# Rise Ticker™ Display

# Installation Manual

For the most recent update, go to http://www.adaptivedisplays.com/support/rise.

**RISE**
**SOFTOOLS**
**AN ADAPTIVE PARTNER**

**NOTE:** Due to continuing product innovation, specifications in this manual are subject to change without notice.

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# Contents

# Introduction

## Product description

The Rise Ticker™ signs can show real-time market data, proprietary information, news headlines, and messaging. They are designed in either a single case or a modular format. All modules are full-matrix. Multiple sign modules can be connected together side-by-side, creating a single sign unit. All models are designed to be front-serviceable.

The Rise Ticker™ signs are either standard or custom configuration and installation.

Standard Rise Ticker™ signs:

- have electrical connections which plug into an outlet.

- are straight and mount on a flat surface.

- are available in lengths of 5, 6, 7, 8, 9, and 10 feet.

- use connectors on the outside of the unit for either serial connections using Modular Network Adapters or Ethernet connections.

- are considered "factory installed" in that the only electrical need is to plug it into the outlet.

Custom Rise Ticker™ signs:

- have electrical connections using either plugs or direct-connect wires through conduit.

- might not be straight. For example, they might be angled or curved.

- can be made in customized lengths.

- can have either external or internal networking (serial or Ethernet) connections and do not need Modular Network Adapters.

- are considered "field installed" in that there are several electrical options and capabilities.

## Typical installed network

An installed network might look like the high-level picture below. (For a detailed network example, see page 25.)

Rise Ticker™ signs

Ethernet

RS485

Ethernet

RS232

PC with Windows® NT and data server software, such as from Rise Softools.

Data from:
• Reuters
• DTN
• Dow Jones
• PC Quote
• S&P's Comstock
• Bridge
• and so on.

**Figure 1: A sample installation**
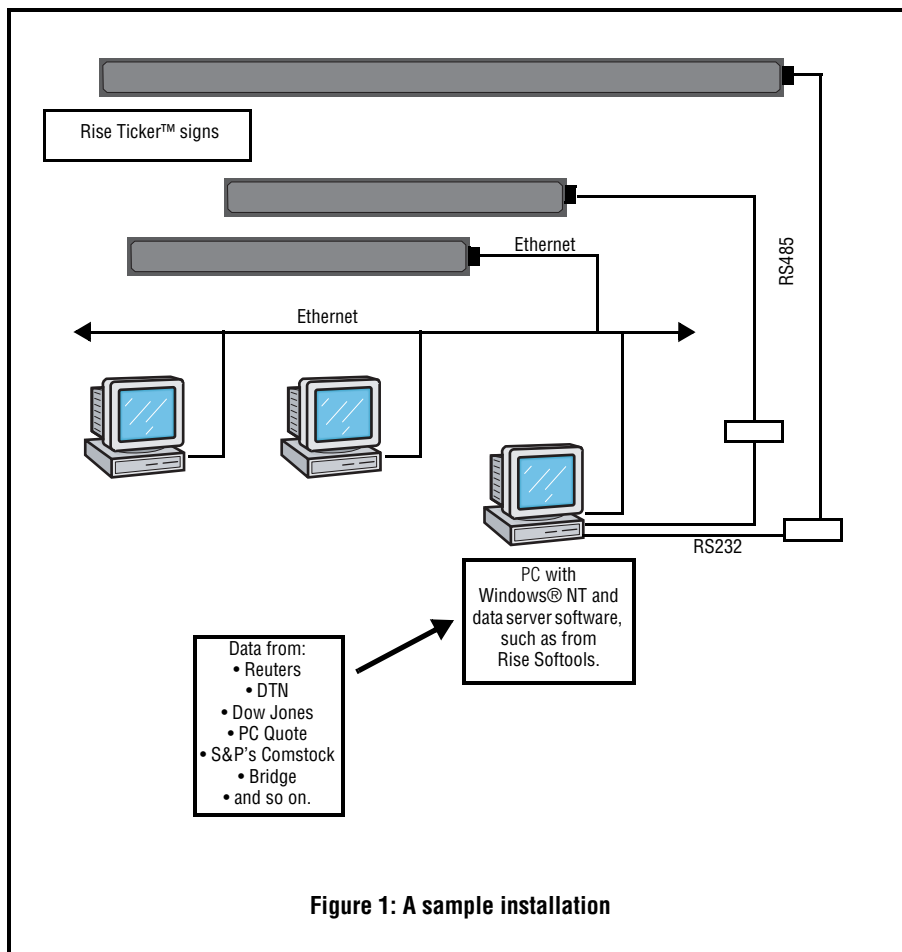
# Description

## Model numbers

See each module's label on the back of the sign for its exact model number.

