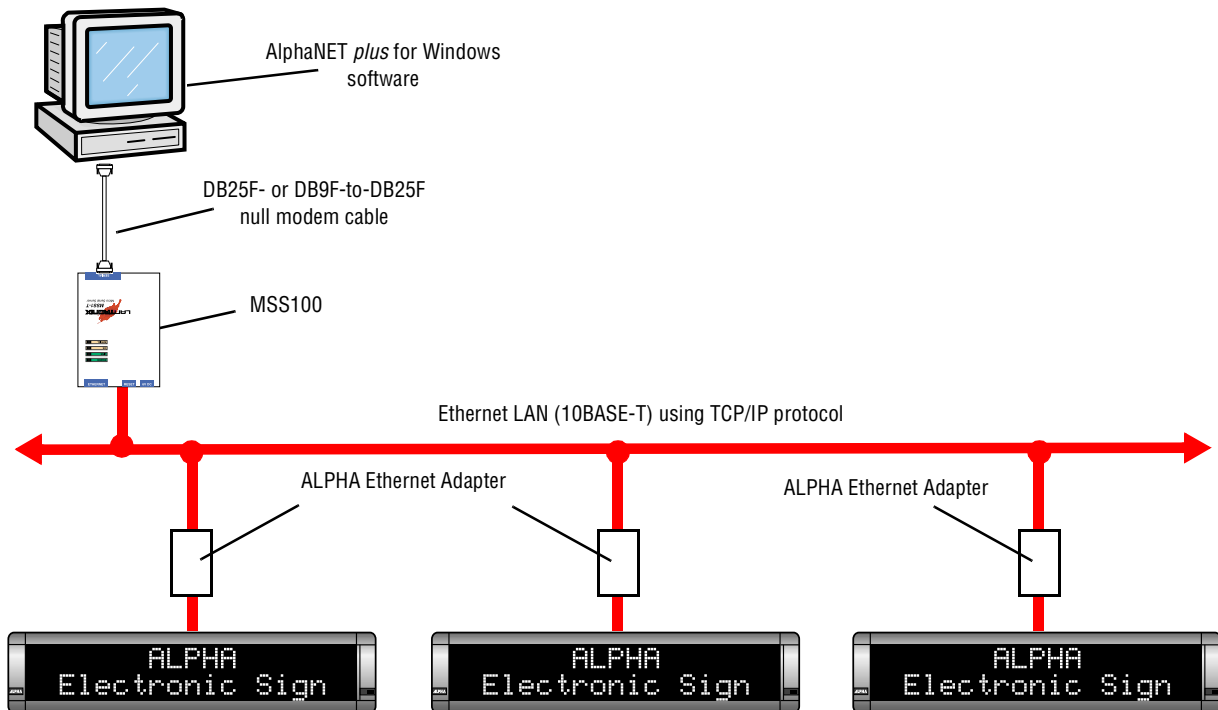
Set up the MSS100 as a sending modem

NOTE 1: You must have programmed the MSS100 serial server with an IP address before setting it up in modem mode.

NOTE 2: The version of the firmware of the MSS100 serial server 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 MSS100. 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.

```
Telnet - 192.67.12.241
Connect  Edit  Terminal  Help

Lantronix MSS100 Version B3.5/905(990519)

Type HELP at the 'Local_2> ' prompt for assistance.


Username> any █
```

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

```
Telnet - 192.67.12.241
Connect  Edit  Terminal  Help

Lantronix MSS100 Version B3.5

Type HELP at the 'Local_2> '


Username> any

Local_2> set priv█
```

```
Telnet - 192.67.12.241
Connect  Edit  Terminal  Help

Lantronix MSS100 Version B3.5/905(990519)

Type HELP at the 'Local_2> ' prompt for assistance.


Username> any

Local_2> set priv
Password>
Local_2>> █
```

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

```
Telnet - 192.67.12.241
Connect  Edit  Terminal  Help

Username> any

Local_2> set priv
Password>
Local_2>> change flow control none█
```
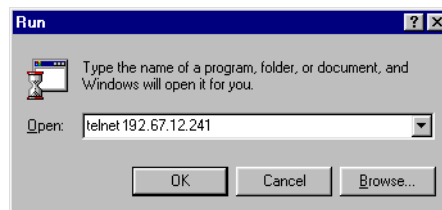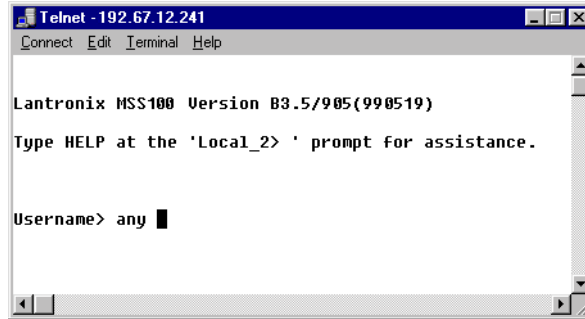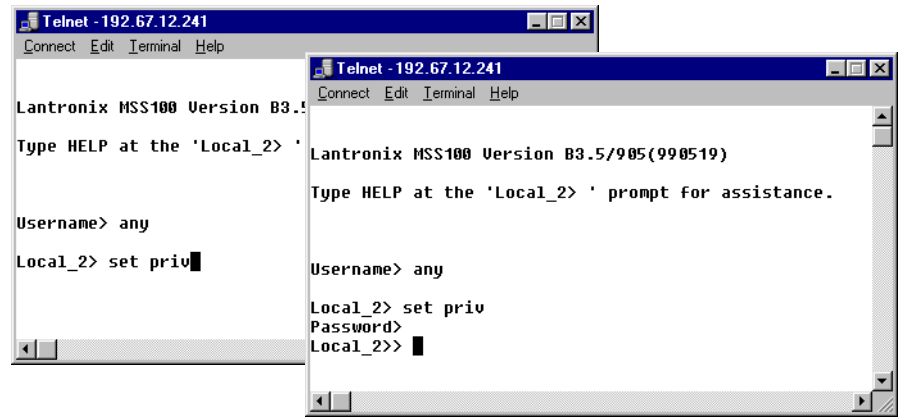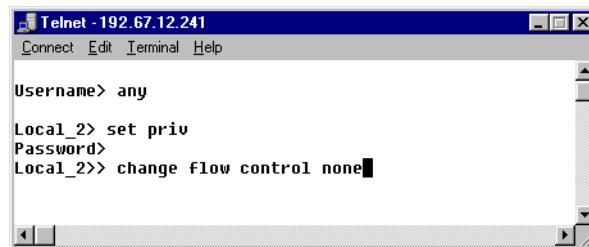
5. Type "change modem emulation enabled". Press **Enter.**

```
Telnet - 192.67.12.241
Connect  Edit  Terminal  Help

Username> any

Local_2> set priv
Password>
Local_2>> change flow control none
Local_2>> change modem emulation enabled█
```
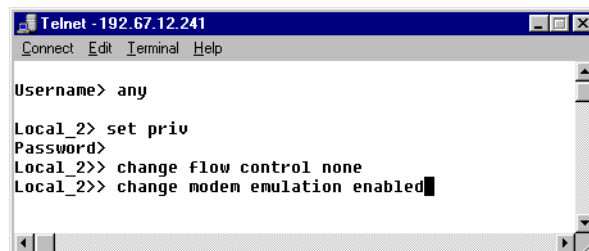
6. Type "show port". Press **Enter.** This will show the current settings of the port. The settings will look something like this:


```
Telnet - 192.67.12.241
Connect  Edit  Terminal  Help

Username> any

Local_2> set priv
Password>
Local_2>> change flow control none
Local_2>> change modem emulation enabled
Local_2>> show port
```

```
Telnet - 192.67.12.241
Connect  Edit  Terminal  Help
Local_2>> show port

Port 1: Username: Port_1               Physical Port 1 (Idle)
    Char Size/Stop Bits:        8/1    Baud Rate:              9600
    Flow Ctrl:                  None   Session Limit:             4
    Parity:                     None   Modem Control:          None
    Access:                  Dynamic   Break Ctrl:            Local
    Local Switch:               None   Start Character:        None
    Forward:                    None   Backward:               None
    Port name:                Port_1   Terminal Type:          None
    Preferred Service:

    Characteristics:  DSR Logout  Verify  Telnet Pad  Dtrwait
                      MdmEmulate

    Sessions:                      0    Current Session:        None
    Input/Output Flow Ctrl:      N/N    DSR/DTR/CTS/RTS/CD:  N/N/N/Y/N

    Seconds Since Zeroed:        543    Framing Errors:            0
    Accesses Local/Rem:          0/0    Parity Errors:             0
    Flow Control Violations:       0    Overrun Errors:            0
    Bytes Input:                   0    Bytes Output:            101
    Input Flow On/Off:      0/    0     Output Flow On/Off:   0/    0

Local_2>>
```

