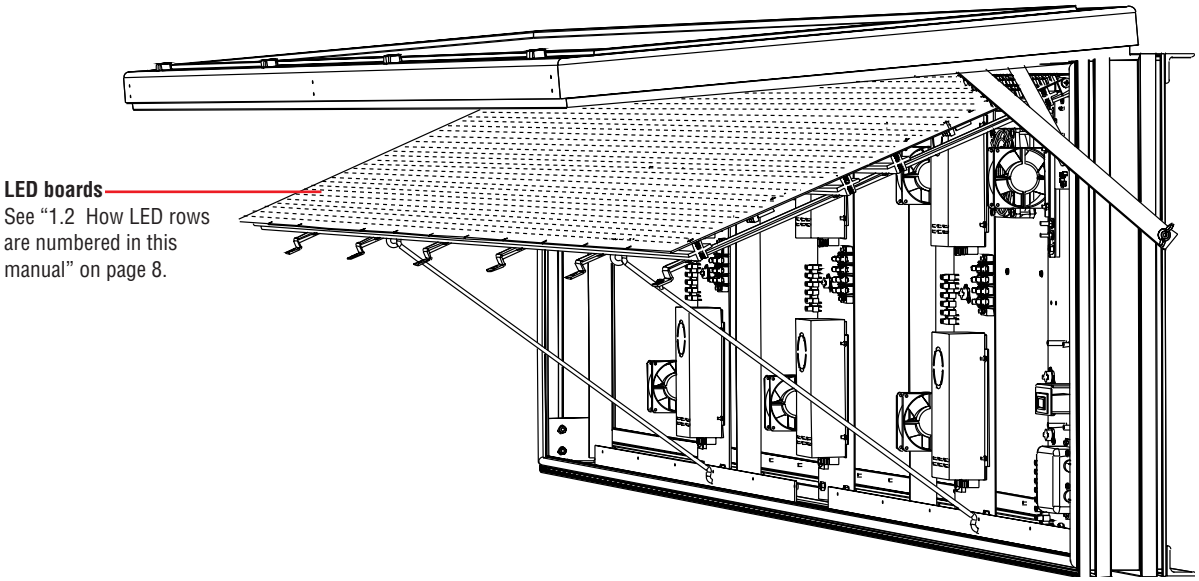
# AlphaEclipse™ 3500 Series B Sign Service Manual

This manual only applies to “Series B” AlphaEclipse 3500 signs.




**Manual part number: 9711-6019**

**Revision date: September 12, 2003**

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# Contents

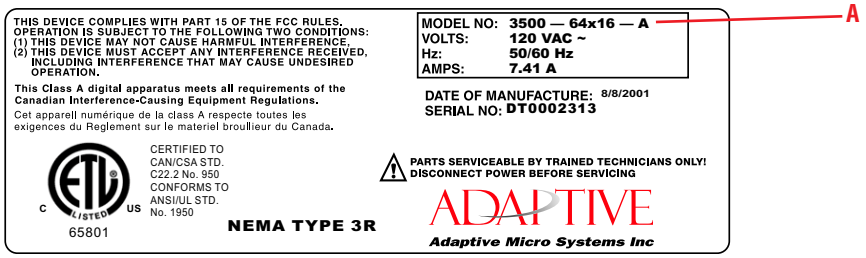
# 1.0 Notes

## 1.1 How to tell a Series A from a Series B sign

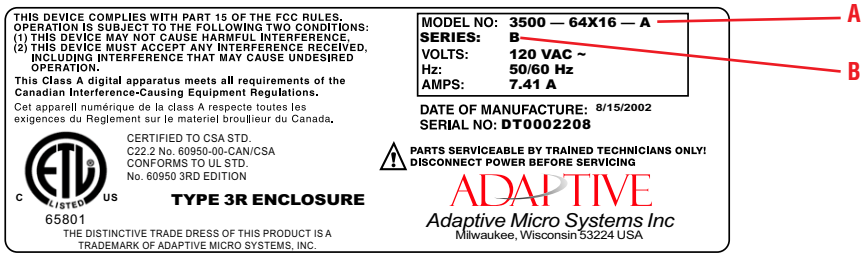
Use an AlphaEclipse 3500 sign's identification label to determine if the sign is a Series A or B. The identification label is located on the back of the sign's case and on the inside of the sign.

**Table 1: Series A and Series B sign identification labels**

### Series A label:



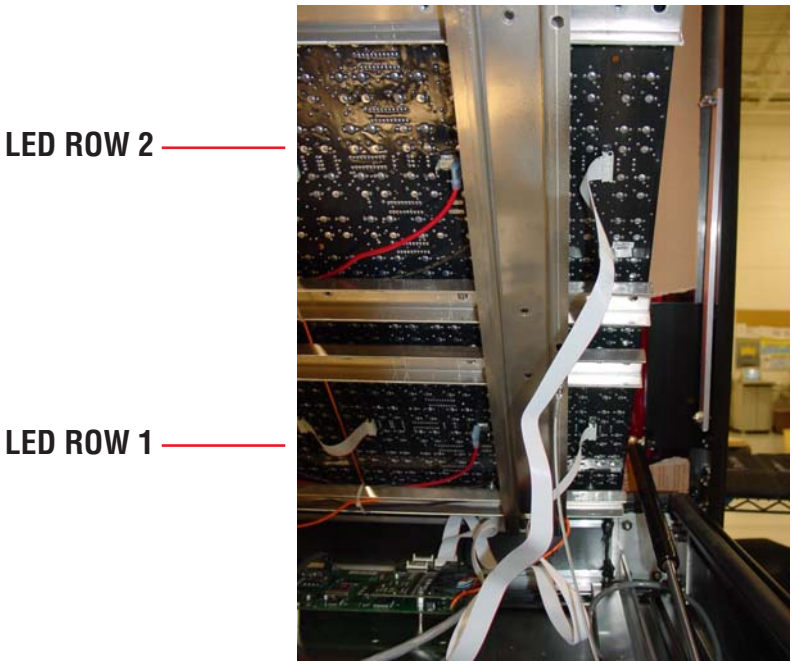

### Series B label:




| Item | Name | Description |
|---|---|---|
| A | Model number | 3500 – 64x16 – A<br>LED lamp color:<br>• A = Amber<br>• R = Red<br>Width (pixel columns)<br>Height (pixel rows)<br>LED lamp viewing angle:<br>• 00 = 30 degree<br>• 01 = 70 degree<br>1.4" pitch, 4 led lamps per pixel |
| B | Series letter | Indicates a basic design revision (only appears on the Series B label) |

## 1.2 How LED rows are numbered in this manual

LED board rows are numbered as if the sign was open and you were looking at the *backs* of the LED boards. Below is an example of how the LED board rows in a 2-line sign would be numbered:



# 2.0 Introduction

## 2.1 Purpose

This manual is intended as a guide for maintenance and repairs considered field serviceable.

This field service manual supplies technical information for service and technical personnel so that they can maintain the equipment at the assembly but not the component level.

## 2.2 Revision history

**Table 2: Revision history**

| Revision | Date | Notes |
|---|---|---|
| 9711-6019 | September 12, 2003 | First preliminary release |

## 2.3 Related documentation

Technical documentation can be found at Adaptive's web site.

**Table 3: Related documentation**

| Part # | Manual title | Description |
|---|---|---|
| **Manuals (http://www.adaptivedisplays.com/manuals/)** | | |
| 9711-6009B | AlphaEclipse 3500 Series A Service Manual | The service manual for only Series A AlphaEclipse 3500 signs. |
| 9708-8081G | AlphaNET 3.0 User Manual | Describes the software used to send messages to an AlphaEclipse sign |
| 9711-6015 | AlphaEclipse 3500 Series B Sign Installation Manual | Provides electrical, mechanical, and network installation instructions for the most current version of the AlphaEclipse Series B sign. |
| 9700-0130 | Creating Graphics for AlphaEclipse Signs | Explains how to use create simple graphics for AlphaEclipse 2500, 2600, and 3500 signs. |
| **TechMemos (http://www.adaptivedisplays.com/ams/dtechmemo.htm)** | | |
| 03-0002 | AlphaEclipse 3500 Series A and B Sign Wireless Transceiver Install Instructions | How to install a 120V Locus wireless transceiver on an AlphaEclipse 3500 Series A or B sign. |
| 02-0006 | Cleaning AlphaEclipse 1500, 2500, 2600, and 3500 Outdoor Signs | Instructions for hand-cleaning the exterior of an AlphaEclipse sign. |
| 02-0003 | AlphaEclipse 3500 Sign Firmware and FPGA Chip Upgrade | Explains:<br>• the changes in the new firmware (Main 1162-5001E. Peripheral 1162-4001D) and FPGA chip (version 1.2, 2611-1621)<br>• how to upgrade a sign. |

**Table 3: Related documentation**

| Part # | Manual title | Description |
|---|---|---|
| 02-0002 | Cable Replacement for AlphaEclipse 3500 Signs | How to clean, protect, and attach cables to AlphaEclipse 3500 Series A signs. |
| 01-0012 | Using the T3000 Tool to Remove Ribbon Cables | How to use the T3000 tool to remove ribbon cables from an AlphaEclipse 3500 Series A sign's LED boards. |
| 01-0010 | Upgrading Firmware on AlphaEclipse 3500 Series Signs | How to use the Alpha Flash Updater software to upgrade the firmware on an AlphaEclipse 3500 sign. |
| 01-0009 | AlphaEclipse 3500 Back-to-Back Sign RS422 (Master/Slave) to RS485 Modification Instructions | How to convert two AlphaEclipse 3500 Series A signs from Master/Slave to Master/Master networking. |
| 01-0006 | Replacing the Turbo Extender Board on an AlphaEclipse Controller Board | How to fix a loose turbo board on an AlphaEclipse 3500 Series A sign by replacing the board. |
| 01-0005 | Removing Coating on AlphaEclipse LED Board Connectors | How to remove excess conformal coating from the connectors on LED boards. |
| 00-0005 | Guidelines for Controlling Electrostatic Discharge Damage | How to prevent static electricity from damaging a sign |

## 2.4 Controlling electrostatic discharge (ESD)


This equipment contains components that may be damaged by "static electricity", or electrostatic discharge. To prevent this from happening, be sure to follow the guidelines in Adaptive Tech Memo 00-0005, *"Preventing Electrostatic Discharge (ESD) Damage,"* available on our Web site at http://www.adaptivedisplays.com.

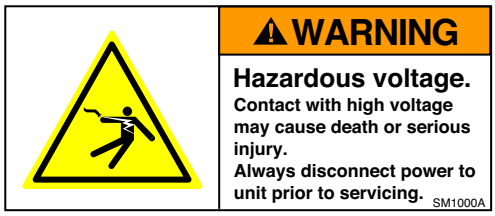
## 2.5 Safety information

### 2.5.1 Equipment symbols

Chassis ground


Mains power (I = ON, 0 = OFF)

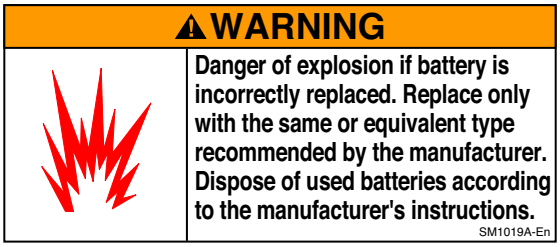
### 2.5.2 Warnings and cautions

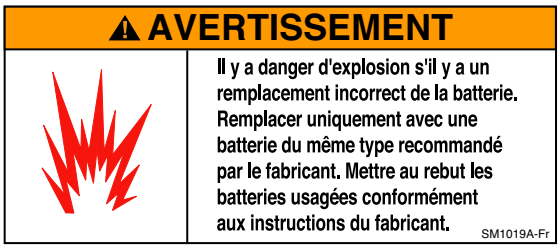



### 2.5.3 Battery backup

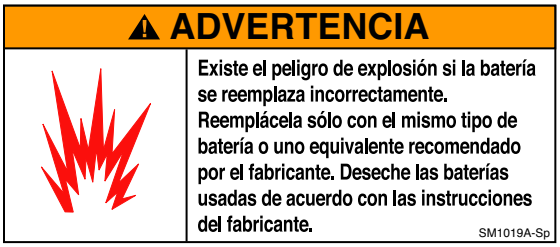
In the event of a power loss, backup batteries in an AlphaEclipse sign provide short-term power in order to retain information such as messages and time settings.

Backup batteries are soldered to the controller board and should not be replaced by anyone other than a qualified Adaptive technician.





# 3.0 Equipment description

## 3.1 Overview

The AlphaEclipse 3500 series signs are one- to four-line outdoor LED signs that can be used to display text or graphic messages. These messages can be displayed on an AlphaEclipse sign using AlphaNET software and the following methods:

- From one AlphaEclipse sign to another
- From a computer connected to a wireless transmitter to a wireless receiver inside an AlphaEclipse sign
- From a computer connected to a transmitting modem to a receiving modem inside an AlphaEclipse sign
- From a computer connected directly to an AlphaEclipse sign

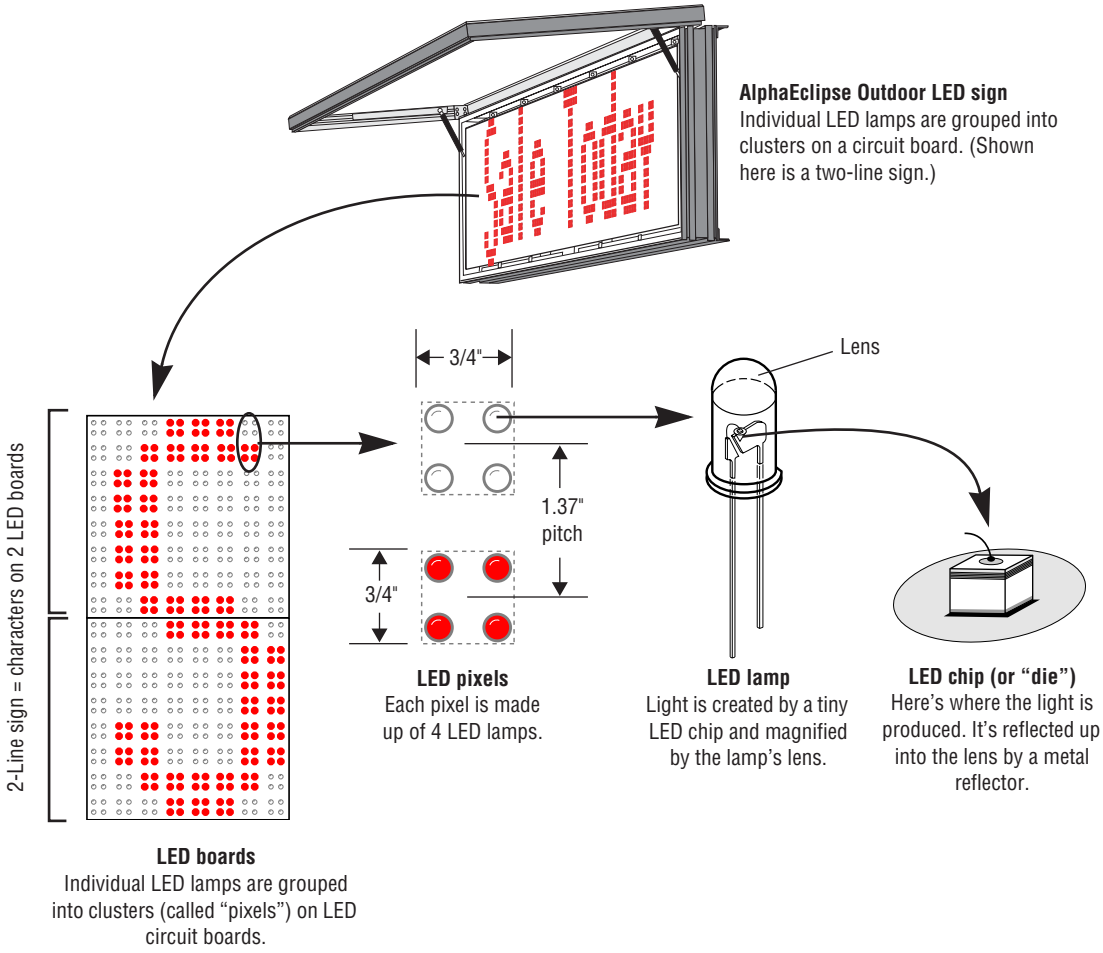


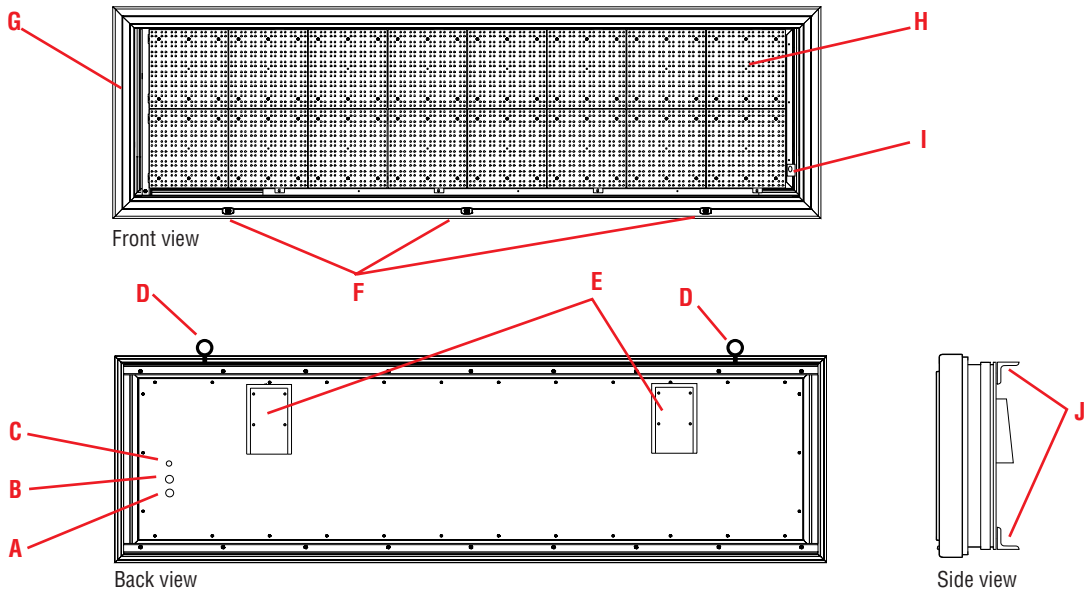

**Figure 1: Anatomy of an AlphaEclipse 3500 sign**

# 3.2 Technical specifications

## 3.2.1 Outside view

**Table 4: Outside view of AlphaEclipse Series B sign**

Shown below is a 2-line sign (64 x 16 LED matrix). Other sign sizes are similar.




| Item | Name | Description |
|---|---|---|
| A | Power conduit | Access for electrical power. Must be sealed with weather-proof conduit during installation. |
| B | Signal and temperature probe conduit | Access for communication signals and temperature probe. Must be sealed with weather-proof conduit during installation. |
| C | Wireless transceiver antenna conduit | Access for antenna for optional wireless transceiver. |
| D | Lifting eyebolt | Used to lift the sign. Should *not* be used to mount the sign. |
| E | Fan covers | Weather-resistant louvers allow air movement through the sign. |
| F | Locking latch | Locks the sign closed. Requires key (included). Number of latches depends on the width of the sign. |
| G | Door | Opens for access to internal sign components. Gas cylinders hold the open door in place. |
| H | LED lens cover | Polycarbonate lens cover in the front access cover. |
| I | Photocell | Senses available light and dims the LEDs at sunset. The LEDs are dimmed by 50% (default setting). |
| J | Mounting brackets | American Standard 6061-T6 extruded aluminum: 0.25" x 1.5" x 2.0" (ASTM B 308). |

### 3.2.2 Inside view

**Table 5: Inside view of AlphaEclipse Series B sign**

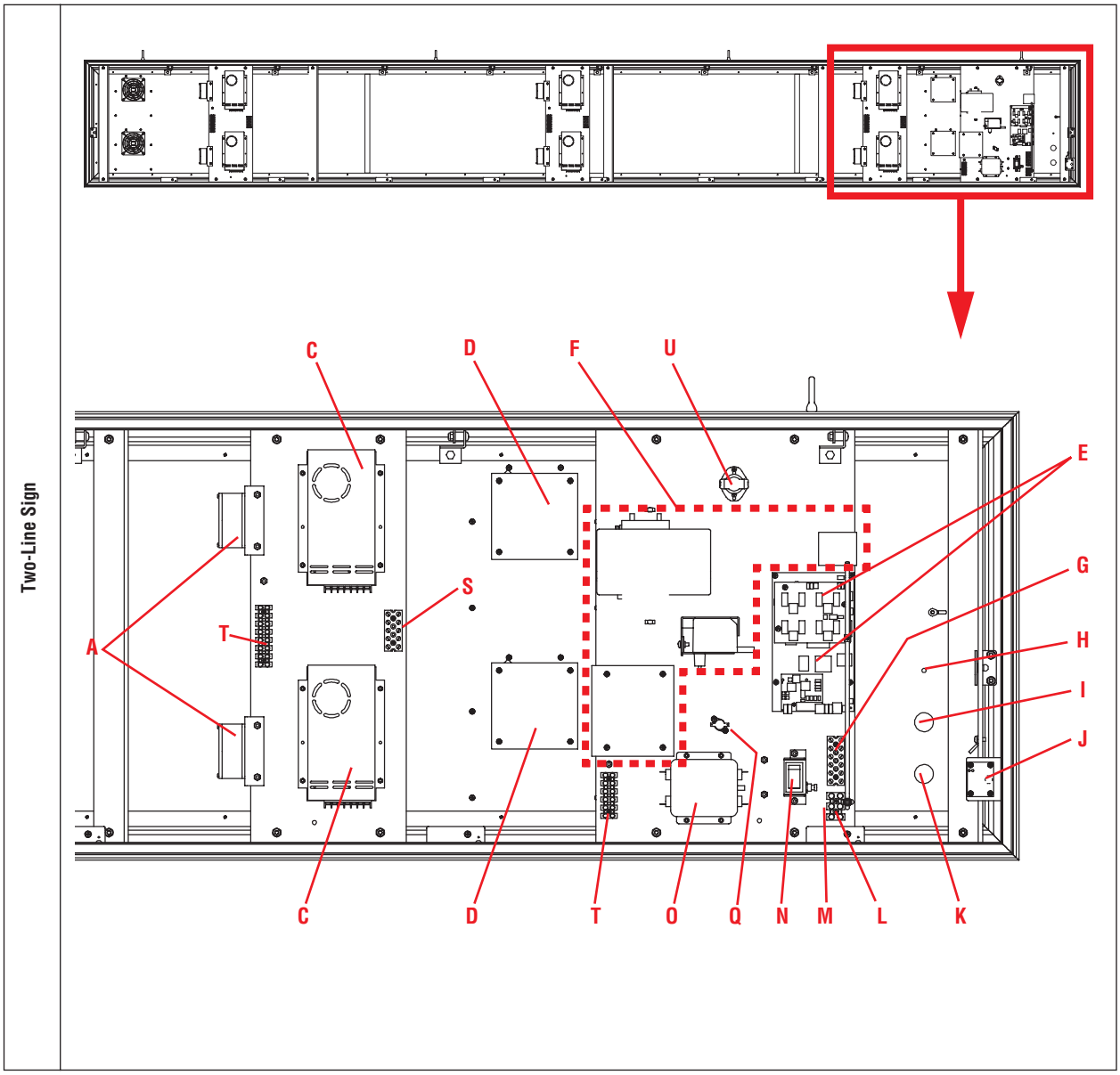
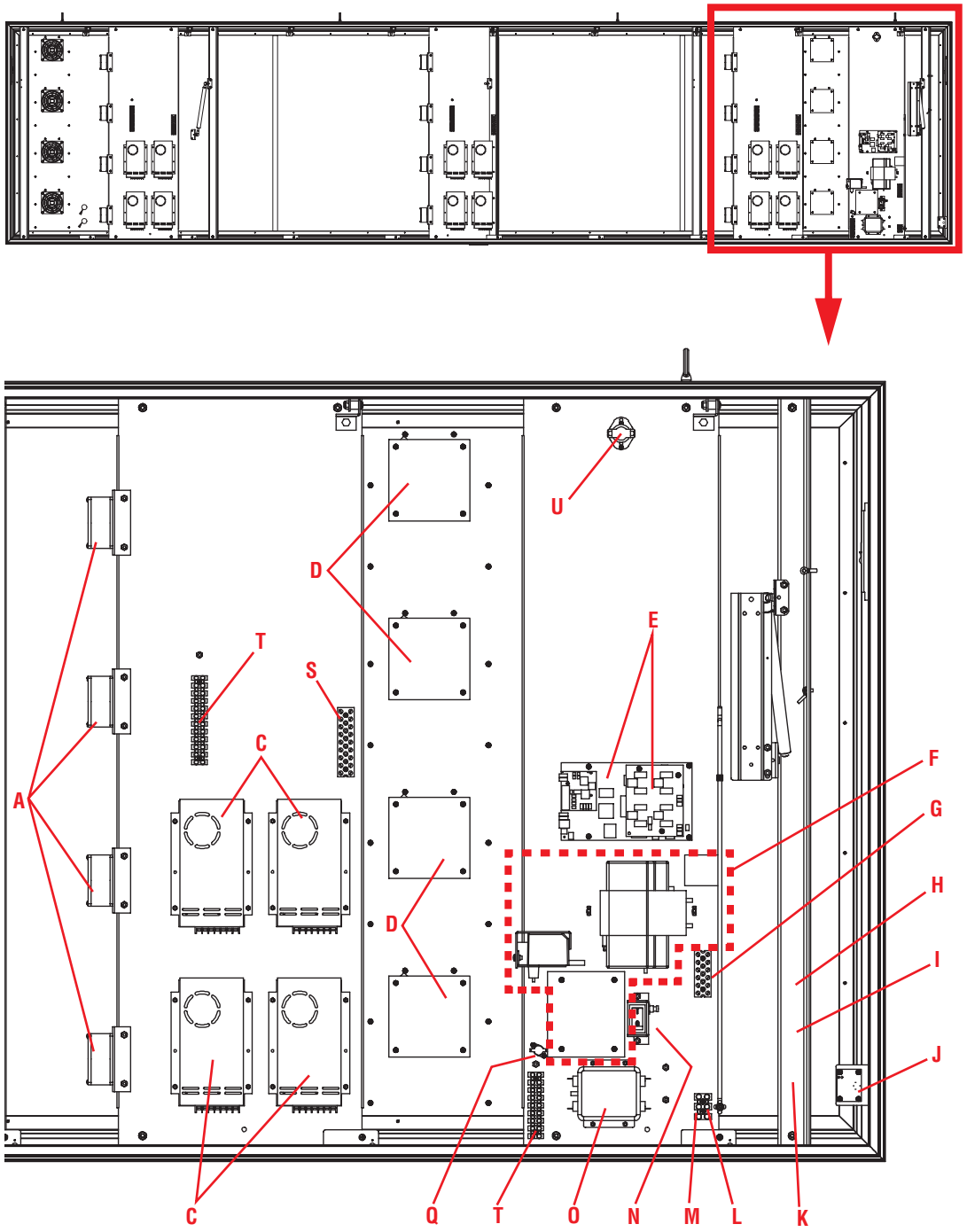


**Table 5: Inside view of AlphaEclipse Series B sign**

Four-Line Sign




| Item | Name | Part # | Description |
|---|---|---|---|
| A | Power supply fan, 120V | | Circulates air in the sign. |
| | Power supply fan, 240V | | |
| B | Heater | — | Not part of a Series B sign. |
| C | Power supply | | Supplies power to fans, controller board, and LED board. |

**Table 5: Inside view of AlphaEclipse Series B sign**

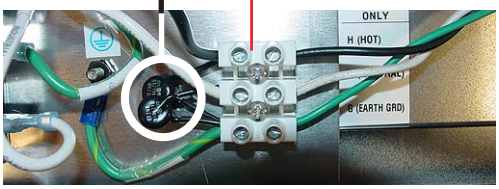
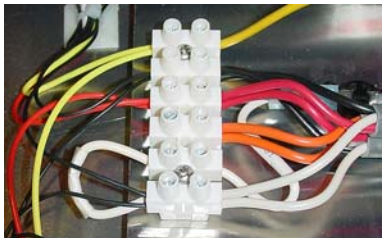
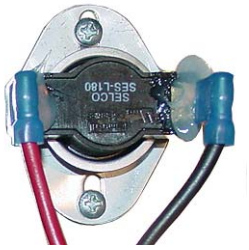
| | | | |
|---|---|---|---|
| **D** | Exhaust fan, 120V | | Dissipates heat from sign. |
| | Exhaust fan, 240V | | |
| **E** | Controller board | | Controls sign operation. |
| | Turbo Extender board | | Plugs into the controller board and communicates with the sign's LED boards. |
| **F** | Modem kit, 120V | | Allows sending messages to sign via a modem (optional). |
| | Modem kit, 240V | | |
| | Transceiver kit, 120V | | Allows sending messages to sign via wireless transmitter (optional). |
| | Transceiver kit, 240V | | |
| **G** | Signal I/O terminal block | | Used for RS232 or RS485 communication with sign:<br>  <br>RS485 +<br>RS485 -<br>SHIELD<br>RS232 TXD<br>RS232 RXD<br>SGL GND |
| **H** | Wireless transceiver antenna conduit opening | | Used to connect antenna to the optional wireless transceiver. |
| **I** | Signal wire conduit opening | | Used to run an RS232 or RS485 signal wire to sign. |
| **J** | Photocell | | Contains light-sensitive photocell used to dim the sign's LEDs |
| **K** | Power line conduit opening | | Wires from power supply terminal block are run though this opening to a suitable power source. |
| **L** | Power supply terminal block | | Used to connect the sign to an appropriate power supply. |
| **M** | Surge suppressor | | Protects the sign from electrical surges. Two suppressors (circled below) are used per sign.<br>Surge suppressors — Power supply terminal block<br>  |
| **N** | Power switch | | Used to disconnect sign from power source. |
| **O** | Line filter | | Removes electrical noise (EMI) from power supply connection. |
| **P** | Heater thermostat | | Not part of a Series B sign. |
| **Q** | Exhaust fan thermostat | | Turns on exhaust fans when inside of unit gets too hot. |
| **R** | Overtemp thermostat | | Not part of a Series B sign. |

**Table 5: Inside view of AlphaEclipse Series B sign**

| | | | |
|---|---|---|---|
| **S** | 5V connection terminal | | Provides power to the LED boards.<br>  |
| **T** | 120/240V connection terminal | | An all-plastic terminal strip that provides power to the power supplies and fans (6-terminal version shown below).<br>  |
| **U** | Shutdown thermostat | | Turns off the sign when it overheats (see " In order to protect itself from damage, a sign will automatically turn on its exhaust fans, dim the LEDS, or turn itself off when the sign reaches a predetermined internal temperature." on page 21).<br>  |

## 3.2.3 Physical and electrical specifications

**Table 6: Series B sign physical and electrical specifications**

| Lines | Rows (pixels) | Columns (pixels) | Dimensions (W x H x D[3] in inches) | Approximate weight (pounds) | Rated input current (amperes) | | LED boards | Power supplies | Fans | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | @ 120 VAC[1] | @ 240 VAC | | | Exhaust (120 mm) | Internal[2] (80 mm) |
| 1 | 8 | 32 | 54.5 x 18.31 x 7.12 | 90 | 1.42 | 0.71 | 4 | 1 | 2 | 1 |
| | 8 | 64 | 97.8 x 18.31 x 7.12 | 140 | 2.33 | 1.17 | 8 | 2 | 2 | 2 |
| | 8 | 80 | 119.8 x 18.31 x 7.12 | 160 | 2.71 | 1.36 | 10 | 2 | 2 | 2 |
| | 8 | 96 | 141.8 x 18.31 x 7.12 | 190 | 3.10 | 1.55 | 12 | 2 | 2 | 2 |
| | 8 | 112 | 163.8 x 18.31 x 7.12 | 220 | 3.63 | 1.81 | 14 | 3 | 2 | 3 |
| | 8 | 128 | 185.8 x 18.31 x 7.12 | 240 | 4.01 | 2.00 | 16 | 3 | 2 | 3 |
| | 8 | 144 | 207.8 x 18.31 x 7.12 | 260 | 4.39 | 2.19 | 18 | 3 | 2 | 3 |
| 2 | 16 | 64 | 97.8 x 29.31 x 7.12 | 185 | 4.16 | 2.08 | 16 | 3 | 2 | 4 |
| | 16 | 80 | 119.8 x 29.31 x 7.12 | 220 | 5.22 | 2.61 | 20 | 4 | 4 | 4 |
| | 16 | 96 | 141.8 x 29.31 x 7.12 | 250 | 5.98 | 2.99 | 24 | 4 | 4 | 4 |
| | 16 | 112 | 163.8 x 29.31 x 7.12 | 285 | 7.04 | 3.52 | 28 | 5 | 4 | 6 |
| | 16 | 128 | 185.8 x 29.31 x 7.12 | 320 | 7.80 | 3.90 | 32 | 6 | 4 | 6 |
| | 16 | 144 | 207.8 x 29.31 x 7.12 | 355 | 8.57 | 4.28 | 36 | 6 | 4 | 6 |
| 3 | 24 | 64 | 97.8 x 40.0 x 7.12 | 440 | 6.28 | 3.14 | 24 | 4 | 4 | 6 |
| | 24 | 80 | 119.8 x 40.0 x 7.12 | 465 | 7.42 | 3.71 | 30 | 5 | 4 | 6 |
| | 24 | 96 | 141.8 x 40.0 x 7.12 | 485 | 8.57 | 4.28 | 36 | 6 | 4 | 6 |
| | 24 | 112 | 163.8 x 40.0 x 7.12 | 515 | 10.46* | 5.23 | 42 | 7 | 6 | 9 |
| | 24 | 128 | 185.8 x 40.0 x 7.12 | 535 | 11.60* | 5.80 | 48 | 8 | 6 | 9 |
| | 24 | 144 | 207.8 x 40.0 x 7.12 | 575 | 12.75* | 6.37 | 54 | 9 | 6 | 9 |
| 4 | 32 | 64 | 97.8 x 51.0 x 7.12 | 480 | 8.10 | 4.05 | 32 | 6 | 4 | 8 |
| | 32 | 80 | 119.8 x 51.0 x 7.12 | 505 | 9.93 | 4.96 | 40 | 7 | 6 | 8 |
| | 32 | 96 | 141.8 x 51.0 x 7.12 | 535 | 11.45* | 5.73 | 48 | 8 | 6 | 8 |
| | 32 | 112 | 163.8 x 51.0 x 7.12 | 560 | 13.88* | 6.94 | 56 | 10 | 8 | 12 |
| | 32 | 128 | 185.8 x 51.0 x 7.12 | 590 | 15.40* | 7.70 | 64 | 11 | 8 | 12 |
| | 32 | 144 | 207.8 x 51.0 x 7.12 | 635 | 16.92* | 8.46 | 72 | 12 | 8 | 12 |

NOTES:

[1] Signs are connected to a power source with either:
- 1 line of power or single ganged
- 2 lines of 120 VAC power or dual ganged, marked with asterisk (*) in above table. Each power line must be connected to an independent, 20A circuit.

[2] Signs equipped with heaters have an additional fan on the main panel.

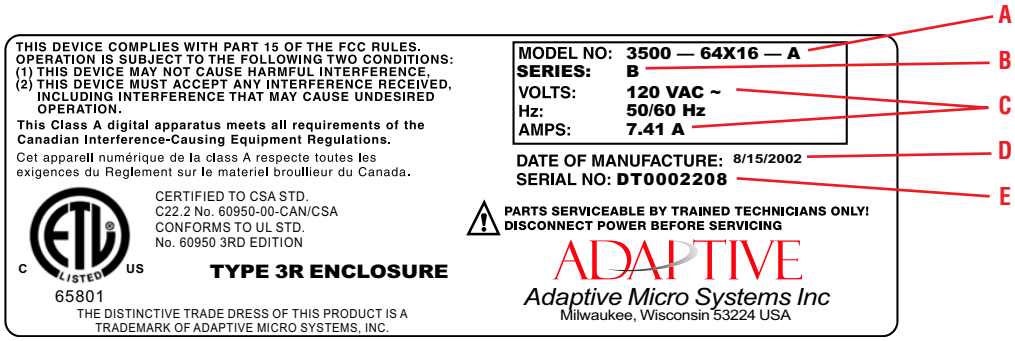
[3] Depth measurement (“D”) includes the sign mounting bracket.

## 3.3 Equipment identification

Equipment labels are located:

- on the back of a sign.
- inside a sign.

**Table 7: Series B sign equipment identification**




| Item | Name | Description |
|---|---|---|
| A | Model number | 3500 – 64x16 – A<br>LED lamp color: A = Amber, R = Red<br>Width (pixel columns) x Height (pixel rows)<br>LED lamp viewing angle: 00 = 30°, 01 = 70°<br>1.4" pitch, 4 led lamps per pixel |
| B | Series letter | Indicates a basic design revision (only appears on the Series B label). |
| C | Electrical information | Input voltage, frequency, and amperage. |
| D | Date of manufacture | Month, day, and year the sign was made. |
| E | Serial number | Consecutive, unique identification number. |

## 3.4 EMI compliance

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with installation guidelines, may cause harmful interference to radio

communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

## 3.5 Temperature protection

In order to protect itself from damage, a sign will automatically turn on its exhaust fans, dim the LEDS, or turn itself off when the sign reaches a predetermined internal temperature.

**Table 8: Series B sign temperature protection**

| Internal sign temperature: | < 30°C (86°F) | 30° - 49°C (86° - 120°F) | 50° - 70°C (122° - 158°F) | 71° - 81°C (160° - 178°F) | 82°C or greater (180°F) |
|---|---|---|---|---|---|
| LEDs: | Normal brightness | | Dim[1] | Off[2] | Off[3] |
| Controller board: | On | | | | |
| Power supplies: | On | | | | |
| Exhaust fans:[4] | Off | On | | | |

[1] Between 50° - 60°C (122° - 140°F), LED brightness can decrease between 62.5% - 100% of normal, depending on display load.
Between 60° - 65°C (140° - 149°F), LED brightness can decrease between 50% - 87.5% of normal, depending on display load.
Between 65° - 70°C (149° - 158°F), LED brightness can decrease between 37.5% - 75% of normal, depending on display load.
(*Display load* means the number of LEDs that are on. For example, a graphic that lights up most of a sign's LEDs will have more of a display load than a simple text message that lights up only some LEDs.)

[2] When the LEDs are turned off because the sign is too hot, two LEDs in the left-most corner will remain on to indicate a thermal shutdown.

[3] All LEDs will be off.

[4] At or above 30° C (86° F), the exhaust fans are switched on by the exhaust fan thermostat. If the temperature drops to 20° C (67° F), then the exhaust fans are turned off.

# 3.6 Optional equipment

## 3.6.1 Temperature probe option

See "4.1.4 Mounting a temperature probe" on page 29.

## 3.6.2 Modem option

This option allows messages to be sent from a computer that has a transmitting modem to a sign that has a receiving modem installed. Each modem must be attached to its own phone line.

NOTE: The modem option only includes the installation of a receiving modem in a sign. The purchase and installation of the transmitting modem is the responsibility of the sign buyer.

The US Robotics 56K modem is used as the receiving modem. This brand is also recommended as the transmitting modem which would be attached to the computer sending message to a sign.

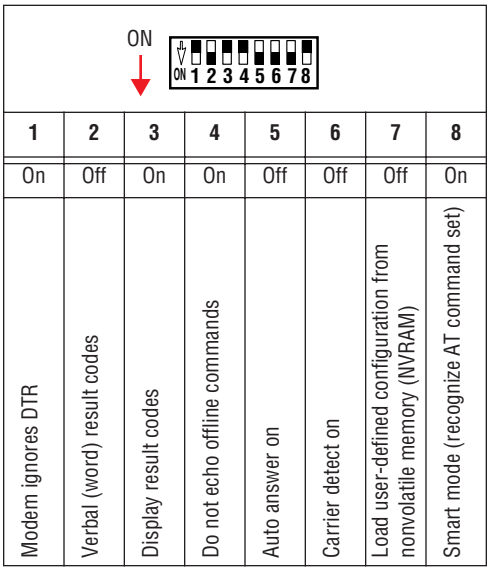
### 3.6.2.1 Receiving modem

The receiving modem is installed inside a sign at the factory.

- Receiving modem DIP switch settings

  The eight DIP switches on the US Robotics receiving modem are set as follows:

**Table 9: US Robotics modem DIP switch settings**

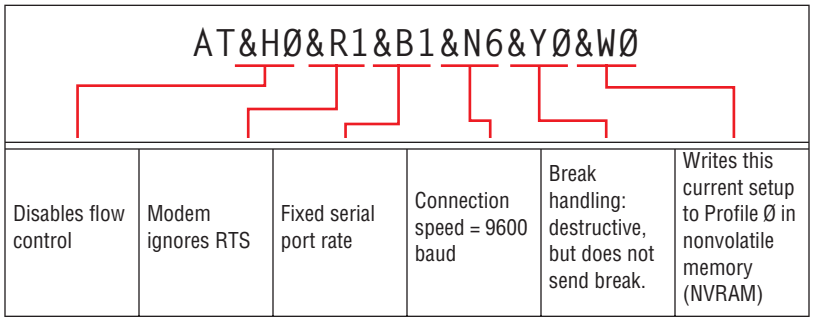



| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|
| On | Off | On | On | Off | Off | Off | On |
| Modem ignores DTR | Verbal (word) result codes | Display result codes | Do not echo offline commands | Auto answer on | Carrier detect on | Load user-defined configuration from nonvolatile memory (NVRAM) | Smart mode (recognize AT command set) |

- Receiving modem software configuration

  The following AT command is sent to the modem with a program like HyperTerminal:

**Table 10: US Robotics modem AT command setup string**




| | | | | | |
|---|---|---|---|---|---|
| Disables flow control | Modem ignores RTS | Fixed serial port rate | Connection speed = 9600 baud | Break handling: destructive, but does not send break. | Writes this current setup to Profile Ø in nonvolatile memory (NVRAM) |

### 3.6.2.2 Transmitting modem

The US Robotics 56K modem is recommended for use as the transmitting modem. This modem is connected to the messaging computer and does not require any special setup for sending messages to a sign.

## 3.6.3 Wireless transceiver option

NOTE: The following information applies to Series B signs which are equipped with the Locus OS2400-232 transceiver (shown below).


For this option, one wireless transceiver (Master) is connected to the messaging computer and sends messages to another transceiver (Receive) inside a sign. Both transceivers require antennas and both are programmed at the factory.

### 3.6.3.1 Transceiver setup

NOTE: For more information about the Locus OS2400-232, see the product manual **OS2400 Radio Modem User's Manual** or visit the company's web site: http://www.overairsolutions.com.

Using the OverAir Solutions software from Locus, the following parameters were set for the master and the remote transceivers:

**Table 11: Locus OS2400-232 transceiver setup**

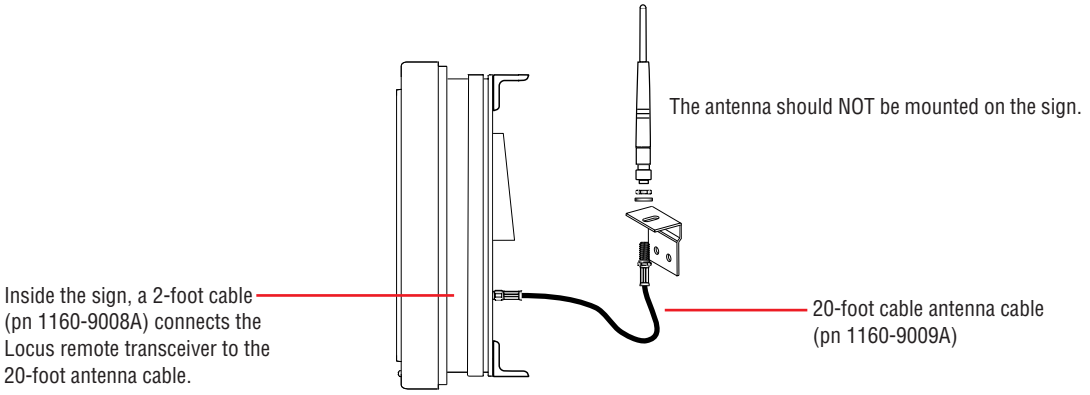
| Parameter | Master transceiver (connected to messaging computer) | Receive transceiver (inside sign) |
|---|---|---|
| **Network name:** | Network 1 | |
| **Network type:** | Point to point | |
| **Network channel:** | 1 | |
| **Radio name:** | Master | Receive |
| **Baud rate:** | 9600 | 9600 |
| **Parity:** | None | None |
| **Data bits:** | 8 | 8 |
| **Stop bits:** | 1 | 1 |
| **Handshaking:** | None | None |
| **Transmit power:** | Max | Max |

### 3.6.3.2 Antenna installation

Follow these guidelines for mounting the remote transceiver antenna:

- Install the antenna and bracket on a support structure other than the sign or the sign's mounting brackets. Do NOT drill a hole in the sign enclosure.
- Install the antenna in a location that will allow optimum line-of-sight transmission and reception of signals between the sending transceiver and the antenna. Do not install the antenna so that the sign is between the sending transceiver and the receiving antenna.