**AVSTnn-n-zzz**
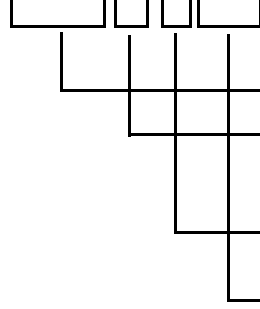
| Section | Meaning | Possible values |
|---------|---------|-----------------|
| AVST | Rise Ticker™ | AVST |
| nn | Number of rows high (in pixels) | 16 24 32 |
| n | Nominal length of module | From 5 to 10, in increments of 1 (for example: 5, 6, 7, 8, 9, 10) |
| zzz | LED color | TRI (tri-color: red, green, amber) SBR (super-bright red) |

## Internal components
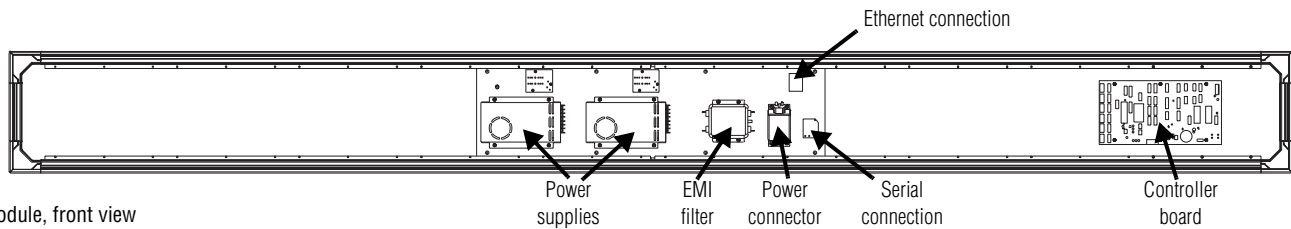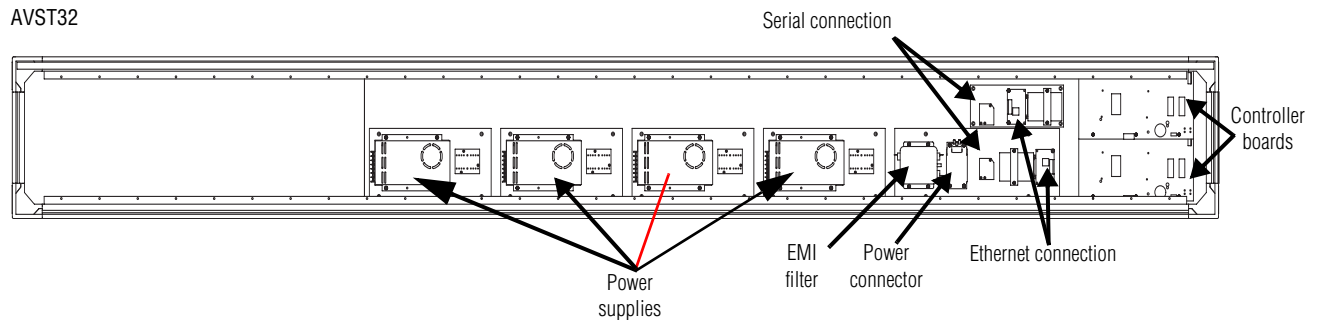
AVST16 and AVST 24



Module, front view

Ethernet connection

Power supplies — EMI filter — Power connector — Serial connection — Controller board

AVST32



Serial connection

Controller boards

Module, front view

Power supplies — EMI filter — Power connector — Ethernet connection

NOTE: On AVST32 signs, there will be two connections, *either serial or Ethernet.* In other words, the sign will have either two serial *or* two Ethernet connections. This drawing shows you the location of all connections. Additionally, the number of power supplies depends on the length of the sign.

## External components

AVST16 and AVST 24

Ethernet connection

Module, back view

Serial
connection

Power
connector

AVST32

Ethernet connection

Serial
connection

Power
connector

Module, back view

NOTE: On AVST32 signs, there will be two connections, *either serial or Ethernet*. In other words, the sign will have either two serial *or* two Ethernet connections. This drawing shows you the location of all connections.