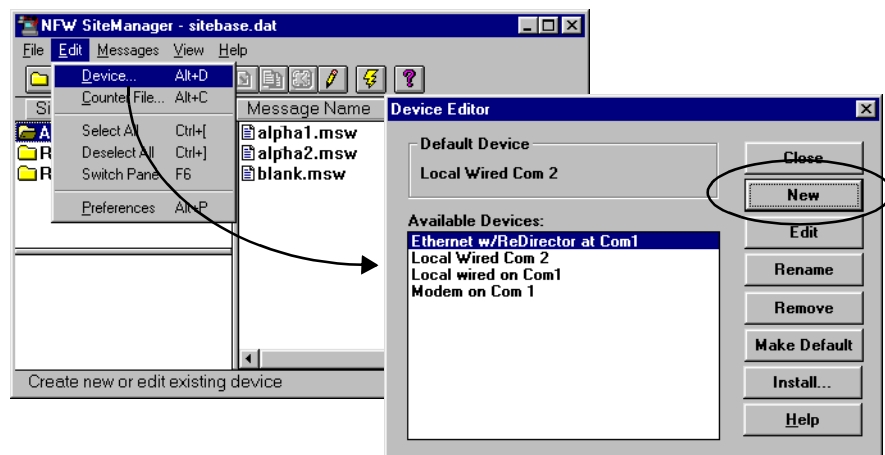**7.** Repeat Step 1 through Step 6 above for all of the MSS100 serial servers to be used in modem mode.

8. Remove power from these servers and re-apply power, after which changes will be in effect. You must now proceed to "Set up sites in AlphaNET plus for Windows", described next.

Set up sites in AlphaNET *plus* for Windows
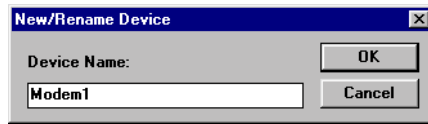
In **AlphaNET *plus* for Windows**, in the *Site Editor*, you must define a device that uses the correct settings for the MSS100 to emulate a sending modem. You must also create a separate site for each of the ALPHA Ethernet Adapters that uses the new device for receiving messages.

1. Run the *Site Manager.* Choose *Device…* from the *Edit* menu. Click the *New* button.

2. Provide a name for this MSS100 device and click *OK*.

3. In this window, choose the appropriate settings for the MSS100. Click *OK*.

Modem checkbox must be checked

COM port must be the one that the MSS100 is using.

Data Format must be 8N1 (8 bits, no parity, 1 stop bit)

Baud Rate must be 9600

4. If this MSS100 will be the primary transmission device, click on the *Make Default* button. If this MSS100 is the *only* transmission device, you *must* make it the default.
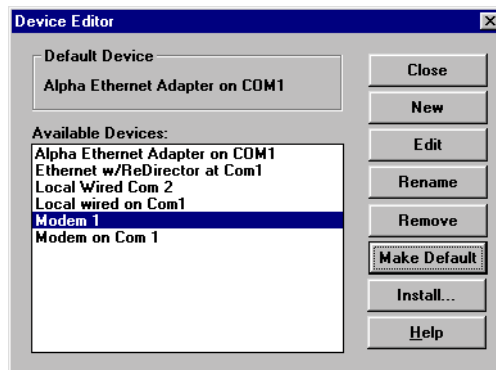
5. By confirming this selection, this MSS100 will be designated the default device. Click *Yes* and then *Close*.

6. Choose *New Site* from the *File* menu.

7. Specify a site name. Choose the *Connect Device* that you just set up in the previous steps. Type the *Phone Number* as "*n.n.n.n*:3001T" where *n.n.n.n* is the assigned IP address of the receiving ALPHA Ethernet Adapter. Click *OK*.
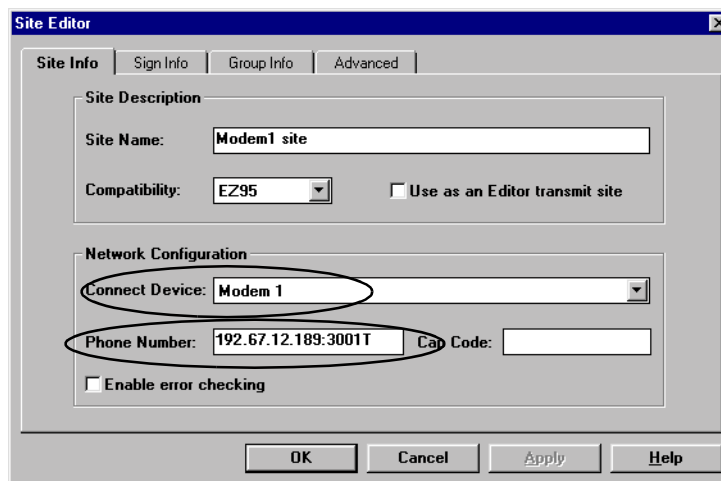
8. You are now ready to send messages to this ALPHA Ethernet Adapter site as you normally would in **AlphaNET** *plus* **for Windows**.