- Install the antenna in an unobstructed area, keeping adequate clearance from any objects that could block the signal.
- Install the antenna in a more elevated location than the sign, and, if possible, keep it vertical.
- Mount the sign as shown:




## 3.6.4 Fiber optic modem option

### 3.6.4.1 Description

The fiber optic modem option allows messages to be sent from the messaging computer to a sign at distances up to 2 miles away. Fiber optic transmissions are not subject to electrical noise, ensure data security because eavesdropping is virtually impossible, and electrically isolate a computer from a sign so there is no spark hazard.

Two fiber optic mini modems are necessary:

- a mini modem inside the sign connected with the 1051-9019 adapter, and
- a mini modem connected to the computer which will be used to send messages to the sign. The 1051-9019 adapter is not used. However, a RS232 cable (DB25-to-DB9 or DB25-to-DB25) is needed to connect this mini modem to a computer COM (RS232) port.

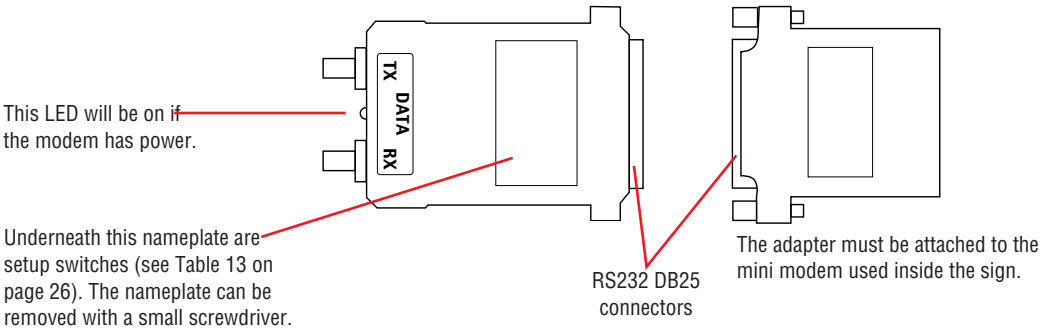


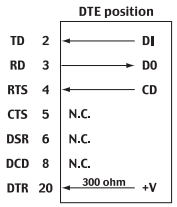
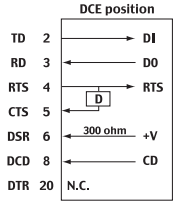

**Figure 2: Black Box ME605A async fiber optic mini modem (left) and 1051-9019 adapter (right)**

### 3.6.4.2 Specifications

**Table 12: Fiber optic mini modem specifications**

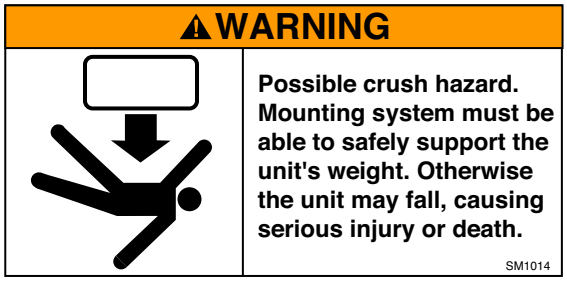
| | |
|---|---|
| **Data rate:** | Up to 19.2 Kbps |
| **Pulse width distortion:** | Less than 25% |
| **Transmission line:** | Duplex optical cable |
| **Transmission mode:** | Asynchronous, full- or half-duplex |
| **Transmission controls:** | Carrier constantly on or controlled by RTS |
| **Optical output levels:** | -28 dBm into 100/140 fiber<br>-32 dBm into 62.5/125 fiber<br>-36 dBm into 50/125 fiber |
| **Receiver sensitivity:** | -45 dBm |
| **Operating wavelength:** | 850 nm |
| **Operating range:** | Maximum range is 2 miles (3 km) of continuous fiber with the following fibers:<br>100/140 fiber with attenuation of 4 dB/km<br>62.5/125 fiber with attenuation of 3.5 dB/km<br>50/125 fiber with attenuation of 3 dB/km |
| **Indicators:** | One power LED |
| **Terminal interface:** | One ITU V.24/EIA RS232C integral DB25 connector |
| **Fiber optic interface:** | Two ST connectors |
| **Operating conditions:** | Temperature — 32 to 122°F (0 to 50°C)<br>Humidity — up to 90%, non condensing |
| **Size:** | 0.7 x 2.1 x 3.1 in (1.8 x 5.3 x 7.8 cm) |
| **Weight:** | 1.3 oz (36 g) |

**Table 13: Fiber optic modem setup switches**

| Switch | Function | Position | Factory setting |
|---|---|---|---|
| CARR | Selects carrier constantly on or controlled by RTS. | • ON — carrier constantly on<br>• CL — carrier controlled by RTS | ON |
| DLY | Selects RTS/CTS delay | • 2 msec<br>• 15 msec | 2 msec |
| DCE/DTE | Selects DCE or DTE | • DTE<br>  <br><br>• DCE<br>  <br> | DCE |

# 4.0 Installation

## 4.1 Mechanical installation




### 4.1.1 Designing the support structure

Support structure design depends on the mounting methods, sign size, sign weight, and wind loading.

Support structure design should only be done by a qualified individual. It is the customer's responsibility to ensure that the support structure and mounting hardware are adequate.

It is the installer's responsibility to ensure that the support structure and hardware are capable of supporting the sign and in compliance with all applicable building codes.

*Adaptive is not responsible for installations or the structural integrity of support structures done by others.*

### 4.1.2 Lifting the sign

Use the two eyebolts on the sign to lift the display.

NOTE: The 3/8-inch eyebolts on the sign are designed to be used with a lifting bar (shown below).

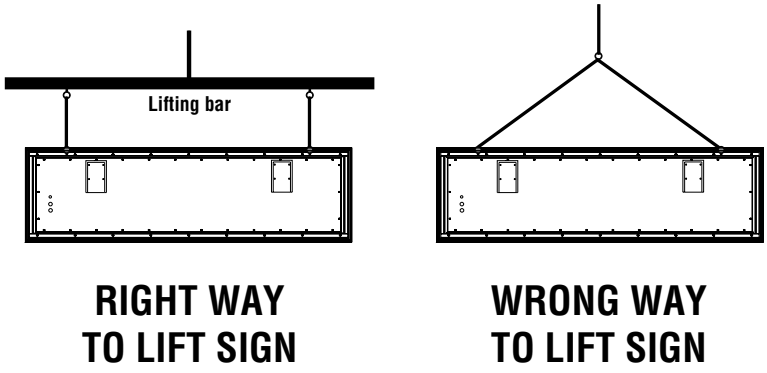


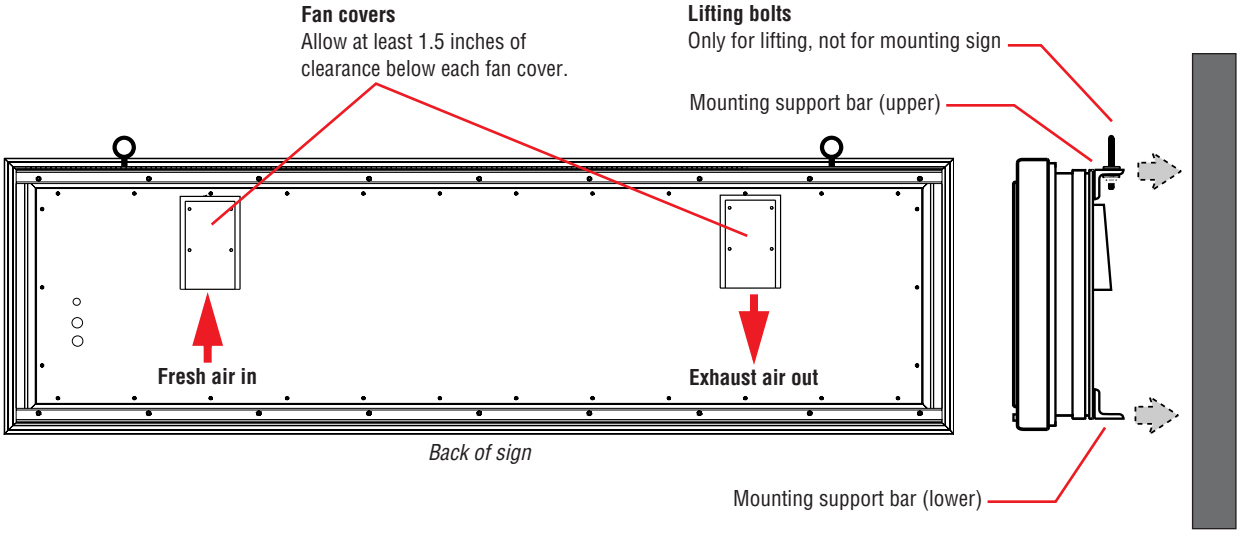

**Figure 3: Lifting an AlphaEclipse 3500 sign**

### 4.1.3 Mounting the sign

Because every installation site is unique, there is no single Adaptive-approved procedure for mounting AlphaEclipse signs.

However, follow these guideline when installing a sign:

- Consult with a professional sign installer to determine the proper mounting system and to comply with all applicable building codes.
- Only use the sign's mounting support bars to mount the sign. *Mounting to any other parts of the sign will void the warranty.*
- *Both* mounting support bars should be used to mount the sign.
- Drill holes as needed in the sign's mounting support bars for fasteners. *Drilling holes in any other place on the sign will void the warranty.* Follow these guidelines when drilling holes in the mounting support bars:
  - ❏ Drill the minimum number of holes necessary.
  - ❏ The distance from the center line of a mounting bolt to the outside edge of a mounting support bar should NOT be less than two times the diameter of the fasteners.
  - ❏ To prevent bi-metal corrosion, dissimilar material should be isolated when mounting the sign.
- Allow fan clearance as shown below:




For monument-type installations where the sign is enclosed, the fan covers should be ducted so that the exhaust air is *not* recirculated into the sign. *If this is not done, the sign could overheat and shut down.*

Adaptive recommends isolating the fresh air intake fan covers from the exhaust fan covers.

**Figure 4: Mounting an AlphaEclipse sign**

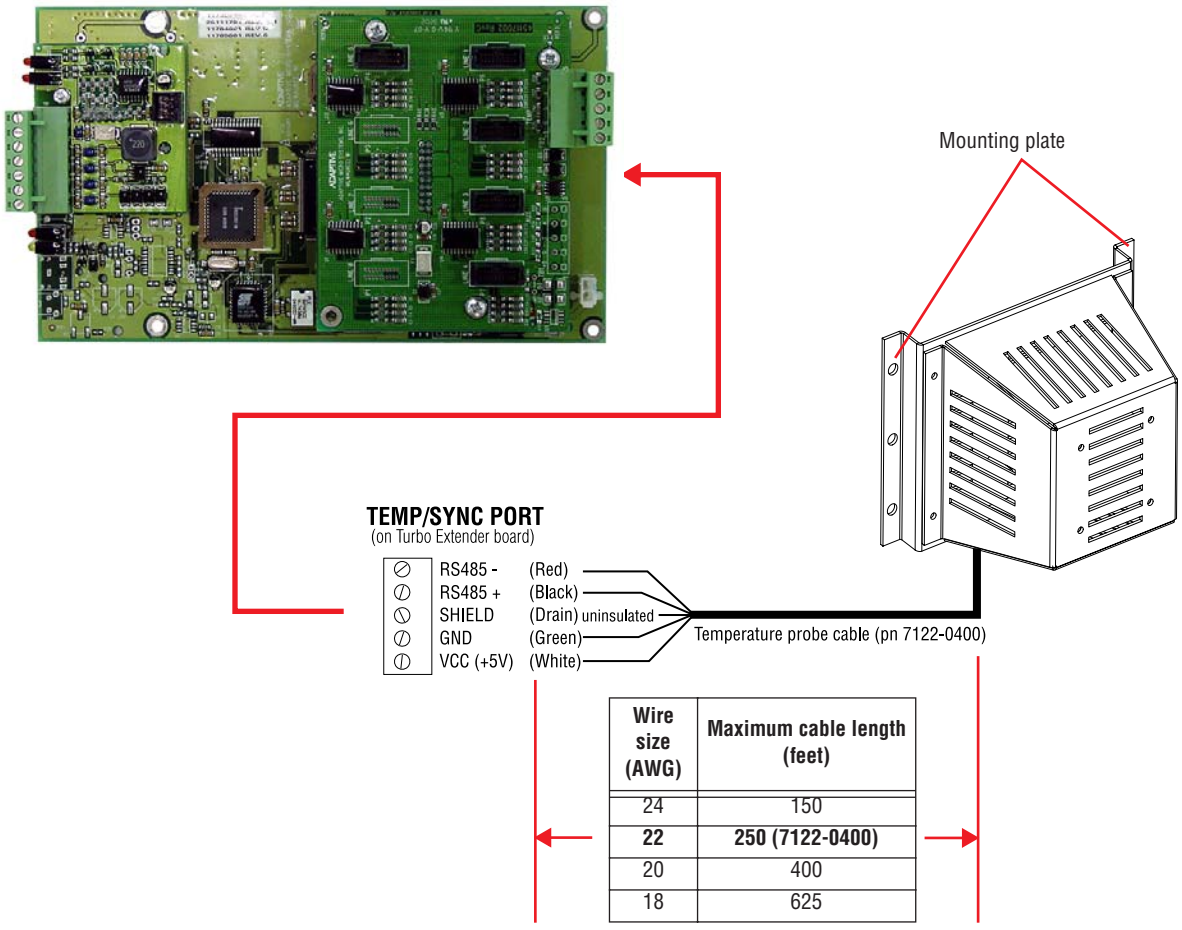
### 4.1.4 Mounting a temperature probe

NOTE: The temperature probe used on a Series A sign cannot be used on a Series B sign. Also, a Series B temperature probe cannot be used on a Series A sign.

**1** **Mount the temperature probe vertically using the mounting plate on each side of the probe. The temperature probe can be mounted on either a flat or a curved surface.**

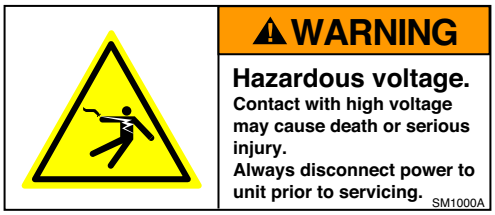
- A good place to locate the temperature probe is underneath the eaves of a protected overhang. Choose a location where air movement is not restricted by nearby walls or other obstructions. Mount the temperature probe housing so that convection currents, or rising hot air flows, are not blocked by the mounting plates.
- A location on the north side of a building, at least 6 feet off the ground, or other large structure will afford protection from the afternoon sun. Shield the probe from the effect of the direct sun, reflected heat, or any nearby sources of heat, such as chimneys, vents, or HVAC ducts.
- A light-colored background is preferable to a dark-colored mounting background. A location above vegetation is preferable to a location above asphalt or blacktop.

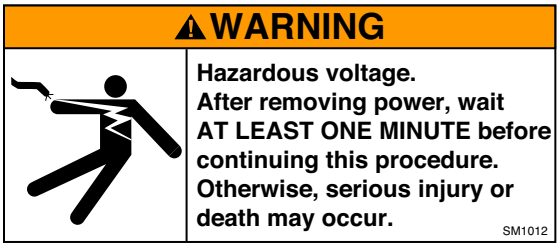
**2** **Connect the temperature probe to the controller board.**




| Wire size (AWG) | Maximum cable length (feet) |
|---|---|
| 24 | 150 |
| **22** | **250 (7122-0400)** |
| 20 | 400 |
| 18 | 625 |

## 4.2 Electrical installation



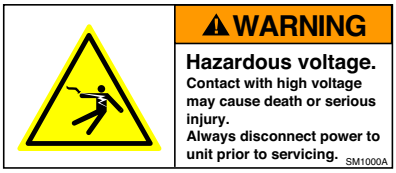

### 4.2.1 Guidelines for electrical installation

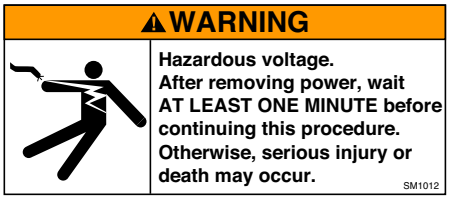
- Electrical installation should only be attempted by a qualified electrician.
- Electrical connection must comply with all applicable national and local codes. In the United States, refer especially to Articles 250 (grounding) and 600 (electric signs) of the National Electrical Code.
- Inspect all internal sign cabling for proper connection and seating.
- All power wiring must be from a switched, fused power source.
- A two-pole disconnect device must be installed in the building wiring for each branch circuit supplying the sign.
- The sign must be properly earth grounded. The sign's support structure should *not* be used as ground.
- Run separate conduits for signal wires (for example, RS232, RS485) and for power wires.
- All electrical connections must be watertight.
- Use minimum 80° C copper wire only. Torque terminals to 7-10 inch/pounds. Utiliser uniquement un fil en cuivre pouvant supporter 80° C minimum. Serrer les bornes à 0,79 N/m – 1,13 N/m.

### 4.2.2 Opening the sign

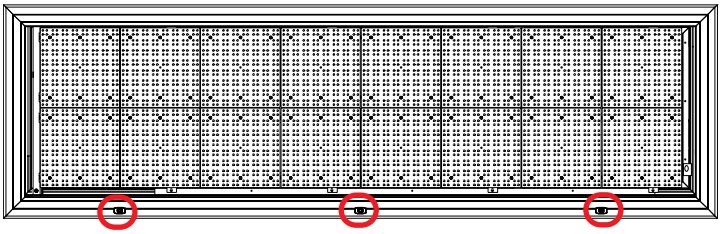
NOTE: Do NOT attempt this procedure if there are strong winds or if it is raining or snowing.

**1** **Remove power from the sign.**



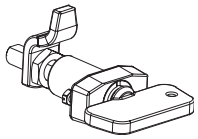



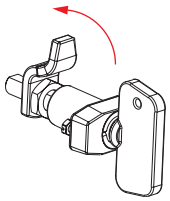

**2** **Unlock the sign door with a latch key.**

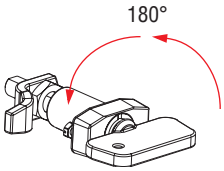




Latch key





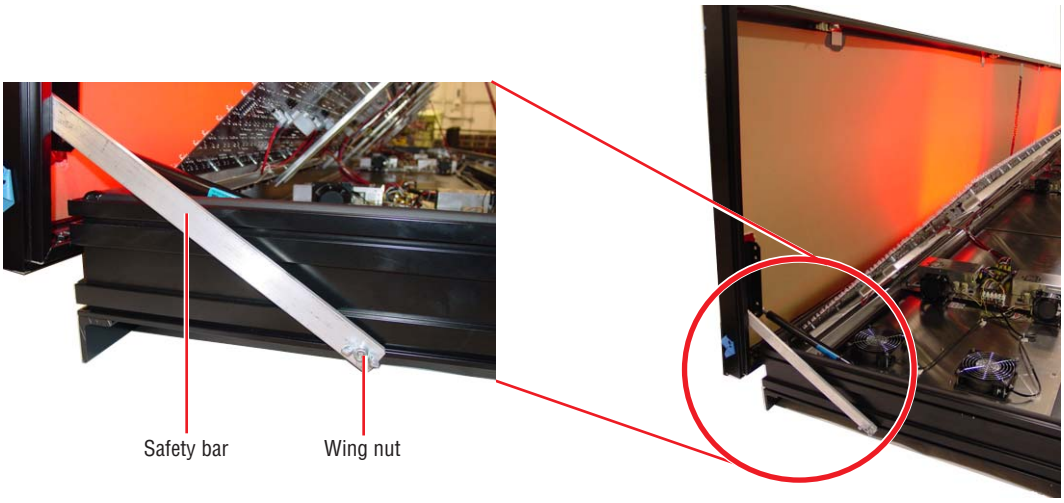



**3** **Lift the door up.**

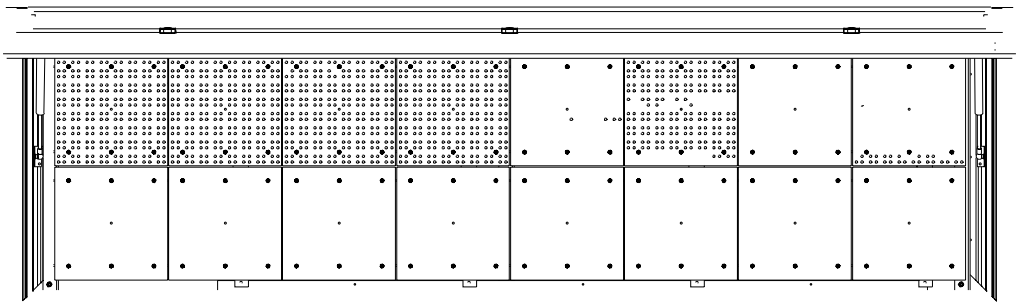
NOTE: Signs equipped with gas shock absorbers can open quickly.

NOTE: Long signs may require a person at each end to help open the sign.

**4** **Fasten a safety bar on each side of the sign.**

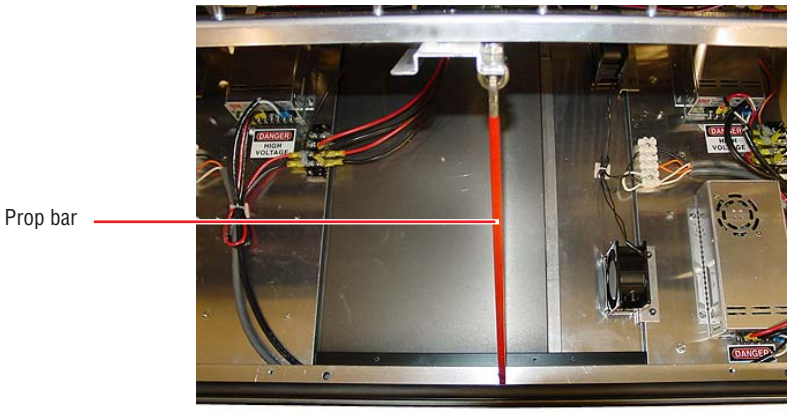



**5** **Remove the screw from each vertical rail.**

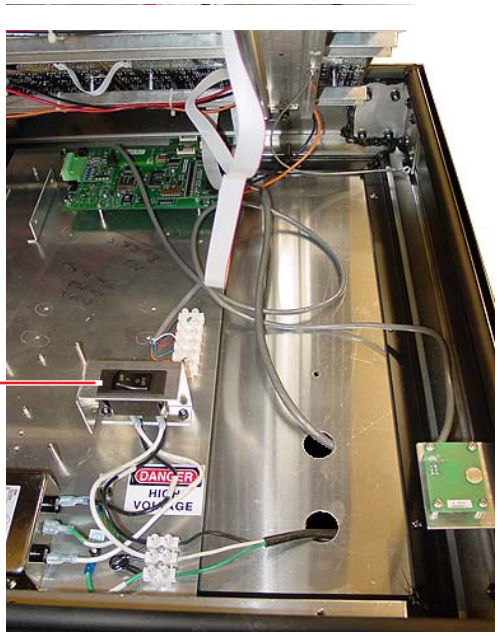


**Lift up the LED boards.**

**7** **Lower and fasten the prop rod(s).**




**8** **Put the internal power switch in the OFF (0) position.**

### 4.2.3 Installing signal wiring

**1** **Connect the sign to the messaging computer.**

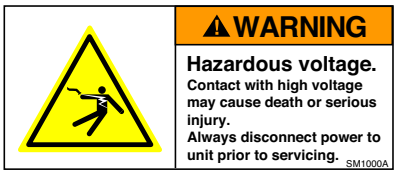
❑ See "5.2 Computer-to-sign connection methods" on page 38.

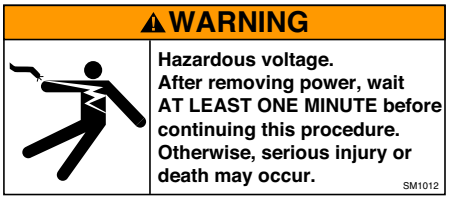
**2** **Connect the signs together (for multiple signs only).**

❑ See "5.3 Sign-to-sign connection methods" on page 46.

### 4.2.4 Connecting power to the sign

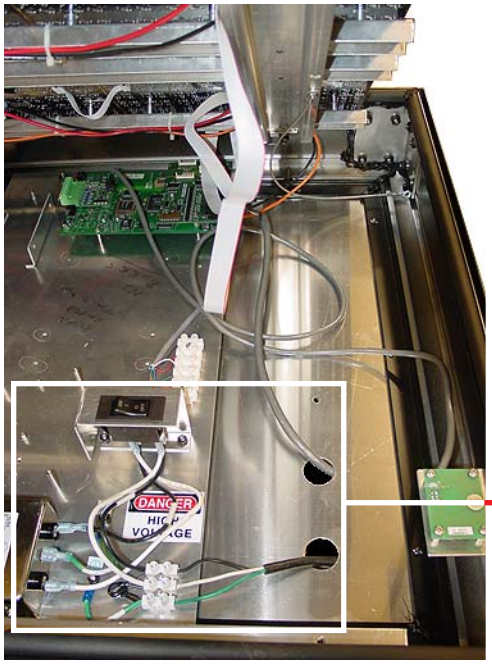
NOTE: Electrical installation should only be attempted by a qualified electrician. Electrical connection must comply with all applicable national and local codes.




**1** **Connect the sign to an appropriate power source.**

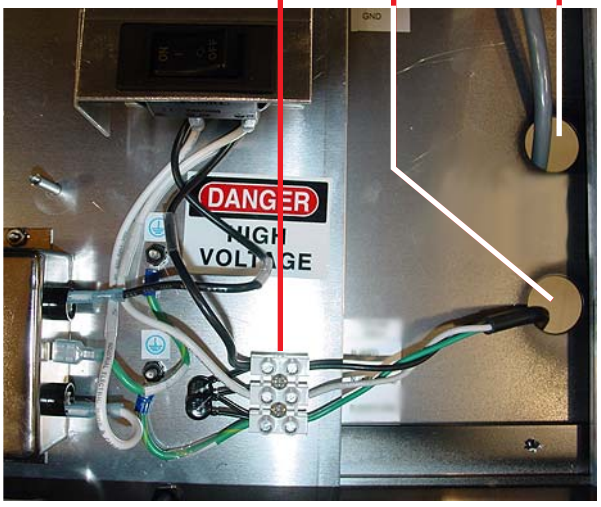
AlphaEclipse™ sign
(inside view, right side)



| Terminal block | 120V | 240V |
|---|---|---|
| 1 | LINE | LINE 1 |
| 2 | NEUTRAL | LINE 2 |
| 3 | GROUND | GROUND |

Power line conduit opening. Connect power lines to a **20-amp dedicated service breaker**.

Signal wire conduit opening




**2** **Ground the sign according to the applicable electrical codes.**

NOTE: The sign's support structure should *not* be used as ground.

### 4.2.5 Closing the sign

| | |
|---|---|
| 1 | Put the internal power switch in the ON (I) position. |
| 2 | Place each prop rod in the up position |
| 3 | Lower the LED boards. |
| 4 | Attach a screw to each vertical rail. |
| 5 | Place each safety bar in the up position. |
| 6 | Push down the sign door until it latches. |

## 4.3 Installation checkout test

**1** **Apply power to the sign.**

**2** **Observe the sign's powerup messages.**

| Sequence | Example message | Description |
|---|---|---|
| 1 | DIP<br>DISABLED | Will only appear if the sign's DIP switches are under software control (AlphaNET Diagnostics software). |
| 2 | 11705001D<br>ECLIPSE | Main FLASH firmware part number ("11705001") and revision ("D"). |
| 3 | ECLIPSE<br>M-096x016 | Sign model, Master/Slave mode, and sign size (in this case, the "ECLIPSE" means that this is an AlphaEclipse sign, "M" indicates that the sign is a "Master", and an "096x016" means that the sign is 96 columns long by 16 rows high). |
| 4 | CLEAR<br>MEMORY | Will only appear if DIP switch #10 in Bank 1 is set to ON. This message indicates that the sign's memory will be erased each time the sign is turned on. This means that all messages will be erased each time. |
| 5 | SER ADDR<br>0C HEX | Serial address of sign in hexadecimal (in this case, the hexadecimal address is "0C" which is 12 in decimal). |
| 6 | SER.. DATA<br>9600, 8n1 | Baud rate, number of data bits, parity, number of stop bits (in this case, 9600 baud, 8 data bits, no parity, and 1 stop bit). |
| 7 | PERF REV<br>11704001A0200 | Part number and revision of the peripheral FLASH firmware (in this case, the part number is "11704001D" and the revision number is 2.0 ["0200"]). |
| 8 | FPGA REV<br>26111701 1.1 | Part number and revision of the sign's programmable logic chip (in this case, the part number is "26111601" and the revision number is "1.1"). |
| 9 | RAM 1<br>RAM 128K | RAM location ("1", "2", and so on) and RAM size ("128K"). |
| 10 | 1:22 AM MON.<br>6/12/03 | Time, day of week, and date set in the sign. |
| 11 | CHK FLASH<br>FLASH OK | Main FLASH memory status. |
| 12 | LO = 5DF7<br>HI = 2281 | Low and high checksums for Main FLASH memory |

**3** **Check if the messaging computer can communicate with the sign(s).**

- ❏ Follow the "8.2.1 PC-TO-SIGN CHECK procedure" on page 79.
- ❏ If the PC-TO-SIGN CHECK procedure fails, see "8.1 Common sign problems" on page 61.

# 5.0 Networking signs

In order to display messages on an AlphaEclipse sign, a sign must be connected to the messaging computer which has AlphaNET software installed.

## 5.1 Series A and B sign networking comparison

**Table 14: Series A and B sign networking comparison**

| | Computer-to-sign connection | | | | | | | Sign-to-sign connection | |
|---|---|---|---|---|---|---|---|---|---|
| | [1]External connection box (RS232) | [2]External connection box (RS485) | Converter Box III (RS485) | Fiber optic[3] | Ethernet[4] | Modem | Wireless | Master/Master[5] | Master/Slave[6] |
| **Series A sign:** | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| **Series B sign:** | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

NOTES:

[1] Used to connect a computer to a sign using a short (< 50 foot) RS232 cable.

[2] Used to connect an IR Message Loader to a sign in order to download messages from the loader to the sign.

[3] A fiber optic computer-to-sign connection is just a RS232 connection because the two fiber optic modems use RS232.

[4] Neither a Series A or B sign can be connected directly to an Ethernet LAN. However, it is possible to use a serial interface (like the Lantronix MSS485) to connect a Series A or B sign to a 10BASE-T Ethernet LAN.

[5] Master/Master = All signs are wired to each other using a RS485 network. Messages come into the first Master sign via an RS232 connection to a modem, wireless transceiver, or a computer. Each sign can display its own, unique message. It is possible to connect Series A and Series B signs together into a Master/Master network.

[6] Master/Slave = All signs are wired together using either a "turbo" network (Series A) or a special RS485 network (Series B). Messages come into the first Master sign via a RS232 connection to a modem, wireless transceiver, or a computer. All signs will display the *same* message at the *same* time. **It is NOT possible to connect Series A and Series B signs together into a Master/Slave network.**

## 5.2 Computer-to-sign connection methods

There are a number of ways to connect an AlphaEclipse Series B signs *to a computer*:

- External connection box (RS232)
- External connection box (RS485) — for IR Message Loader
- Converter Box III (RS485)
- Fiber optic
- Ethernet
- Modem
- Wireless

**Table 15: Computer-to-sign connection methods**

| Distance from computer to sign (feet) | External connection box (RS232) | External connection box (RS485) | Converter Box III (RS485) | Fiber optic[2] | Ethernet[3] | Modem[1] | Wireless[1,4] |
|---|---|---|---|---|---|---|---|
| up to 50 | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 50 to 1000 | No | Yes | Yes | Yes | Yes | Yes | Yes |
| 1000 - 4000 | No | Yes | Yes | Yes | Yes | Yes | Yes |
| 4000+ | No | No | No | Yes | Yes | Yes | No |

NOTES:

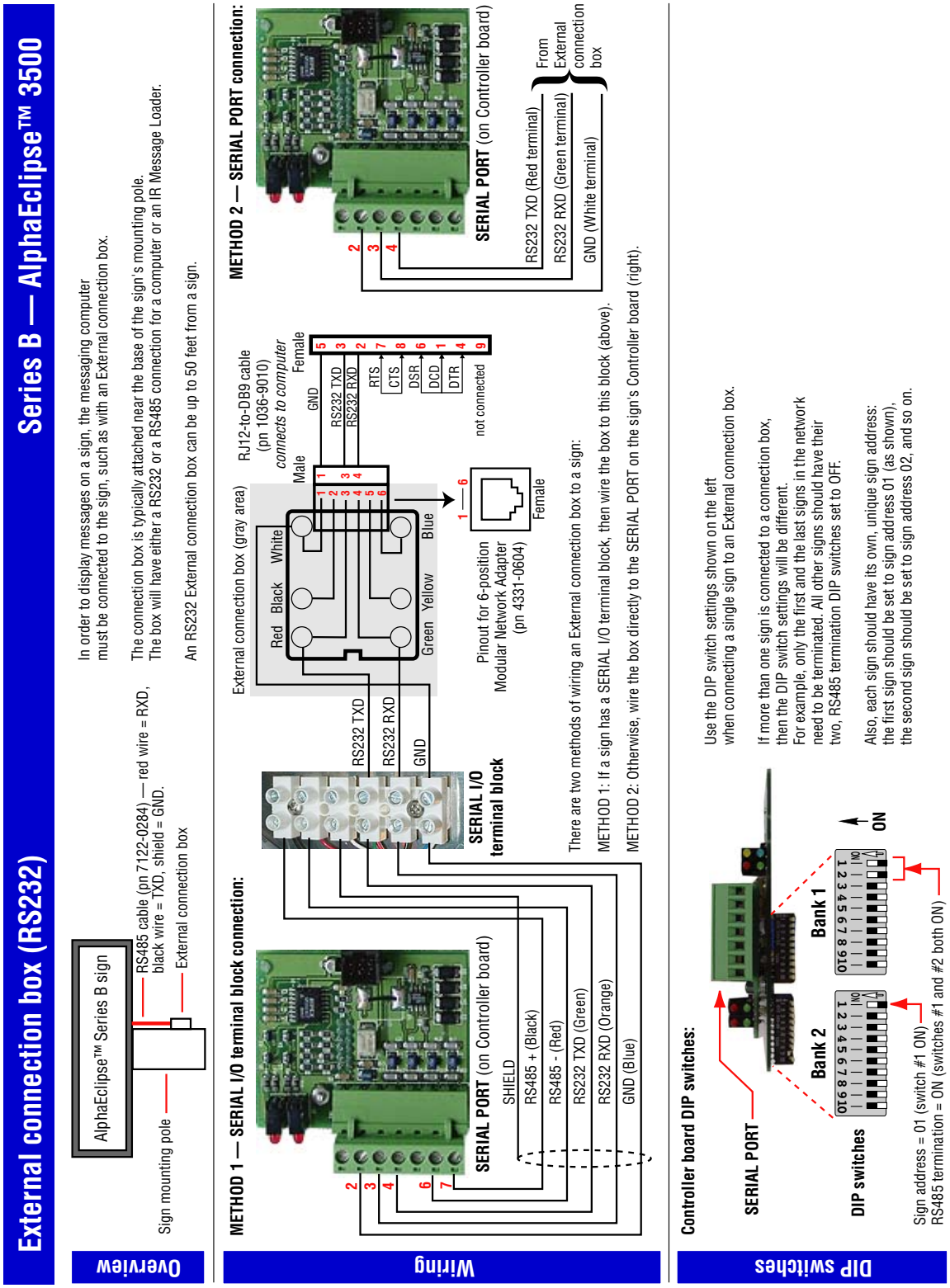
[1] Installed and configured at the factory.

[2] For a fiber optic data connection, the maximum distance between the sign and computer is 2 miles (~10,000 feet).

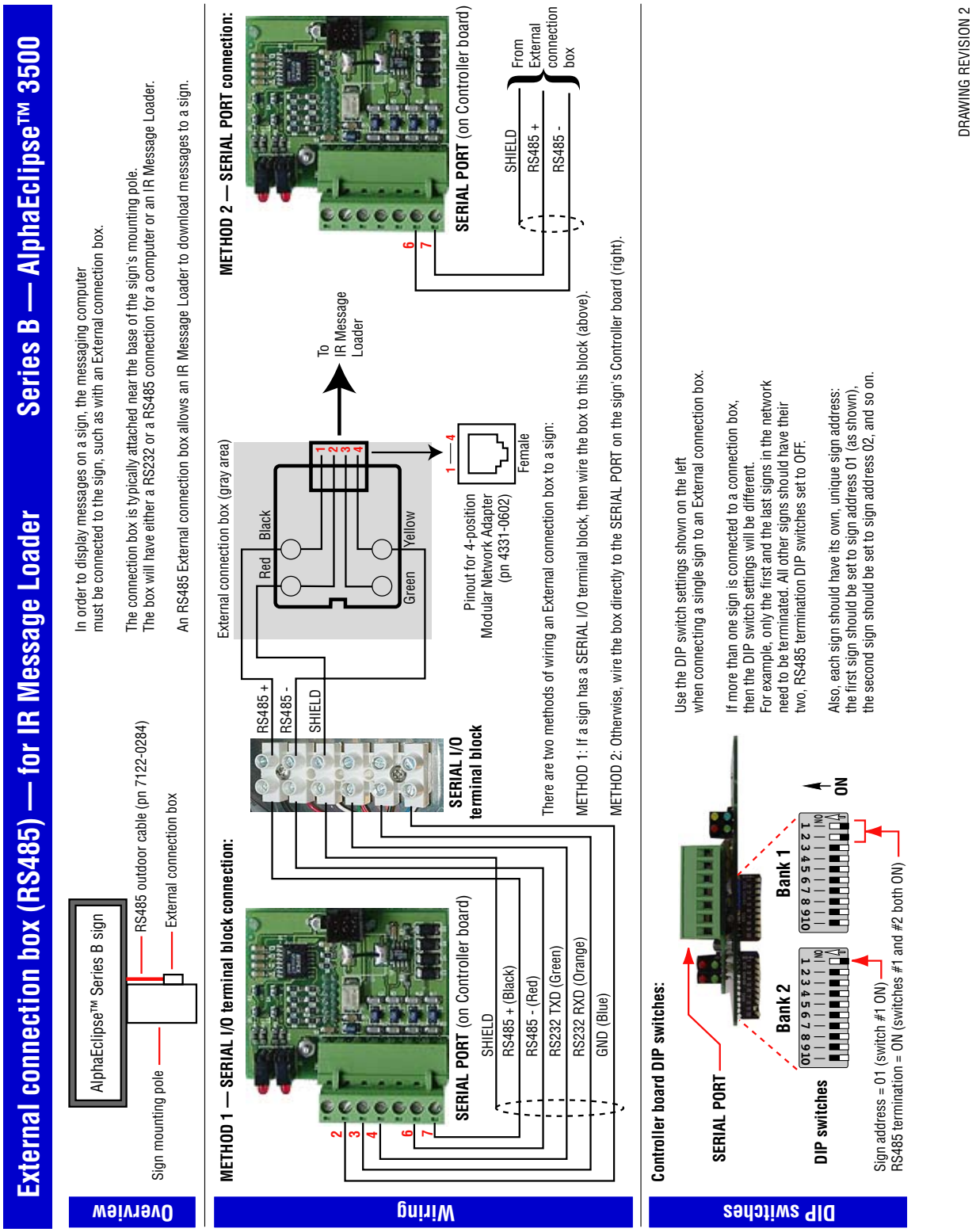
[3] A sign cannot be connected directly to the Ethernet. A Lantronics MSS485-T Serial Server must be used as an interface.

[4] Maximum *indoor* range of a Locus OS2400-232 or a Zeus ZLRT2100 wireless transceiver is about 1500 feet. Actual operating range depends on local environment, including obstructions and electrical interference. The maximum *outdoor* range of a Locus OS2400-232 or a Zeus ZLRT2100 wireless transceiver is about 10,000 feet (about 2 miles). Actual operating range depends on local environment, including obstructions and electrical interference.