# Installation

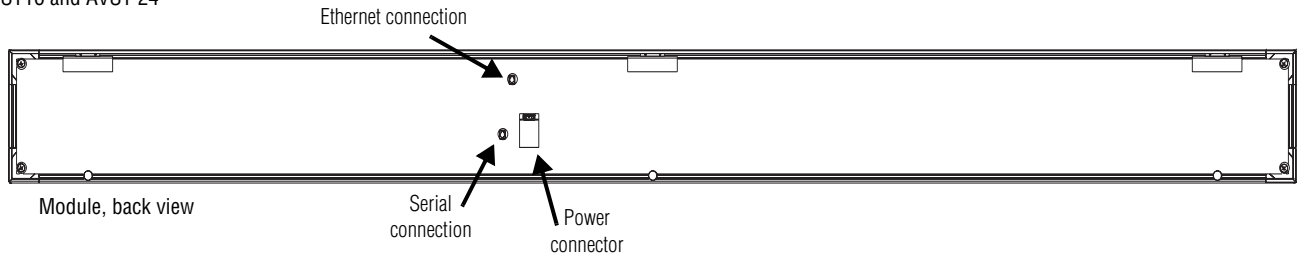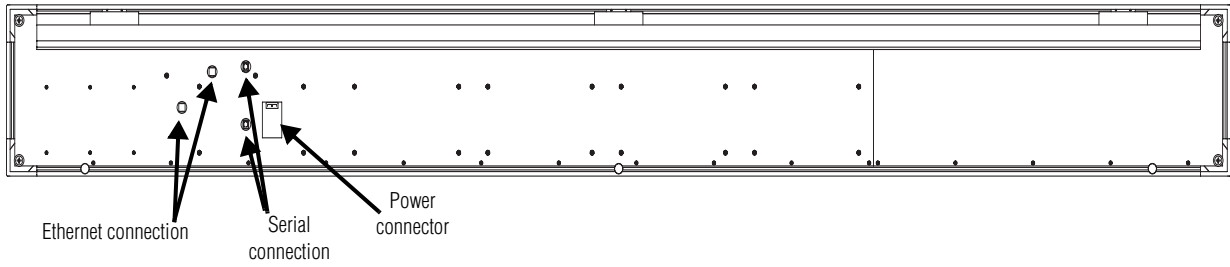The Rise Ticker™ signs are designed in a modular format so they can be connected side-by-side to create a single unit. The modules must be interconnected and wired (power and serial) *as they are being mounted on the wall or ceiling*. For each module, follow the directions in the "Mounting instructions," "Module connection," and "Electrical installation" sections of this manual, connecting each module to one already installed.

## Environmental requirements

Care must be taken to observe these considerations when selecting a location for the Rise Ticker™ signs.

- These signs are for *indoor use only* and should not be continuously exposed to direct sunlight.

- These signs should only be used in an environment where the temperature is between 0° and 40° Celsius (32° to 104° Fahrenheit).

- These signs should only be used in an environment where the humidity (non-condensing) does not exceed 95%.

- For installation, there must be at least 1″ (2.5 cm) clearance on each end of the case and at least 2″ (5.1 cm) clearance above the case.

## Mounting instructions

### Tools needed

- Adjustable open-end wrench
- 1/16″ hex key
- #3-bit Phillips screwdriver
- 3/16″ hex wrench

### Mounting hardware
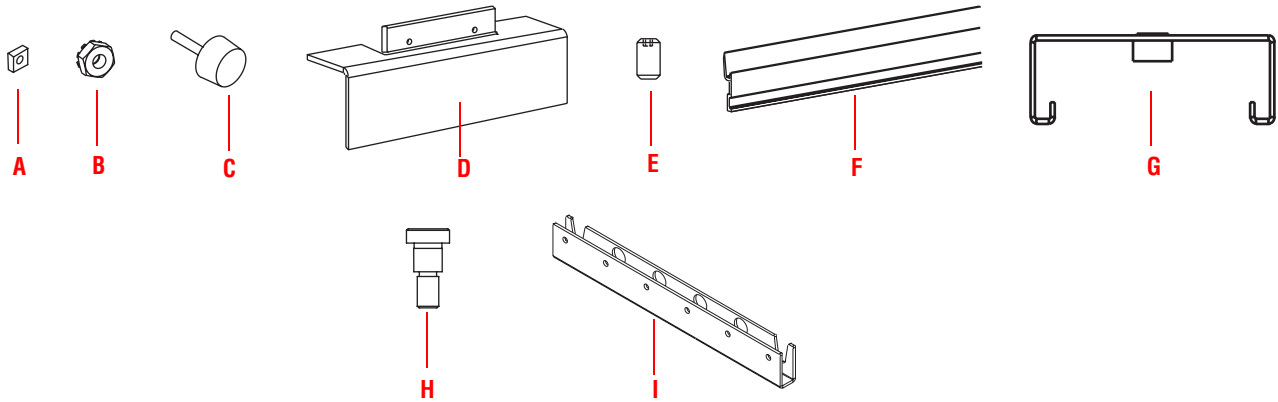
| Part | Quantity per module length | | Part description |
|------|------|------|------|
| | **5', 6'** | **7', 8', 9', 10'** | |
| **A** | 2 | 3 | Square nut |
| **B** | 2 | 3 | Keps nut |
| **C** | 2 | 3 | Foot bumper |
| **D** | 2 | 3 | Wall-mounting bracket |
| **E** | 4 | 6 | Socket set screw |
| **F** | 1 | 1 | Wall-mounting bar |
| **G** | 2 | 3 | Ceiling-mounting bracket |
| **H** | 2 | 2 | Shoulder bolt |
| **I** | 2 | 2 | Vertical-mounting bracket |

Do not use the wrong parts or substitute any other parts for those supplied by the factory. Also, do not use fewer parts than the specified quantity. Doing so may cause damage to the sign and invalidate the warranty.