Local/Remote mode

In the *Local/Remote mode*, you can use an MSS100 as a "local/host" serial server to send messages all at once to one or more signs, each with a "remote" ALPHA Ethernet Adapter attached.

In this mode, you set one MSS100 as the local/host device. When setting up the MSS100, you assign it a fixed list of up to 12 IP addresses of ALPHA Ethernet Adapters. You set up each ALPHA Ethernet Adapter as a remote device. Then you can use the local/host device to send messages at one time to <u>all</u> the remote devices in the fixed list. You can also send messages to individual signs by using unique addresses for signs with the ALPHA Ethernet Adapters.
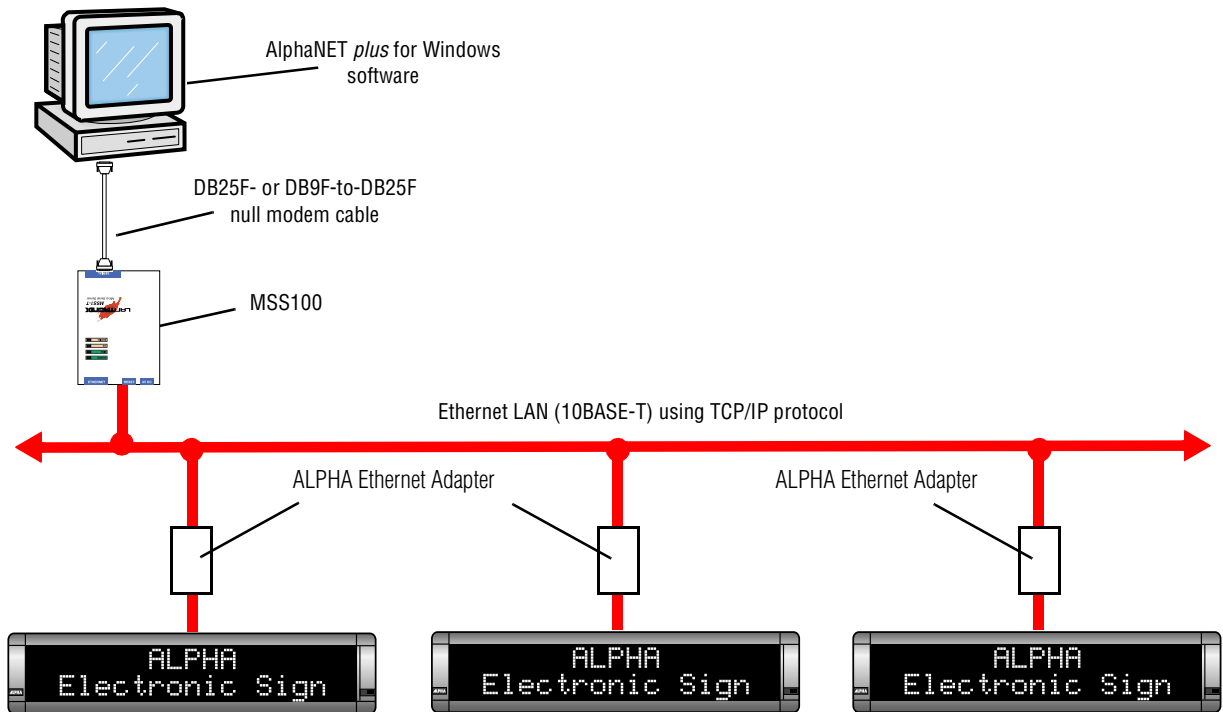

AlphaNET *plus* for Windows software

DB25F- or DB9F-to-DB25F null modem cable

MSS100

Ethernet LAN (10BASE-T) using TCP/IP protocol

ALPHA Ethernet Adapter

ALPHA Ethernet Adapter

ALPHA Electronic Sign

ALPHA Electronic Sign

ALPHA Electronic Sign

Set up the MSS100 to act as a local device

NOTE 1: You must program the MSS100 devices with IP addresses before setting them up.

NOTE 2: The version of the firmware of the MSS100 must be version B3.5/905 (dated 990518) or higher.

Set up the MSS100 to act as a local device

1. Choose *Start > Run*. Type "Telnet *n.n.n.n*" where *n.n.n.n* is the assigned IP address for the MSS100. Click *OK*.
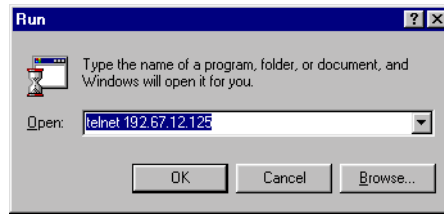
2. Type a user name and press **Enter**. It doesn't matter what you type here, except that it must be different from that used by any other **Telnet** user on the network.
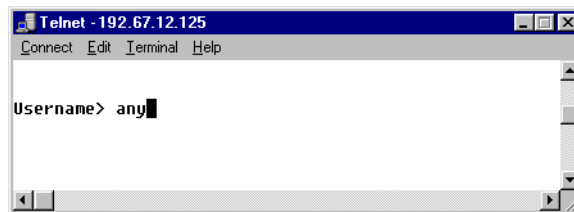
3. Type "set priv". Press **Enter.** Then type the password. Press **Enter** again**.**The default password is "system".
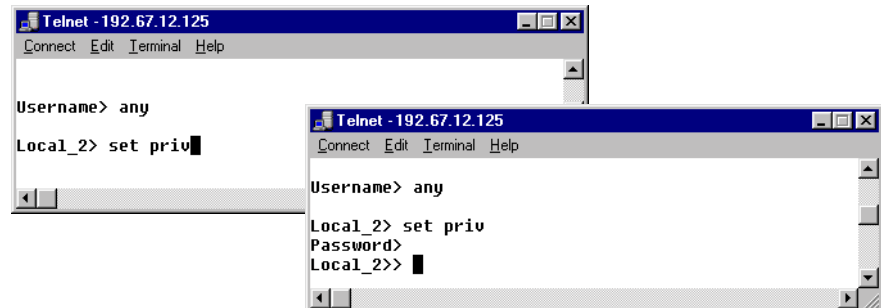
4. Type "change flow control none". Press **Enter**.