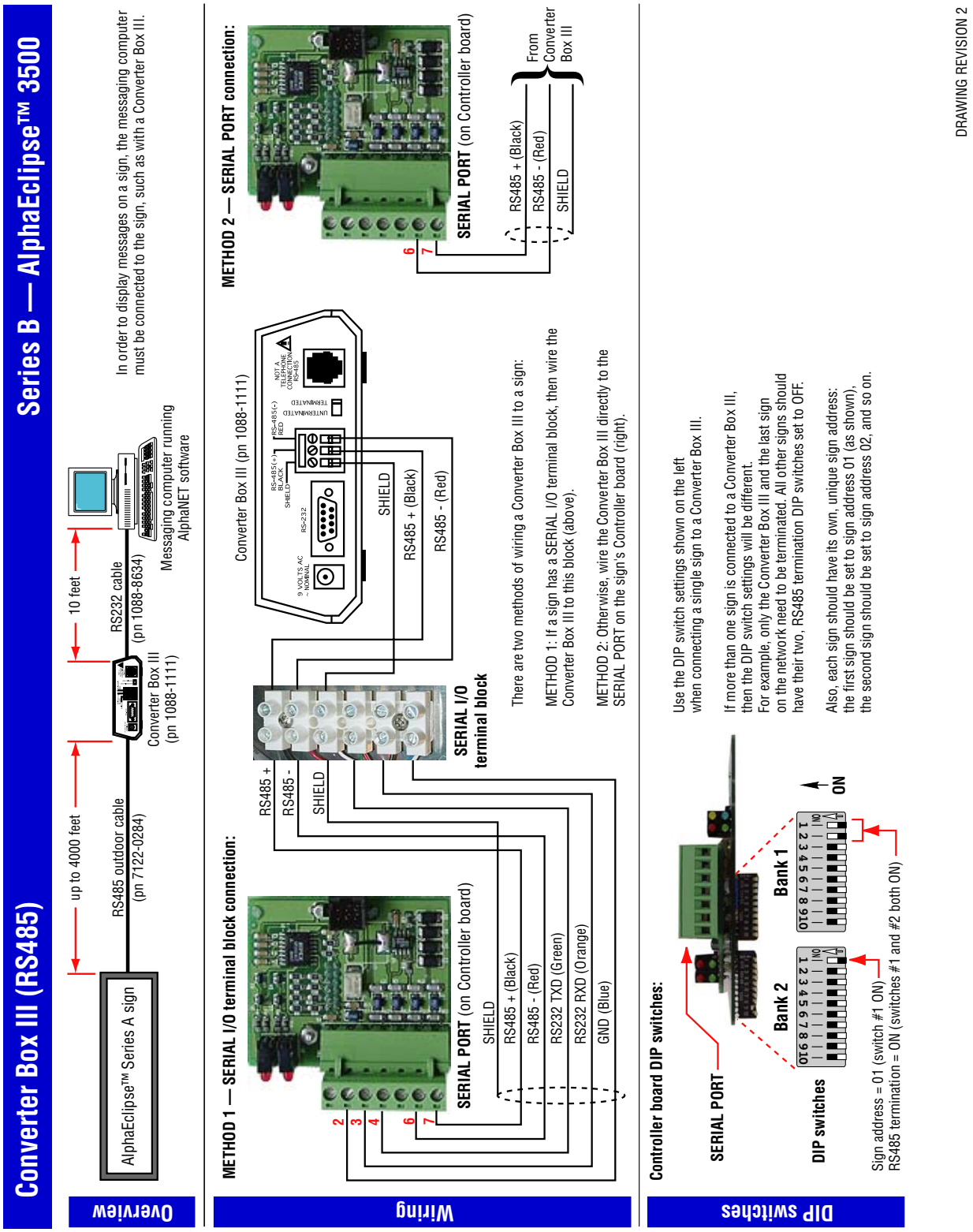
## 5.2.1 External connection box (RS232) computer-to-sign connection



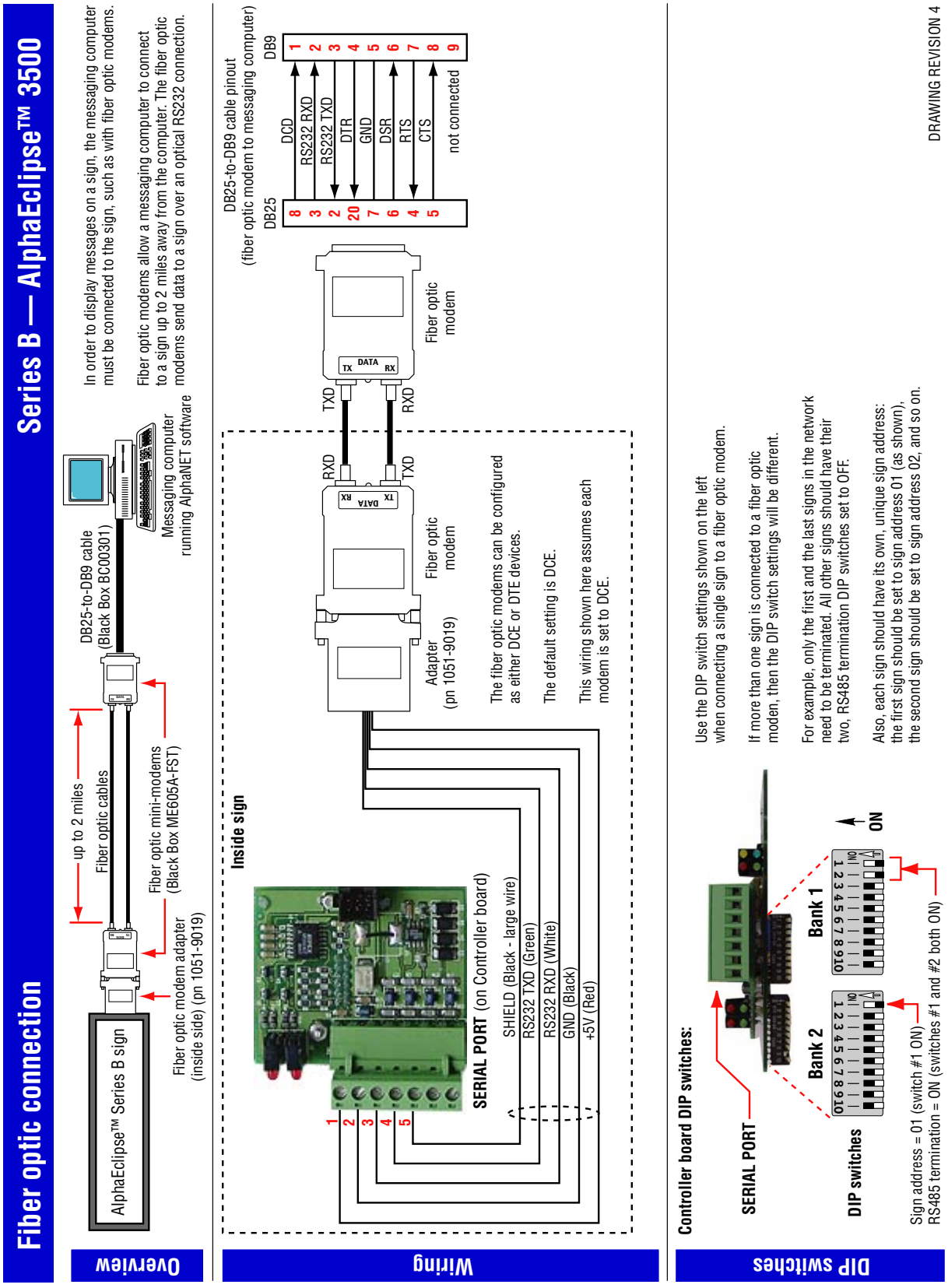
## 5.2.2 External connection box (RS485) computer-to-sign connection



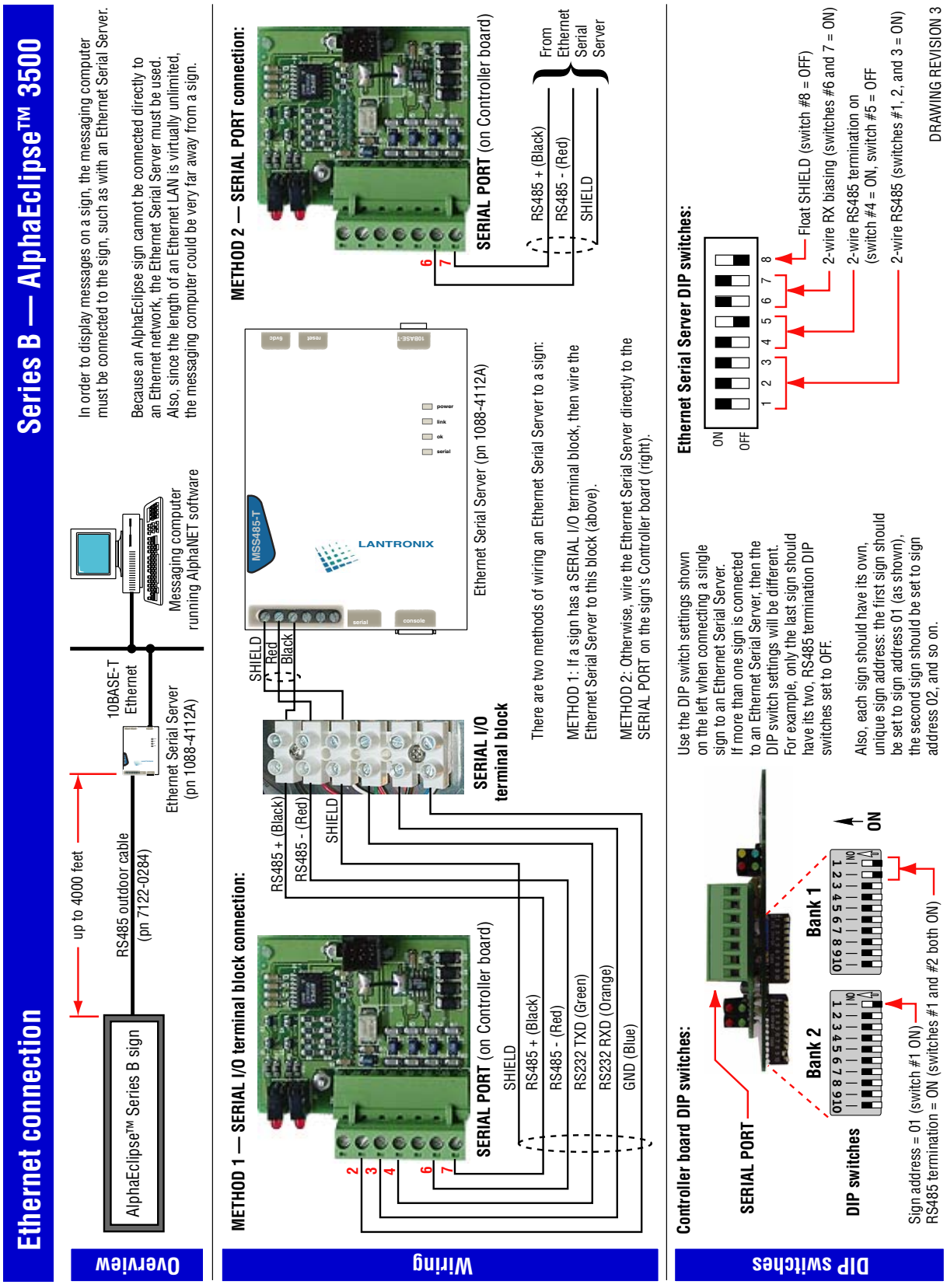
## 5.2.3 Converter Box III (RS485) computer-to-sign connection



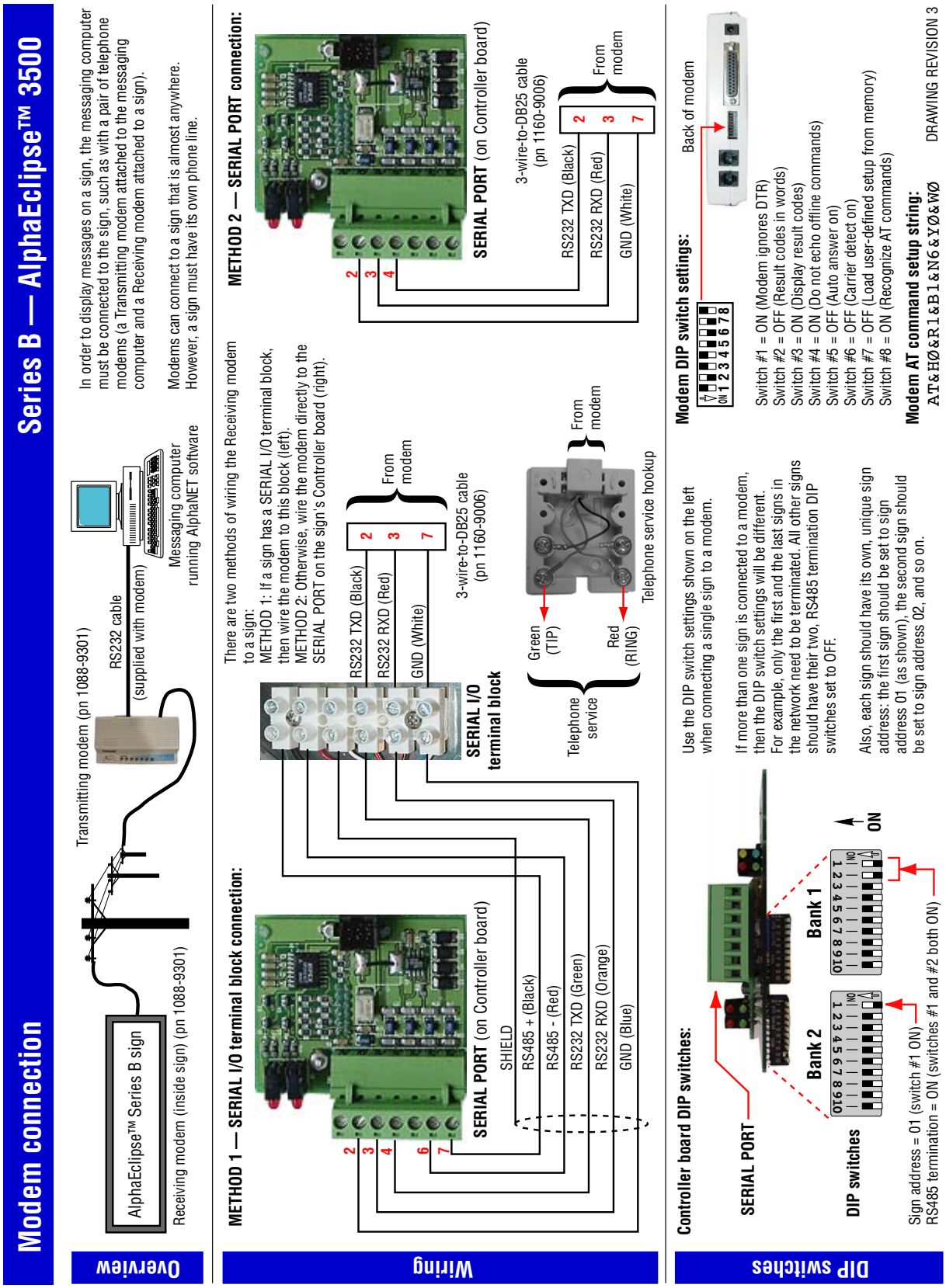
## 5.2.4 Fiber optic computer-to-sign connection



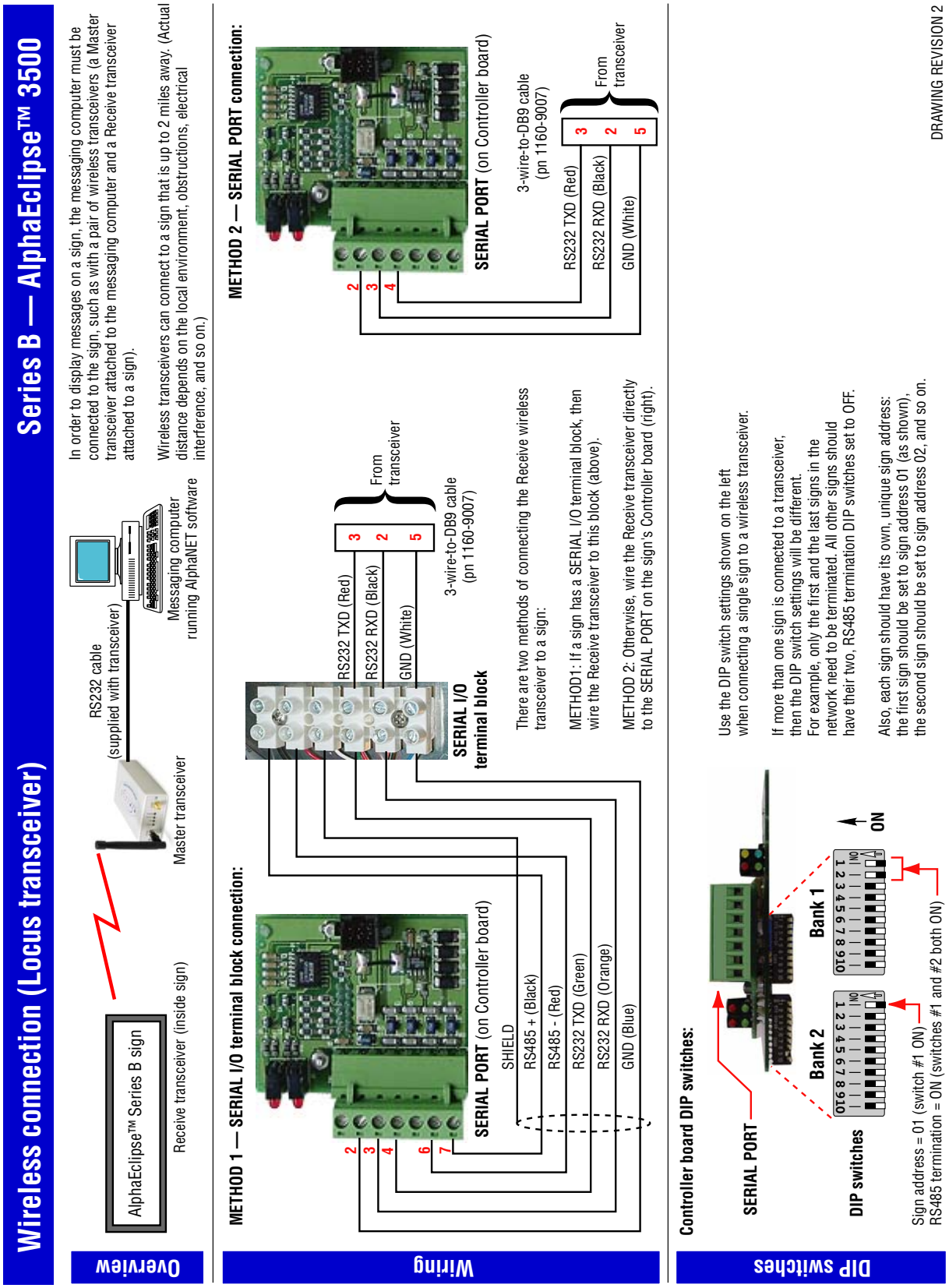
## 5.2.5 Ethernet computer-to-sign connection



## 5.2.6 Modem computer-to-sign connection



## 5.2.7 Wireless computer-to-sign connection



## 5.3 Sign-to-sign connection methods

There are two ways to *interconnect* two or more AlphaEclipse signs:

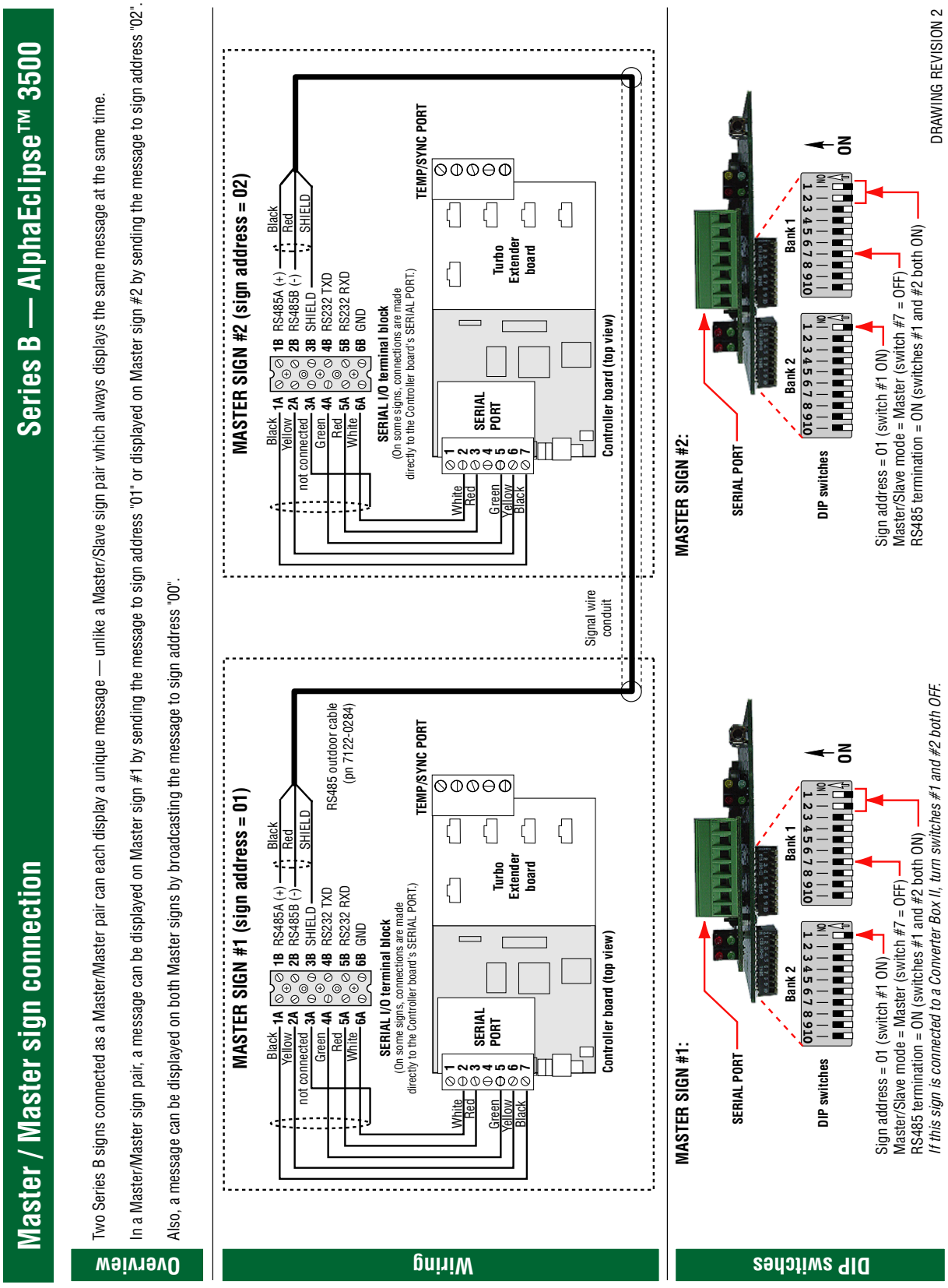
- Master/Master
- Master/Slave

**Table 16: Sign-to-sign connection methods**

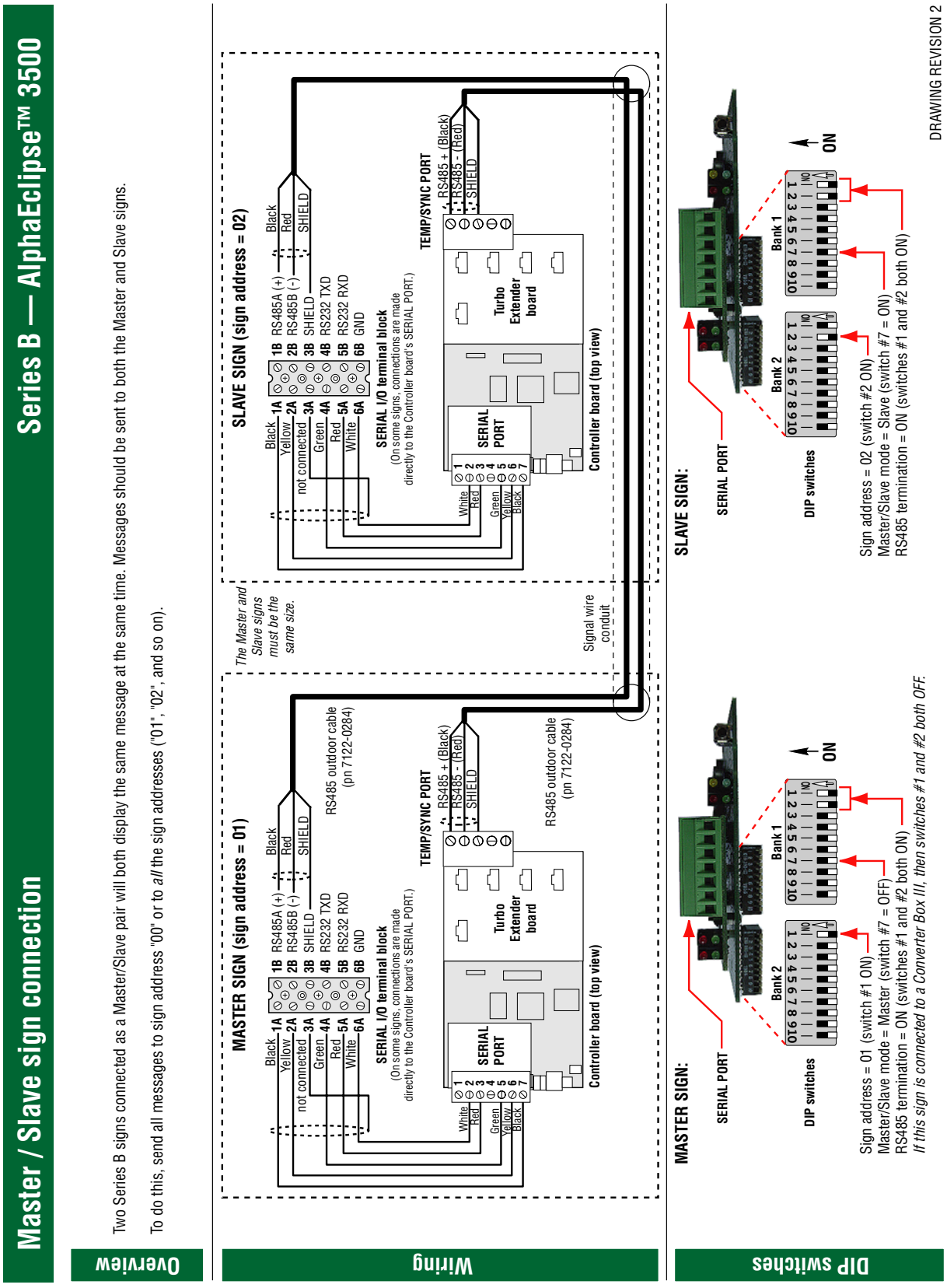
| | Description |
|---|---|
| **Master/Master:** | Signs connected this way can each display a unique message. Messages come into the first Master sign via an RS232 connection to a modem, wireless transceiver, or a computer.<br>  <br>**Figure 5: Master/Master sign-to-sign connection**<br>NOTES:<br>• Messaging — a message can be displayed on all the signs in a Master/Master network by sending the message to sign address "00". Also, if each sign in a Master/Master network has a unique serial address (for example, "01", "02", and so on), then a different message can be sent to and displayed on each sign.<br>• Temperature — to display the temperature on the signs in a Master/Master network, a temperature probe must be connected to *each* sign. If a sign attempts to display the temperature and does not have a temperature probe attached, the sign will display "ERR" in place of the temperature.<br>• Time — in Master/Master mode, the time is synchronized whenever a message is sent using the AlphaNET software. |
| **Master/Slave:** | Signs connected this way always display the *same* message at the *same* time. This is called *simultaneous messaging* and is often used when signs are mounted back-to-back. Messages come into the Master sign via an RS232 connection to a modem, wireless transceiver, or a computer.<br>  <br>**Figure 6: Master/Slave sign-to-sign connection**<br>NOTES:<br>• Messaging — a message will be displayed *simultaneously* on all the signs in a Master/Slave network by sending the message to sign address "00" or to *all* the sign addresses ("01", "02", and so on).<br>• Temperature — to display the temperature on the signs in a Master/Slave network, a temperature probe must be connected to the Master sign.<br>• Time — in Master/Slave mode, the time is synchronized at the top of every hour and also whenever a message is sent using the AlphaNET software. |

NOTE: An AlphaEclipse sign's connection to a computer or to other signs must be properly "terminated" in order for the sign to operate. (See "5.4 Termination" on page 49.)

## 5.3.1 Master/Master sign-to-sign connection



## 5.3.2 Master/Slave sign-to-sign connection

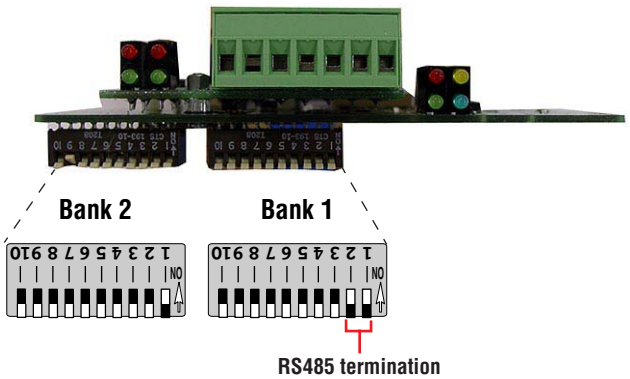


## 5.4 Termination

When signs are networked together using RS485 connections, EOL (End-Of-Line) termination must be taken into account so that the signs will function properly.

Improperly terminated signs may be unable to display messages.

### 5.4.1 Termination DIP switches



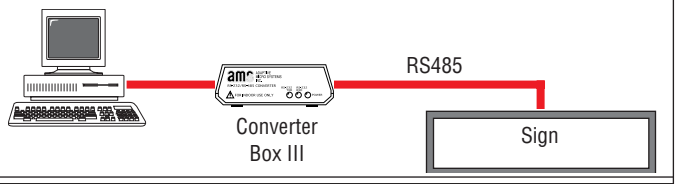

Controller board
(side view)

**RS485 termination**
Both DIP switches 1 & 2 = ON.

### 5.4.2 Termination examples

- One-sign network using a Converter Box III:

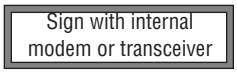
**Table 17: Termination on a one-sign network using a Converter Box III (Series B sign)**




| | | |
|---|---|---|
| **RS485 Devices:** | Converter Box III<br>(First device) | Sign<br>(Last device) |
| **RS485 Termination:** | ON | ON |

- One-sign network using a sign with an internal modem or wireless transceiver:

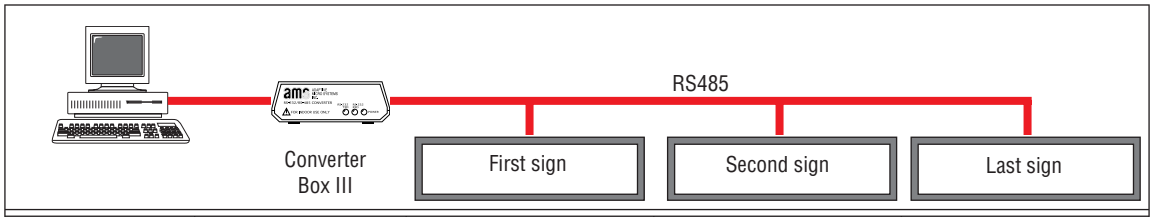
**Table 18: Termination on a one-sign network using a sign with an internal modem or transceiver (Series B sign)**




| | |
|---|---|
| **RS485 Devices:** | Sign<br>(First/Last device) |
| **RS485 Termination:** | ON |

- Termination on multiple signs using RS485 networking:

**Table 19: Termination on multiple signs using RS485 networking (Series B sign)**




| | | | | |
|---|---|---|---|---|
| **RS485 Devices:** | Converter Box III (First device) | First sign (Middle device) | Second sign (Middle device) | Last sign (Last device) |
| **RS485 Termination:** | ON | OFF | OFF | ON |

# 6.0 Basic operating instructions

The purpose of this section is to show how to set up AlphaNET messaging software in order to send messages to a sign. For more information, see the AlphaNET user manual (see "2.3 Related documentation" on page 9).

NOTE: Examples from AlphaNET version 3 software are shown below.

## 6.1 Basic setup for AlphaNET software

To send messages from a computer to a sign using AlphaNET software, this software must be set up based on how your computer is connected to the sign. To set up the software, you need to:

- Create a device
- Create a site
- Create and send messages

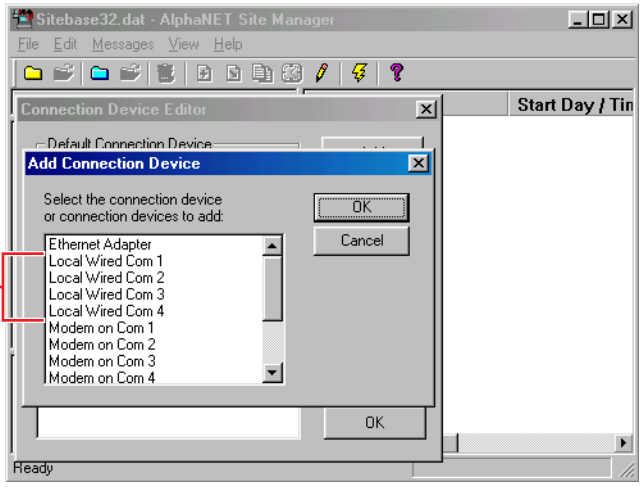
### 6.1.1 Create a device

Use the *Site Manager* in the AlphaNET software to create a device based on how your computer is connected to the sign:

- Wired (RS232 or RS485) — see "6.1.1.1 Device setup for a wired, wireless, or fiber optic connection" on page 52.
- Fiber optic — see "6.1.1.1 Device setup for a wired, wireless, or fiber optic connection" on page 52.
- Modem — see "6.1.1.2 Device setup for a Modem connection" on page 53.
- Wireless — see "6.1.1.1 Device setup for a wired, wireless, or fiber optic connection" on page 52.

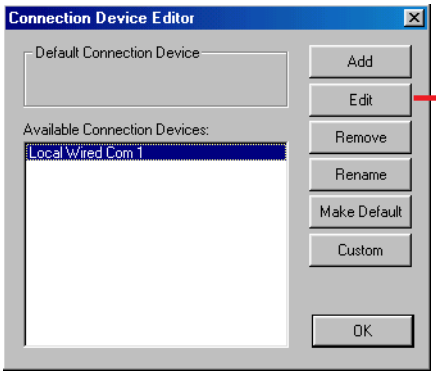
### 6.1.1.1 Device setup for a wired, wireless, or fiber optic connection

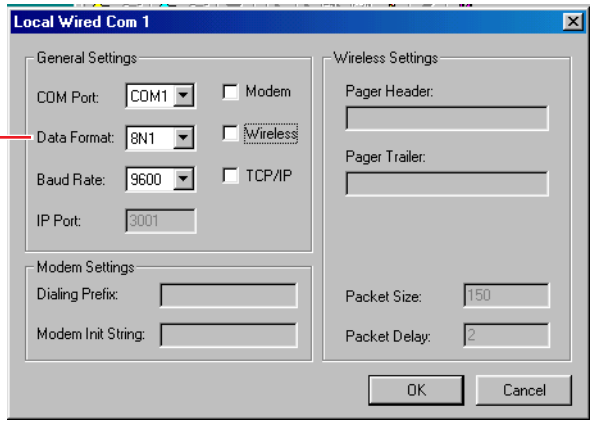
**1** **In the AlphaNET software, open Site Manager. Then click *Edit* > *Connection Device* > *Add*. Select a *Local Wired* device for the messaging computer COM port you will be using. Then click *OK*.**




Select one of these based on which COM port is wired to the sign.

**2** **Click the *Local Wired* device you just added and click *Edit*. Then click *OK* and go to "6.1.2.1 Site setup for a wired, wireless, or fiber optic connection" on page 54.**

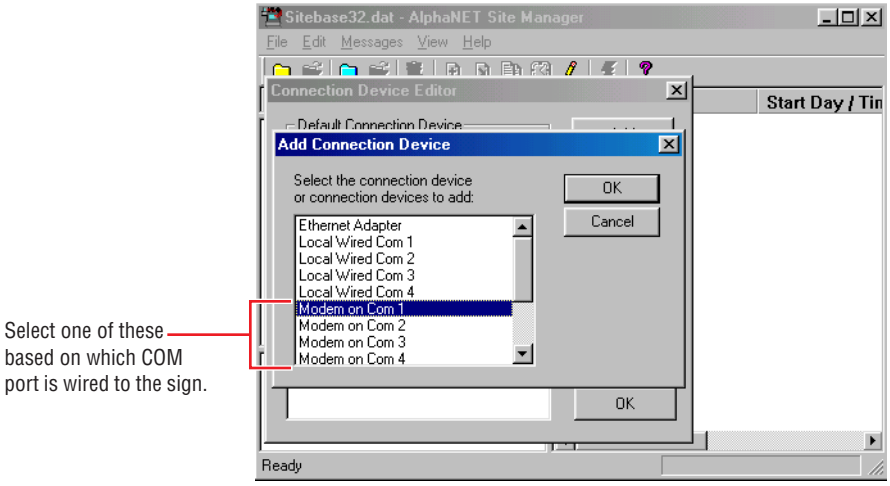


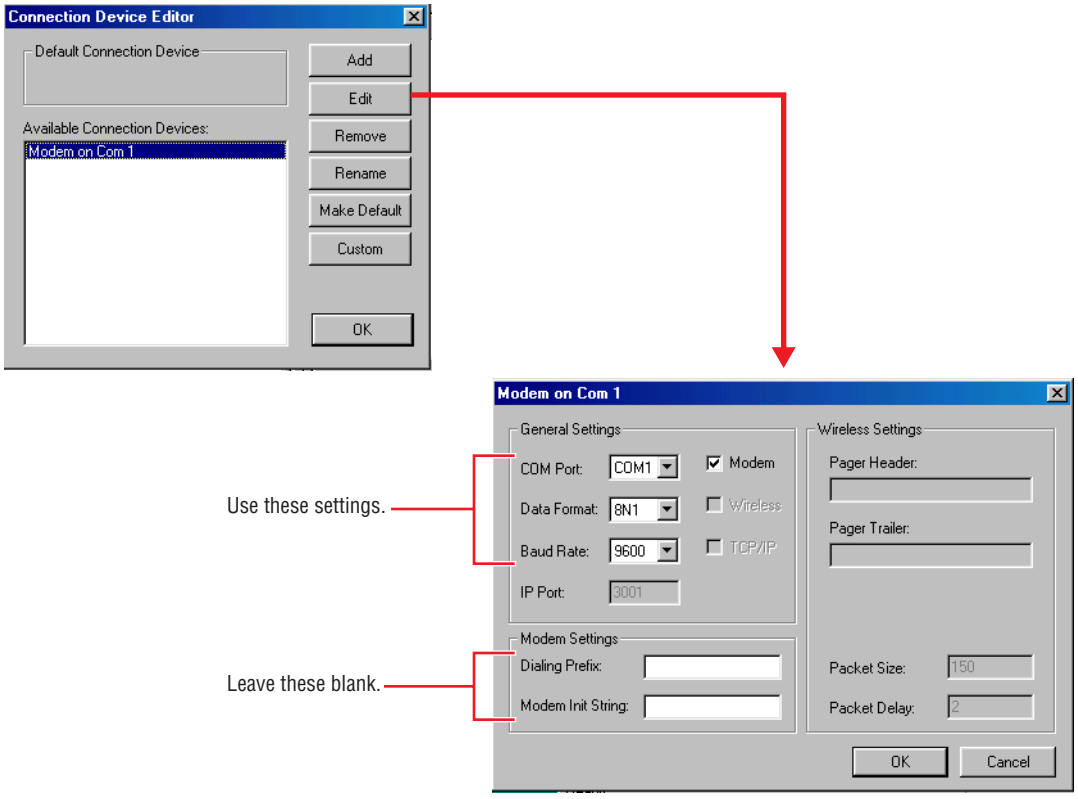

*Data Format* must be *8N1* for an AlphaEclipse 3500 sign.

### 6.1.1.2 Device setup for a Modem connection

**1** **In the AlphaNET software, open Site Manager. Then click *Edit* > *Connection Device* > *Add*. Select a *Modem* device for the messaging computer COM port you will be using. Then click *OK*.**




**2** **Click the *Modem* device you just added and click *Edit*. Then click *OK* and go to "6.1.2.2 Site setup for a Modem connection" on page 55.**

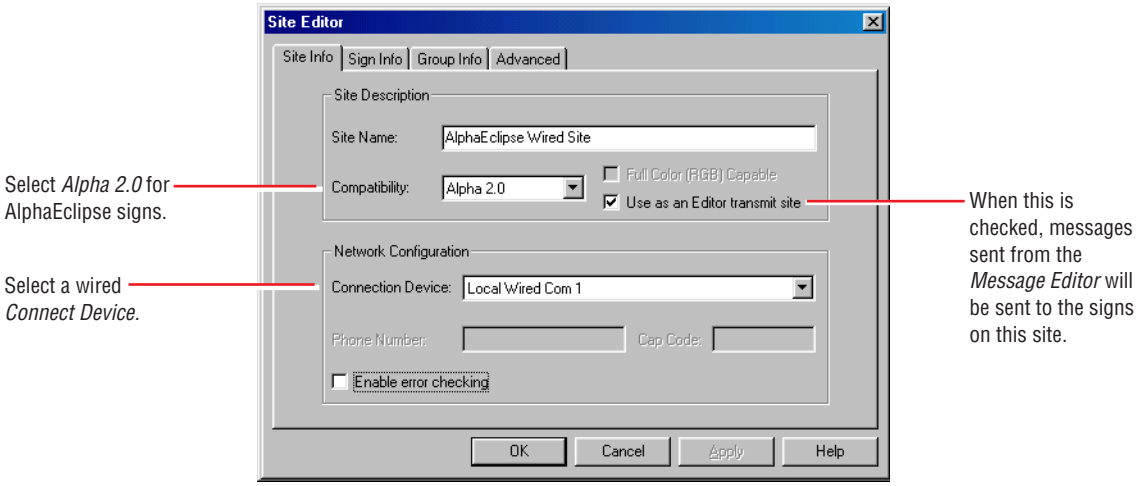


## 6.1.2 Create a site

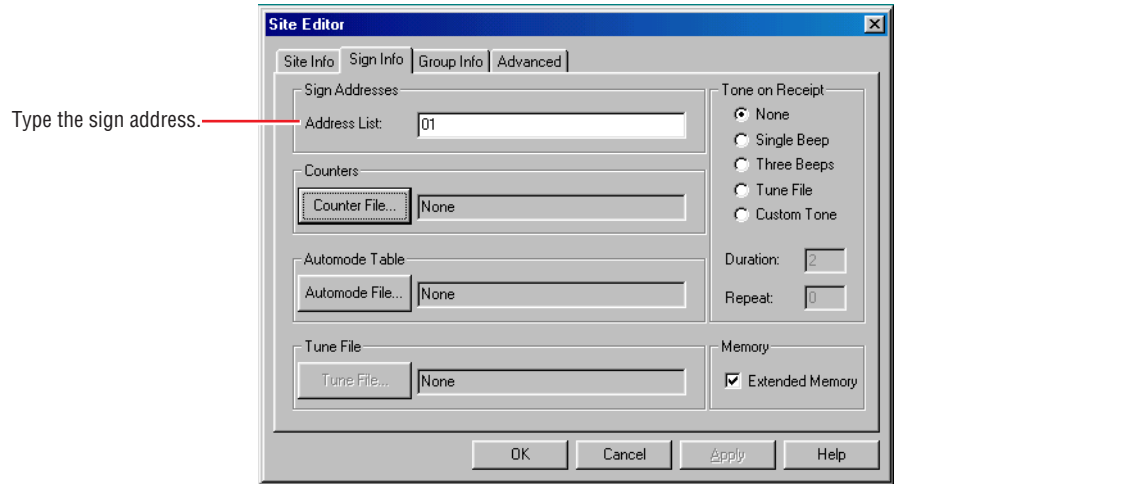
In AlphaNET software, a site must be created in order to send messages to a sign.

### 6.1.2.1 Site setup for a wired, wireless, or fiber optic connection

**1** **In Site Manager, click *File* > *New Site*. In the *Sign Info* tab, fill in the information for a new site.**

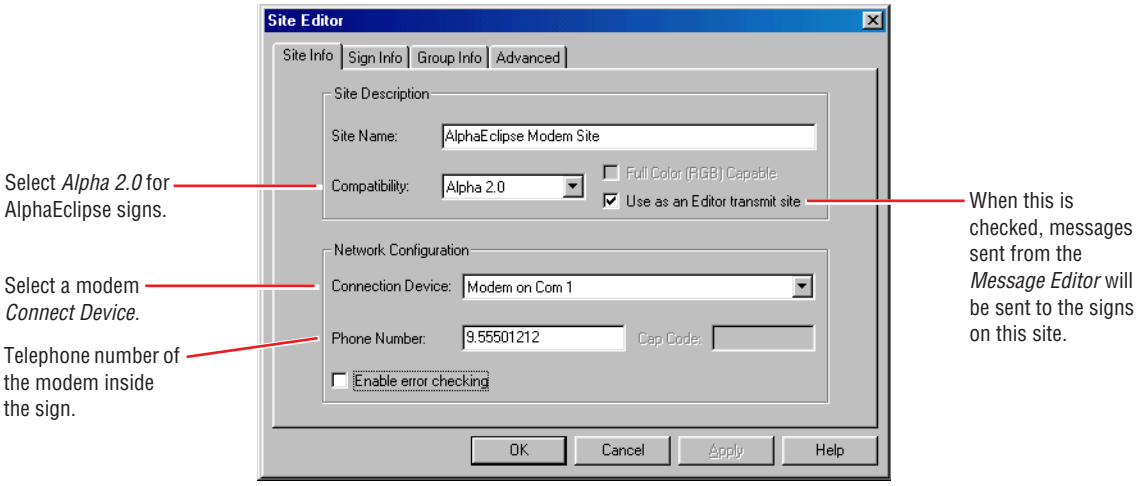



**2** **Click the *Sign Info* tab. Make sure the sign address is set. Then click *OK*,**

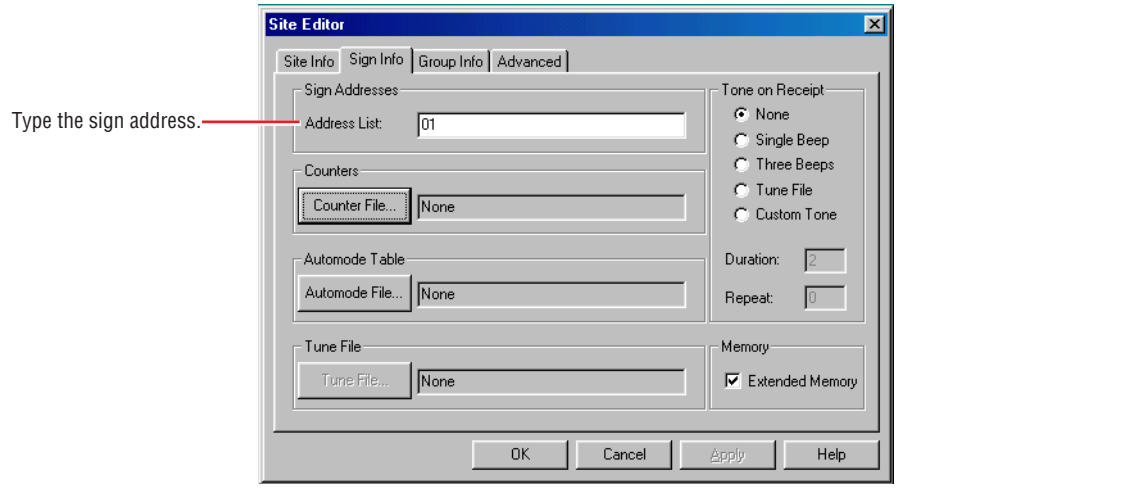


### 6.1.2.2 Site setup for a Modem connection

**1** **In Site Manager, click *File* > *New Site*. In the *Sign Info* tab, fill in the information for a new site.**

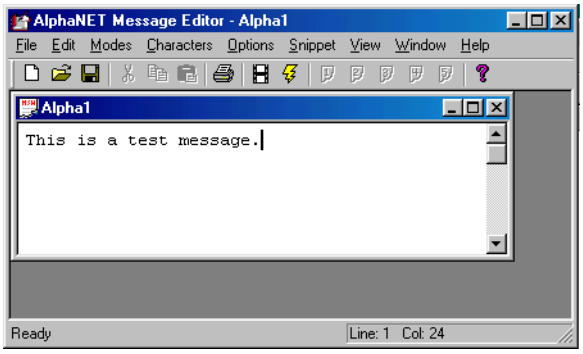



**2** **Click the *Sign Info* tab. Make sure the sign address is set. Then click *OK*,**



### 6.1.3 Create and send a message

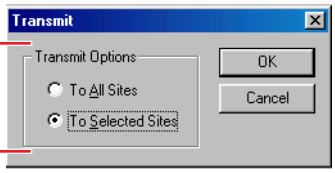
**1** **Open the Message Editor. Type a short test message.**




**2** **Send this message to the sign by clicking *File* > *Transmit*.**

Select *To Selected Signs*.