> **NOTE:** The mounting hardware *does not include* fasteners for attaching to a wall or ceiling, or a ceiling mounting rod. The exact type of fastener or mounting rod used will vary depending on the type of wall or ceiling (for example, concrete, brick, drywall, and so on) to which the sign is mounted.

- Fasteners must be appropriate for the type of wall or ceiling to which the sign is mounted.
- Each of the fasteners must be capable of supporting four (4) times the weight of the sign.
- A sign must be attached to a wall or ceiling capable of supporting four (4) times the weight of the sign.
- See sign weight(s) listed in "Physical specifications" on page 44.

| ⚠ **WARNING** | |
|---|---|
| | **Possible fire hazard. Always mount unit indoors. Mounting the unit outdoors may cause a fire which could result in serious injury or death.** |

| ⚠ **WARNING** | |
|---|---|
| | **Possible shock hazard. Always mount unit indoors. Mounting a unit outdoors makes the unit a possible source of electric shock which could result in serious injury or death.** |

| ⚠ **WARNING** | |
|---|---|
| | **Hazardous voltage. Contact with high voltage may cause death or serious injury. Always disconnect all power to sign before servicing.** |

| ⚠ **WARNING** | |
|---|---|
| | **Possible crush hazard. The wall and the mounting system must be able to support at least 4 times the unit's weight. Otherwise the unit may fall, causing serious injury or death.** |

### Wall-mounting instructions

1.  Disconnect power from the sign. Power must be removed from the sign at the power source to prevent electrical injury or damage.

2.  Mount the wall-mounting bar on the wall using the appropriate fasteners.

Wall-mounting bar

Bar <u>must</u> be fastened here.

Bar <u>may</u> be fastened here.

Cut-away side view

Wall
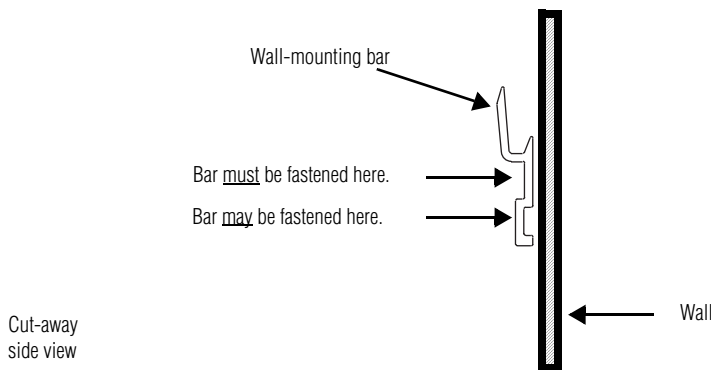
3.  (Optional) Bumpers and nuts have been installed in the groove at the bottom of the back of the sign's case. If they are not properly positioned, you can loosen the Keps nuts slightly and slide them to the appropriate locations in the groove. Do not loosen the bumpers any more than necessary to slide them or they will unscrew from the internal nuts that hold them in place. After repositioning them, secure the bumpers by tightening the Keps nuts.

Bumper

Keps nut

Side view

Back view
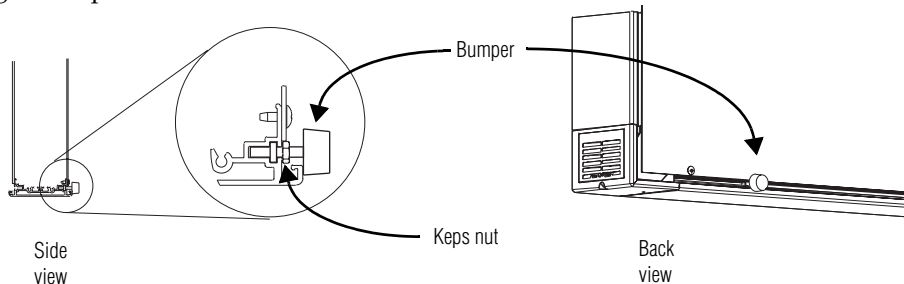
**4.** (Optional) Mounting brackets have been installed in the groove at the top of the back of the sign case. If they are not properly positioned for the specific installation, you can slightly loosen the two (2) set screws in the holes of any bracket and slide the bracket to the appropriate location in the groove. Be sure the mounting brackets are positioned evenly across the case, keeping one bracket on the left end and one bracket on the right end of each sign. Tighten all the set screws in each bracket. Torque to 10–15 lb-in.