5. Type "change access local". Press **Enter**.
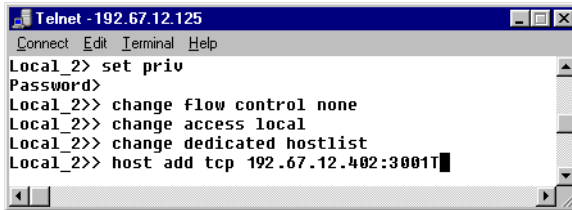
6. Type "change dedicated hostlist". Press **Enter**.

```
Telnet - 192.67.12.125
Connect  Edit  Terminal  Help

Local_2> set priv
Password>
Local_2>> change flow control none
Local_2>> change access local
Local_2>> change dedicated hostlist
```

7. Type "host add tcp *n.n.n.n*:3001T" where *n.n.n.n* is the IP address of an ALPHA Ethernet Adapter to be used in <u>remote</u> mode. Press **Enter**. *Do this step for each <u>remote</u> ALPHA Ethernet Adapter which is to receive messages from the local MSS100.*

```
Telnet - 192.67.12.125
Connect  Edit  Terminal  Help
Local_2> set priv
Password>
Local_2>> change flow control none
Local_2>> change access local
Local_2>> change dedicated hostlist
Local_2>> host add tcp 192.67.12.402:3001T
```
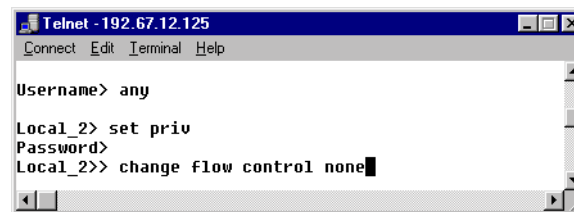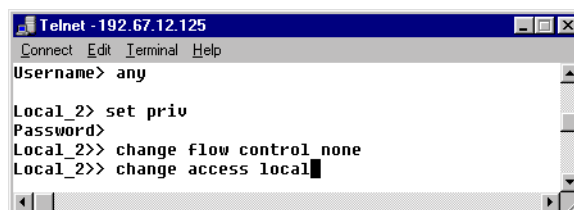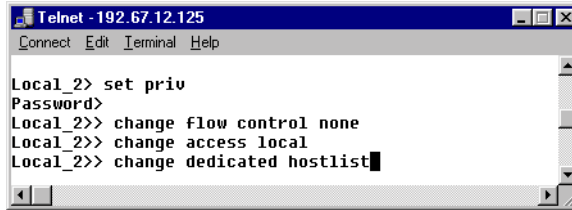
```
Telnet - 192.67.12.125
Connect  Edit  Terminal  Help
Password>
Local_2>> change flow control none
Local_2>> change access local
Local_2>> change dedicated hostlist
Local_2>> host add tcp 192.67.12.402:3001T
Local_2>> host add tcp 192.67.12.403:3001T
```

NOTE
There is a maximum of twelve (12) remote ALPHA Ethernet Adapters, and therefore, twelve signs, that can receive messages from a local MSS100.
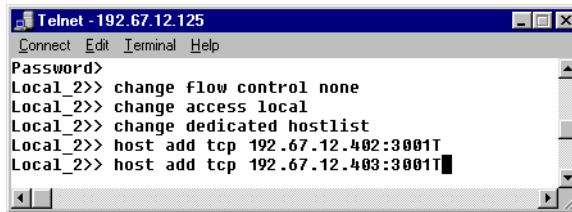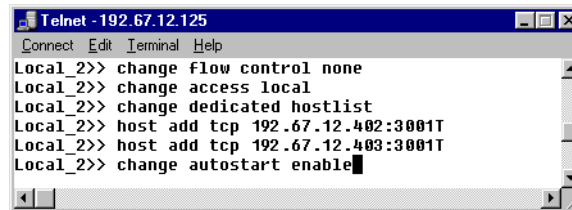
8. Type "change autostart enable". Press **Enter**.

```
Telnet - 192.67.12.125
Connect  Edit  Terminal  Help
Local_2>> change flow control none
Local_2>> change access local
Local_2>> change dedicated hostlist
Local_2>> host add tcp 192.67.12.402:3001T
Local_2>> host add tcp 192.67.12.403:3001T
Local_2>> change autostart enable
```

9. Type "show hostlist". Press **Enter**. This will show the list of the remote ALPHA Ethernet Adapter IP addresses you entered.

```
Telnet - 192.67.12.125                                    _ □ ×
Connect  Edit  Terminal  Help
Local_2>> change access local
Local_2>> change dedicated hostlist
Local_2>> host add tcp 192.67.12.402:3001T
Local_2>> host add tcp 192.67.12.403:3001T
Local_2>> change autostart enable
Local_2>> show hostlist█
```

```
Telnet - 192.67.12.125                                    _ □ ×
Connect  Edit  Terminal  Help
Local_2>> change autostart enable
Local_2>> show hostlist
   1:   TELNET: <192.67.12.402:3001T>
   2:   TELNET: <192.67.12.403:3001T>

Local_2>> █
```

10. Type "show port". Press **Enter**. This will show the current settings of the port.

```
Telnet - 192.67.12.125                                    _ □ ×
Connect  Edit  Terminal  Help
Local_2>> change autostart enable
Local_2>> show hostlist
   1:   TELNET: <192.67.12.402:3001T>
   2:   TELNET: <192.67.12.403:3001T>

Local_2>> show port█
```

```
Telnet - 192.67.12.125                                                   _ □ ×
Connect  Edit  Terminal  Help

Local_2>> show port

Port 1: Username: Port_1              Physical Port 1 (Idle)
    Char Size/Stop Bits:        8/1   Baud Rate:               9600
    Flow Ctrl:                  None  Session Limit:              4
    Parity:                     None  Modem Control:           None
    Access:                     Local Break Ctrl:              Local
    Local Switch:               None  Start Character:          None
    Forward:                    None  Backward:                 None
    Port name:                Port_1  Terminal Type:            None
    Dedicated Service:     (Hostlist)
    Characteristics:  Telnet Pad  Autostart


    Sessions:                      0  Current Session:          None
    Input/Output Flow Ctrl:      N/N  DSR/DTR/CTS/RTS/CD:  N/N/N/Y/N

    Seconds Since Zeroed:        976  Framing Errors:             0
    Accesses Local/Rem:          0/0  Parity Errors:              0
    Flow Control Violations:       0  Overrun Errors:             0
    Bytes Input:                   0  Bytes Output:             101
    Input Flow On/Off:     0/     0  Output Flow On/Off:    0/     0

Local_2>> █
```