However, if the test message does not appear, transmit again, but this time select *To All Signs*.



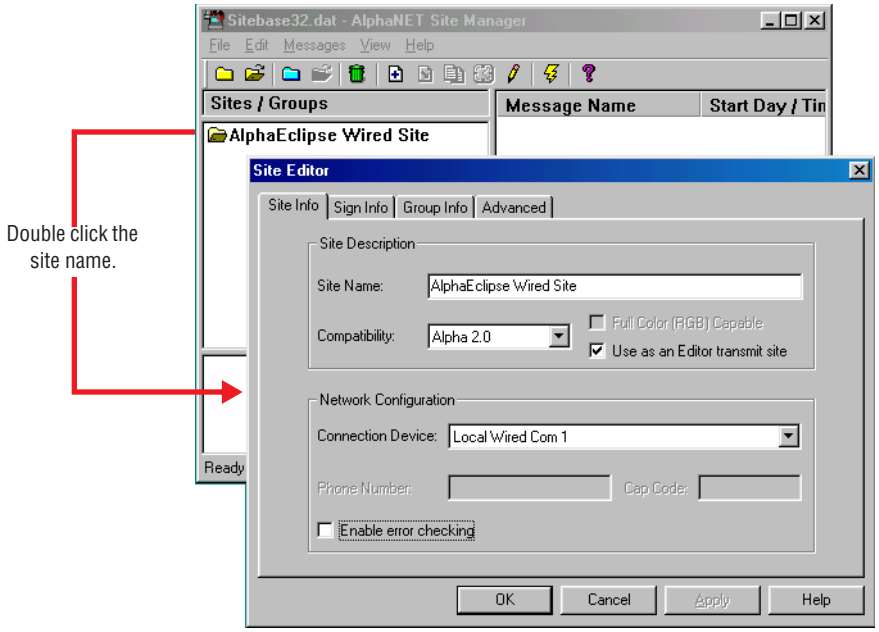

## 6.2 Setting the time and date on a sign

Whenever a message is sent to a sign, the sign's clock is automatically updated to the time on the computer that send the message.

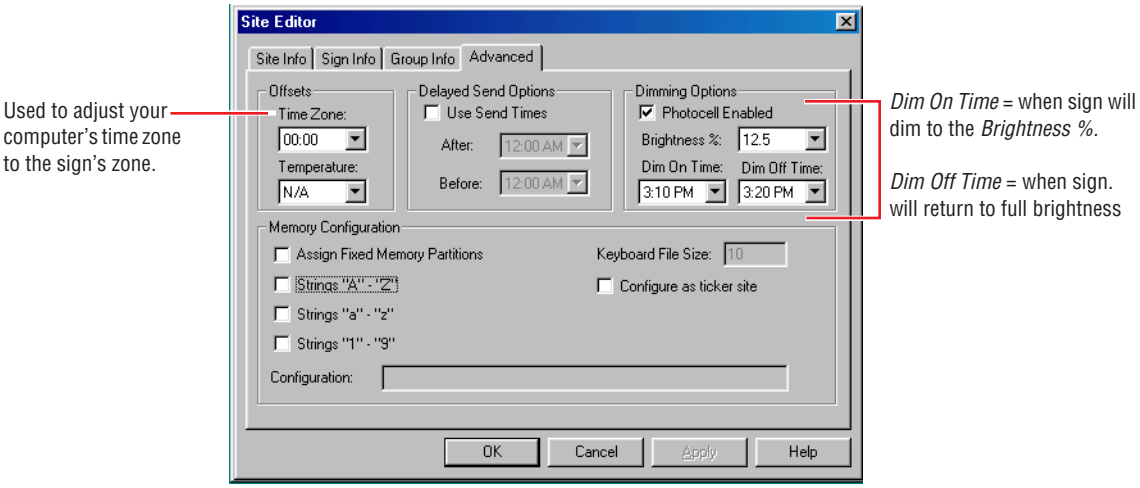
If your computer is on a different time zone that your sign, the time zone can be adjusted in the *Site Editor* by selecting the *Advanced* tab.

## 6.3 Setting the dimming time for a sign

**1** **Open the Site Manager. Double click the name of the site for the sign you want to dim.**




**2** **Click the *Advanced* tab. Set the *Dimming Options*.**



# 7.0 Maintenance

Whenever a unit is opened, examine the inside thoroughly as itemized in the following table:

**Table 20: Recommended general maintenance**

| |
|---|
| • Test exhaust fans to make sure they are operational. |
| • Make sure power supply fans are running. |
| • Make sure the bottom air intake vents are not clogged with debris. |
| • Unclog water drain holes in the bottom of the unit. |
| • Verify door seals are in place. |
| • Verify sign mounting structure is secure. |
| • Clean front window as required. |
| • Clean inside of unit of any foreign material. |
| • Check for signs of water leakage. Small leaks can be sealed with 3M Scotch-Seal Polyurethane adhesive Sealant 540 black. |

# 8.0 Troubleshooting

The purpose of this section is to help a user fix a sign as quickly as possible using three types of troubleshooting procedures (see "8.2 Troubleshooting procedures" on page 78) that start relatively easy with testing that can be done on a computer but that get progressively more difficult:

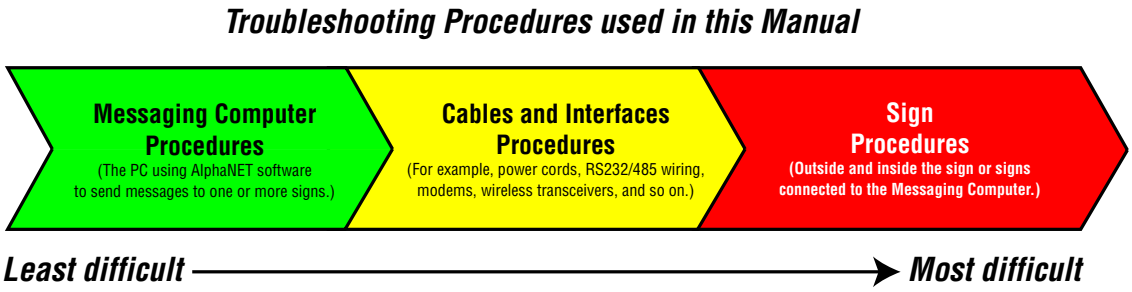
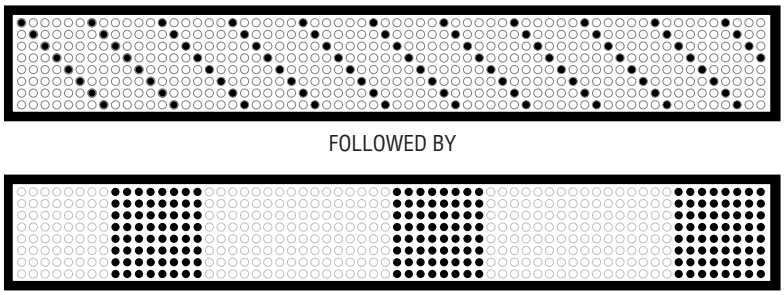



**Figure 7: Three-part troubleshooting process**

## 8.1 Common sign problems

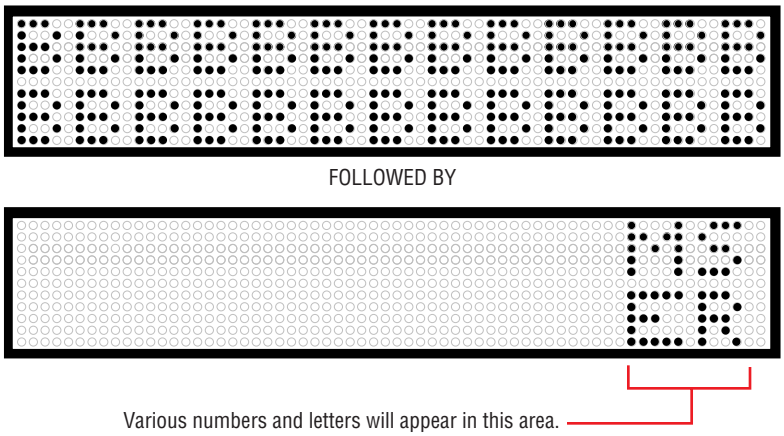
| Problem type | Problem | Recommended solution |
|---|---|---|
| General | All LEDs are on. | page 67 |
| | No LEDs are on. | page 68 |
| | Letter "B"s fill the sign. | page 63 |
| | Pattern of blocks and diagonal bars keep repeating. | page 62 |
| Text and graphics | Startup message ("Impact . . . AlphaEclipse . . .") keeps reappearing. | page 69 |
| | Text and graphics appear dim. | page 70 |
| | Text appears scrambled. | page 72 |
| | Messages sent from AlphaNET software do not appear. | page 73 |
| | Graphics sent from AlphaNET software do not appear. | page 74 |
| Temperature | Temperature or "ERR" appears in upper right. | page 64 |
| | Temperature is inaccurate. | page 65 |
| | Temperature displayed on two signs is different. | page 66 |
| LED boards | All LEDs are on. | page 67 |
| | No LEDs are on. | page 68 |
| | Only two LEDs in the upper left are on. | page 71 |
| | One or more LED boards are off. | page 75 |
| | Entire row of LED boards is off. | page 76 |
| | Entire section of sign is off. | page 77 |

### 8.1.1 Problem: Pattern of blocks and diagonal bars keep repeating

| | |
|---|---|
| **SIGN APPEARANCE:** |  FOLLOWED BY |
| **POSSIBLE CAUSE:** | • Sign is set in Test Pattern Mode (see Table 21, “Test Mode information,” on page 97). |
| **SUGGESTED SOLUTION:** | Follow the procedure listed below: **Messaging Computer Procedures** → **Cables and Interfaces Procedures** → **Sign Procedures** • TEST MODES (page 97) |

## 8.1.2 Problem: Letter “B”s fill the sign

**SIGN APPEARANCE:**




**POSSIBLE CAUSE:**

- Sign is set in Production Test Mode (see Table 21, “Test Mode information,” on page 97).

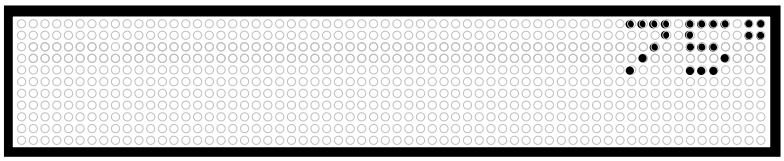
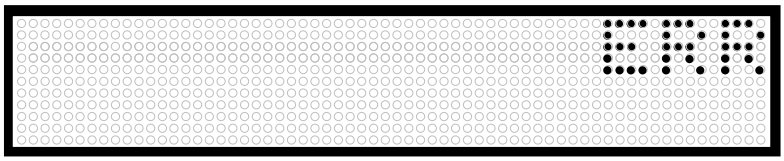
**SUGGESTED SOLUTION:**

Follow the procedure listed below:

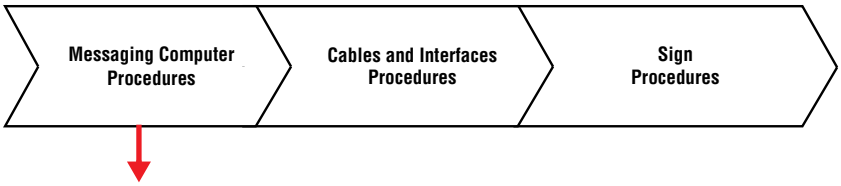
**Messaging Computer Procedures** → **Cables and Interfaces Procedures** → **Sign Procedures**

- TEST MODES (page 97)

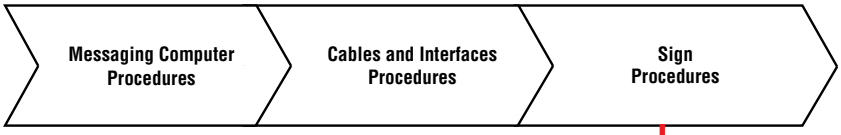
### 8.1.3 Problem: Temperature or “ERR” appears in upper right

| | |
|---|---|
| **SIGN APPEARANCE:** |  OR  |
| **POSSIBLE CAUSE:** | • Sign is set in Temperature Test Mode (see Table 21, “Test Mode information,” on page 97). |
| **SUGGESTED SOLUTION:** | Follow the procedure listed below: **Messaging Computer Procedures** → **Cables and Interfaces Procedures** → **Sign Procedures** • TEST MODES (page 97) |

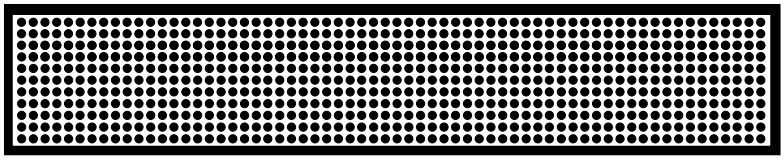
### 8.1.4 Problem: Temperature is inaccurate

| | |
|---|---|
| **SIGN APPEARANCE:** | Temperature displayed on sign does not match the actual temperature. |
| **POSSIBLE CAUSE:** | • Temperature probe is not calibrated correctly. |
| **SUGGESTED SOLUTION:** | Follow the procedure listed below:<br>  <br>• TEMP PROBE CHECK (page 114) |

## 8.1.5 Problem: Temperature displayed on two signs is inaccurate

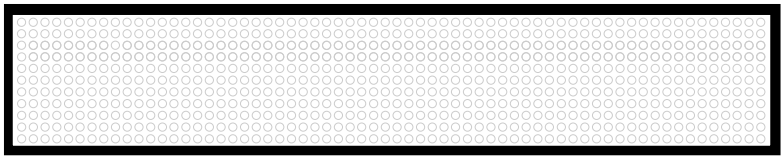
| | |
|---|---|
| **SIGN APPEARANCE:** | Temperature shown on two or more signs is not the same. |
| **POSSIBLE CAUSE:** | • Signs are not connected as a Master/Slave network.<br>• Faulty temperature probe. |
| **SUGGESTED SOLUTION:** | Follow the procedure listed below:<br>  <br>• TEMP PROBE FIX (page 115) |

### 8.1.6 Problem: All LEDs are on

| | |
|---|---|
| **SIGN APPEARANCE:** |  |
| **POSSIBLE CAUSE:** | • Sign is set in Test Match Mode (see Table 21, “Test Mode information,” on page 97). |
| **SUGGESTED SOLUTION:** | Follow the procedure listed below:<br>**Messaging Computer Procedures** → **Cables and Interfaces Procedures** → **Sign Procedures**<br>• TEST MODES (page 97) |

## 8.1.7 Problem: No LEDs are on

**SIGN APPEARANCE:**

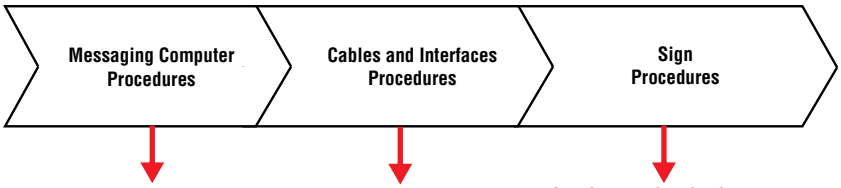


**POSSIBLE CAUSES:**

- User error with AlphaNET software.
- Messaging computer not set up properly.
- AlphaNET software problem.
- External power switch off.
- Internal power switch off.
- Cable and/or interface problem.
- Sign malfunction (DIP switches misconfigured, sign overheating, sign damage, and so on)

**SUGGESTED SOLUTIONS:**

Follow the procedures listed below. Start on the left with "Messaging Computer Procedures" and work your way right to "Sign Procedures":

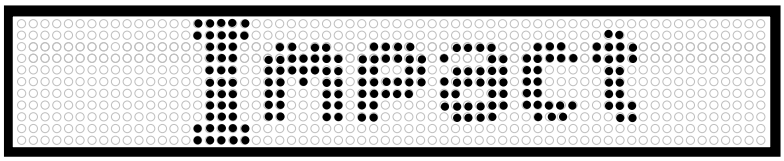
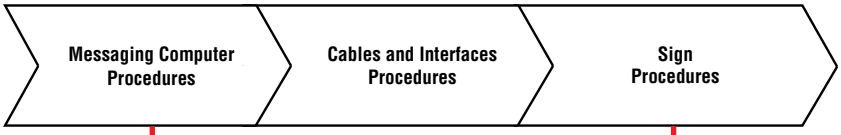



- PC-TO-SIGN check (page 79)
- ALPHANETMESSAGE (page 82)

- PC CHECK (page 84)

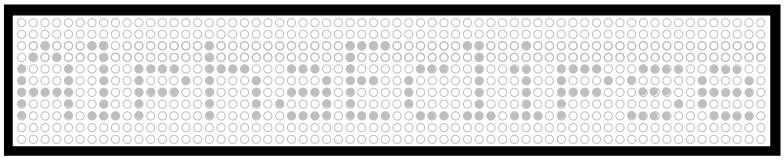
- OUTSIDE INSPECTION (page 112)
- SIGN RESTART (page 96)
- INSIDE INSPECTION (page 113)
- SIGN POWER (page 101)
- SIGN FEEDBACK (page 99)
- SIGN CHECK (page 104)

## 8.1.8 Problem: Startup message keeps reappearing

| | |
|---|---|
| **SIGN APPEARANCE:** | "Impact . . . AlphaEclipse . . . Series . . . Features . . . and . . . Functions . . ."<br>  |
| **POSSIBLE CAUSES:** | Each of the following erases all messages from the sign and causes the demo message to appear:<br>• Bank 1 DIP switch #10 is set to on.<br>• AlphaNET Diagnostics software *Actions* > *Clear Memory* used.<br>• AlphaNET Diagnostics software *Actions* > *Configure Sign (Advanced)* > *Set Other Options* > *Demo Message* set to on. |
| **SUGGESTED SOLUTIONS:** | Follow the procedures listed below. Start on the left with "Messaging Computer Procedures" and work your way right to "Sign Procedures":<br>  <br>• PC DIP SWITCH (page 116)<br>• SIGN DIP SWITCH (page 117) |

## 8.1.9 Problem: Text and graphics appear dim

**SIGN APPEARANCE:**

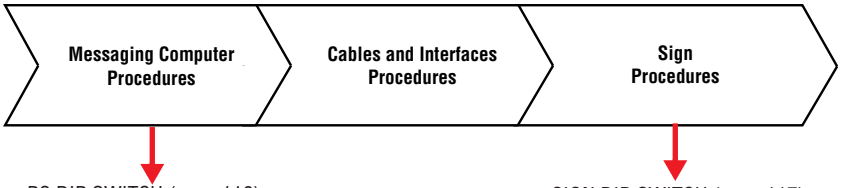


**POSSIBLE CAUSES:**

- AlphaNET Diagnostics software *Actions* > *Configure Sign* > *Set Dim Times* and *Set Dimming Level* are causing the sign's loss of brightness.
- The sign has automatically reduced brightness to protect itself from overheating (see "3.5 Temperature protection" on page 21).

**SUGGESTED SOLUTIONS:**

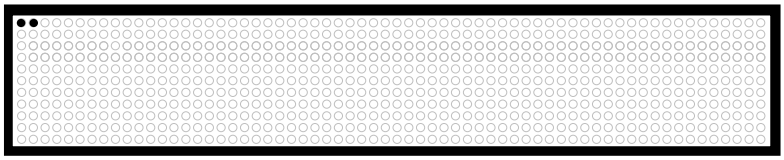
Follow the procedures listed below. Start on the left with "Messaging Computer Procedures" and work your way right to "Sign Procedures":




- PC DIP SWITCH (page 116)
- OVERHEAT CHECK (page 118)

- SIGN DIP SWITCH (page 117)
- OVERHEAT FIX (page 119)

## 8.1.10 Problem: Only two LEDs in upper left are on

| | |
|---|---|
| **SIGN APPEARANCE:** |  |
| **POSSIBLE CAUSES:** | • The sign has overheated and turned off all but these two LEDs to protect itself from damage. For more information, see "3.5 Temperature protection" on page 21. |
| **SUGGESTED SOLUTIONS:** | Follow the procedures listed below. Start on the left with "Messaging Computer Procedures" and work your way right to "Sign Procedures":<br>**Messaging Computer Procedures** → **Cables and Interfaces Procedures** → **Sign Procedures**<br>• OVERHEAT CHECK (page 118)<br>• OVERHEAT FIX (page 119) |

## 8.1.11 Problem: Text appears scrambled

**SIGN APPEARANCE:**

Instead of this message appearing on the sign . . .


. . . scrambled text like one of the following appears:

1

2


3

4


5

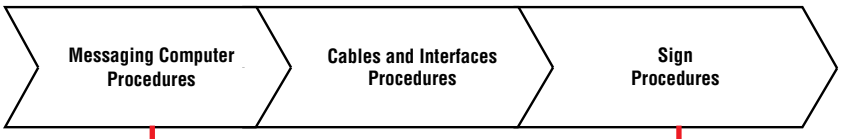

**POSSIBLE CAUSES:**

If the scrambled message looks *similar* to number:

- **1** = driver height set wrong (Bank 3 DIP switch #3).
- **2** = sign length (columns) is set *longer* than the actual length of the sign (Bank 3 DIP switches #7 through 10).
- **3** = sign length (columns) is set *shorter* than the actual length of the sign (Bank 3 DIP switches #7 through 10).
- **4** = sign height (rows) is set *longer* than the actual height of the sign (Bank 3 DIP switches #4 through 6).
- **5** = sign height (rows) is set *shorter* than the actual height of the sign (Bank 3 DIP switches #4 through 6).

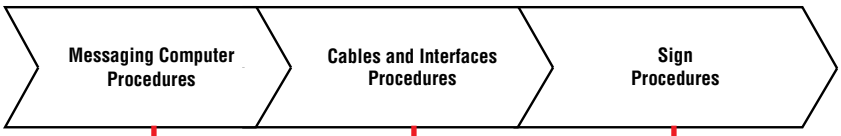
**SUGGESTED SOLUTIONS:**

Follow the procedures listed below. Start on the left with "Messaging Computer Procedures" and work your way right to "Sign Procedures":




- PC DIP SWITCH (page 116)
- SIGN DIP SWITCH (page 117)

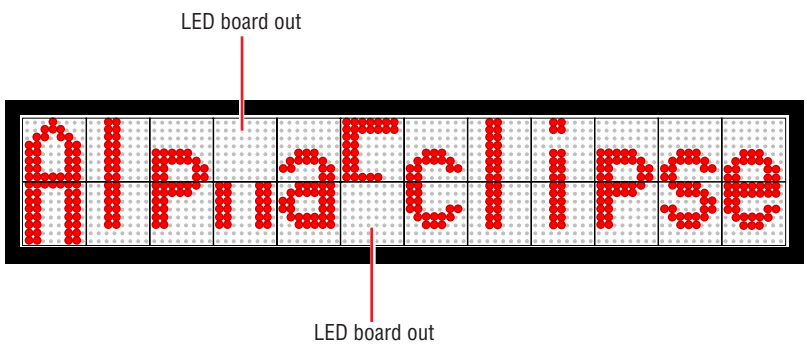
## 8.1.12 Problem: Messages sent from AlphaNET software do not appear

| | |
|---|---|
| **SIGN APPEARANCE:** | Messages from AlphaNET software do not appear on the sign(s). |
| **POSSIBLE CAUSES:** | • User error with AlphaNET software.<br>• Messaging computer not set up properly.<br>• AlphaNET software problem.<br>• External power switch off.<br>• Internal power switch off.<br>• Cable and/or interface problem.<br>• Sign malfunction (DIP switches misconfigured, sign overheating, sign damage, and so on). |
| **SUGGESTED SOLUTIONS:** | Follow the procedures listed below. Start on the left with "Messaging Computer Procedures" and work your way right to "Sign Procedures":<br>  <br>• PC-TO-SIGN check (page 79)<br>• ALPHANETMESSAGE (page 82)<br>• PC CHECK (page 84)<br>• OUTSIDE INSPECTION (page 112)<br>• SIGN RESTART (page 96)<br>• INSIDE INSPECTION (page 113)<br>• SIGN POWER (page 101)<br>• SIGN FEEDBACK (page 99)<br>• SIGN CHECK (page 104) |

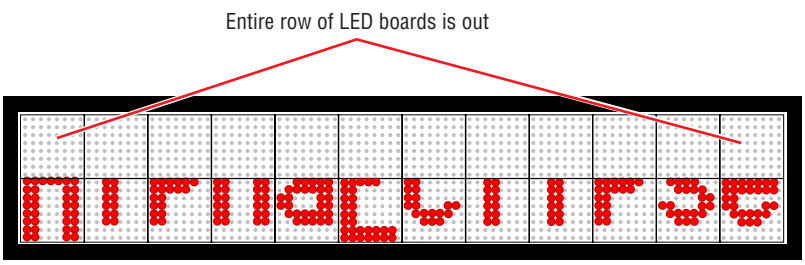
## 8.1.13 Problem: Graphics sent from AlphaNET software do not appear

| | |
|---|---|
| **SIGN APPEARANCE:** | Graphics sent from AlphaNET software do not appear. |
| **POSSIBLE CAUSES:** | • Graphic too large.<br>• Wrong colors used in graphic<br>• Graphic's "transparency" setting not turned off. |
| **SUGGESTED SOLUTIONS:** | See **Creating Graphics for AlphaEclipse Signs** (pn 9700-0130). |

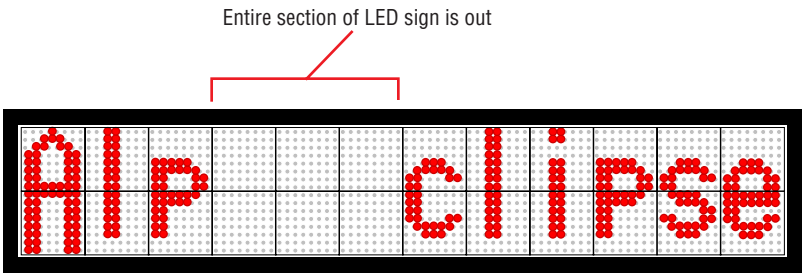
## 8.1.14 Problem: One or more LED boards is off

| | |
|---|---|
| **SIGN APPEARANCE:** |  |
| **POSSIBLE CAUSES:** | • Ribbon cable from previous LED board is not connected to the LED board that is out. |
| **SUGGESTED SOLUTIONS:** | • Follow the INSIDE INSPECTION procedure (page 113).<br>• Make sure data and power cables are attached to the LED board(s) that are out.<br>• Replace LED board if necessary (see “9.6 LED board replacement” on page 135). |

## 8.1.15 Problem: Entire row of LED boards is off

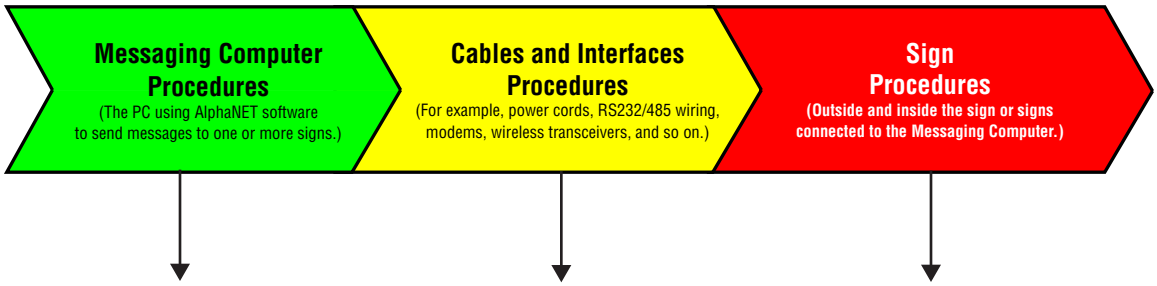
| | |
|---|---|
| **SIGN APPEARANCE:** |  |
| **POSSIBLE CAUSES:** | • Ribbon cable from controller board is not connected to the first LED board in the row. |
| **SUGGESTED SOLUTIONS:** | • Follow the INSIDE INSPECTION procedure (page 113).<br>• Make sure data and power cables are attached to the LED board(s) that are out.<br>• Make sure that a ribbon cable for this row is connected to the controller board.<br>• Replace LED board if necessary (see “9.6 LED board replacement” on page 135). |

### 8.1.16 Problem: Entire section of sign is off

| | |
|---|---|
| **SIGN APPEARANCE:** |  |
| **POSSIBLE CAUSES:** | • Power supply for these LED boards has failed. |
| **SUGGESTED SOLUTIONS:** | • Follow the INSIDE INSPECTION procedure (page 113).<br>• Make sure data and power cables are attached to the LED board(s) that are out.<br>• Follow the SIGN POWER procedure (page 101).<br>• Replace power supply if necessary (see “9.7 Power supply replacement” on page 137). |

## 8.2 Troubleshooting procedures

### *Types of Troubleshooting Procedures*




- PC-TO-SIGN CHECK (page 79)
- ALPHANET MESSAGE (page 82)
- TEMP PROBE CHECK (page 114)
- PC DIP SWITCH (page 116)
- OVERHEAT CHECK (page 118)

- PC FEEDBACK (page 81)
- PC CHECK
  - ❑ PC CHECK-RS232 (page 85)
  - ❑ PC CHECK-RS485 (page 86)
  - ❑ PC CHECK-FIBER (page 87)
  - ❑ PC CHECK-MODEM (page 88)
  - ❑ PC CHECK-WIRELESS (page 90)
  - ❑ PC CHECK-IRLOADER (page 91)
  - ❑ PC CHECK-ETHERNET (page 93)

- TEST MODES (page 97)
- OUTSIDE INSPECTION (page 112)
- INSIDE INSPECTION (page 113)
- SIGN FEEDBACK (page 99)
- SIGN POWER (page 101)
- SIGN RESTART (page 96)
- SIGN CHECK
  - ❑ SIGN CHECK-RS232 (page 105)
  - ❑ SIGN CHECK-RS485 (page 106)
  - ❑ SIGN CHECK-FIBER (page 107)
  - ❑ SIGN CHECK-MODEM (page 108)
  - ❑ SIGN CHECK-WIRELESS (page 109)
  - ❑ SIGN CHECK-IRLOADER (page 110)
  - ❑ SIGN CHECK-ETHERNET (page 111)
- TEMP PROBE FIX (page 115)
- SIGN DIP SWITCH (page 117)
- OVERHEAT FIX (page 119)

**Figure 8: Types of troubleshooting procedures**

## 8.2.1 Messaging Computer procedure → Cables and Interfaces procedure → Sign procedure PC-TO-SIGN CHECK procedure

Description:

- To see if communications exist between a sign and the messaging computer.
- To get information from the sign, such as its address, baud rate, and so on.

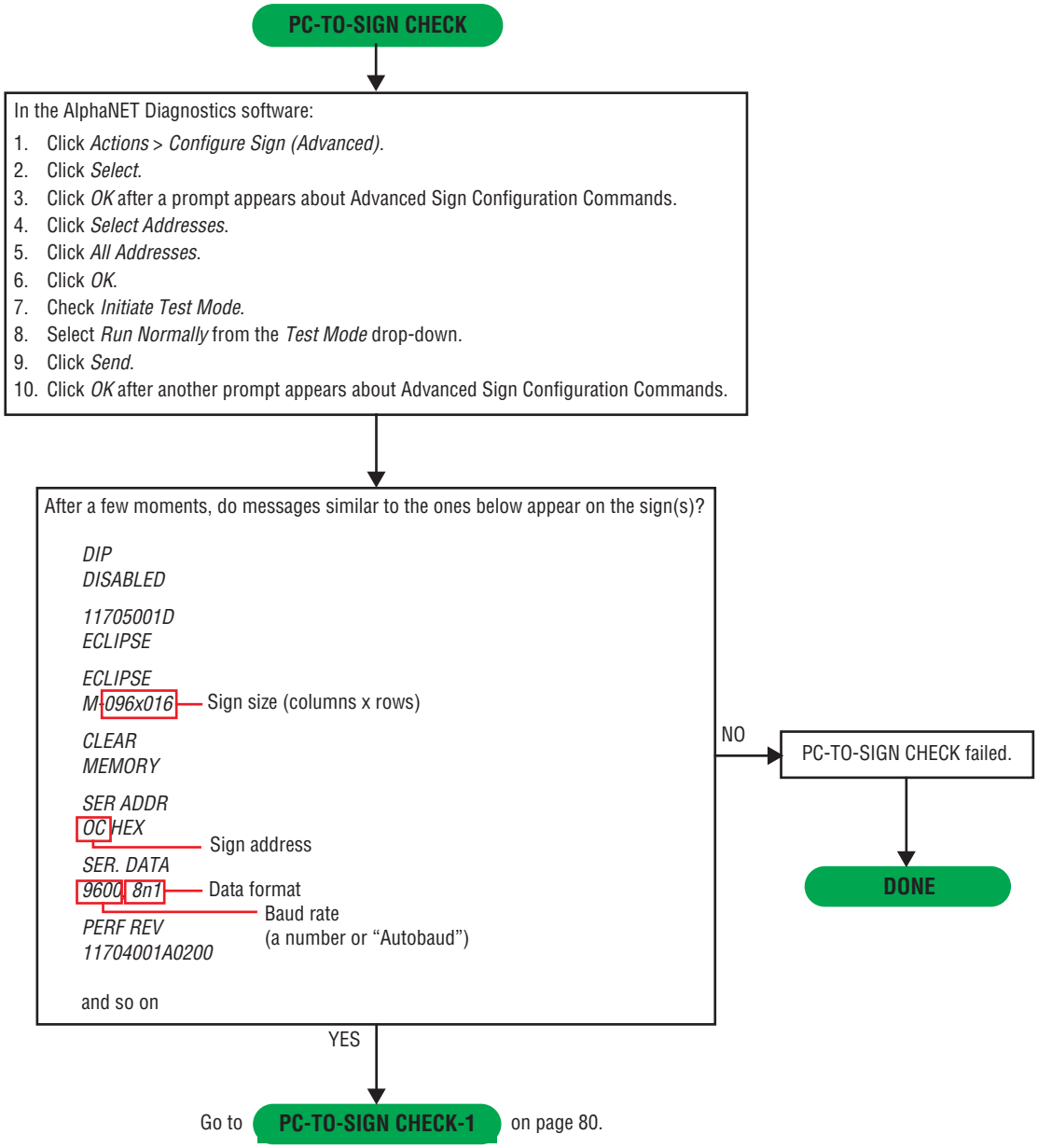



**Figure 9: PC-TO-SIGN CHECK procedure flowchart (1 of 2)**

### 8.2.1.1 Messaging Computer procedure → Cables and Interfaces procedure → Sign procedure — PC-TO-SIGN CHECK-1 procedure

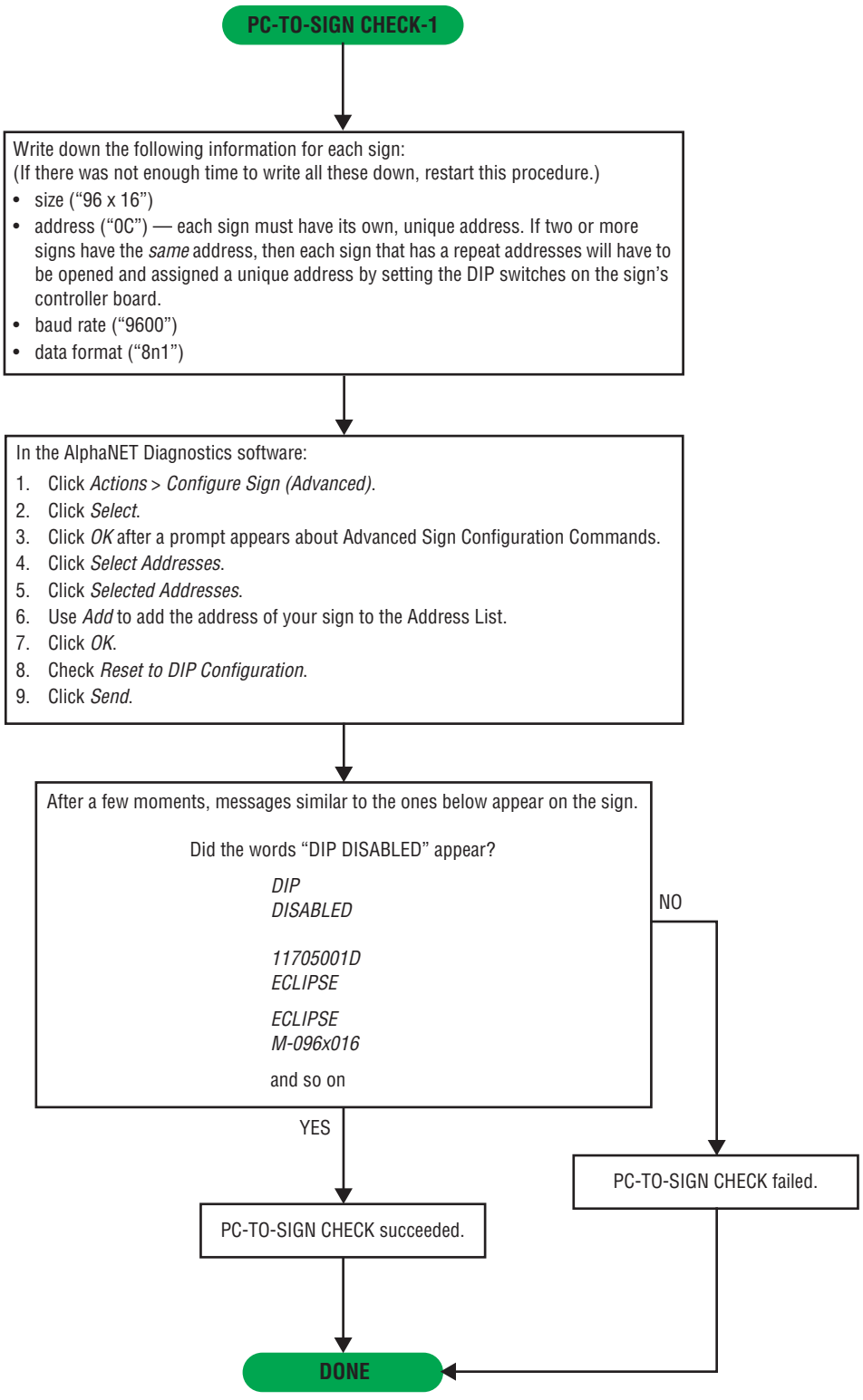



**Figure 10: PC-TO-SIGN CHECK procedure flowchart (2 of 2)**

## 8.2.2 Messaging Computer procedure | Cables and Interfaces procedure | Sign procedure — PC FEEDBACK procedure

Description:

- To see if there is one-way, two-way, or no communication between the messaging computer and the sign(s) that should receive messages from this computer.

  NOTE: This procedure only works if the messaging computer uses one of the following communication interfaces: Converter Box III, modem, Zeus wireless transceiver, Locus radio modem, Lantronix MSS485-T, or an interface that has separate transmit and receive indicators.

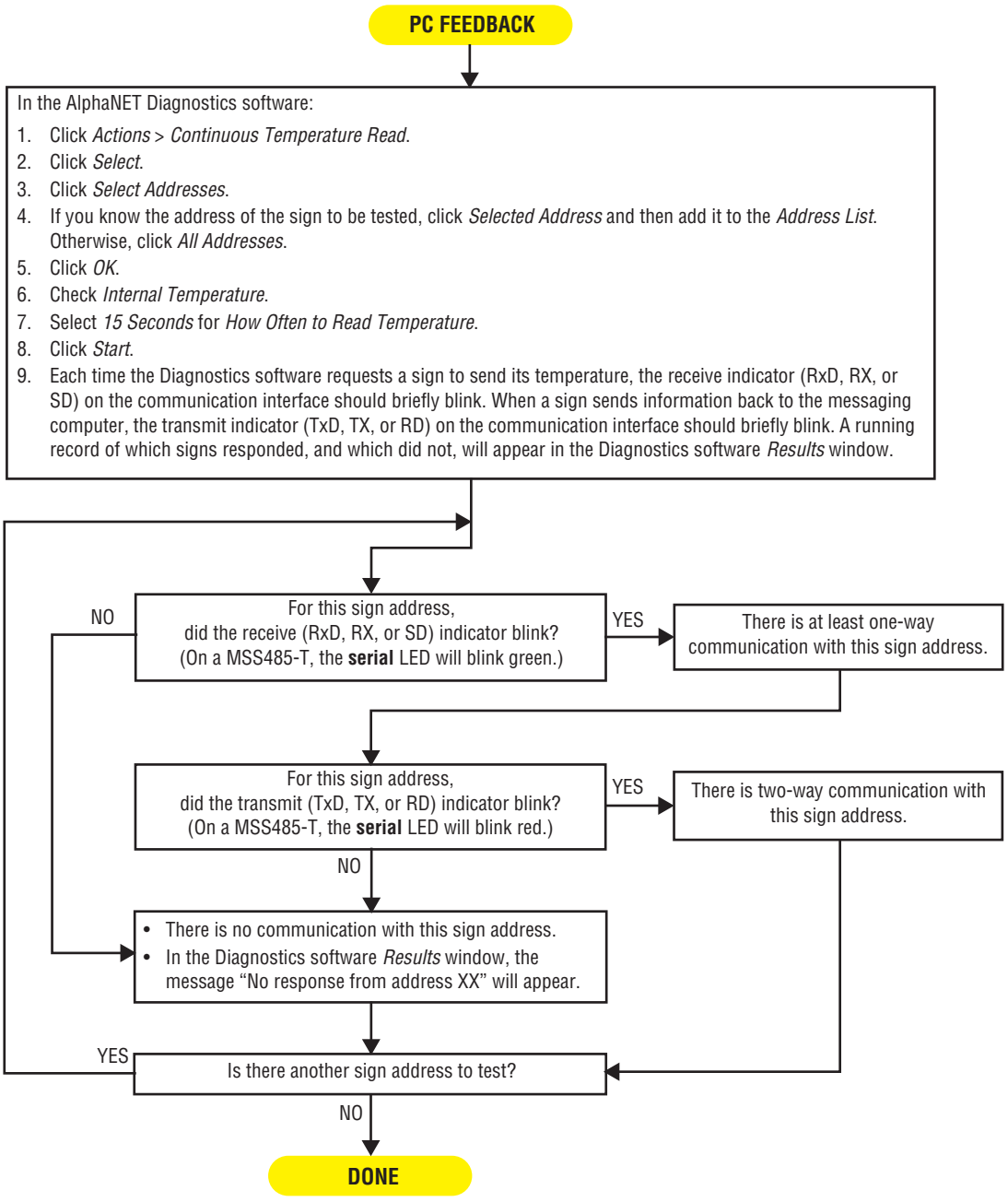



**Figure 11: PC FEEDBACK procedure flowchart**

## 8.2.3 Messaging Computer procedure → Cables and Interfaces procedure → Sign procedure ALPHANET MESSAGE procedure

Description:

- To see if a message created using AlphaNET software and simulated on a computer screen, looks the same on an actual sign.

  NOTE: This procedure erases all messages currently stored in a sign.