**NOTE:** Since the Rise Ticker™ sign is modular, mounting brackets must be positioned at the ends of each interconnecting module. Be sure the mounting brackets are positioned as in Step 4 above.
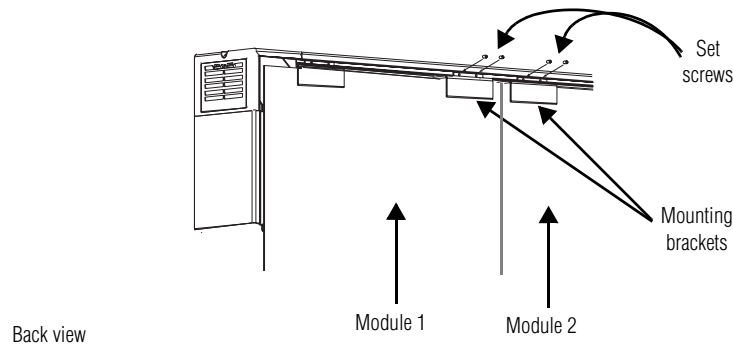
**5.** Lift the sign onto the wall-mounting bar and let the sign slide all the way down into the groove.
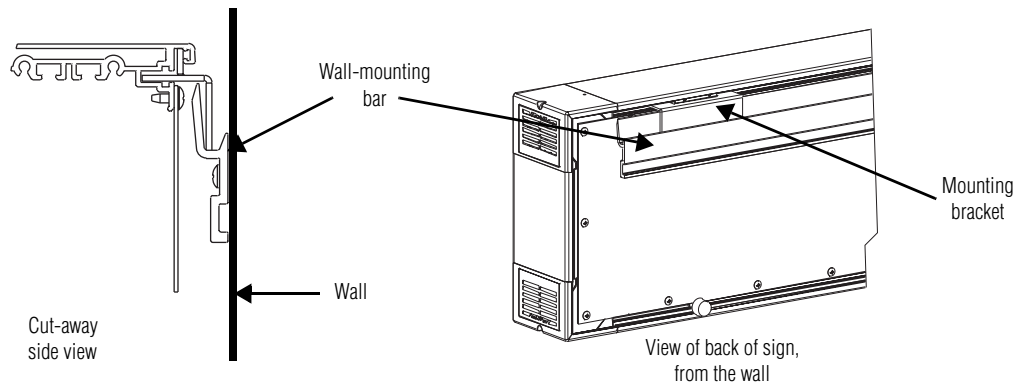
**NOTE:** For standard installation, plug the electrical power cord into outlet. For custom installation, see "Electrical installation" on page 19.
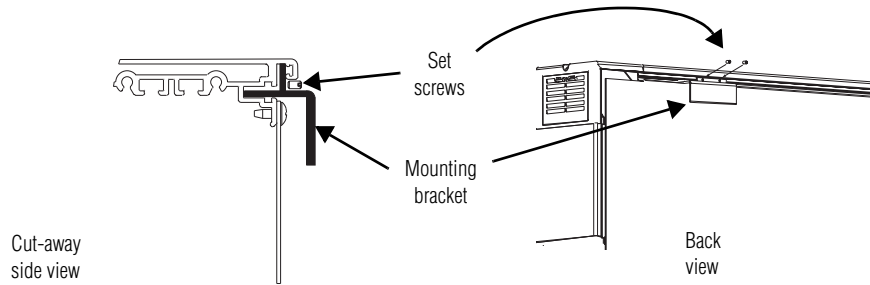
### Ceiling-mounting instructions

1. Disconnect power from the sign. Power must be removed from the sign at the power source to prevent electrical injury or damage.

2. Slide ceiling mounting brackets over the top of the sign, making sure to fit the sides of the brackets into the groves along the sides of the sign.

   **NOTE:** Two brackets are required for 5-, 6-, and 7-foot signs. Three brackets are required for 8, 9, and 10-foot signs.