Set up ALPHA Ethernet Adapters to act as remote devices

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

NOTE 2: The version of the firmware of the ALPHA Ethernet Adapters 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 ALPHA Ethernet Adapter. 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**.
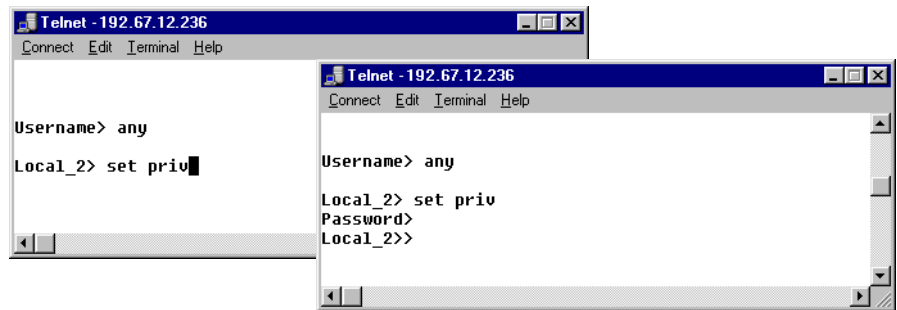
Set up ALPHA Ethernet Adapters to act as remote devices

5. Type "change access remote". Press **Enter**.

```
 Telnet -192.67.12.236                    _ □ ×
Connect  Edit  Terminal  Help

Local_2>> change flow control none
Local_2>> change access remote█
```

```
 Telnet -192.67.12.236                              _ □ ×
Connect  Edit  Terminal  Help

Local_2>> change flow control none
Local_2>> change access remote
Local_2>> █
```

6. Type "show port". Press **Enter**. show the current settings of the port.

```
 Telnet -192.67.12.236               _ □ ×
Connect  Edit  Terminal  Help
Password>
Local_2>> change flow control none
Local_2>> change access remote
Local_2>> show port█
```

```
 Telnet -192.67.12.236                                              _ □ ×
Connect  Edit  Terminal  Help
Local_2>> show port

Port 1: Username: Port_1              Physical Port 1 (Local Mode)
   Char Size/Stop Bits:        8/1    Baud Rate:                  9600
   Flow Ctrl:                  None   Session Limit:                 4
   Parity:                     None   Modem Control:              None
   Access:                   Remote   Break Ctrl:                Local
   Local Switch:               None   Start Character:            None
   Forward:                    None   Backward:                   None
   Port name:                Port_1   Terminal Type:              None
   Characteristics:  Telnet Pad


   Sessions:                      0   Current Session:            None
   Input/Output Flow Ctrl:      N/N   DSR/DTR/CTS/RTS/CD:    N/N/N/Y/N

   Seconds Since Zeroed:        364   Framing Errors:                0
   Accesses Local/Rem:          1/0   Parity Errors:                 0
   Flow Control Violations:       0   Overrun Errors:                0
   Bytes Input:                   0   Bytes Output:                101
   Input Flow On/Off:      0/    0    Output Flow On/Off:     0/    0

Local 2>>
```
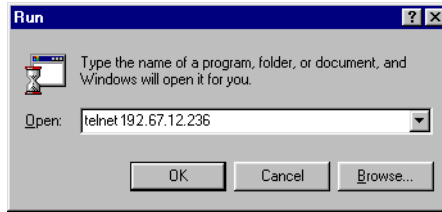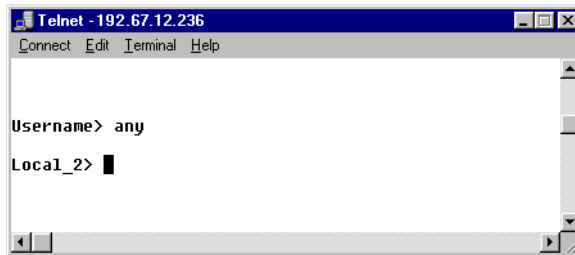
7. Repeat Step 1 through Step 7 above for all of the ALPHA Ethernet Adapters to be used in remote mode.

Reset and check all devices

1. Remove power from all the remote ALPHA Ethernet Adapters and re-apply power.

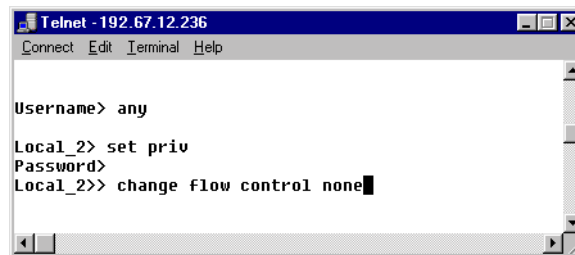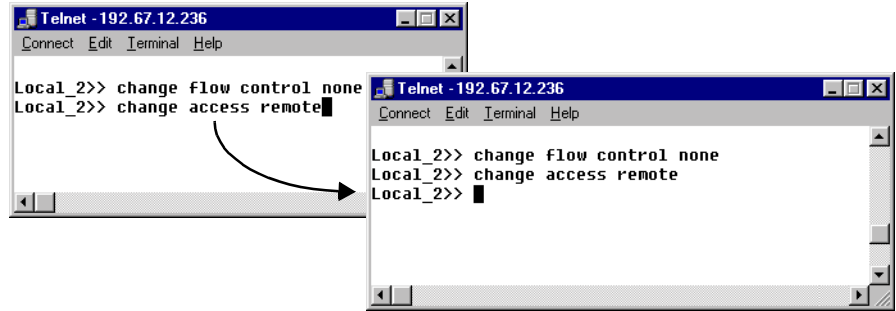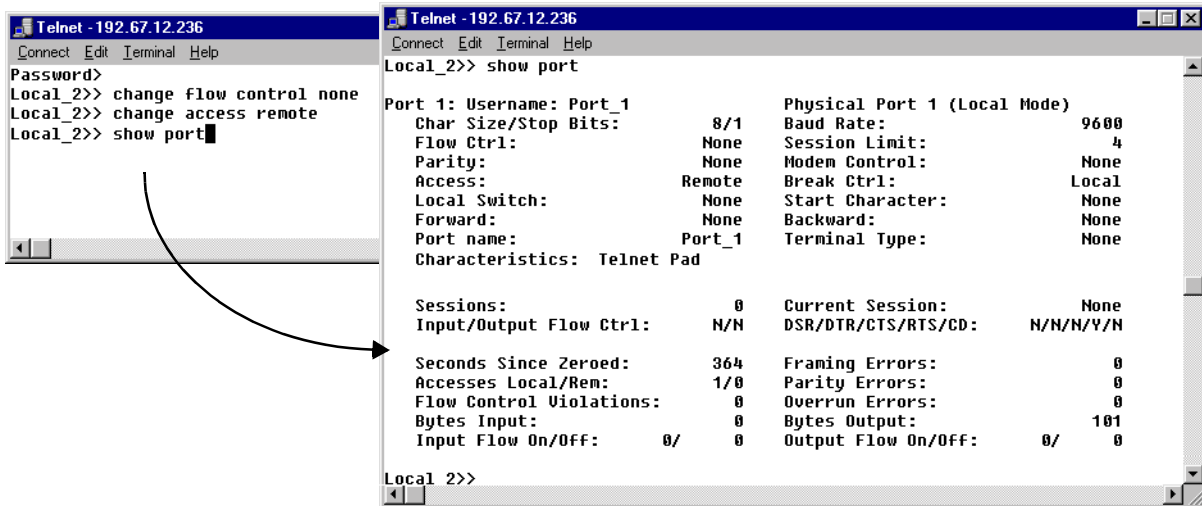**2.** Next, remove power from all the local MSS100 devices and re-apply power.