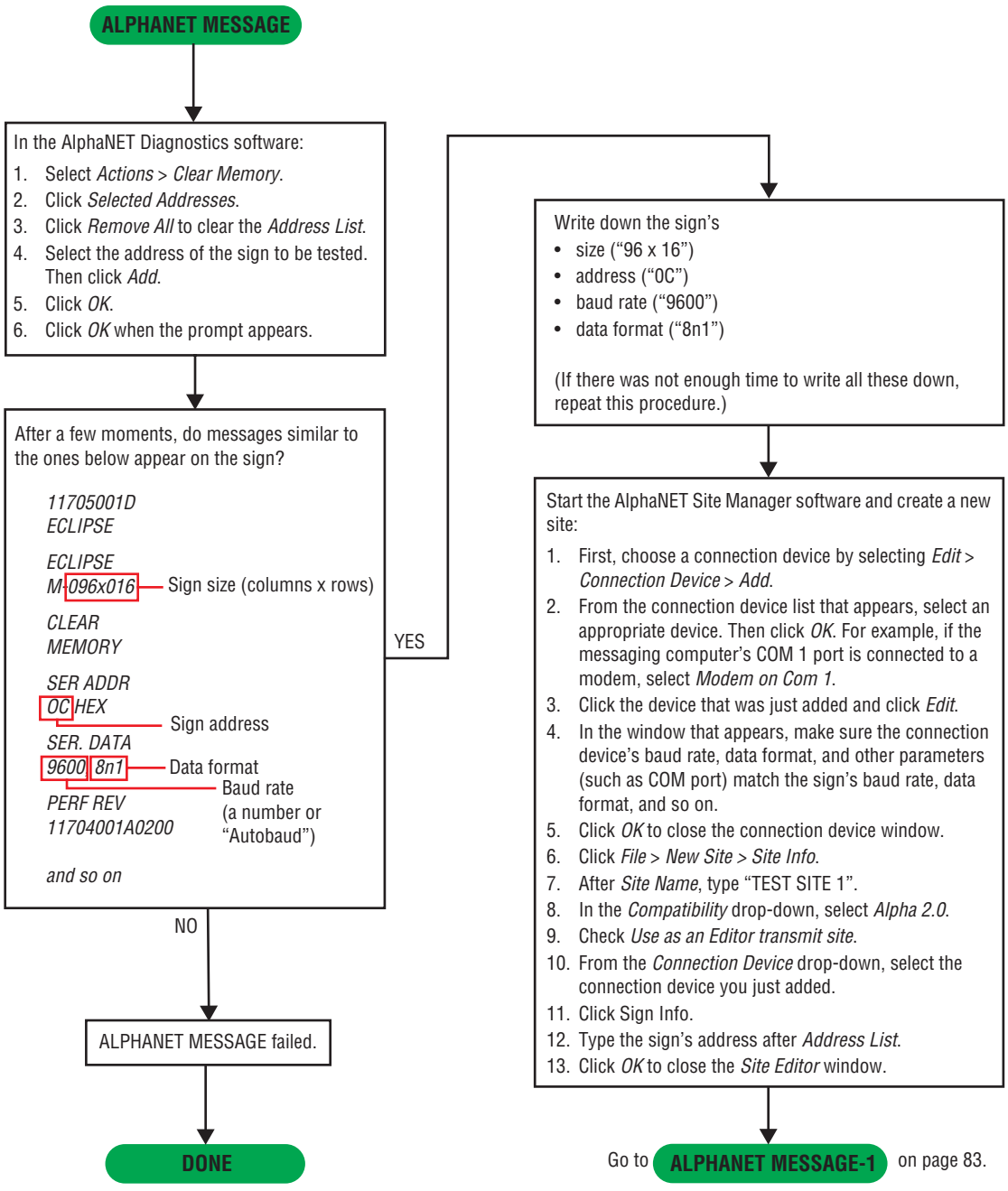



**Figure 12: ALPHANET MESSAGE procedure flowchart (1 of 2)**

### 8.2.3.1 Messaging Computer procedure → Cables and Interfaces procedure → Sign procedure — ALPHANET MESSAGE-1 procedure

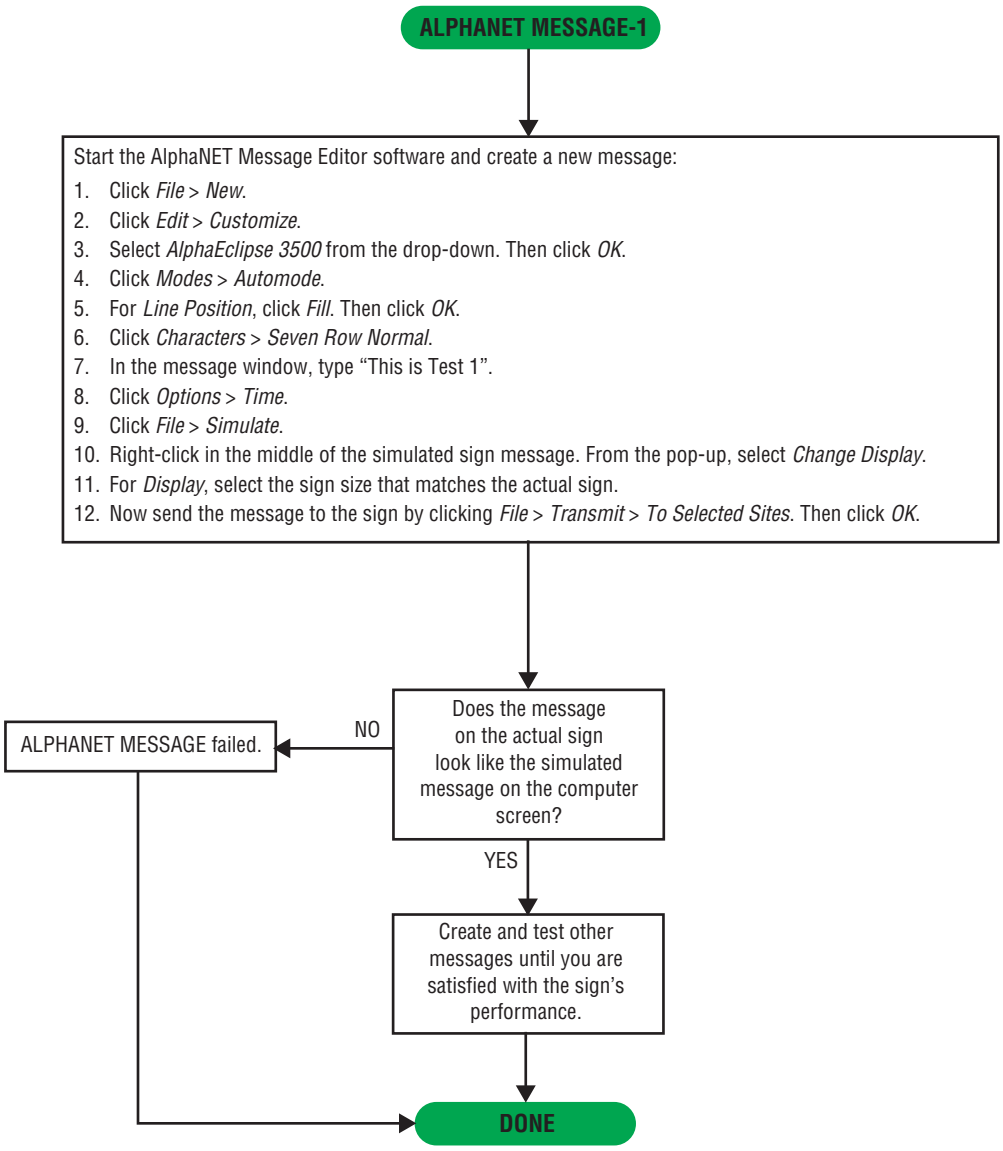



**Figure 13: ALPHANET MESSAGE procedure flowchart (2 of 2)**

## 8.2.4 Messaging Computer procedure | Cables and Interfaces procedure | Sign procedure — PC CHECK procedure

Description:

- To determine if there is a fault in the messaging computer's cables and/or interfaces (modem, wireless transceiver, and so on).

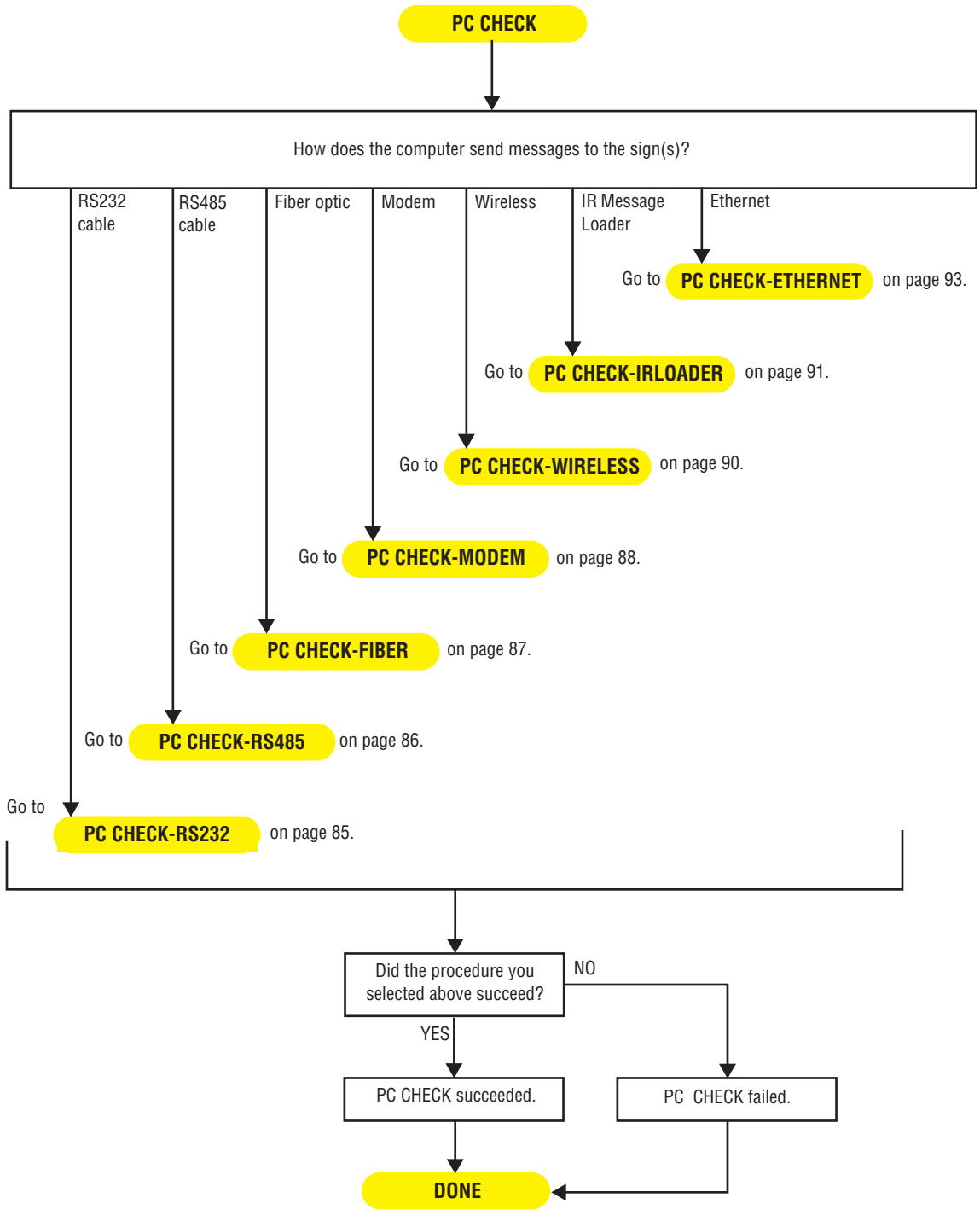



**Figure 14: PC CABLE CHECK procedure flowchart**

### 8.2.4.1 Messaging Computer procedure → Cables and Interfaces procedure → Sign procedure — PC CHECK-RS232 procedure

Description:

- To determine if the messaging computer's settings and RS232 cable are working correctly.

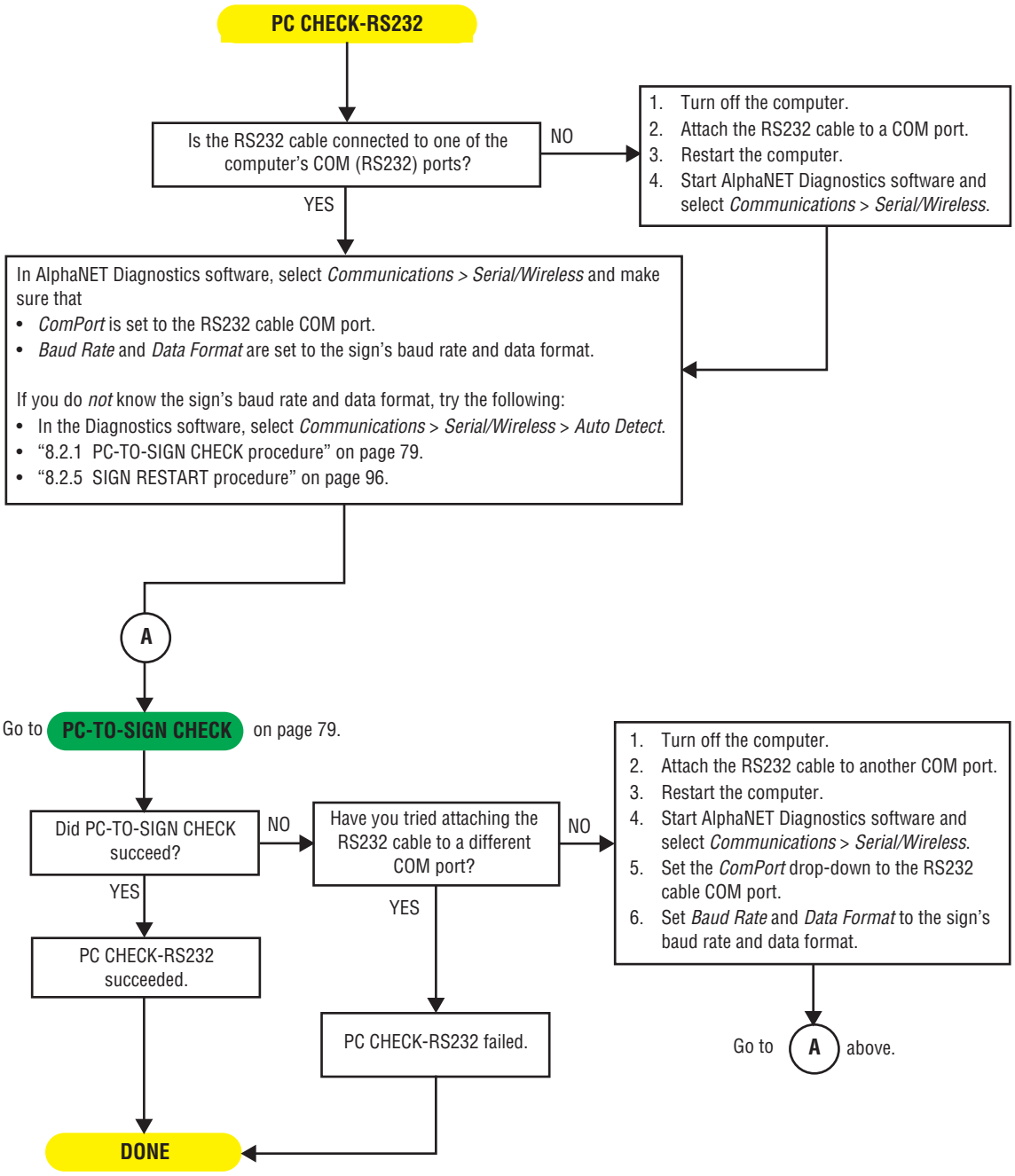



**Figure 15: PC CHECK-RS232 procedure flowchart**

### 8.2.4.2 Messaging Computer procedure > Cables and Interfaces procedure > Sign procedure PC CHECK-RS485 procedure

Description:

- To see if there is communication between the messaging computer and the Converter Box III.

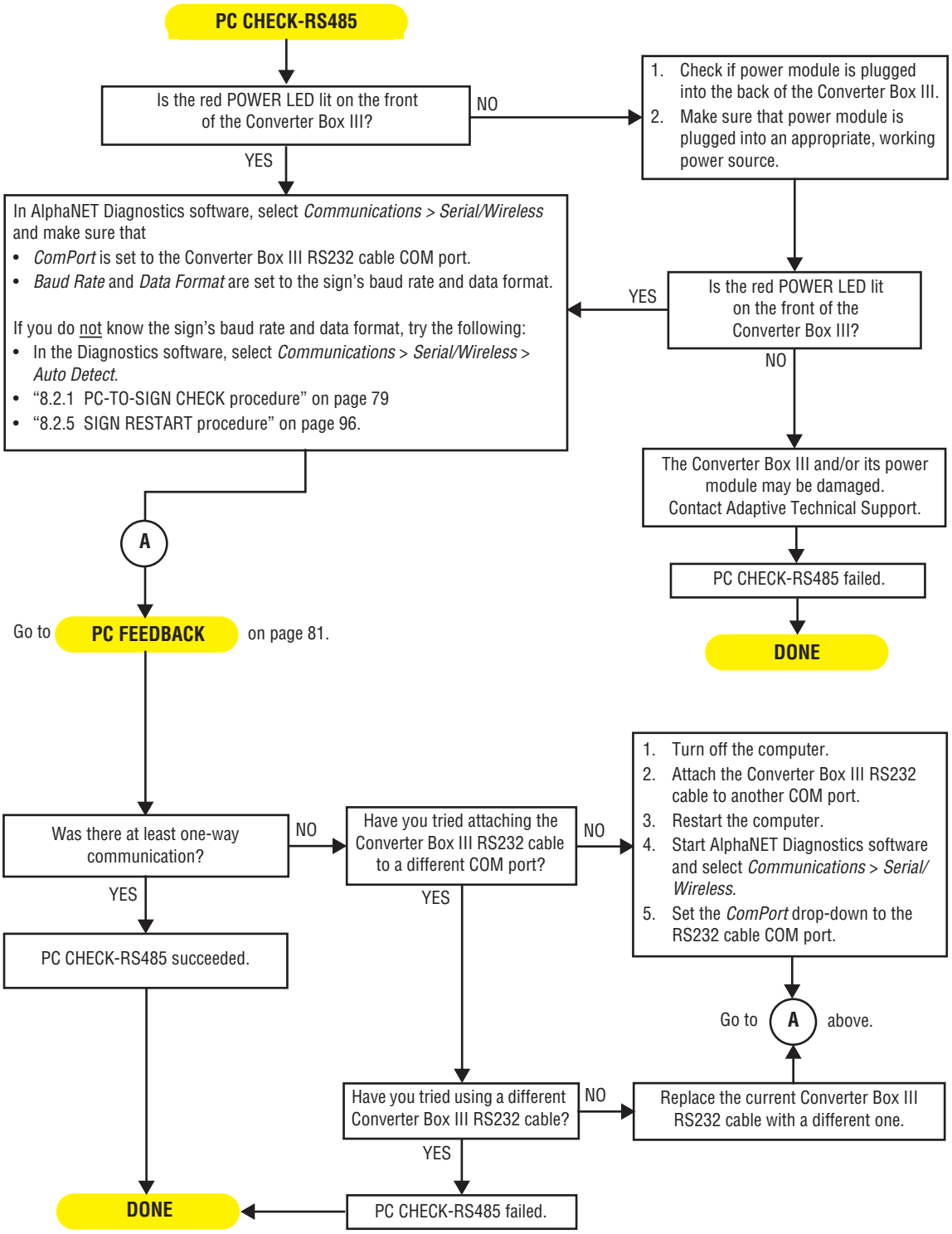



**Figure 16: PC CHECK-RS485 procedure flowchart**

### 8.2.4.3 Messaging Computer procedure | Cables and Interfaces procedure | Sign procedure — PC CHECK-FIBER procedure

Description:

- To see if the fiber optic modem connected to the messaging computer has power and is set up properly.

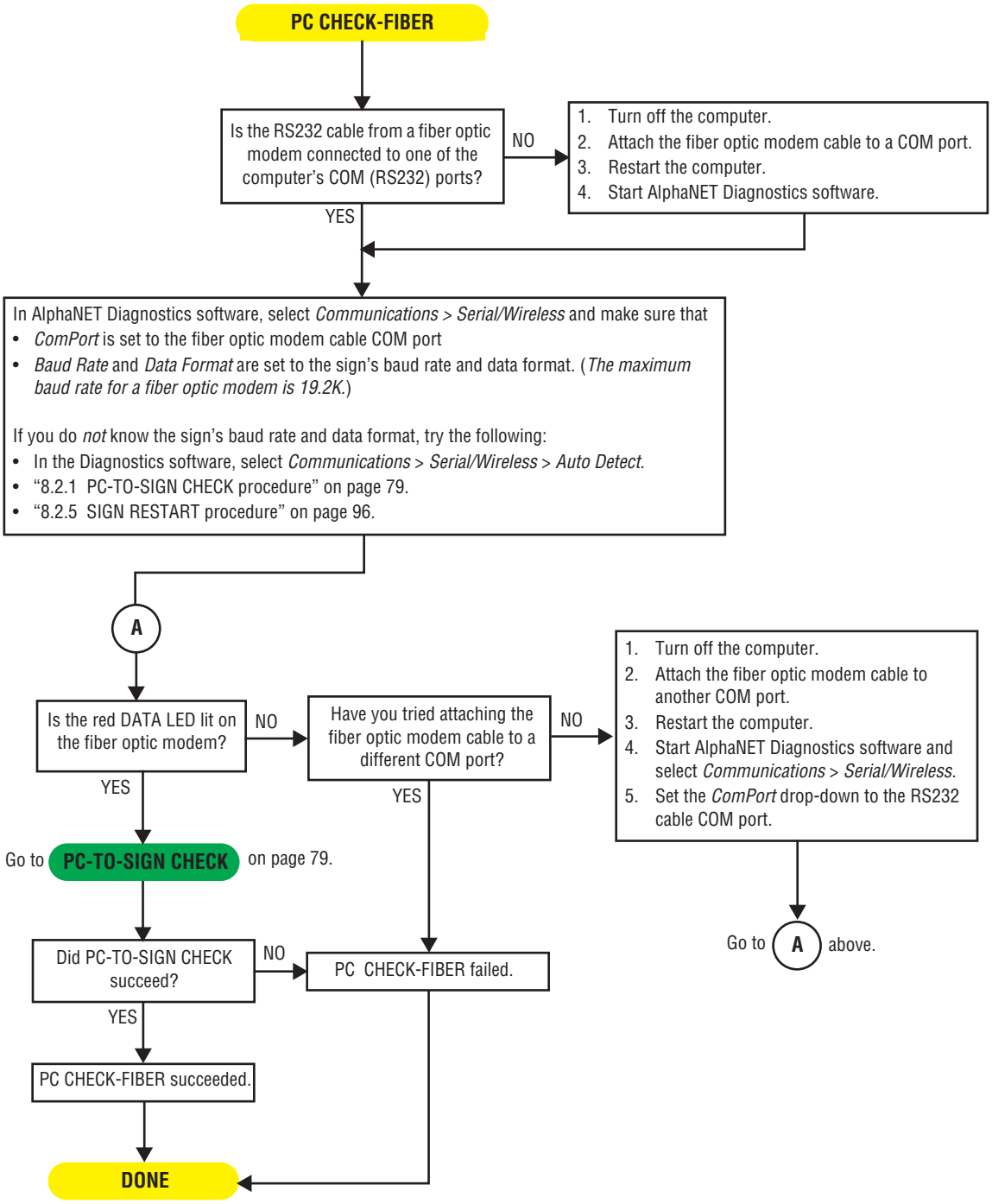



**Figure 17: PC CHECK-FIBER procedure flowchart**

### 8.2.4.4 Messaging Computer procedure > Cables and Interfaces procedure > Sign procedure — PC CHECK-MODEM procedure

Description:

- To see if there is communication between the messaging computer and a modem.

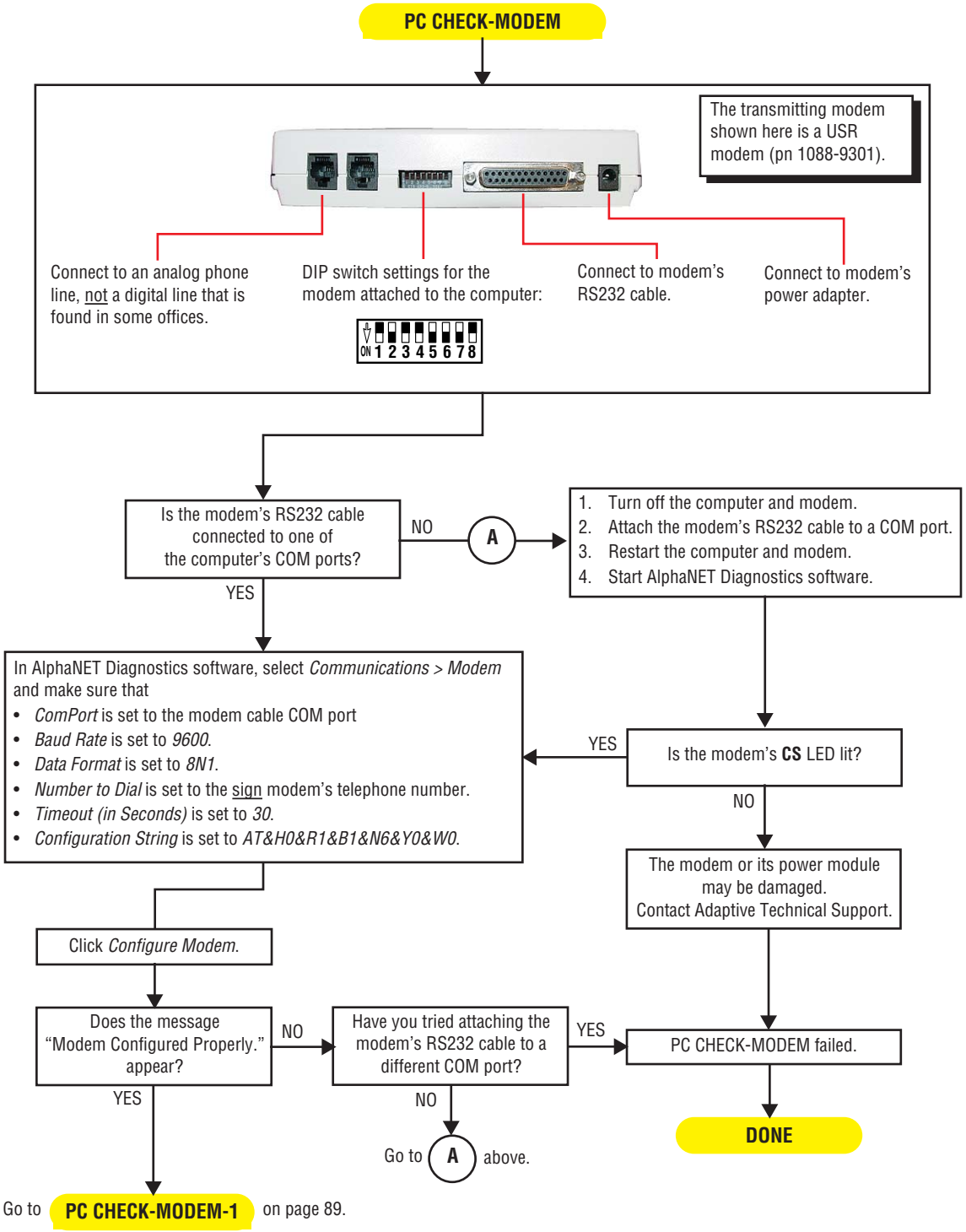



**Figure 18: PC CHECK-MODEM procedure flowchart (1 of 2)**

## 8.2.4.4.1 Messaging Computer procedure > Cables and Interfaces procedure > Sign procedure > PC CHECK-MODEM-1 procedure

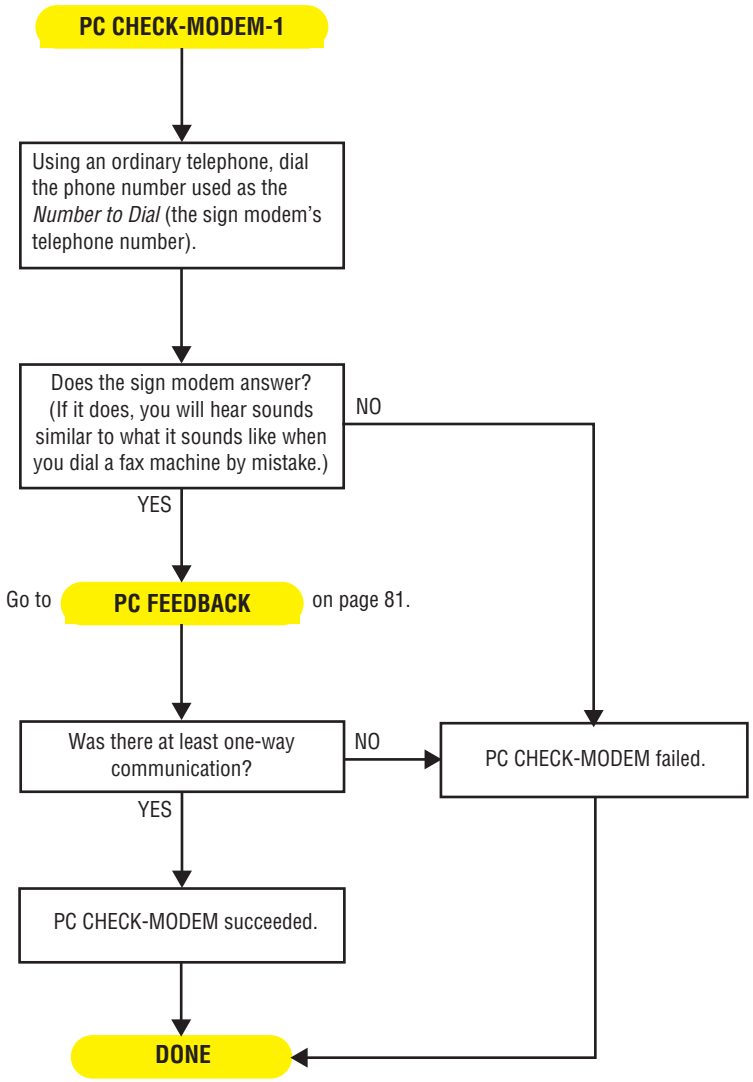



**Figure 19: PC CHECK-MODEM procedure flowchart (2 of 2)**

### 8.2.4.5 Messaging Computer procedure > Cables and Interfaces procedure > Sign procedure — PC CHECK-WIRELESS procedure

Description:

- To see if there is communication between the messaging computer and a wireless transceiver.

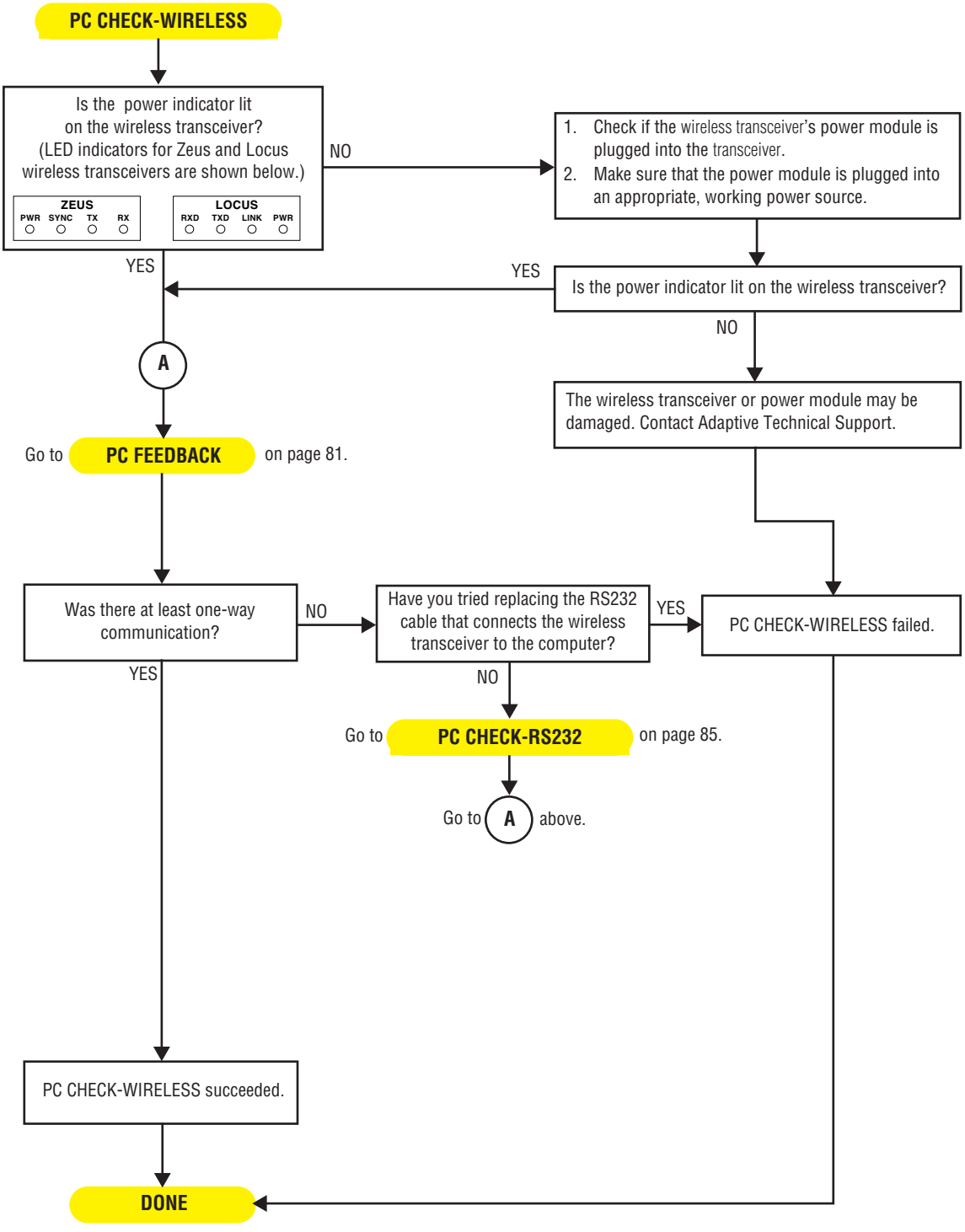



**Figure 20: PC CHECK-WIRELESS procedure flowchart**

## 8.2.4.6 Messaging Computer procedure > Cables and Interfaces procedure > Sign procedure PC CHECK-IRLOADER procedure

Description:

- To see if there is communication between the messaging computer and an IR Message Loader.

**PC CHECK-IR LOADER**

Go to **SIGN RESTART** on page 96

Is the sign's baud rate and data format one of the following?
- AUTOBAUD, 7E2/8N1 (see note)
- 2400, 7E2

NOTE: The AUTOBAUD and 7E2/8N1 settings will only work with:
- AlphaEclipse 2500 signs.
- AlphaEclipse 2600 signs.
- AlphaEclipse 3500 Series B signs.
- AlphaEclipse Series A signs that have MAIN firmware version G or greater.

NO → PC CHECK-IRLOADER failed.

YES


Check the IR Message Loader's firmware revision:
1. Remove the battery from the IR Message Loader.
2. Remove the four screws on the back of loader.
3. Find the firmware EPROM revision letter. In the picture on the left, the revision letter is "H".

Is the revision letter of the IR Message Loader's firmware EPROM "H" or greater?

NO → The IR Message Loader's firmware EPROM must be upgraded. Contact Adaptive Technical Support.

YES

Connect the IR Message Loader to the messaging computer:
1. Replace the back of the IR Message Loader.
2. Replace the battery in the loader.
3. Connect one end of a 3-foot RS232/RS485 data cable (pn 1088-8621) to the loader.
4. Connect the other end of the data cable to a messaging computer COM port using either a DB9 adapter (pn 1088-9108) or a DB-25 adapter (pn 4370-0001C), depending on your computer's COM port.

PC CHECK-IRLOADER failed.

**DONE**

Go to **PC CHECK-IR LOADER-1** on page 92

8.2.4.6.1 Messaging Computer procedure > Cables and Interfaces procedure > Sign procedure > PC CHECK-IR LOADER-1

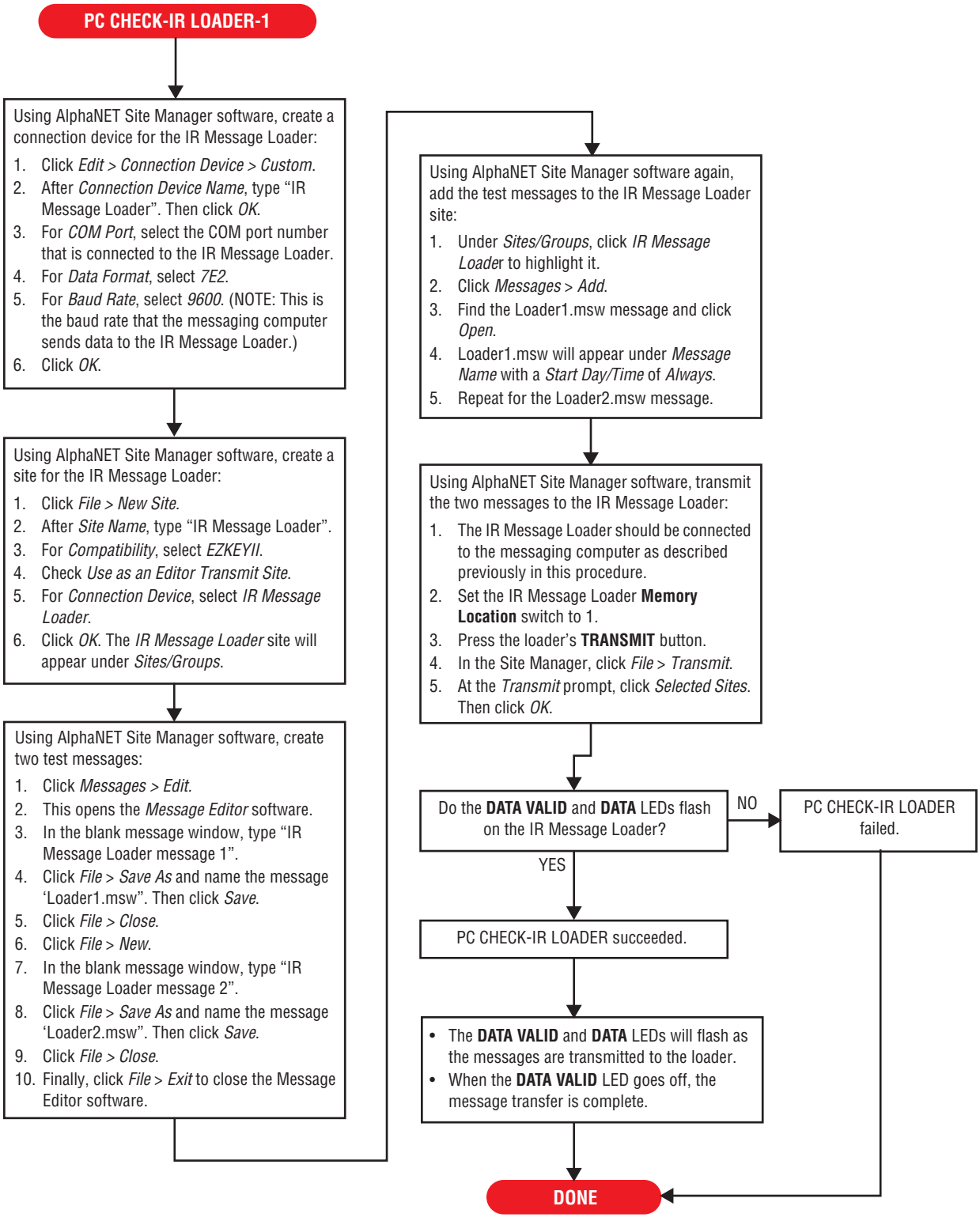



**Figure 21: PC CHECK-IRLOADER procedure flowchart (2 of 2)**

## 8.2.4.7 Messaging Computer procedure > Cables and Interfaces procedure > Sign procedure PC CHECK-ETHERNET procedure

Description:

- To see if there is communication between the messaging computer and a Lantronix MS485-T serial server.

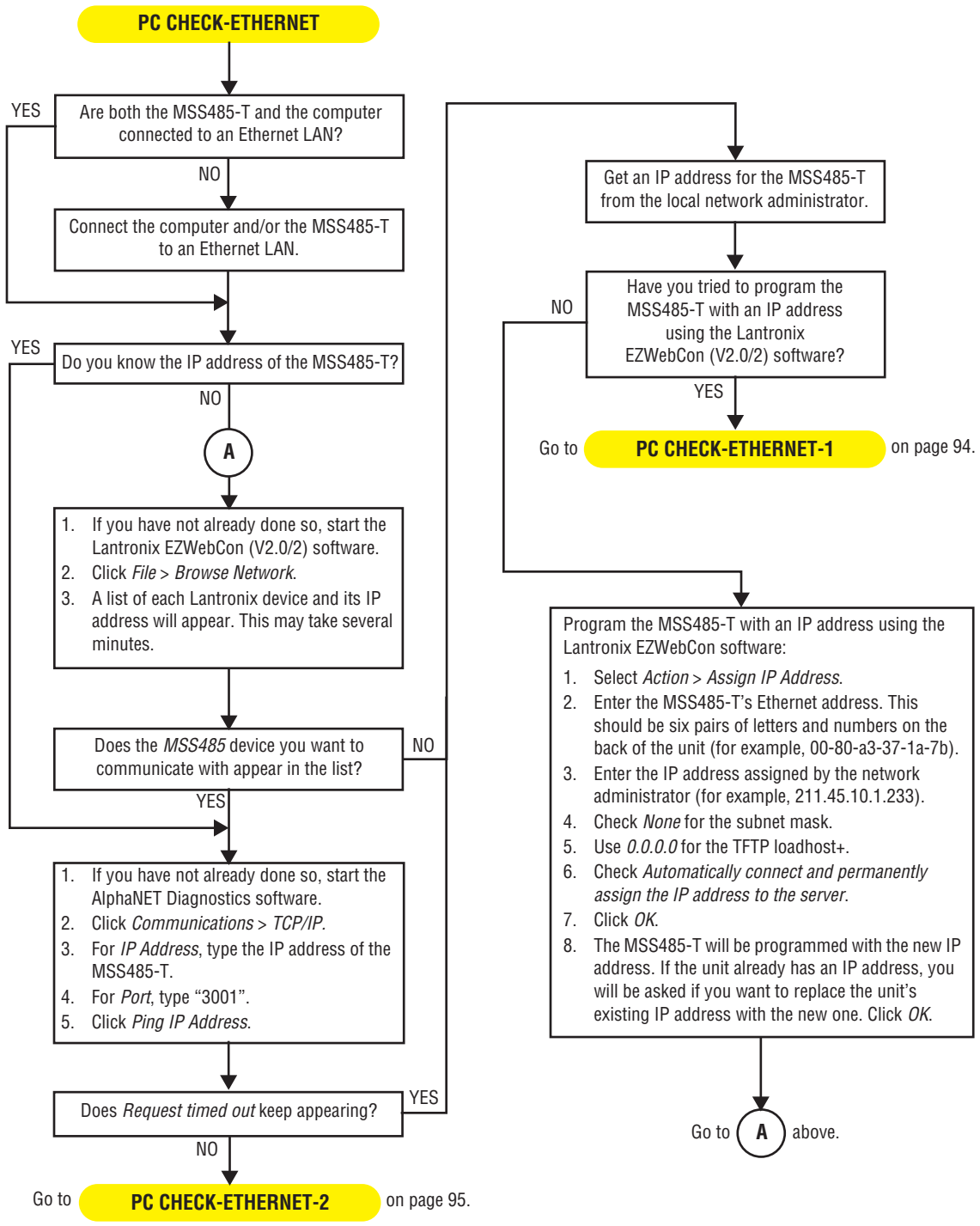



**Figure 22: PC CHECK-ETHERNET procedure flowchart (1 of 3)**

## 8.2.4.7.1 Messaging Computer procedure > Cables and Interfaces procedure > Sign procedure — PC CHECK-ETHERNET-1 procedure

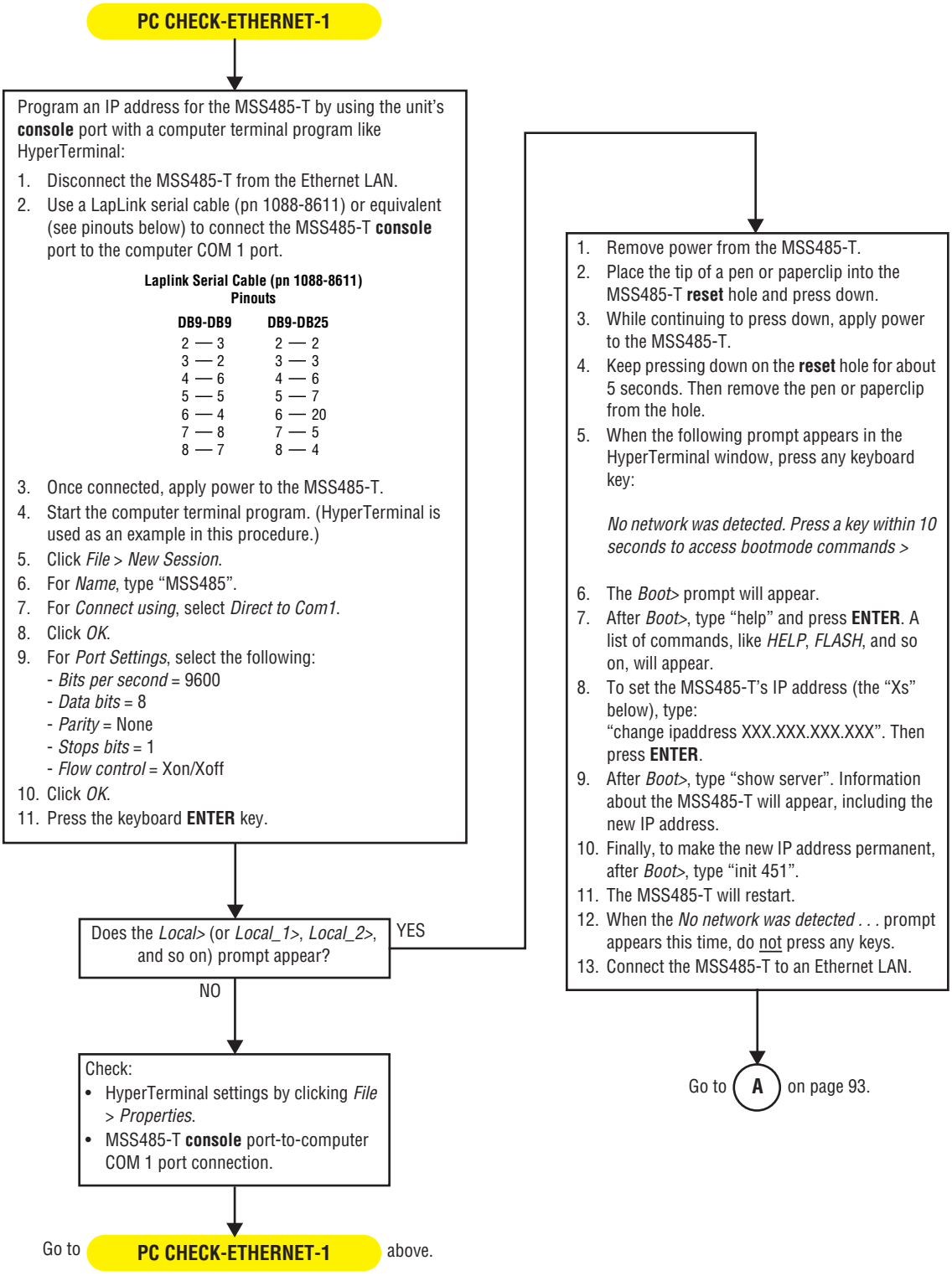



**Figure 23: PC CHECK-ETHERNET procedure flowchart (2 of 3)**

### 8.2.4.7.2 Messaging Computer procedure > Cables and Interfaces procedure > Sign procedure PC CHECK-ETHERNET-2 procedure

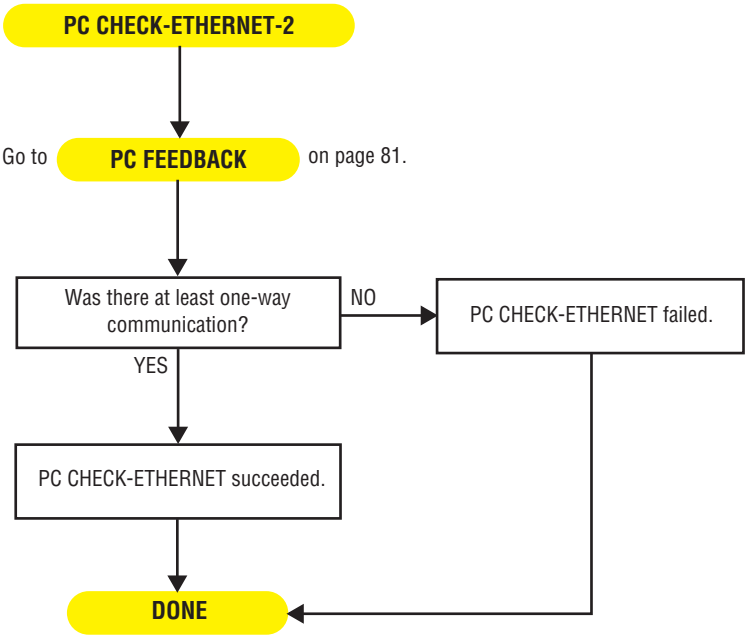



**Figure 24: PC CHECK-ETHERNET procedure flowchart (3 of 3)**

## 8.2.5 Messaging Computer procedure > Cables and Interfaces procedure > Sign procedure SIGN RESTART procedure

Description:

- To get information from the sign like its address, baud rate, and so on by cycling the sign's power.