Ceiling mounting bracket

Groves on side of sign

Top and side view of bracket

Groves on side of sign

Cut-away Side view
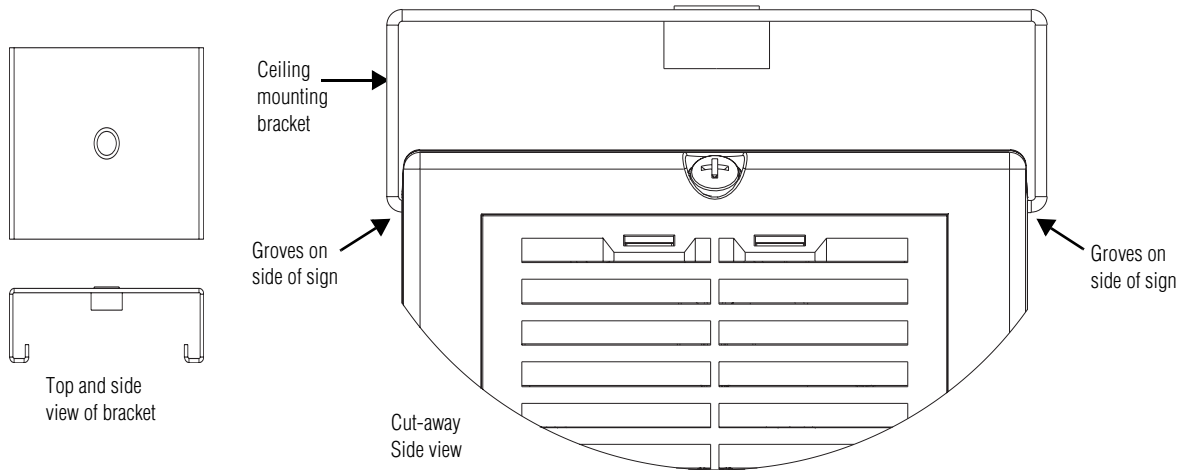
3. Position the brackets appropriately by sliding them along the grooves. Be sure the mounting brackets are spaced evenly across the case, keeping them one (1) foot from each end of the sign. If using a third bracket, center the third bracket along the horizontal length of the case.

4. Screw a ceiling mounting rod (not included) into the hole on the top of each bracket and tighten.

For a 1/2-inch threaded bar
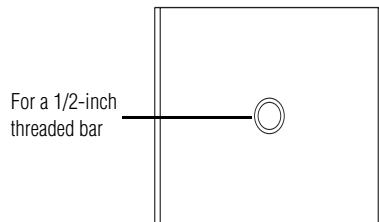
5. Mount the sign to the ceiling using appropriate fasteners.

Ceiling

Ceiling mounting rod (not included)

Ceiling mounting bracket

Cut-away Side view
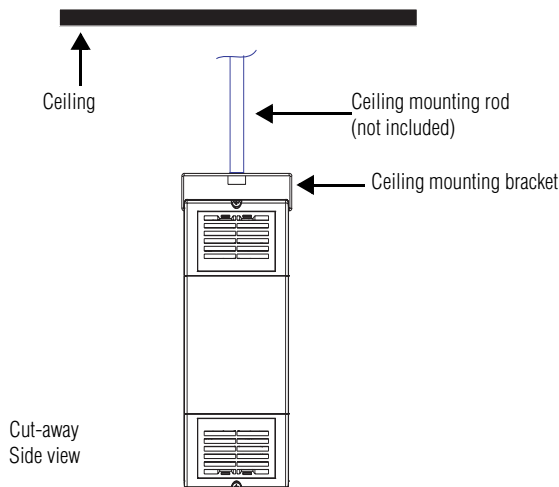
### Vertical-mounting instructions

Only Rise Ticker™ signs up to 12 feet in length can be mounted vertically.

1. Disconnect power from the sign. Power must be removed from the sign at the power source to prevent electrical injury or damage.

2. Using a #3-bit Phillips screwdriver, remove the four screws and the washers from each corner of the back of the sign. Save the washers for use in the next step.



Remove these four screws and the washers
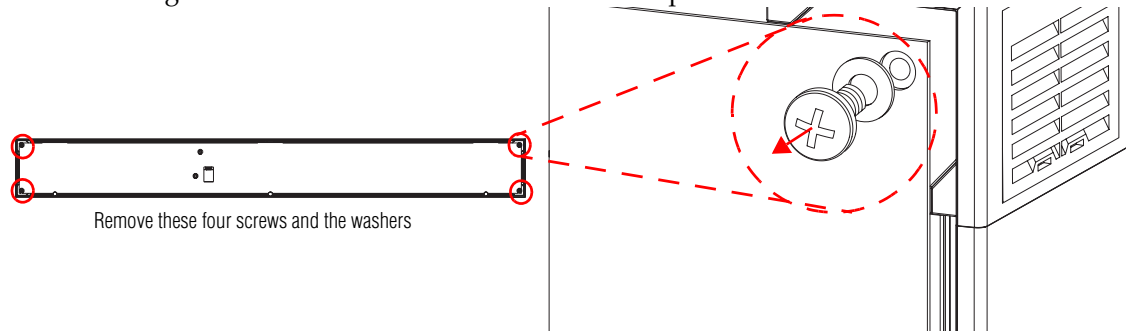
3. Using a 3/16" hex wrench, screw one washer (from step 2) and one shoulder bolt (included) into each corner of the back of the sign with 275 lb-in of torque.