3. Choose *Start > Run*. Type "Telnet *n.n.n.n*" where *n.n.n.n* is the assigned IP address for the local MSS100 devices. Click *OK*.
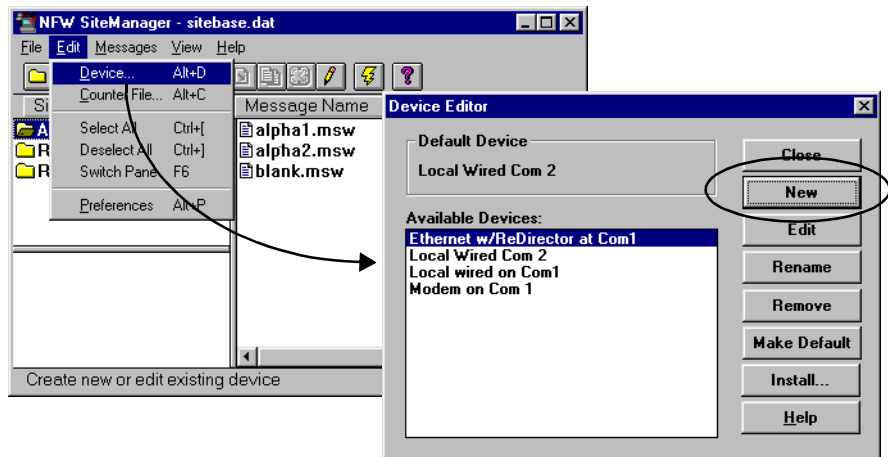
4. Enter a username and password.

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 is the number of remote ALPHA Ethernet Adapters you set up for the local MSS100 to send messages to.
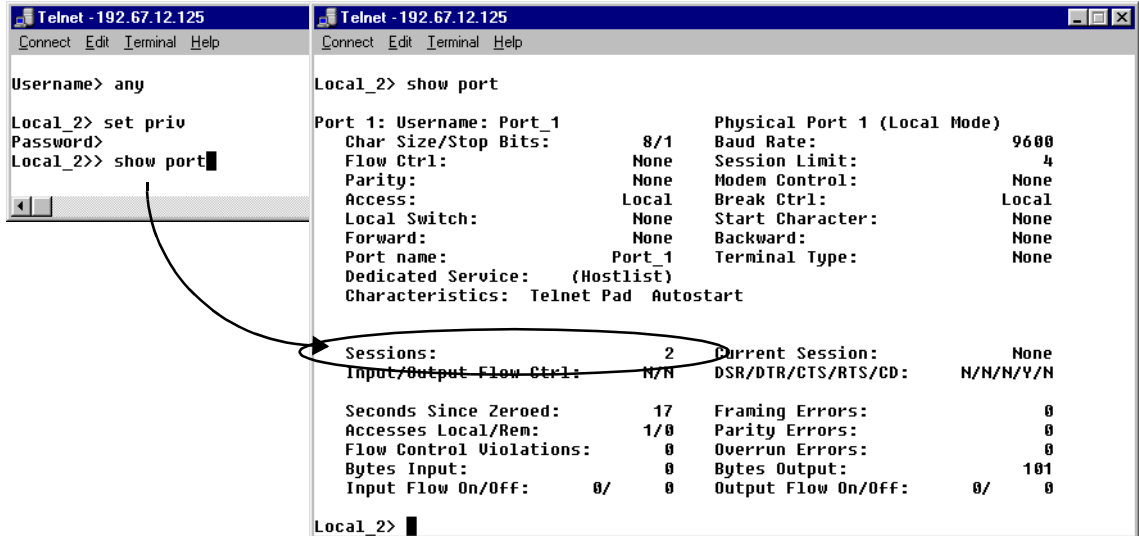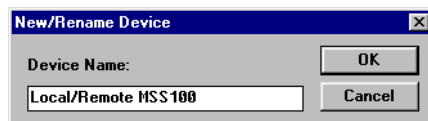

Set up sites in AlphaNET *plus* for Windows

In **AlphaNET *plus* for Windows**, in the *Site Editor*, you must define a device that uses the correct settings for the MSS100 to send messages. You must also create a site for the MSS100, using the new device.
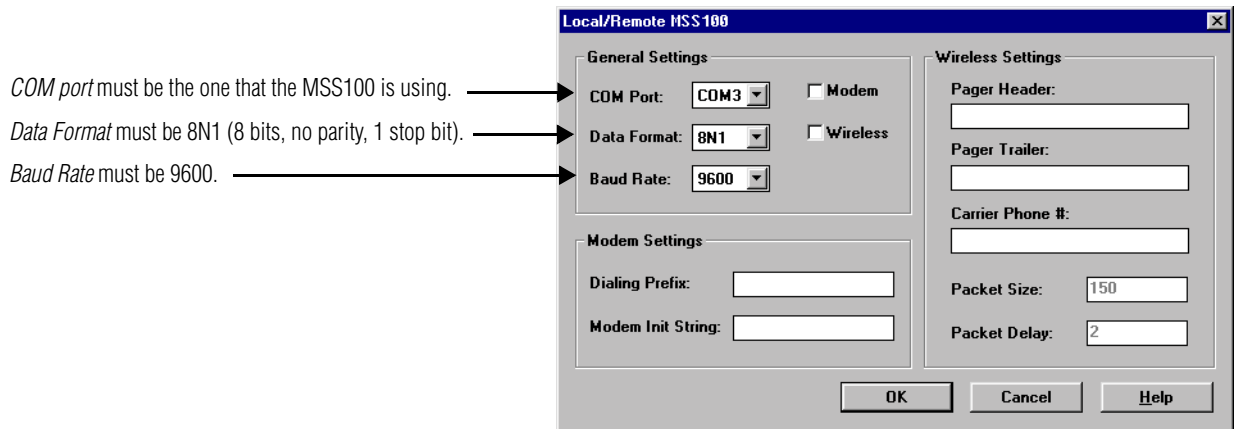
1. Run the *Site Manager.* Choose *Device…* from the *Edit* menu. Click the *New* button.
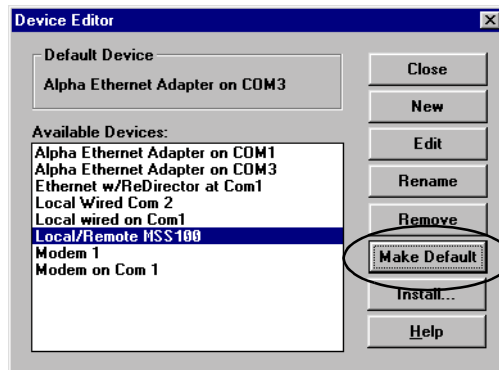