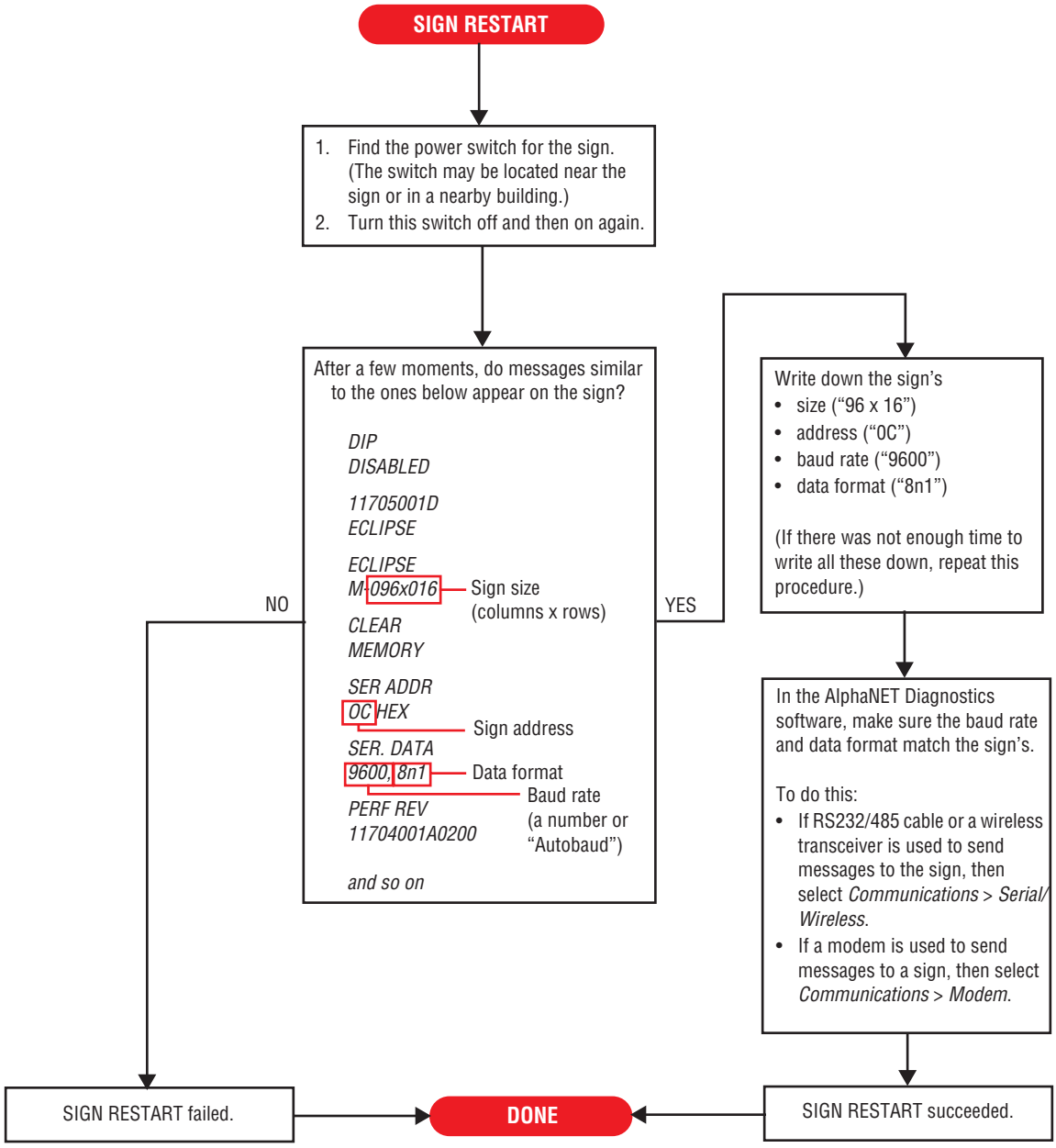


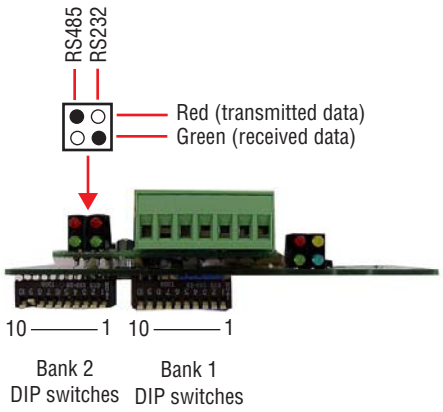

**Figure 25: SIGN RESTART procedure flowchart**

## 8.2.6 Messaging Computer procedure → Cables and Interfaces procedure → Sign procedure TEST MODES procedure

Description:

- To determine if a sign is locked into one of the following test modes (test mode names taken from AlphaNET Diagnostics software).
  - ❏ Test Pattern Mode — diagonal lines and blocks keep repeating on the sign.
  - ❏ Test Match Mode — all LEDs are on.
  - ❏ Production Test Mode — sign starts up filled with letter "B"s. Then a series of letters and numbers appear on the far right side of the sign.
  - ❏ Temperature Test Mode — the temperature is displayed on the far right side of the sign. If a temperature probe is not connected to the sign, then the letters "ERR" will appear instead of the temperature.
- To set the sign to normal operating mode.

**Table 21: Test Mode information**

| **Test Mode**<br><br>(These are the names used in AlphaNET Diagnostics software.) | **DIP switch settings** | **Does the sign display the Diagnostics software *Broadcast Message*?** | **Can the sign be reset to normal operation using the Diagnostics software?**<br><br>*Configure Sign (Advanced) > Initiate Test Mode > Run Normally* | **Do controller board LEDs blink during *Broadcast Message*?**<br><br>  |
|---|---|---|---|---|
| Test Pattern | Bank 2: #10 = OFF, #9 = ON<br>Bank 1: n/a | Yes | Yes<br><br>(The message "DIP DISABLED" will appear each time the sign is restarted.) | Yes |
| Test Match Mode | Bank 2: #10 = ON, #9 = OFF<br>Bank 1: n/a | | | |
| Production Test Mode | Bank 2: n/a<br>Bank 1: #9 = OFF, #8 = ON | | | |
| Temperature Test Mode | Bank 2: n/a<br>Bank 1: #9 = ON, #8 = OFF | | | |

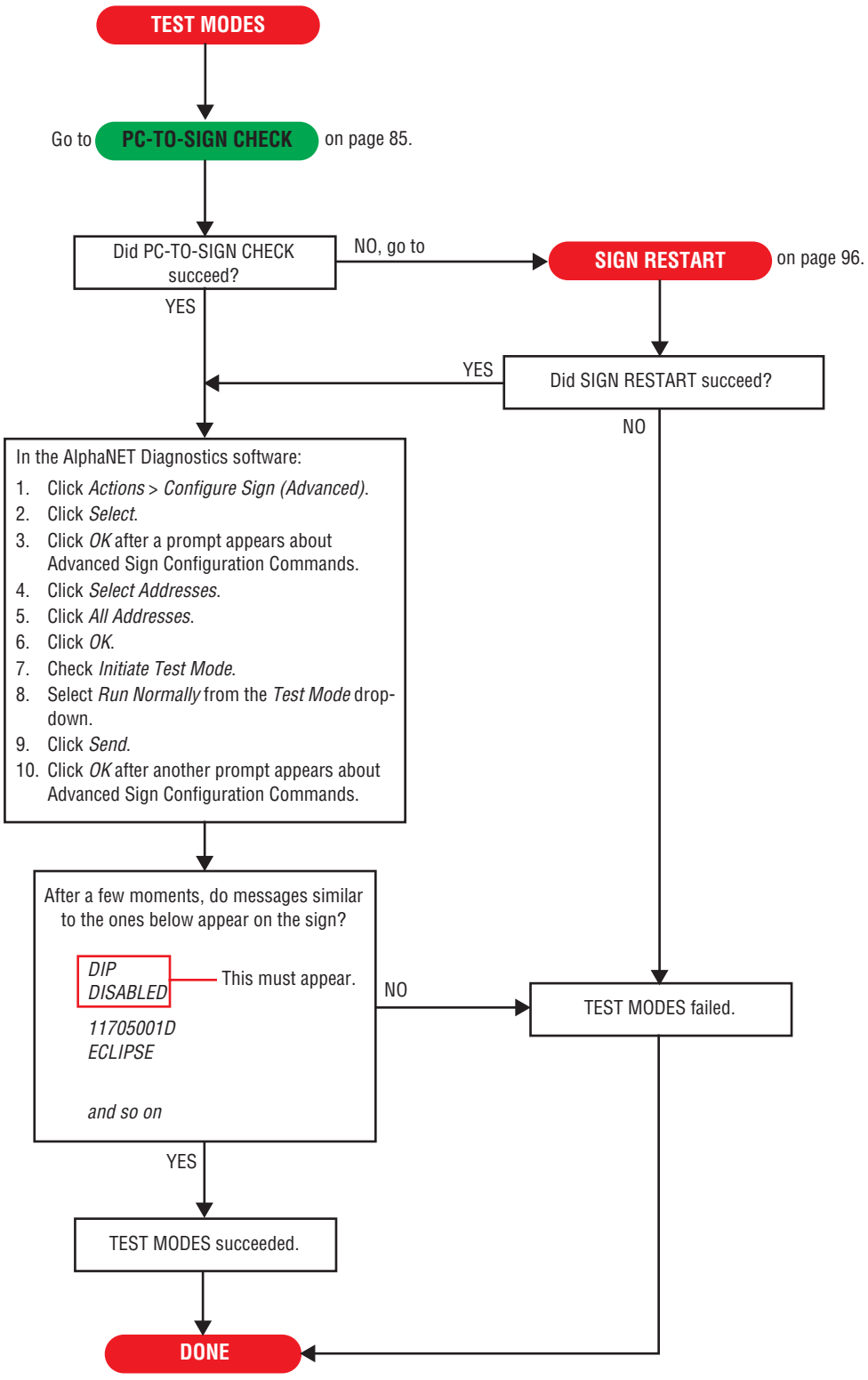
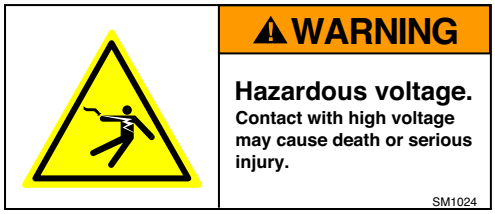



**Figure 26: TEST MODES procedure flowchart**

## 8.2.7 Messaging Computer procedure > Cables and Interfaces procedure > Sign procedure SIGN FEEDBACK procedure

Description:

- To see if there is one-way, two-way, or no communication between the messaging computer and the sign.



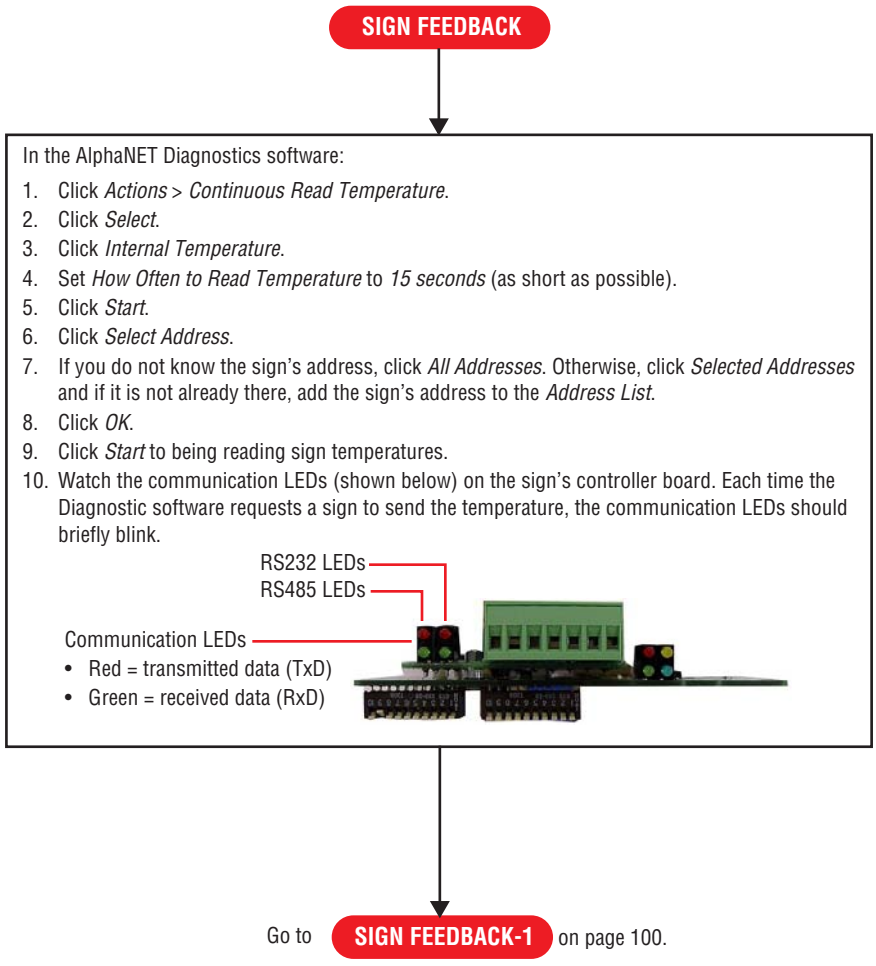




**Figure 27: SIGN FEEDBACK procedure flowchart (1 of 2)**

## 8.2.7.1 Messaging Computer procedure > Cables and Interfaces procedure > Sign procedure SIGN FEEDBACK-1 procedure

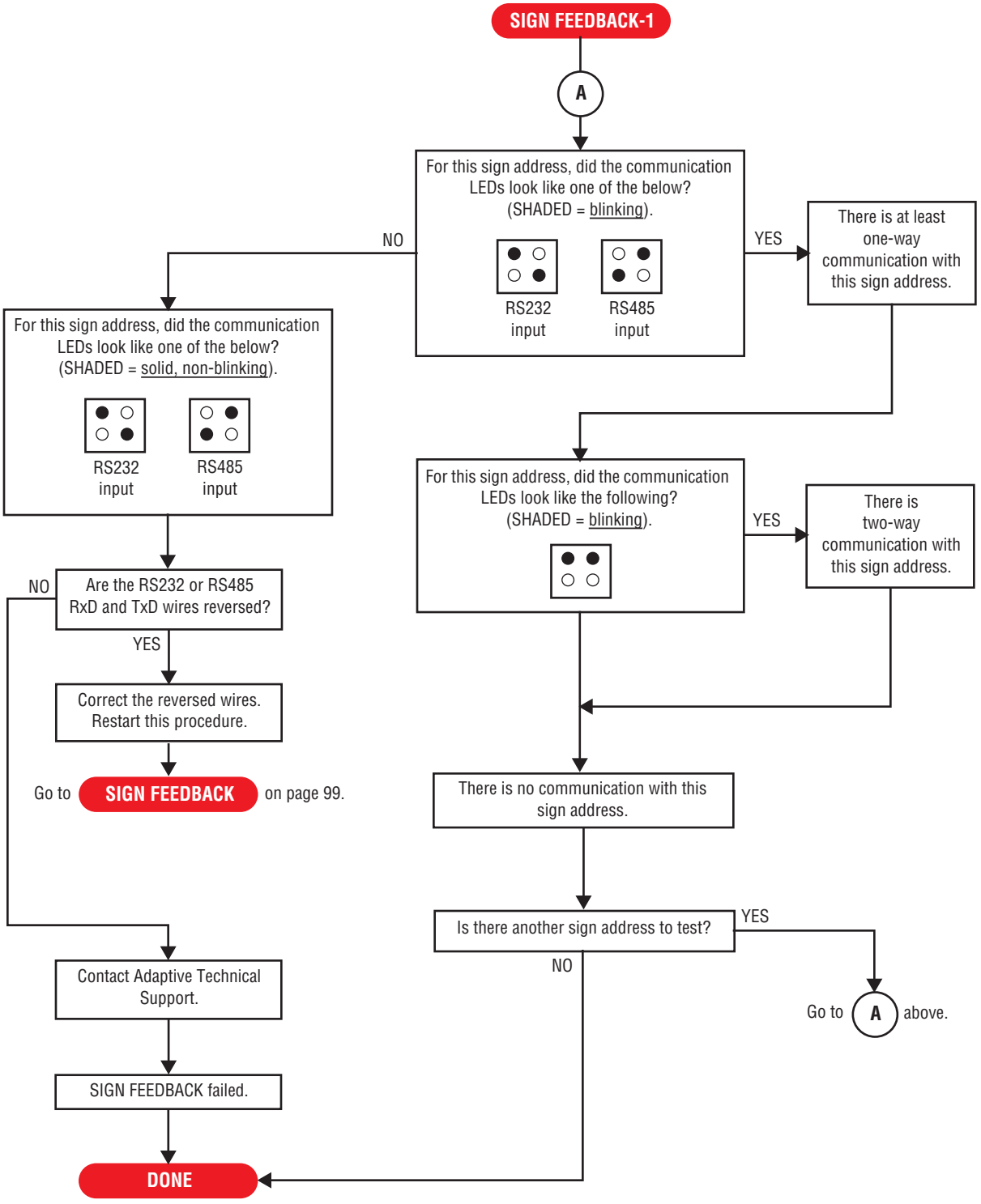
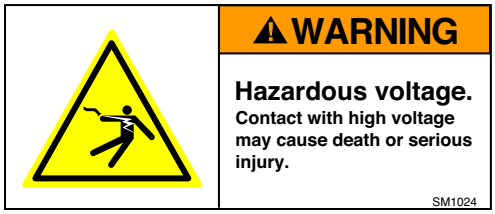



**Figure 28: SIGN FEEDBACK procedure flowchart (2 of 2)**

## 8.2.8 Messaging Computer procedure > Cables and Interfaces procedure > Sign procedure SIGN POWER procedure

Description:

- To see if power is supplied to the sign and its components (controller board, power supplies, and so on).



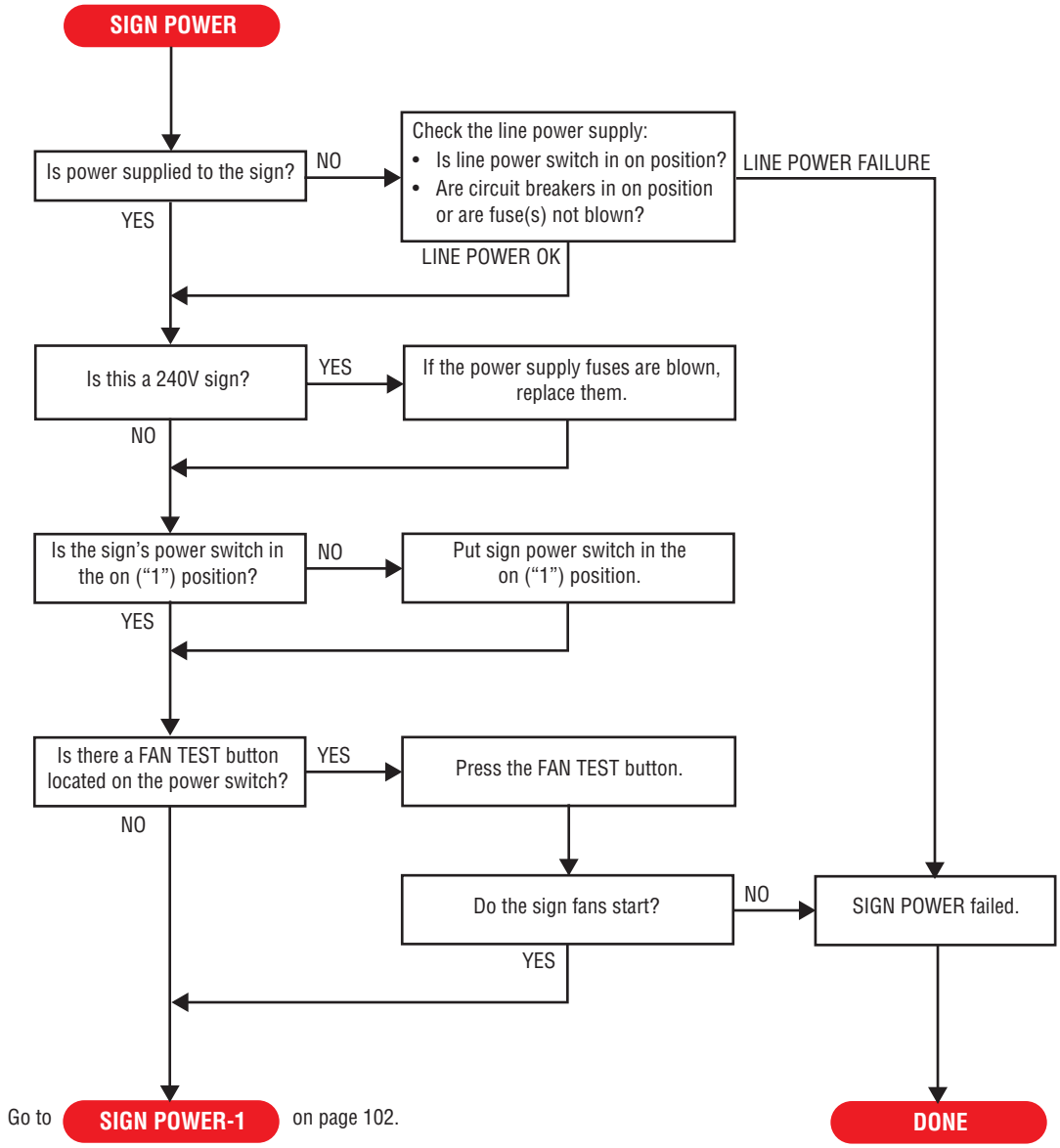




**Figure 29: SIGN POWER procedure flowchart (1 of 3)**

## 8.2.8.1 Messaging Computer procedure > Cables and Interfaces procedure > Sign procedure SIGN POWER-1 procedure

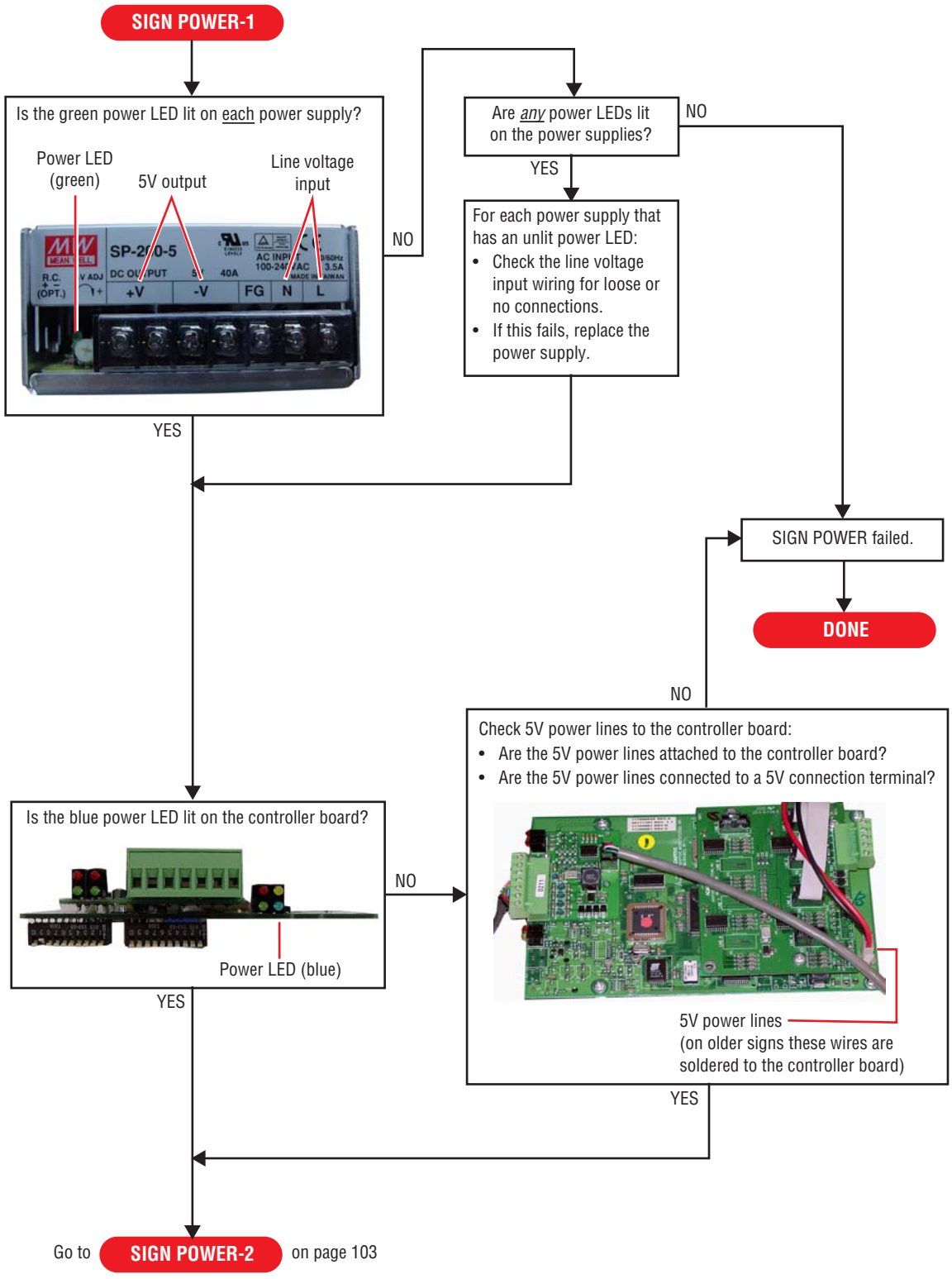



**Figure 30: SIGN POWER procedure flowchart (2 of 3)**

## 8.2.8.2 Messaging Computer procedure → Cables and Interfaces procedure → Sign procedure SIGN POWER-2 procedure

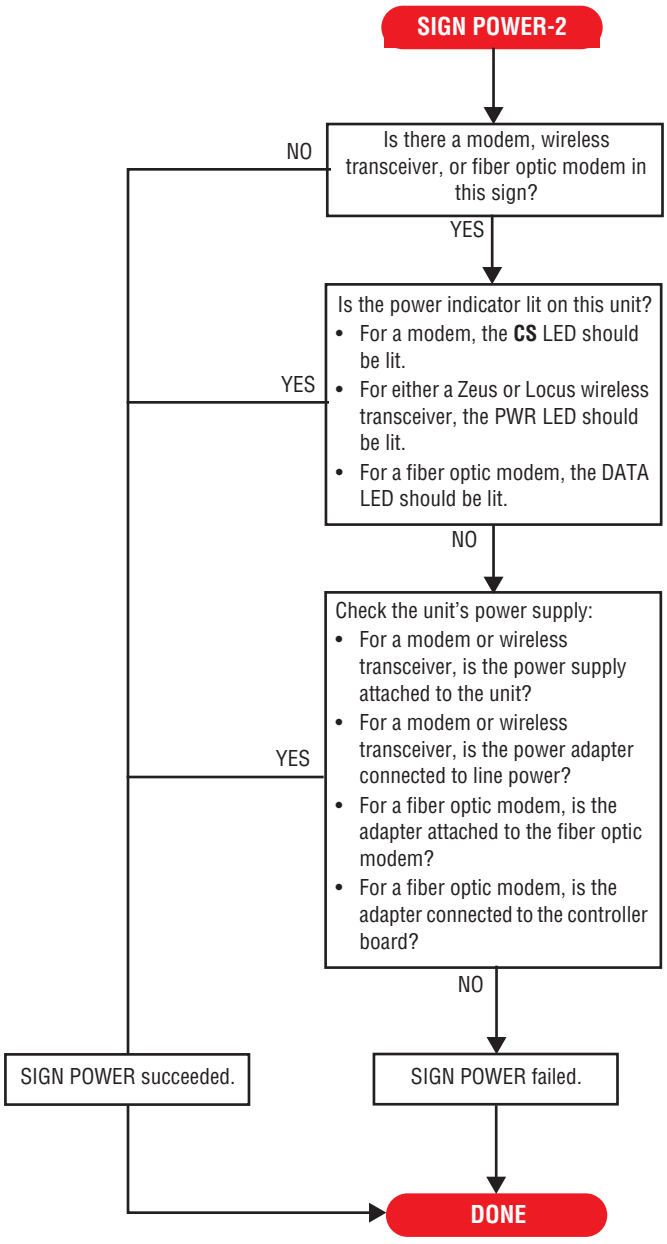
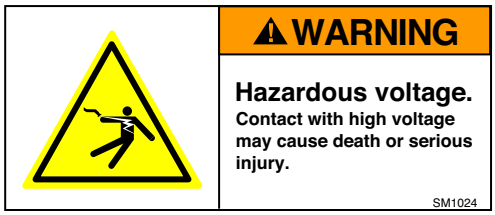



**Figure 31: SIGN POWER procedure flowchart (3 of 3)**

## 8.2.9 Messaging Computer procedure > Cables and Interfaces procedure > Sign procedure SIGN CHECK procedure

Description:

- To determine if there is a fault in the sign's cables and/or interfaces (modem, wireless transceiver, and so on).



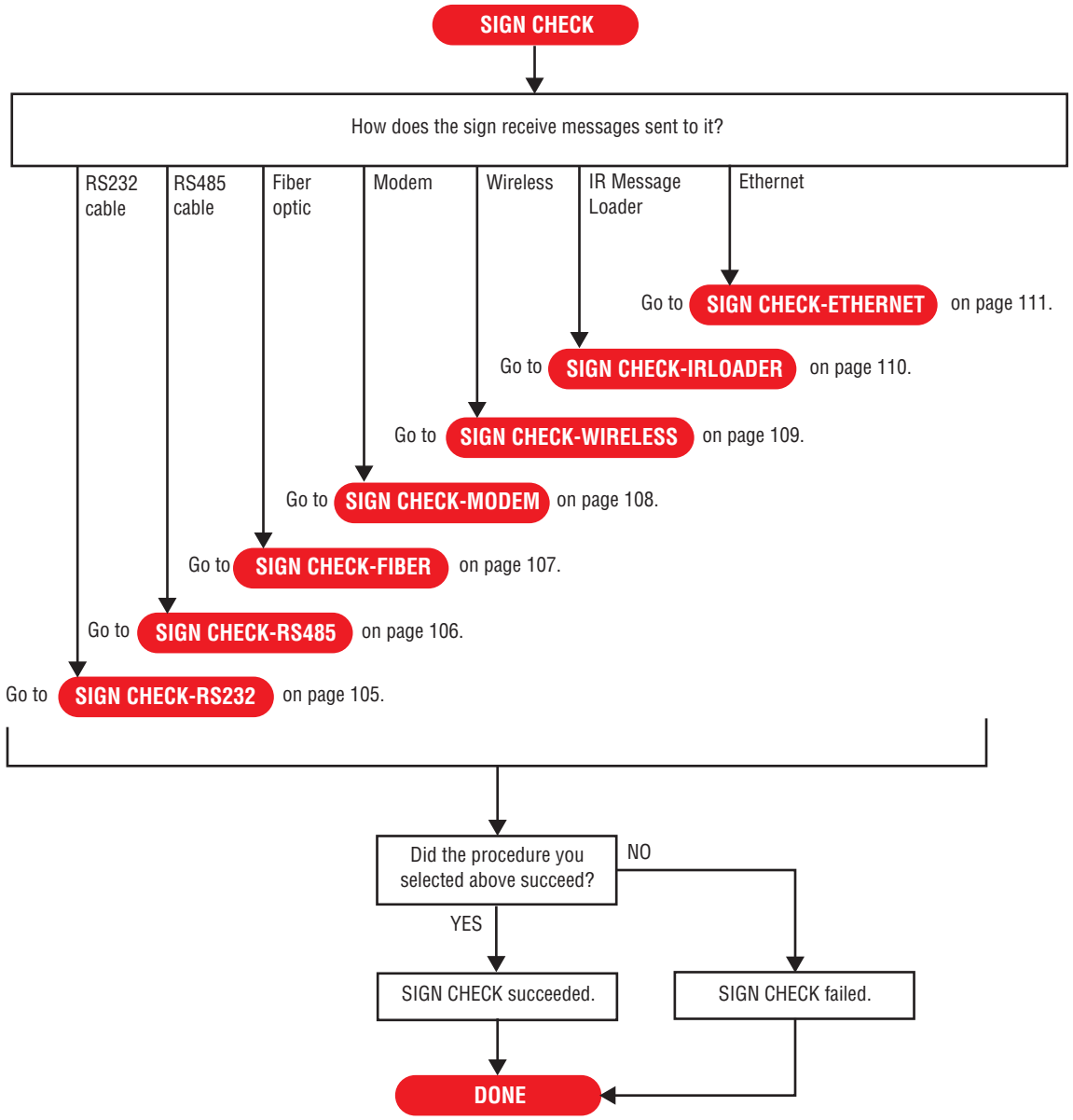
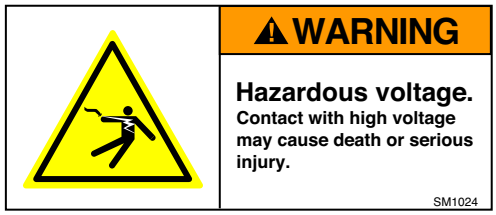




**Figure 32: SIGN CHECK procedure flowchart**

### 8.2.9.1 Messaging Computer procedure > Cables and Interfaces procedure > Sign procedure SIGN CHECK-RS232 procedure

Description:

- To determine if the sign's RS232 cabling is working correctly.



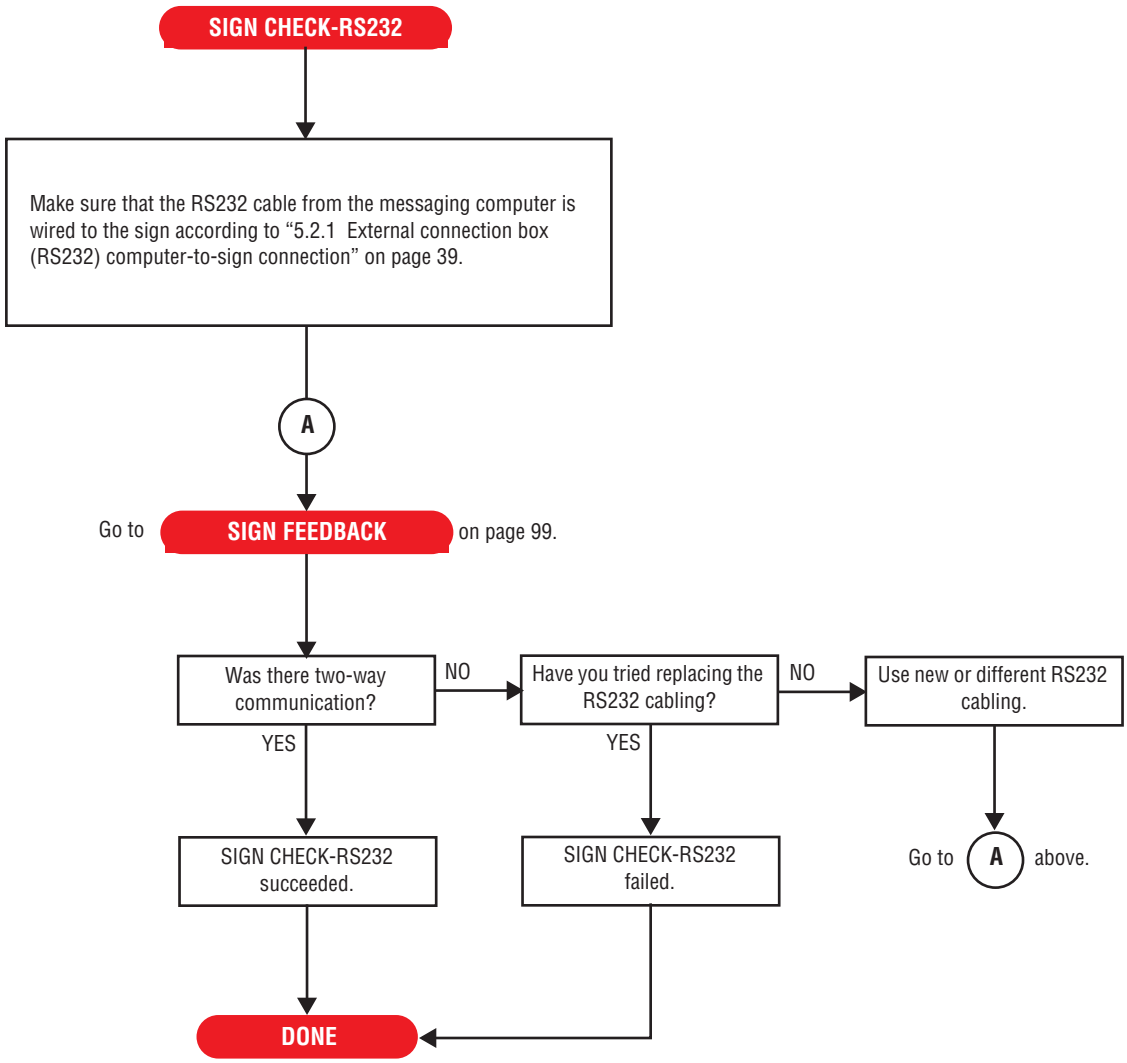
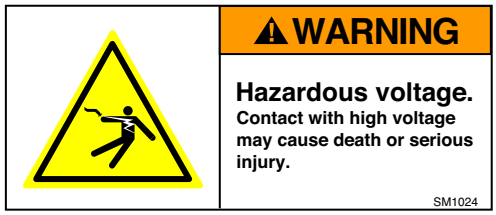




**Figure 33: SIGN CHECK-RS232 procedure flowchart**

### 8.2.9.2 Messaging Computer procedure > Cables and Interfaces procedure > Sign procedure SIGN CHECK-RS485 procedure

Description:

- To determine if the sign's RS485 cabling is working correctly.



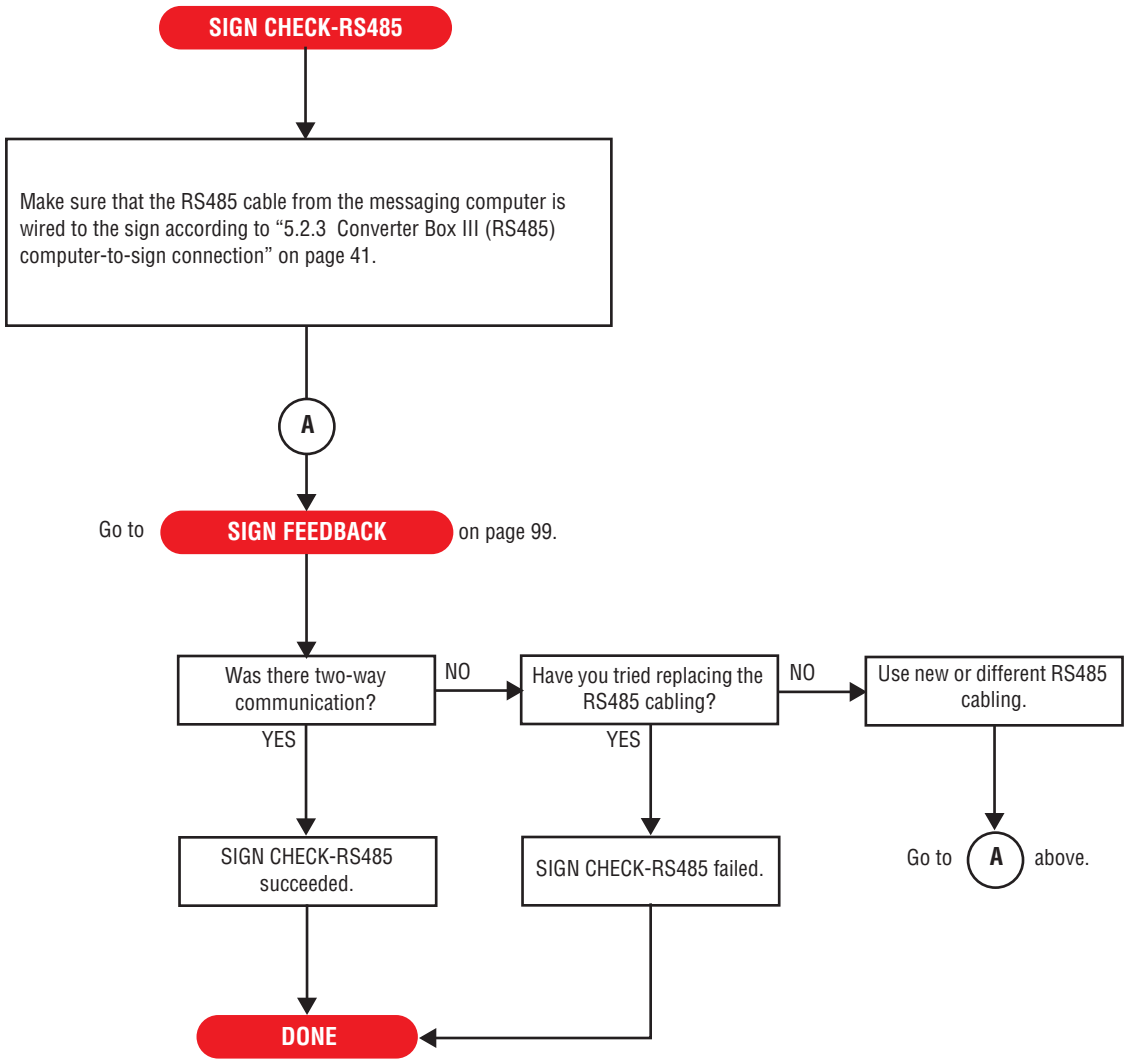
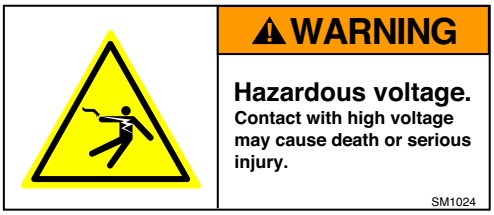




**Figure 34: SIGN CHECK-RS485 procedure flowchart**

### 8.2.9.3 Messaging Computer procedure → Cables and Interfaces procedure → Sign procedure SIGN CHECK-FIBER procedure

Description:

- To determine if the sign's fiber optic modem and cabling are working correctly.