Screw in one washer and one shoulder bolt.
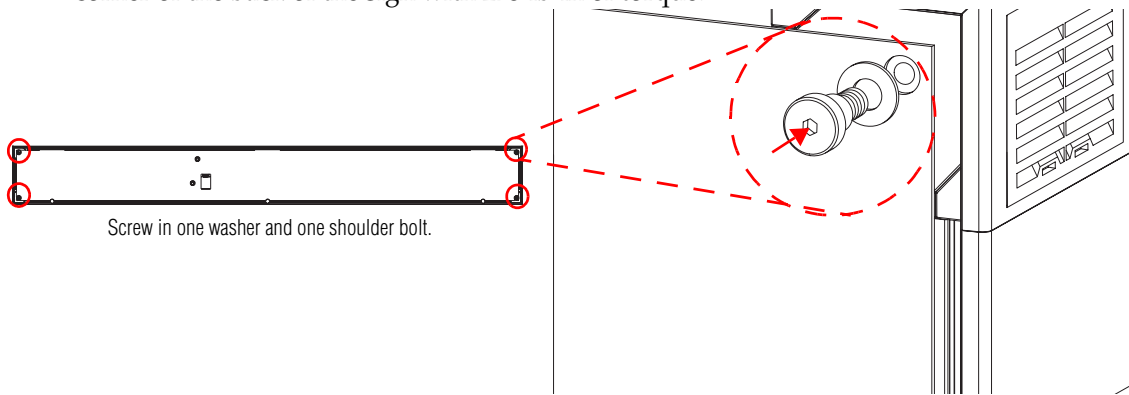
4. Using the table below, attach the sign's vertical-mounting brackets to a wall using the appropriate fasteners.

| Sign length (feet) | Vertical distance between the center of each shoulder bolt (inches) |
|---|---|
| 5 | 63.65 |
| 6 | 75.65 |
| 7 | 87.65 |
| 8 | 99.65 |
| 9 | 111.65 |
| 10 | 123.65 |
| 11 | 135.65 |
| 12 | 147.65 |

**NOTE:** The dimensions above will not be correct if you ordered a custom-length sign.

Vertical-mounting
bracket

This side of the bracket
sits against the wall.

Vertical distance between the center
of each shoulder bolt.
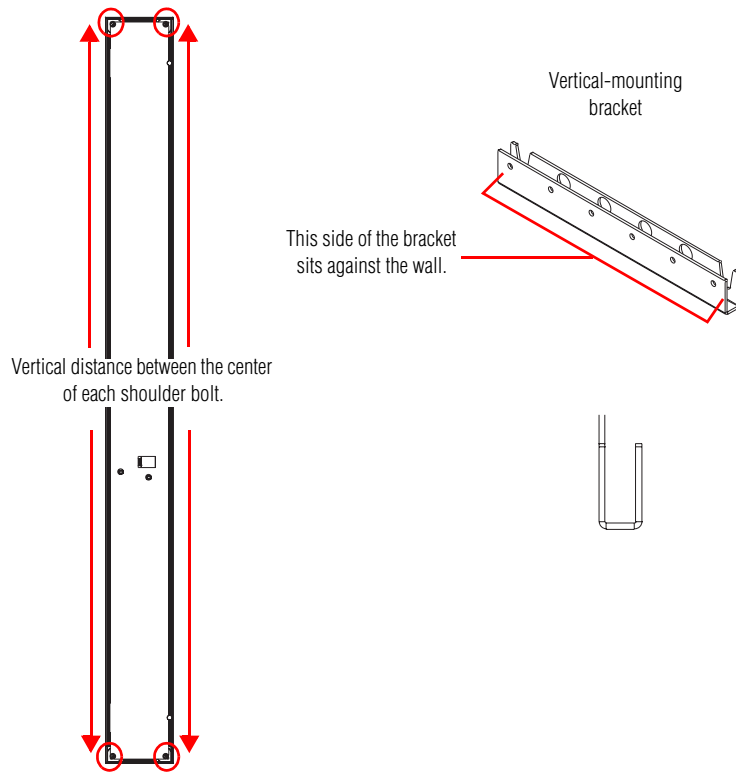
**5.** Mount the sign to the wall by lifting the sign so that the shoulder bolts rest on the vertical-mounting brackets.