2. Provide a name for this MSS100 device and click *OK.*

3. In this window, choose the appropriate settings for the MSS100. Click *OK*.

COM port must be the one that the MSS100 is using.

Data Format must be 8N1 (8 bits, no parity, 1 stop bit).

Baud Rate must be 9600.

4. If this MSS100 will be the primary transmission device, click on the *Make Default* button. If this MSS100 is the *only* transmission device, you *must* make it the default.

5. By confirming this selection, this MSS100 will be designated the default device. Click *Yes* and then *Close*.
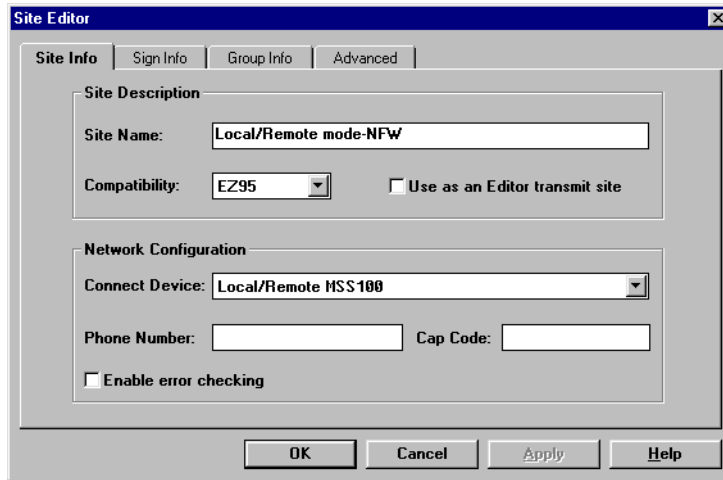
6. Choose *New Site* from the *File* menu.

7. Specify a *Site Name*. Choose the *Connect Device* that you set up for the correct MSS100 to receive messages.

8. If you want to send messages to any specific signs, set the *Address List* for this site to the specific sign serial address(es).
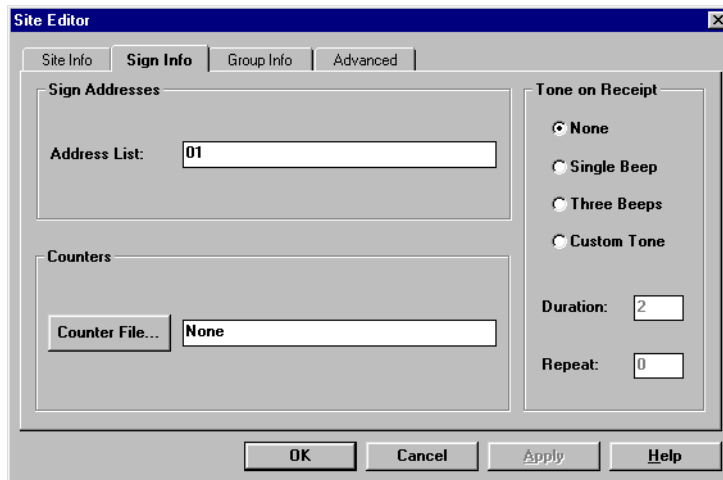
9. You are now ready to send messages as you normally would. Messages will go to the MSS100, which, in turn, will send the messages on to all the ALPHA Ethernet Adapters that it is set to send to, as shown in Step 9 on page 41. Any message will be shown only on the ALPHA Ethernet Adapter/sign with the serial address that matches the site the message is sent to.

Set up sites in AlphaNET plus for Windows

Set up locations in Smart Alec 1.8

When using Local/Remote mode and **Smart Alec** version 1.8, you can access the sign as a Wired device location.
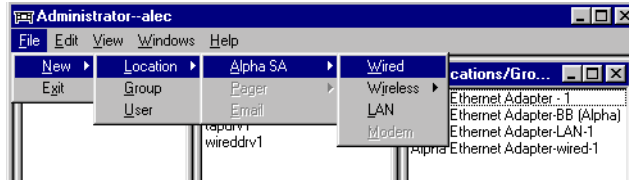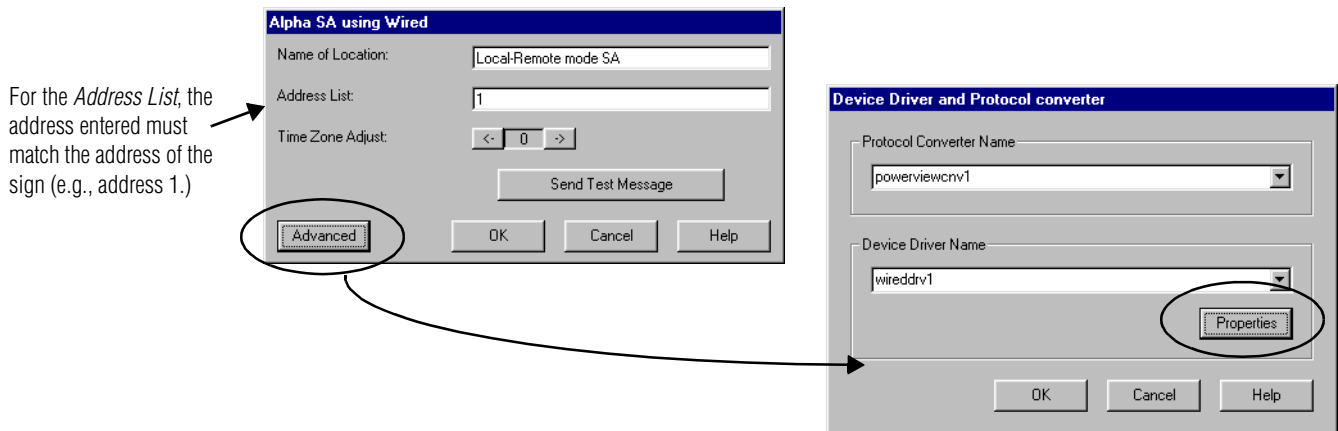
1. Create a new Alpha SA Wired location.