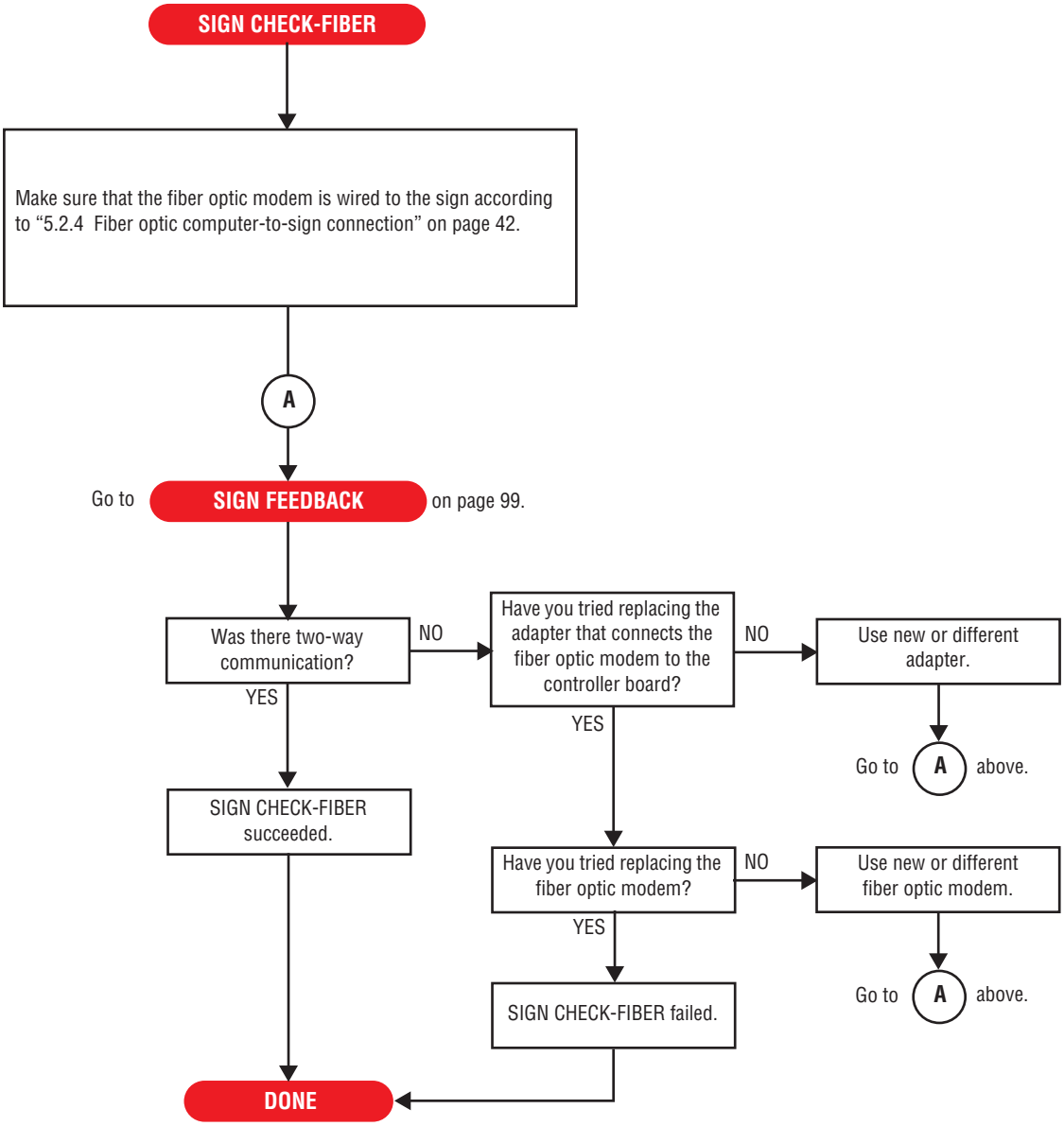
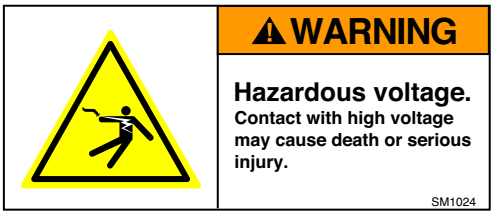




**Figure 35: SIGN CHECK-FIBER procedure flowchart**

### 8.2.9.4 Messaging Computer procedure > Cables and Interfaces procedure > Sign procedure SIGN CHECK-MODEM procedure

Description:

- To determine if the sign's modem and cabling are working correctly.



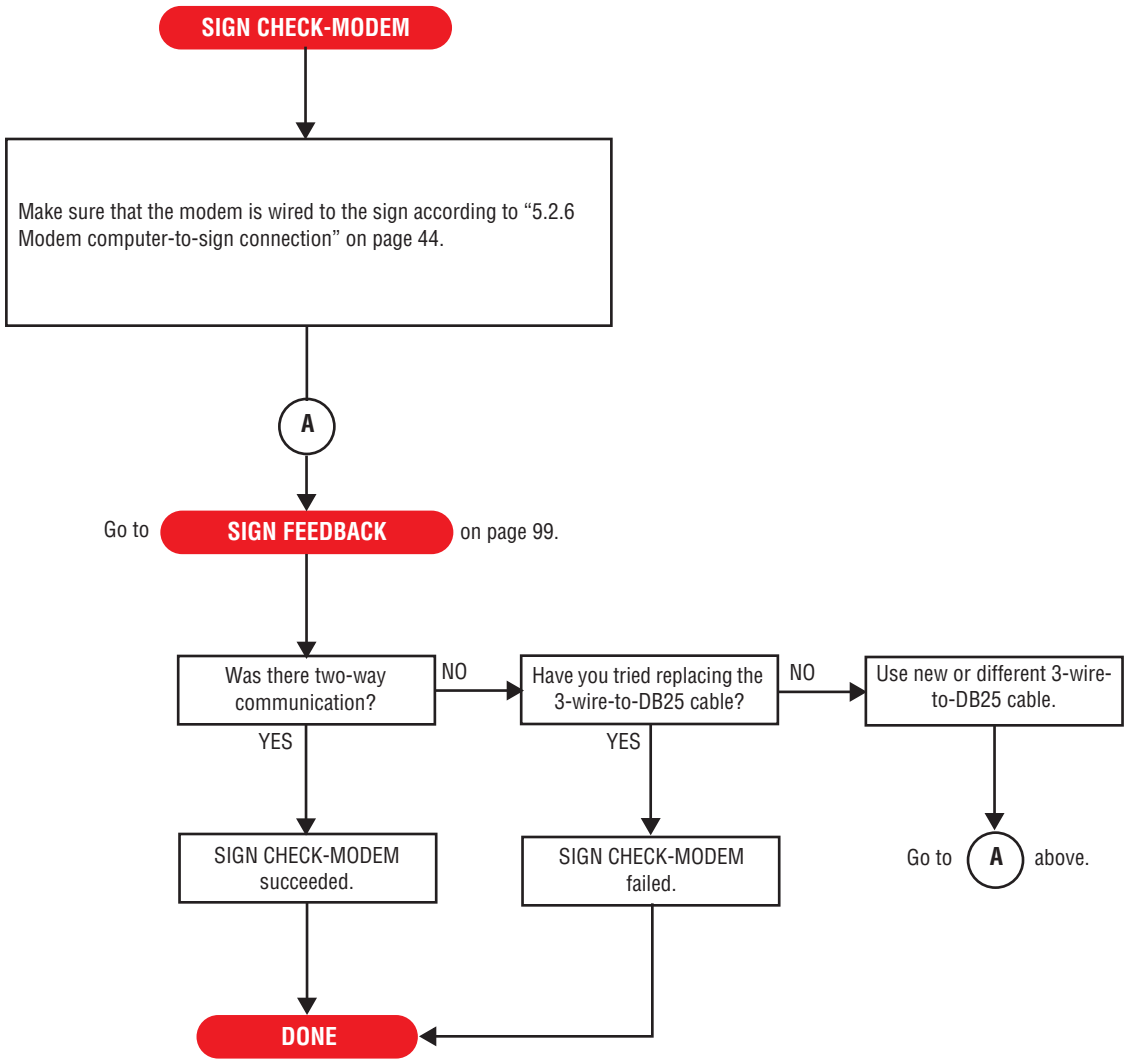
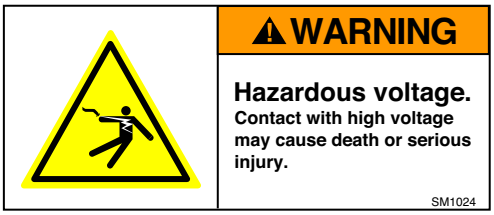




**Figure 36: SIGN CHECK-MODEM procedure flowchart**

### 8.2.9.5 Messaging Computer procedure > Cables and Interfaces procedure > Sign procedure SIGN CHECK-WIRELESS procedure

Description:

- To determine if the sign's wireless transceiver and cabling are working correctly.



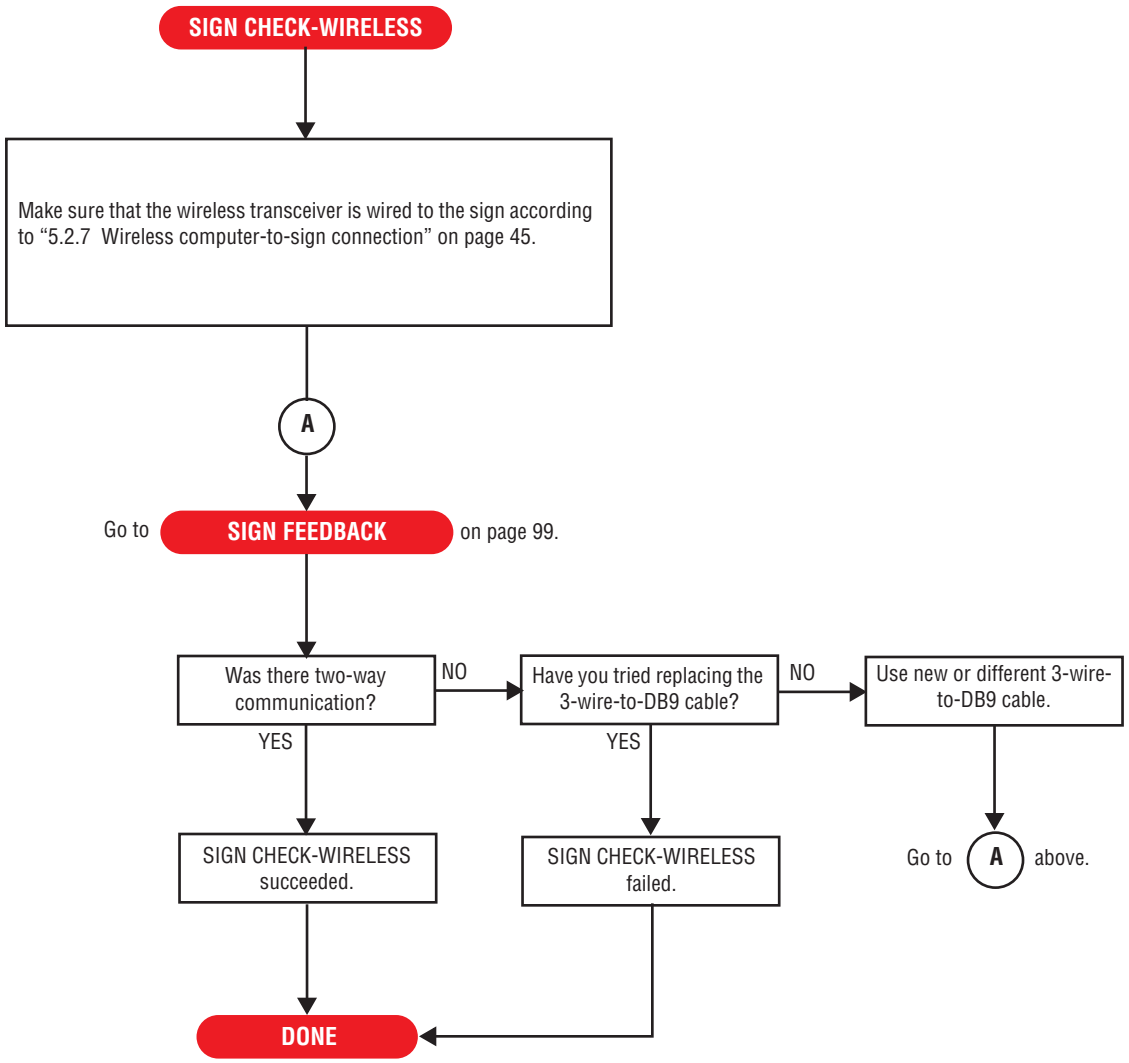
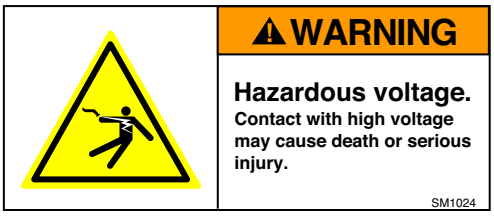




**Figure 37: SIGN CHECK-WIRELESS procedure flowchart**

### 8.2.9.6 Messaging Computer procedure > Cables and Interfaces procedure > Sign procedure SIGN CHECK-IRLOADER procedure

Description:

- To determine if the sign's external connection box for an IR Message Loader is working correctly.



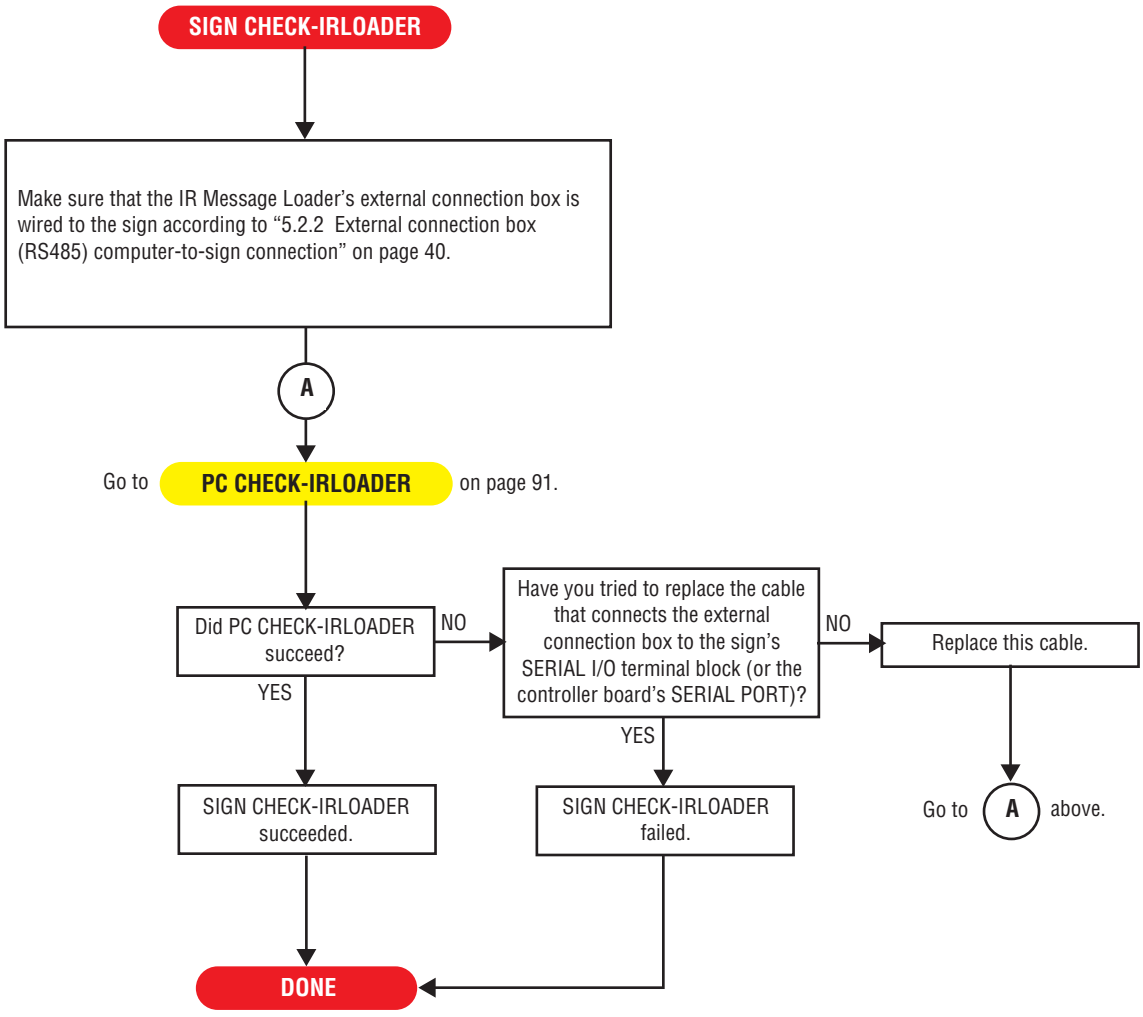
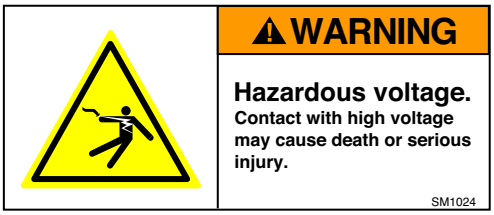




**Figure 38: SIGN CHECK-IRLOADER procedure flowchart**

### 8.2.9.7 Messaging Computer procedure > Cables and Interfaces procedure > Sign procedure SIGN CHECK-ETHERNET procedure

Description:

- To determine if the sign's RS485 connection to a MSS485-T is working correctly.



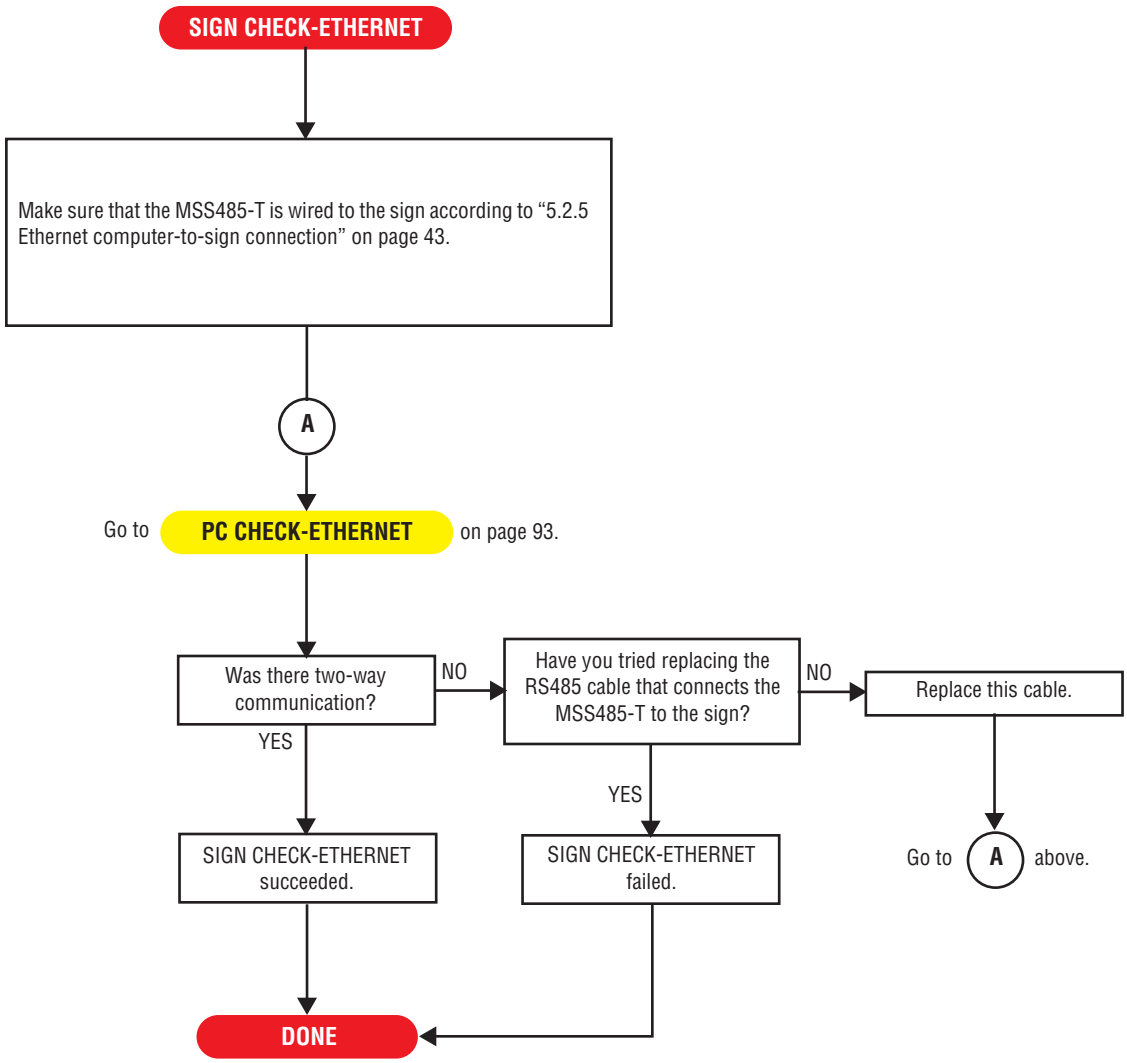




**Figure 39: SIGN CHECK-ETHERNET procedure flowchart**

## 8.2.10 Messaging Computer procedure > Cables and Interfaces procedure > Sign procedure OUTSIDE INSPECTION procedure

Description:

- To see if there are any external, visual indications of damage to the sign(s).

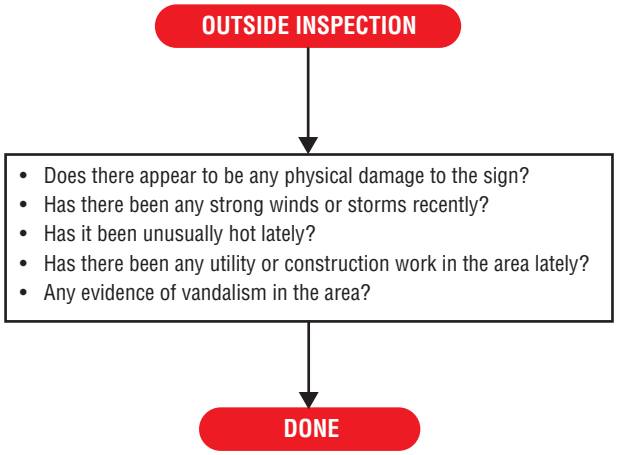
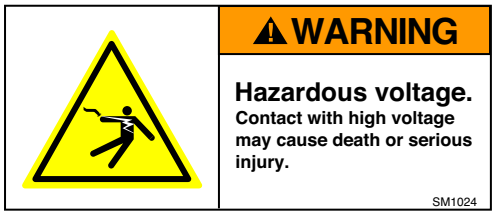



**Figure 40: OUTSIDE INSPECTION procedure flowchart**

## 8.2.11 Messaging Computer procedure > Cables and Interfaces procedure > Sign procedure INSIDE INSPECTION procedure

Description:

- To see if there are any internal, visual indications of damage to the sign(s).



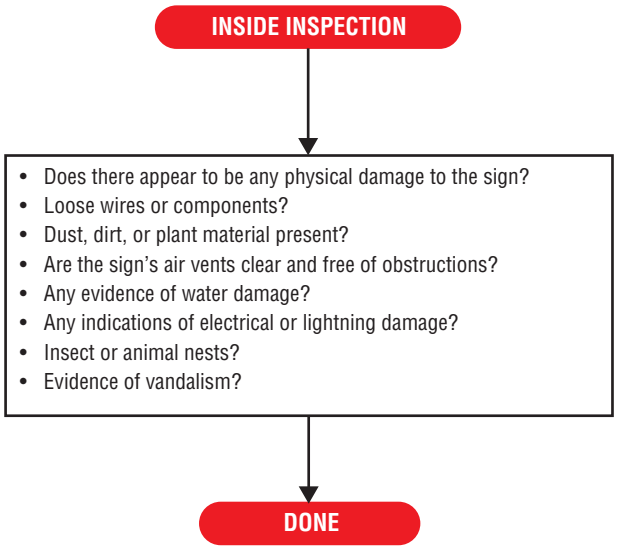




**Figure 41: INSIDE INSPECTION procedure flowchart**

## 8.2.12 Messaging Computer procedure | Cables and Interfaces procedure | Sign procedure TEMP PROBE CHECK procedure

Description:

- To see if a temperature probe is operating correctly.

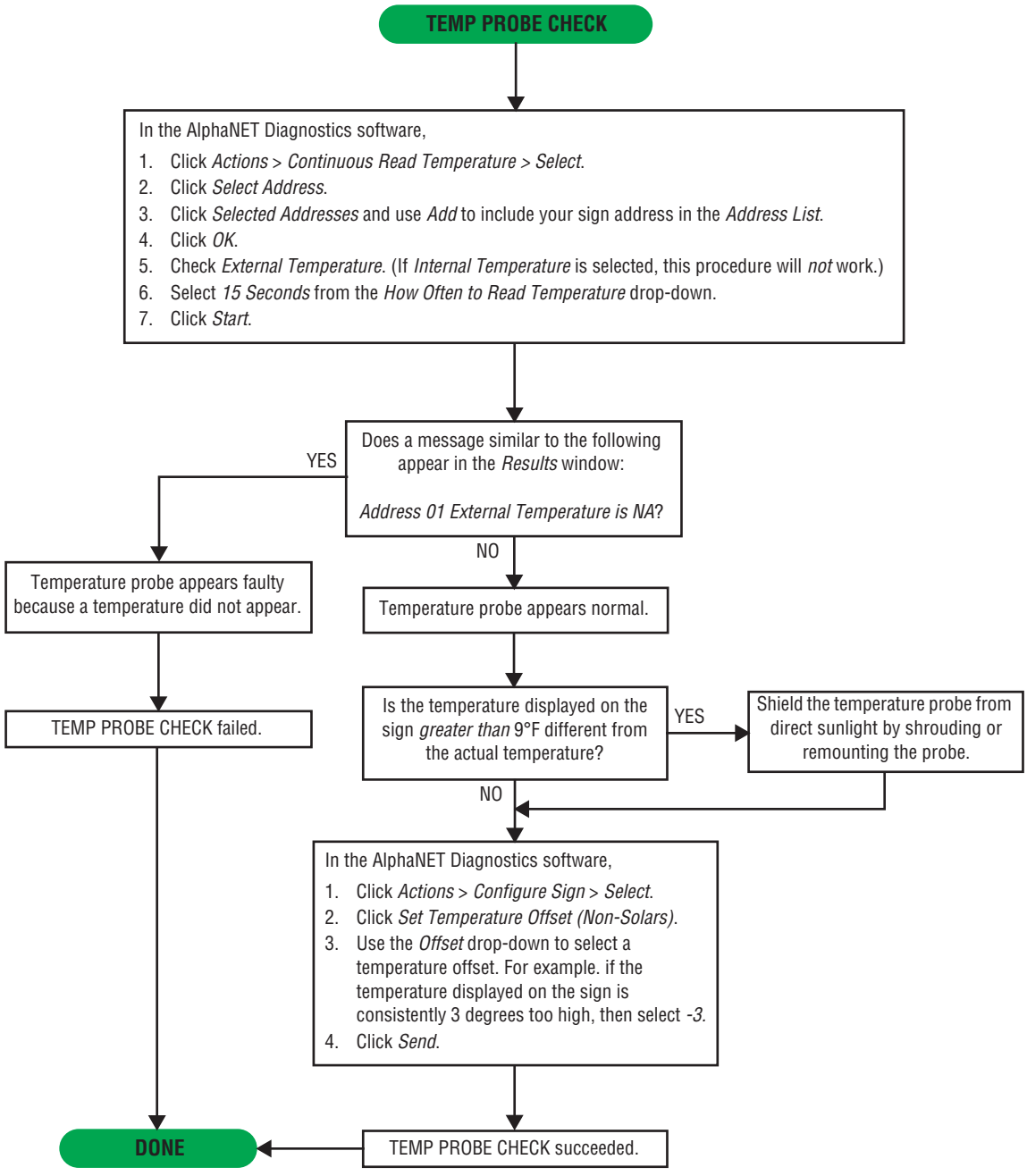
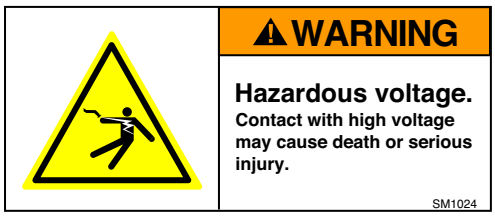



**Figure 42: TEMP PROBE CHECK procedure flowchart**

## 8.2.13 Messaging Computer procedure > Cables and Interfaces procedure > Sign procedure TEMP PROBE FIX procedure

Description:

- To correct a faulty temperature probe.



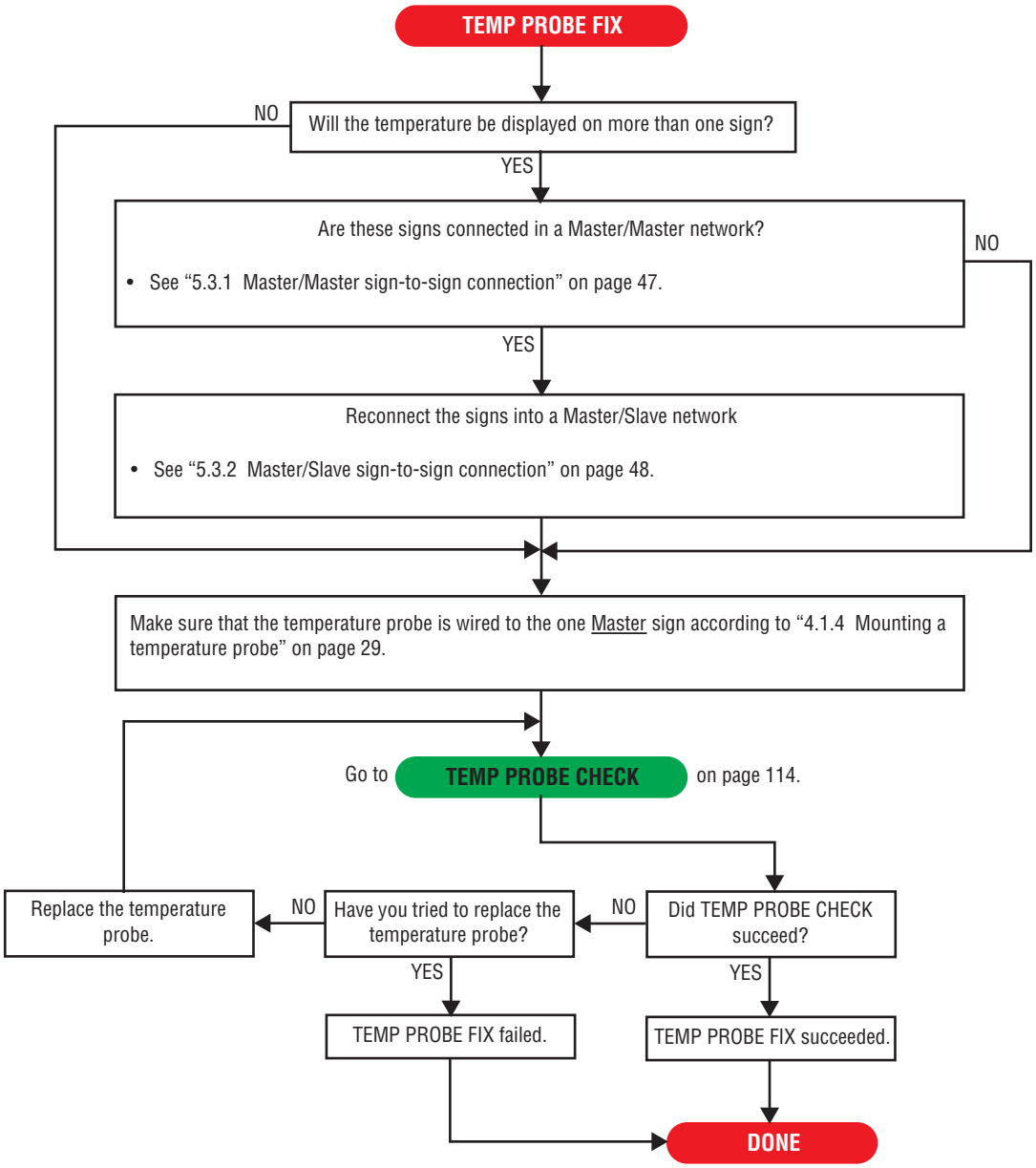




**Figure 43: TEMP PROBE FIX procedure flowchart**

## 8.2.14 Messaging Computer procedure > Cables and Interfaces procedure > Sign procedure PC DIP SWITCH procedure

Description:

- To use AlphaNET software to change one or more DIP switches on a sign's controller board.

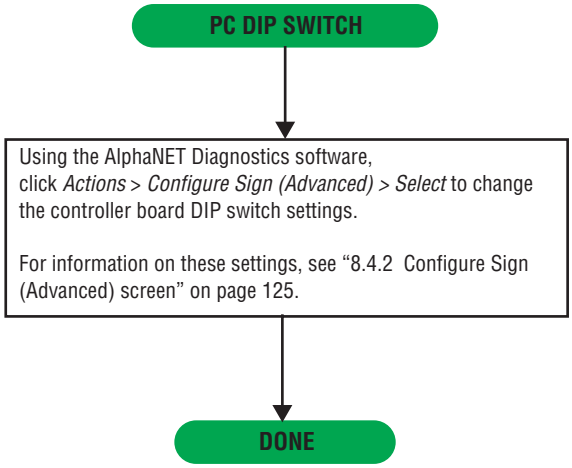
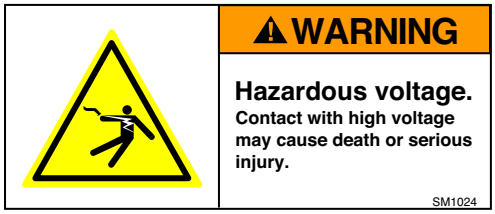



**Figure 44: PC DIP SWITCH procedure flowchart**

## 8.2.15 Messaging Computer procedure > Cables and Interfaces procedure > Sign procedure SIGN DIP SWITCH procedure

Description:

- To physically change one or more DIP switches on a sign's controller board.



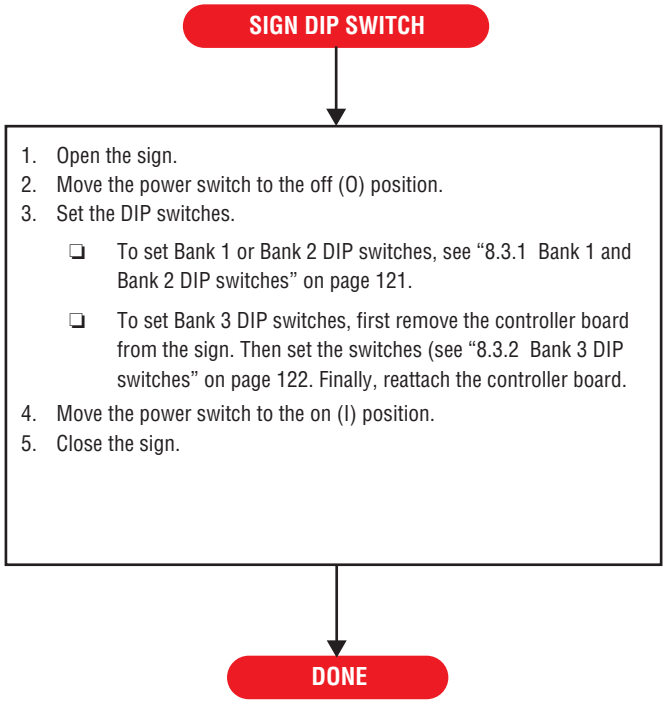




**Figure 45: SIGN DIP SWITCH procedure flowchart**

## 8.2.16 Messaging Computer procedure | Cables and Interfaces procedure | Sign procedure OVERHEAT CHECK procedure

Description:

- To see if a sign is overheating

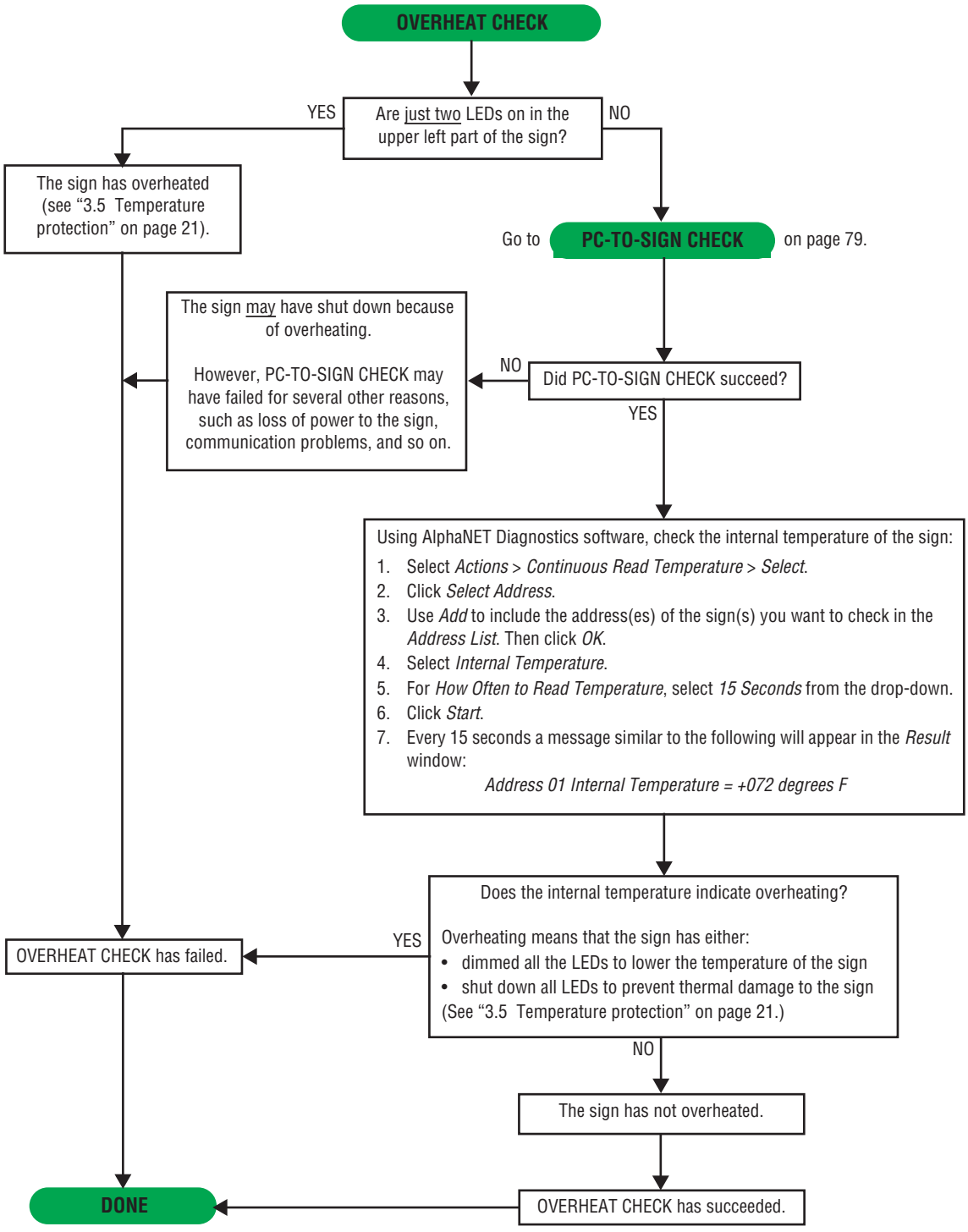
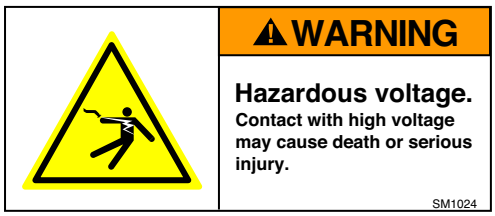



**Figure 46: OVERHEAT CHECK procedure flowchart**

## 8.2.17 Messaging Computer procedure > Cables and Interfaces procedure > Sign procedure OVERHEAT FIX procedure

Description:

- To try to fix a sign that is overheating



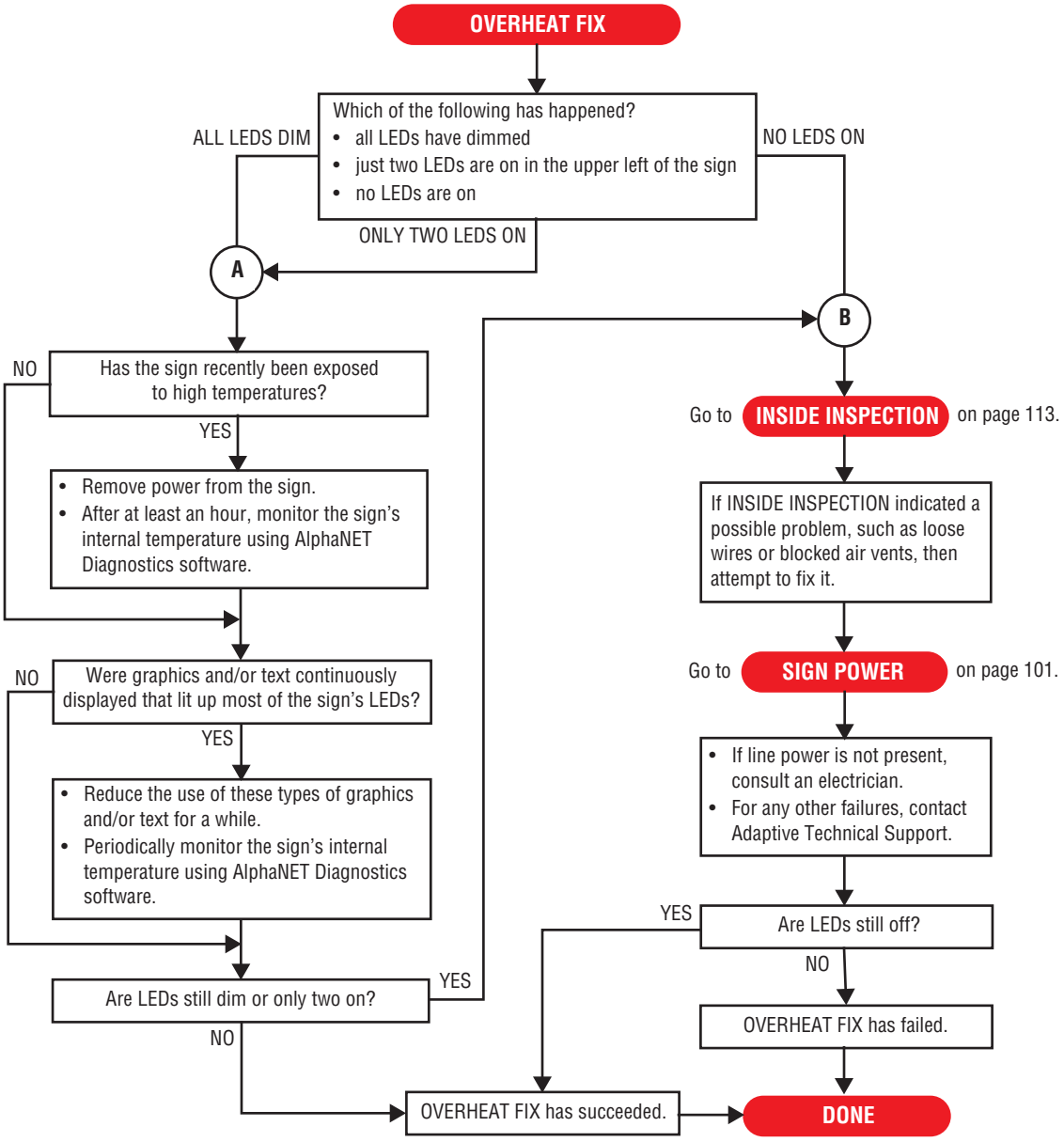




**Figure 47: OVERHEAT FIX procedure flowchart**

## 8.3 Controller board DIP switches

Three banks of DIP switches, located on the controller board (below), control much of the sign's operation.