NOTE

You must create a new location for **each** unique serial address on signs.

2. Assign a *Name* and set the *Address List* to the serial address of the sign. Choose the *Advanced* button on this screen and the *Properties* button on the next.

For the *Address List*, the address entered must match the address of the sign (e.g., address 1.)

3. Choose the correct properties for this *Location*. Click *OK* for this and the next two screens, until the *Location* is defined.

Baud Rate must be "9600".

Parity must be "none".

The *Connector* must be set to the COM port you chose to be redirected to the IP address of the ALPHA Ethernet Adapter.

Data Bits must be "8".
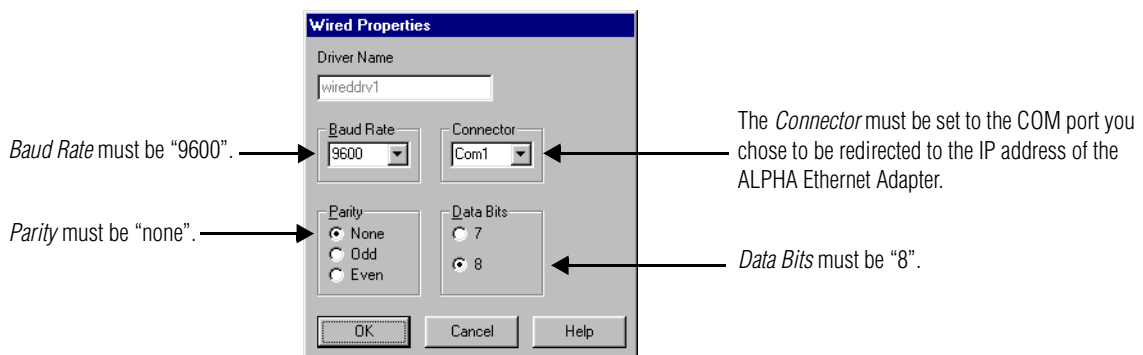
4. The Smart Alec administrator must then authorize the user for the new location.

5. Messages can now be sent from Smart Alec to the sign. The messages will go to all locations that the local MSS100 is set to send to. Any message will be shown only on the sign with the serial address that matches the site the message is sent to.

Set up locations in Smart Alec 2.1

When using Local/Remote mode and **Smart Alec** version 2.1, you can access the sign as a Serial device location.
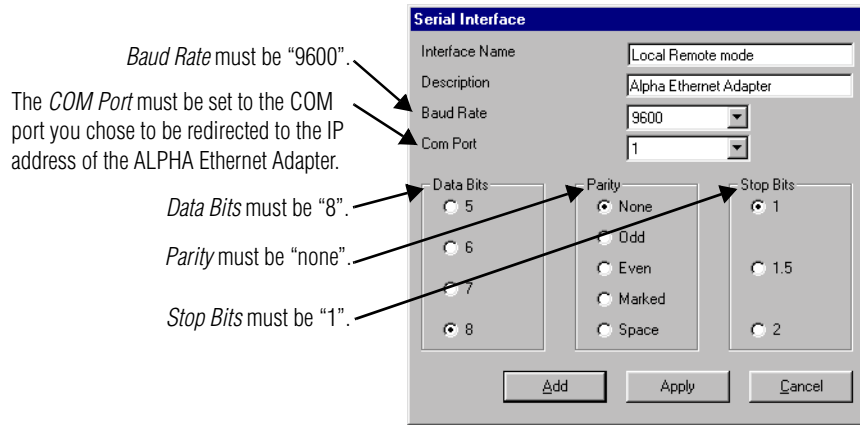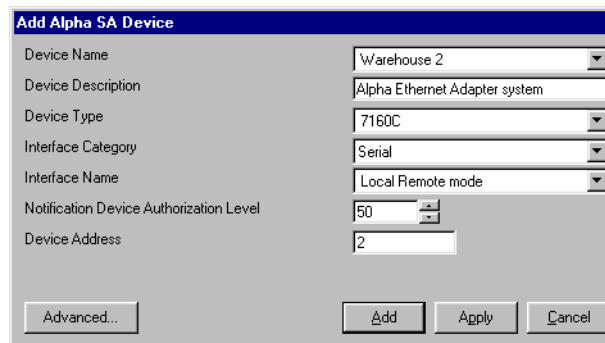
1. In *Notification Device Interface Setup*, choose *File > New > Serial* interface.

2. Complete the choices for this notification device interface. Click *Add.*

Baud Rate must be "9600".

The *COM Port* must be set to the COM port you chose to be redirected to the IP address of the ALPHA Ethernet Adapter.

Data Bits must be "8".

Parity must be "none".

Stop Bits must be "1".

Serial Interface

Interface Name	Local Remote mode
Description	Alpha Ethernet Adapter
Baud Rate	9600
Com Port	1

Data Bits
○ 5
○ 6
○ 7
⊙ 8

Parity
⊙ None
○ Odd
○ Even
○ Marked
○ Space

Stop Bits
⊙ 1
○ 1.5
○ 2

[Add] [Apply] [Cancel]

3. In *Notification Device Setup*, choose *File > New > Alpha SA* device.

4. Choose the correct properties for this notification device. Choose "Serial" for *Interface Category* and then your specific *Interface Name* as in Step 2 above. Click *Add.*

Add Alpha SA Device

Device Name	Warehouse 2
Device Description	Alpha Ethernet Adapter system
Device Type	7160C
Interface Category	Serial
Interface Name	Local Remote mode
Notification Device Authorization Level	50
Device Address	2

[Advanced...] [Add] [Apply] [Cancel]

5. You are now ready to send messages to this ALPHA Ethernet Adapter site as you normally would in **Smart Alec** 2.1. The messages will go to all destinations that the local MSS100 is set to send to. Any message will be shown only on the sign with the serial address that matches the destinations the message is sent to.

Technical support

Support services

Technical information

Software is available at Adaptive's Internet World Wide Web site

http://www.ams-i.com.

Technical information, as well as the latest Ethernet 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.