However, there are differences in how DIP switches function in Series A and B signs.

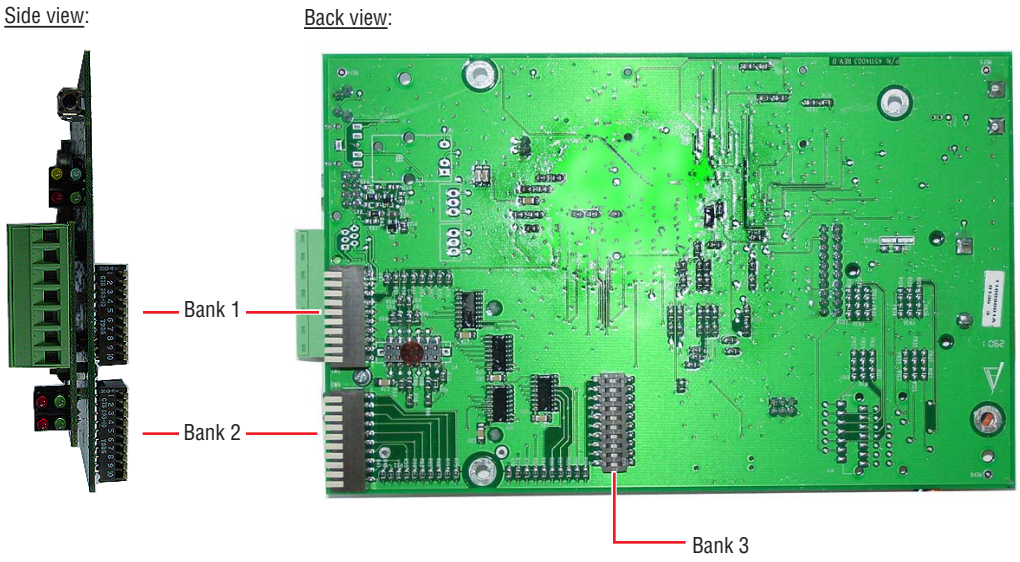
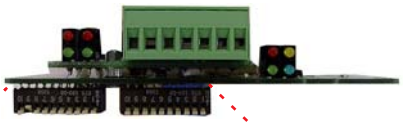


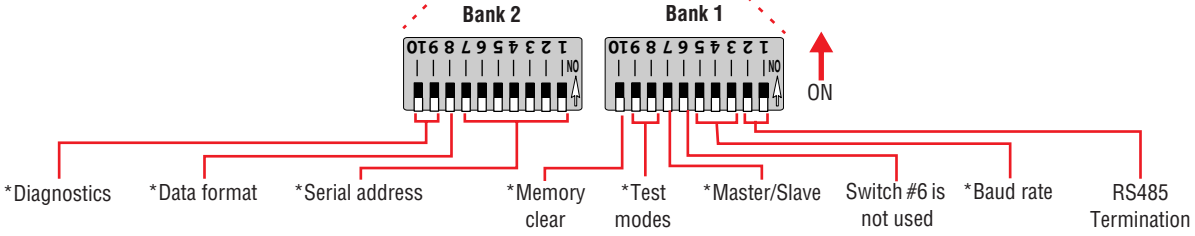

**Figure 48: Controller board DIP switch location (Series A and B)**

## 8.3.1 Bank 1 and Bank 2 DIP switches

* indicates that this DIP switch setting can be set using AlphaNET Diagnostics software.



Controller board (side view)




### Bank 2 DIP switches

| | 10 | 9 | Description |
|---|---|---|---|
| Diagnostics | Off | Off | Normal messaging (default) |
| | Off | On | Test Pattern Mode — Repeating diagonal lines and blocks to test for LED outages. |
| | On | Off | Test Match Mode — All LEDs are lit to test for uniform LED display |
| | On | On | Software override — When switches #10 and #9 are both on *and* Bank 1 DIP switches #9 and #8 are also on, then the sign will use the current DIP switch settings. Also, AlphaNET Diagnostics software will *not* be able to override any DIP switch settings. |

| | 8 | Description |
|---|---|---|
| Data format | Off | 8N1 — 8 data bits, No parity, 1 stop bit (default) |
| | On | 7E2 — 7 data bits, Even parity, 2 stop bits |

| | 7 (MSB) | 6 | 5 | 4 | 3 | 2 | 1 (LSB) | Address | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Dec | Hex |
| Serial address (address 0 = default) | Off | Off | Off | Off | Off | Off | Off | 0 | 00 |
| | Off | Off | Off | Off | Off | Off | On | 1 | 01 |
| | Off | Off | Off | Off | Off | On | Off | 2 | 02 |
| | Off | Off | Off | Off | Off | On | On | 3 | 03 |
| | . . . | . . . | . . . | . . . | . . . | . . . | . . . | . . . | . . . |
| | On | On | On | On | On | Off | On | 125 | 7D |
| | On | On | On | On | On | On | Off | 126 | 7E |
| | On | On | On | On | On | On | On | 127 | 7F |

### Bank 1 DIP switches

| | 10 | Description |
|---|---|---|
| Memory clear | Off | Do NOT clear memory on sign startup (default) |
| | On | Clear memory on sign startup |

| | 9 | 8 | Description |
|---|---|---|---|
| Test modes | Off | Off | Normal mode (default) |
| | Off | On | Production Test Mode — Sign starts filled with letter "B"s. |
| | On | Off | Temperature Test Mode — The temperature is displayed on the far left of the sign. |
| | On | On | Software override — see the "Software override" explanation for Bank 2 DIP switches #10 and #9 |

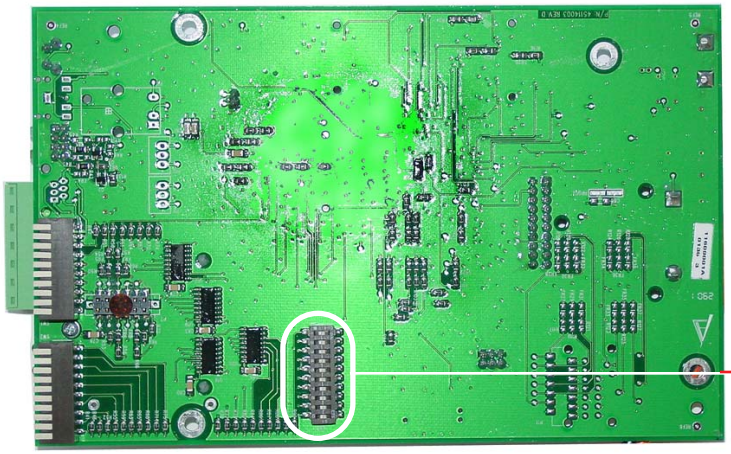
| | 7 | Description |
|---|---|---|
| Master/ Slave | Off | Master mode (default) |
| | On | Slave mode |

| | 5 | 4 | 3 | Description |
|---|---|---|---|---|
| Baud rate | Off | Off | Off | Autobaud (see below) |
| | Off | Off | On | 1200 |
| | Off | On | Off | 2400 |
| | Off | On | On | 4800 |
| | On | Off | Off | 9600 |
| | On | Off | On | 19200 |
| | On | On | Off | 38400 |
| | On | On | On | Autobaud (see below) |
| | When Autobaud is on, the sign will try to set the sign to the baud rate and data format of the transmitting device, like a modem. *Make sure that Data format (Bank 2, switch #8) is off.* | | | |

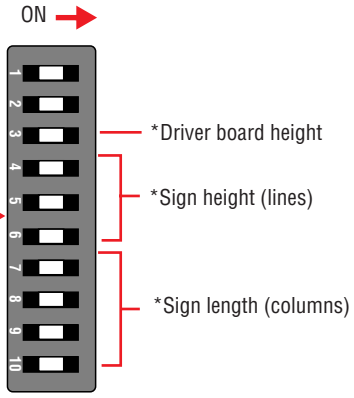
| | 2 | 1 | Description |
|---|---|---|---|
| RS485 Termi-nation | Off | Off | Termination off (default) |
| | On | On | Termination on |

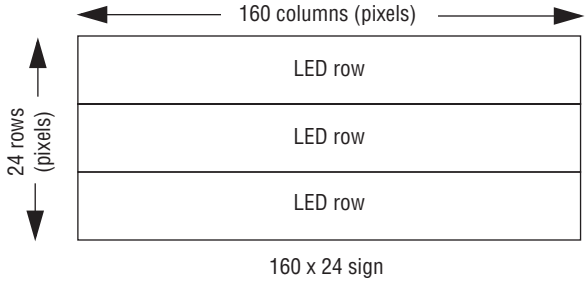
## 8.3.2 Bank 3 DIP switches

Controller board (back view):



* indicates that this DIP switch setting can be set using AlphaNET Diagnostics software.




Example: How to calculate Sign height and Sign length:

Sign size is typically represented in pixels, as in 160 (columns) x 24 (rows). This means the sign is 160 pixels long and 24 pixels high. In AlphaEclipse 3500 signs, each line is 8 pixels high. So a 160 x 24 sign has a Sign height = 3 (24/8) and a Sign length = 160.

**Bank 3 DIP switches**

| Sign length (columns) | | | | |
|---|---|---|---|---|
| **10** | **9** | **8** | **7** | Description |
| Off | Off | Off | Off | 64 columns (default) |
| Off | Off | Off | On | 16 columns |
| Off | Off | On | Off | 32 columns |
| Off | Off | On | On | 48 columns |
| Off | On | Off | Off | 64 columns |
| Off | On | Off | On | 80 columns |
| Off | On | On | Off | 96 columns |
| Off | On | On | On | 112 columns |
| On | Off | Off | Off | 128 columns |
| On | Off | Off | On | 144 columns |
| On | Off | On | Off | 160 columns |
| On | Off | On | On | 176 columns |
| On | On | Off | Off | 192 columns |
| On | On | Off | On | 208 columns |
| On | On | On | Off | 224 columns |
| On | On | On | On | 240 columns |

| Sign height (lines) | | | | |
|---|---|---|---|---|
| **6** | **5** | **4** | **Description** | |
| Off | Off | Off | 1 line (default) | |
| Off | Off | On | 2 lines | |
| Off | On | Off | 3 lines | |
| Off | On | On | 4 lines | |
| On | Off | Off | 5 lines | Not valid for 3500 signs |
| On | Off | On | 6 lines | |
| On | On | Off | 7 lines | |
| On | On | On | 8 lines | |

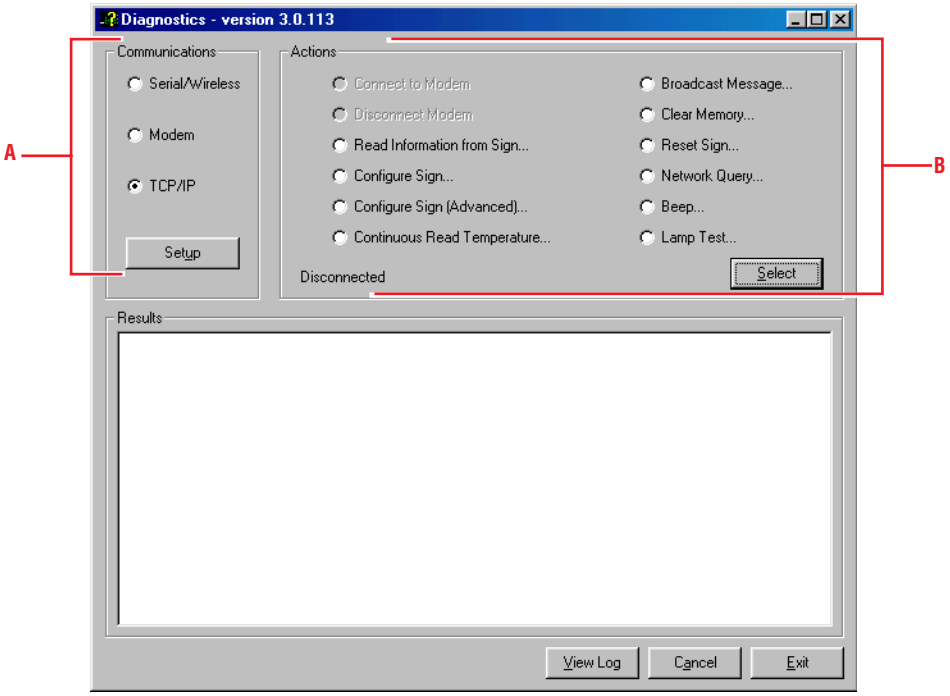
| Driver board height | |
|---|---|
| **3** | **Description** |
| Off | 8-row high (default) |
| On | 16-row high |

## 8.4 AlphaNET Diagnostics software

This applies to Diagnostics software version 3.0.113.

### 8.4.1 Startup screen

**Table 22: Startup screen**



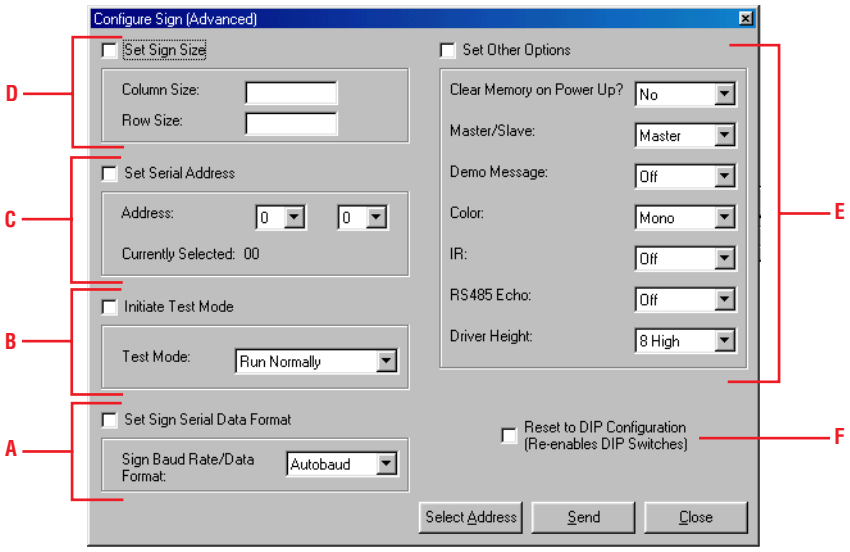

| Item | Name | | Description |
|---|---|---|---|
| A | *Communications* | *Serial/Wireless* | • Sets the COM port, baud rate, and data format for either RS232/ RS485 wired or wireless transceiver sign connections.<br>• Auto detects the sign using the information entered above. *Only detects a sign with address 01.* |
| | | *Modem* | • Sets the COM port, baud rate, data format, dialing prefix, initialization string, number to dial, timeout, and configuration string.<br>• Configures modem using the information entered above. |
| | | *TCP/IP* | • Sets the IP address and port for the Ethernet interface (Lantronix MSS485-T) connected to the sign.<br>• Pings the IP address entered above. |
| B | *Actions* | *Connect to Modem* | • Only appears if *Communications* > *Modem* is selected. |
| | | *Disconnect Modem* | • Only appears if *Communications* > *Modem* and *Connect to Modem* were selected. |
| | | *Read Information from Sign* | • Displays sign information like firmware revision, lists of sign files, serial error register status, temperature, and so on. |

**Table 22: Startup screen**

| | | | |
|---|---|---|---|
| **B** | *Actions* | *Configure Sign* | • For all signs, sets the date, time, and serial address. If power is removed from a sign, on power up a sign will use its previous serial address.<br>• For outdoor signs (like the AlphaEclipse 3500), sets dimming time and level, and temperature offset. |
| | | *Configure Sign (Advanced)* | • Sets sign size (columns and rows), serial address, test modes, baud rate and data format, and other sign options.<br>• Returns sign to its DIP switch settings by selecting *Reset to DIP Configuration*.<br>• Works for all AlphaEclipse Series B signs, but only AlphaEclipse Series A signs that have revision G or later firmware installed. |
| | | *Continuous Temperature Read* | • Continuously displays a sign's internal temperature or the temperature from a temperature probe that is connected to the sign. |
| | | *Broadcast Message* | • Sends a message to all signs, selected sign addresses, or continuously. |
| | | *Clear Memory* | • Erases all messages from one or more signs.<br>• Restarts the sign(s). |
| | | *Reset Sign* | • Restarts one or more signs. |
| | | *Network Query* | • Identifies one or more signs. |
| | | *Beep* | not applicable to AlphaEclipse signs |
| | | *Lamp Test* | • Indicates which LEDs have burned out on one or more signs. |

## 8.4.2 Configure Sign (Advanced) screen

**Table 23: Configure Sign (Advanced) screen**




| Item | Name | | Controller board DIP switch(es) | Notes |
|---|---|---|---|---|
| **A** | *Set Sign Serial Data Format* | *Autobaud* | Bank 2, switch #8 (data format)<br>Bank 1, switches #5, #4, and #3 (baud rate) | |
| | | *1200 (8N1)* | | |
| | | *1200 (7E2)* | | |
| | | *. . .* | | |
| | | *38400 (7E2)* | | |
| **B** | *Initiate Test Mode* | *Run Normally* | Bank 2, switches #10 and #9<br>Bank 1, switches #9 and #8 | See "8.2.6 TEST MODES procedure" on page 97. |
| | | *Production Test Mode* | | |
| | | *Test Pattern* | | |
| | | *Test Match Mode* | | |
| | | *Temperature Test Mode* | | |
| **C** | *Set Serial Address* | *00* through *FF* (hexadecimal) | Bank 2, switches #7, #6, #5, #4, #3, #2, #1 | Unlike *Configure Sign > Change Sign Address*, address changes made with *Set Serial Address* will not change when power is removed from a sign. |
| **D** | *Set Sign Size* | *Column Size* | Bank 3, switches #10, #9, #8, and #7 | |
| | | *Row Size* | Bank 3, switches #6, #5, and #4 | |
| **E** | *Set Other Options* | *Clear Memory on Power Up?* | Bank 1, switch #10 | |
| | | *Master/Slave* | Bank 1, switch #7 | |
| | | *Demo Message* | not applicable | |
| | | *Color* | | |
| | | *IR* | | |
| | | *RS485 Echo* | | |
| | | *Driver Height* | Bank 3, switch #3 | |
| **F** | *Reset to DIP Configuration* | | | |

# 9.0 Parts replacement

## 9.1 List of field-replaceable parts

**Table 24: Field-replaceable parts**

| Part name | Series B sign |
|---|---|
| Controller board | Yes (page 130) |
| Turbo Extender board | Yes (page 131) |
| Exhaust fan | Yes (page 132) |
| Power supply fan | Yes (page 134) |
| LED board | Yes (page 135) |
| Power supply | Yes (page 137) |

## 9.2 Controlling electrostatic discharge (ESD)

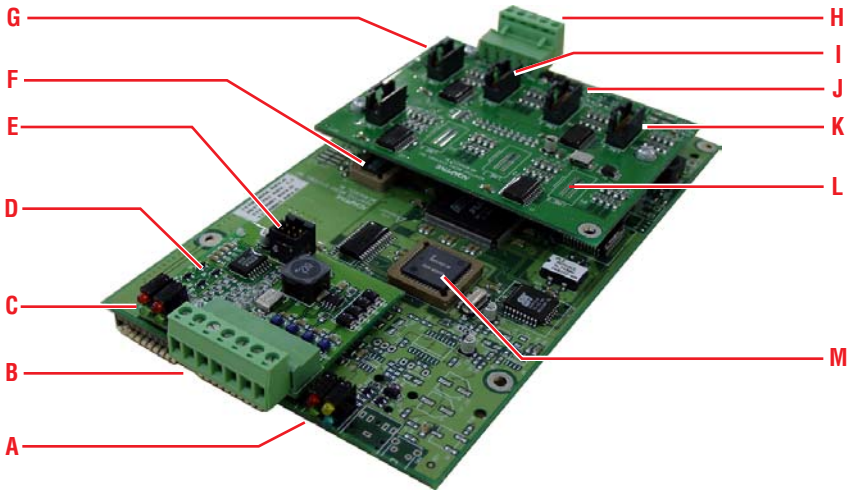

This equipment contains components that may be damaged by “static electricity”, or electrostatic discharge. To prevent this from happening, be sure to follow the guidelines in Adaptive Tech Memo 00-0005, *“Guidelines for Controlling Electrostatic Discharge Damage”*, available at Adaptive’s web site at http://www.adaptivedisplays.com.

# 9.3 Controller board

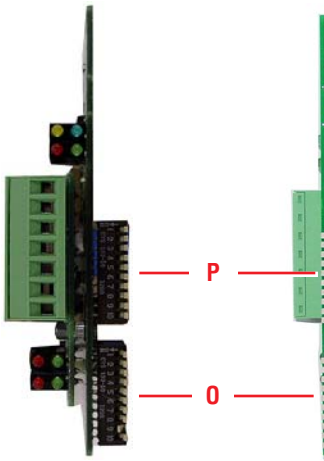
## 9.3.1 Controller board description

**Table 25: Series B controller board description**

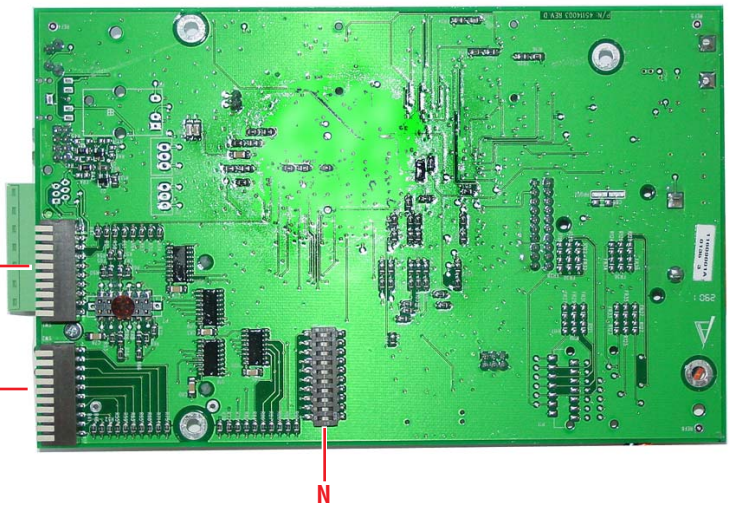
Top view




Side view:




Back view:



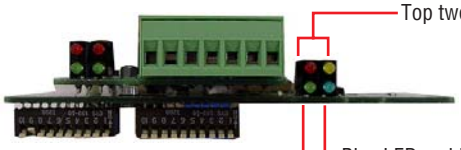
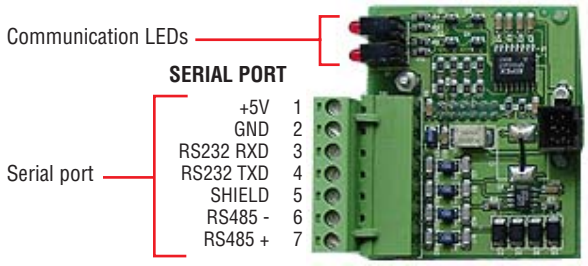
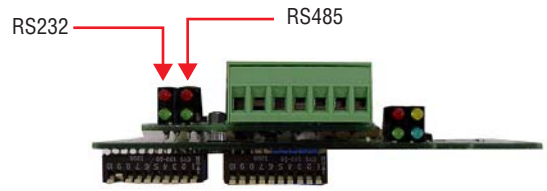
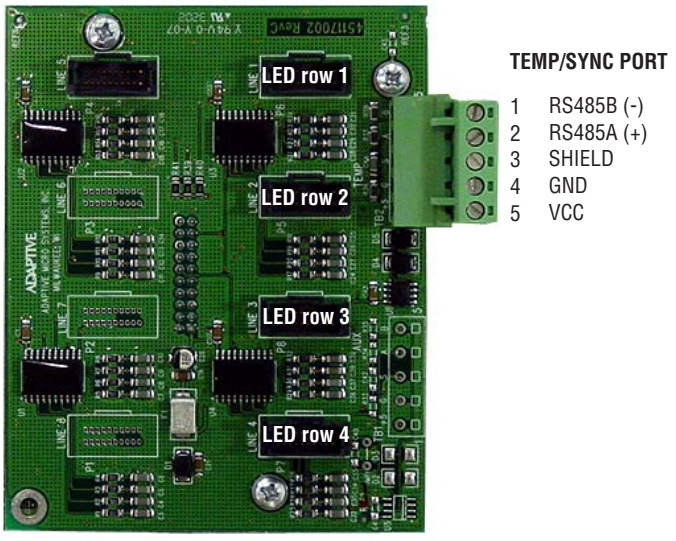

| Item | Name | Description |
|---|---|---|
| A | Diagnostic LEDs | The top two LEDs are not used. The bottom two LEDs are used as follows:<br>  <br>Top two LEDs are not functional.<br>Blue LED — blinks once per second = ok. Steady or off = error.<br>Green LED — lit during FLASH memory upload. |

**Table 25: Series B controller board description**

| | | |
|---|---|---|
| **B** | Serial port |  |
| **C** | Communication LEDs | Red LEDs = incoming data (RxD), Green LEDs = outgoing data (TxD):<br>  |
| **D** | Serial board | See *Serial port* above. |
| **E** | Photocell connector | Sign's photocell connects here. |
| **F** | FPGA chip (socketed) | Controls sign operations. |
| **G** | LED row 1 connector | Signal cable for LED row 1 on the sign. |
| **H** | Temperature probe connector | Series B temperature probe connects here. |
| **I** | LED row 2 connector | Signal cable for LED row 2 on the sign. |
| **J** | LED row 3 connector | Signal cable for LED row 3 on the sign. |
| **K** | LED row 4 connector | Signal cable for LED row 4 on the sign. |
| **L** | Turbo extender board | Supplies data to each LED row in the sign.<br>  |
| **M** | Main FLASH firmware chip (socketed) | Controls sign operations. |
| **N** | Bank 3 DIP switches | Controls sign operations. See "8.3.2 Bank 3 DIP switches" on page 122. |
| **O** | Bank 2 DIP switches | Controls sign operations. See "8.3.1 Bank 1 and Bank 2 DIP switches" on page 121. |
| **P** | Bank 1 DIP switches | |

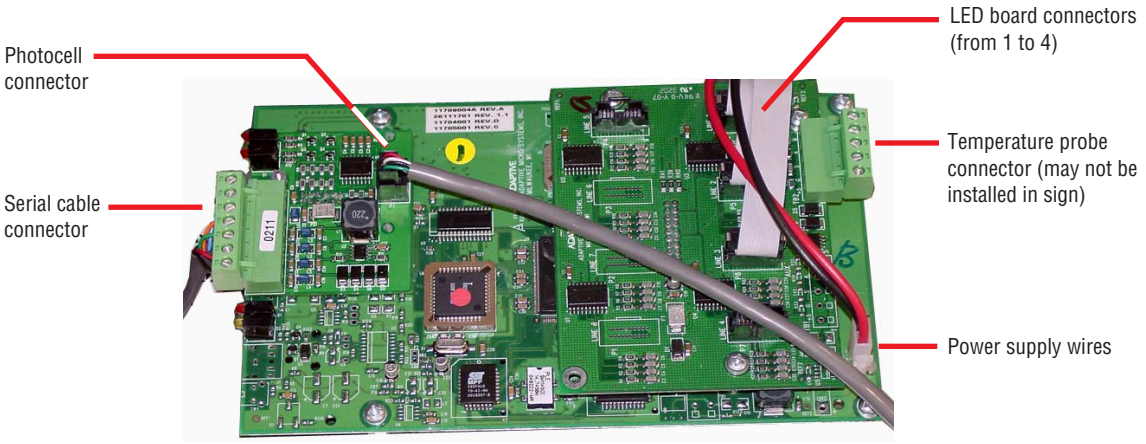
## 9.3.2 Controller board replacement

NOTE: Do NOT attempt this procedure if there are strong winds or if it is raining or snowing.

**1** **Open the sign.**

❏ Follow the steps in "4.2.2 Opening the sign" on page 31.

**2** **Detach all cables from the controller board.**




**3** **Remove the controller board from the sign.**


**4** **Install the replacement controller board.**

❏ Make sure that the DIP switches on the replacement controller board match those on the controller board being replaced. (See "8.3 Controller board DIP switches" on page 120.)

**5** **Close the sign.**

❏ Follow the steps in "4.2.5 Closing the sign" on page 35.

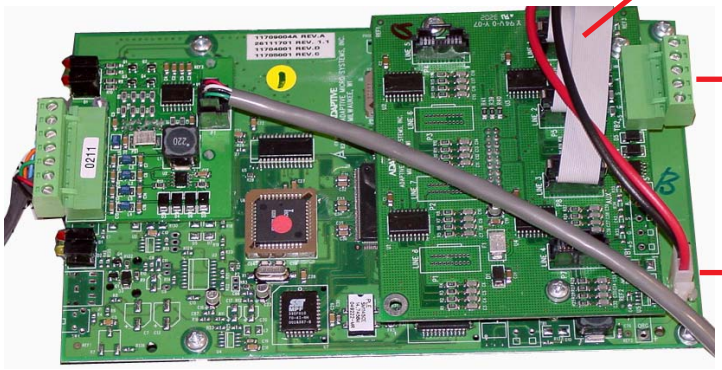
## 9.4 Turbo extender board replacement

The Series B sign has only one type of turbo extender board. This board is attached to the controller board and is similar in function to a Series A sign Master Turbo Extender board..

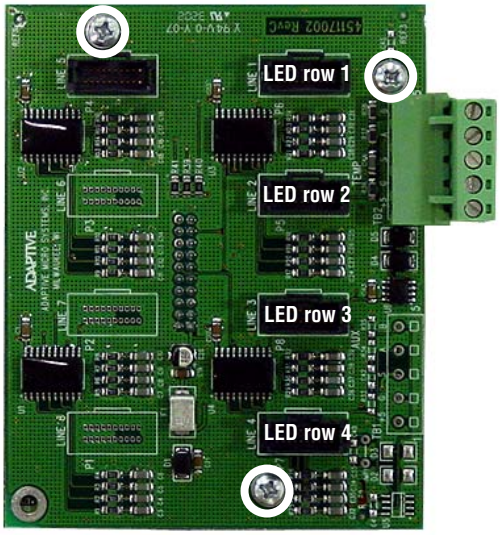
**1** **Open the sign.**

❏ Follow the steps in "4.2.2 Opening the sign" on page 31.

**2** **Detach all cables from the turbo extender board.**




**3** **Remove the turbo extender board from the controller board.**




Remove the three screws that are circled.

**4** **Attach the replacement turbo extender board to the controller board.**

**5** **Close the sign.**

❏ Follow the steps in "4.2.5 Closing the sign" on page 35.

## 9.5 Fan replacement

There are two types of fans in a sign. Both types are powered by line (120/240V) voltage:

- Exhaust fan — moves air *into* and *out* of a sign and only turn on when the sign reaches a designated temperature (see "3.5 Temperature protection" on page 21). Exhaust fans are larger than the power supply fans. Exhaust fans either blow air into or out of a sign. Exhaust fans that blow air *into* a sign should be covered with a plastic cover inside a sign.

  NOTE: In Series B signs, the FAN TEST button, located on the sign's internal power switch, can be used to temporarily turn the exhaust fans on.

- Power supply fan — moves air *inside* a sign. *When a sign has power, power supply fans should be on.*

### 9.5.1 Exhaust fan replacement

**1** **Open the sign.**

❏ Follow the steps in "4.2.2 Opening the sign" on page 31.

**2** **If the exhaust fan has a plastic cover, remove it.**

**3** **Detach the fan power cable. Then remove the fan from the sign.**

Remove the circled screws.

Detach the fan power cable (120/240V).

**4** **Install the replacement exhaust fan.**

❑ If there was a plastic cover on the original fan, install it over the replacement fan.

**5** **Close the sign.**

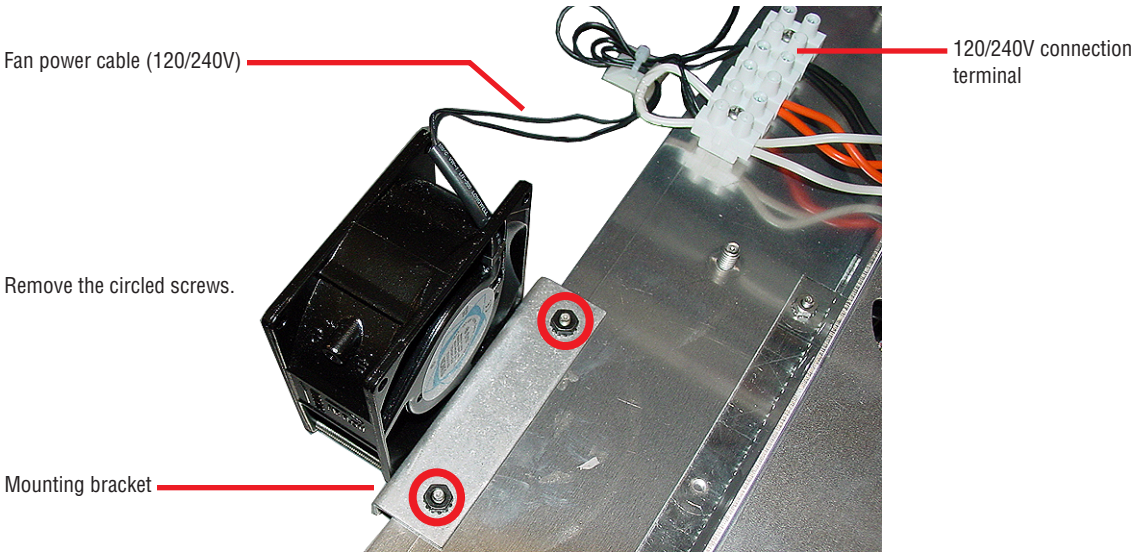
❑ Follow the steps in "4.2.5 Closing the sign" on page 35.

## 9.5.2 Power supply fan replacement

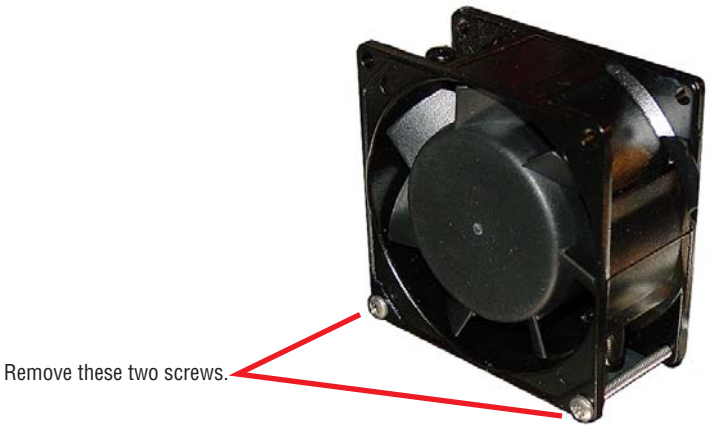
**1** **Open the sign.**

❏ Follow the steps in "4.2.2 Opening the sign" on page 31.

**2** **Disconnect the fan power cable from the 120/240V connection terminal. Then remove the screws that hold the fan to the sign.**




**3** **Remove the screws that hold the fan to the mounting bracket.**




**4** **Install the replacement power supply fan.**

**5** **Close the sign.**

❏ Follow the steps in "4.2.5 Closing the sign" on page 35.

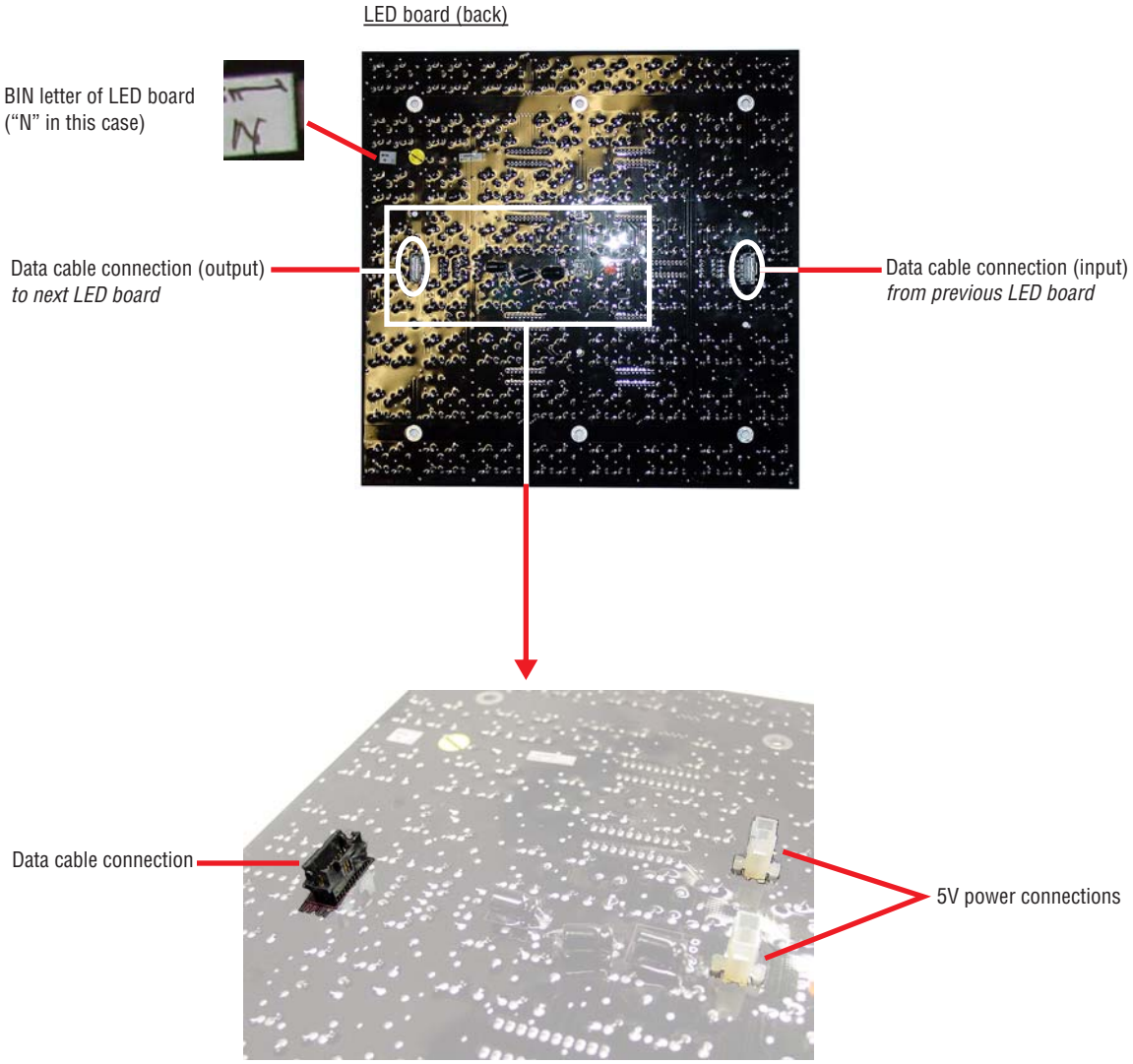
## 9.6 LED board replacement

NOTE: The *replacement* LED board should have the same BIN letter as the current LED board.

**1** **Open the sign.**

❏ Follow the steps in "4.2.2 Opening the sign" on page 31.

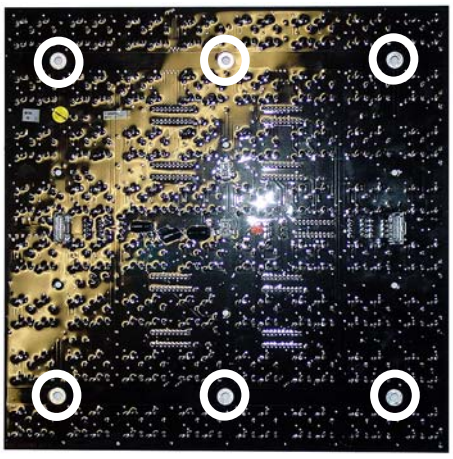
**2** **Remove the 5V power and data cables attached to the back of the LED board.**




**3** **Lower all the LED boards.**

**4** **Remove the screws that attach the LED board to the sign.**

LED board (back)



Remove the circled screws.

**5** **Install the replacement LED board.**

- ❏ The replacement LED board should have the same BIN letter as the original board.
- ❏ Locate the text "TOP" on the LED board. Install the board with this text facing up.

**6** **Close the sign.**

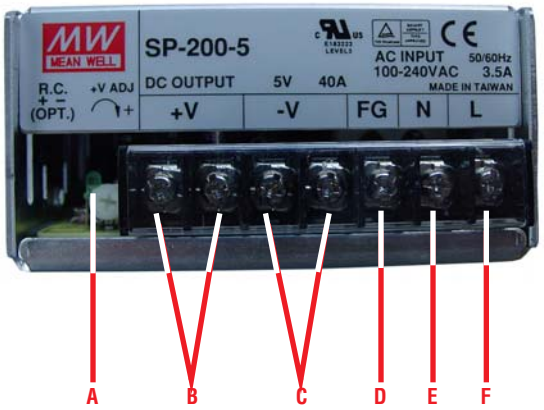
- ❏ Follow the steps in "4.2.5 Closing the sign" on page 35.

# 9.7 Power supply replacement

## 9.7.1 Power supply description

The Meanwell SP-200-5 power supply used in this sign provides 5V power to the LED boards:

**Table 26: Meanwell SP-200-5 power supply description**


| Item | Name | Description |
|---|---|---|
| A | | Power LED (green) — when lit, indicates that the power supply is functioning. |
| B | +V | 5 VDC output to LED boards. |
| C | -V | |
| D | FG (or ground symbol) | Ground connector. |
| E | N (neutral) | 100-240 VAC input. |
| F | L (line voltage) | |

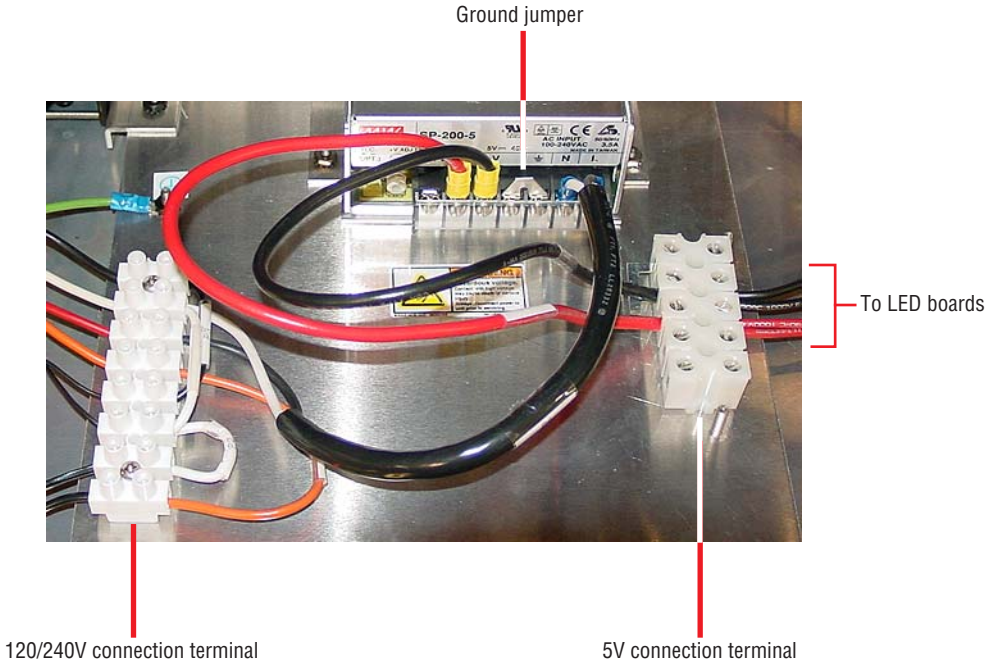
## 9.7.2 Power supply replacement

**1** **Open the sign.**

❏ Follow the steps in "4.2.2 Opening the sign" on page 33.

**2** **Disconnect the 5V and line voltage wires from the power supply.**

❏ If there is a ground jumper (shown below), then remove it and use it on the replacement power supply.




**3** **Remove the power supply from the sign.**

**4** **Install the replacement power supply.**

- ❏ Fasten the replacement power supply to the sign.
- ❏ Connect the 5V and line voltage wires to the power supply.
- ❏ If there was a ground jumper on the original power supply, then install it on the replacement unit.

**5** **Close the sign.**

- ❏ Follow the steps in "4.2.5 Closing the sign" on page 37.

## 9.8 Firmware upgrade

This information is contained in the latest revision of Adaptive TechMemo #01-0010 (go to http://www.adaptivedisplays.com/ams/dtechmemo.htm).