Shoulder bolts from each
corner of the back of the sign

The shoulder bolts rest in each
channel of the vertical-
mounting brackets.
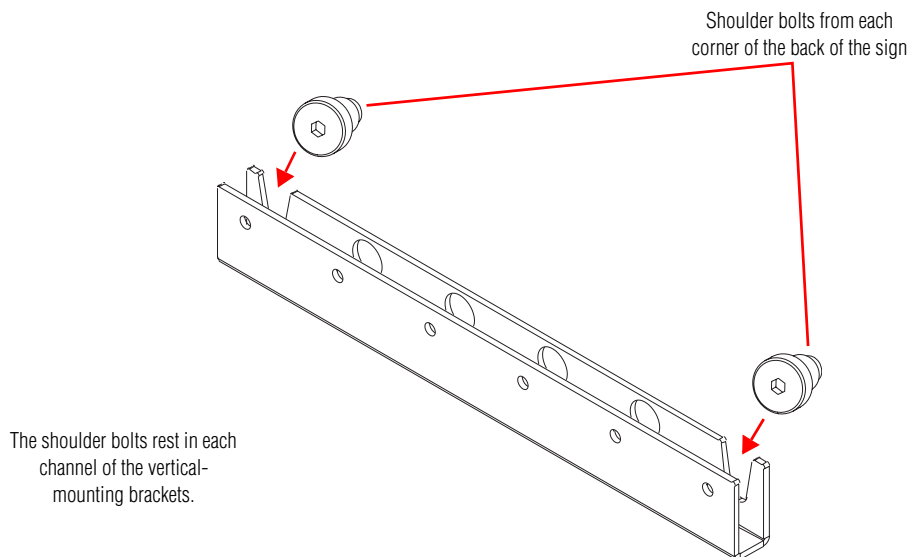
# Module connection

### Tools needed

- Medium Phillips screwdriver

### Module interconnection hardware



A    B    C    D
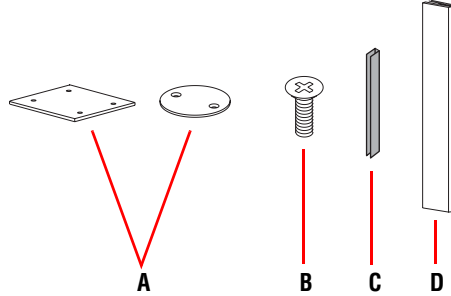
| Part | Part description | Quantity |
|------|------------------|----------|
| **A** | Flat plate | 2 for each interconnection (Both square and round versions are shown; only one version is used per sign.) |
| **B** | Screws for Part A | 4 for each flat plate |
| **C** | EMI gasket | 4 for each interconnection |
| **D** | "H" support bracket | One for each interconnection |

### Module interconnection instructions



**ATTENTION**
**OBSERVE PRECAUTIONS**
**ELECTROSTATIC SENSITIVE DEVICE**

1. On the sign to be interconnected, slide one of the flat plates into the slot for the upper flat plate until the holes are aligned. Fasten with screws for Part A. Repeat for the lower flat plate.
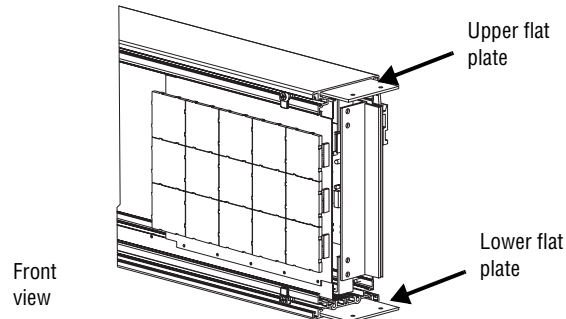


Upper flat plate

Lower flat plate

Front view

NOTE:
The plates for your sign may be the round version. They are installed in a similar manner.

**2.** Slide EMI gaskets over the rear support wall of the case of the sign in Step 1, with approximately 8″ (20 cm) between the gaskets.



Front of the module

Approx. 8" (50 cm)

EMI gaskets

Cut-away side view
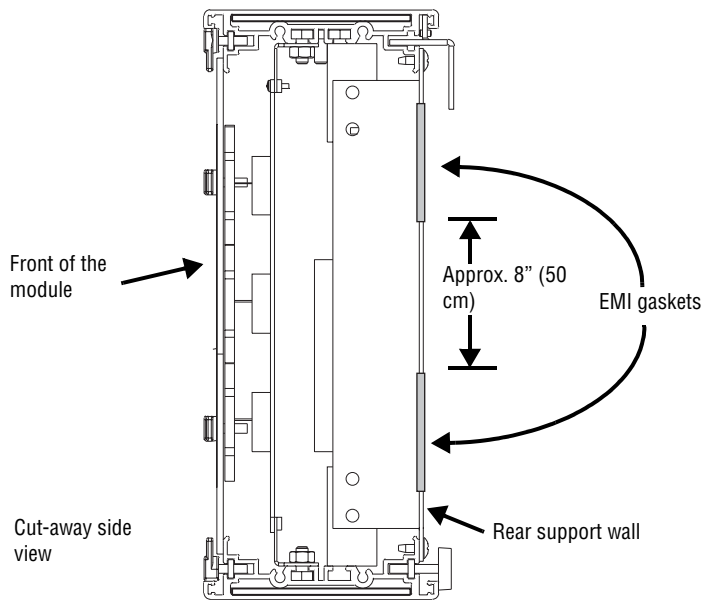
Rear support wall

**3.** Slide an "H" support bracket firmly over the EMI strips on the rear support wall.



Front of the sign module

"H" support bracket

Cut-away view
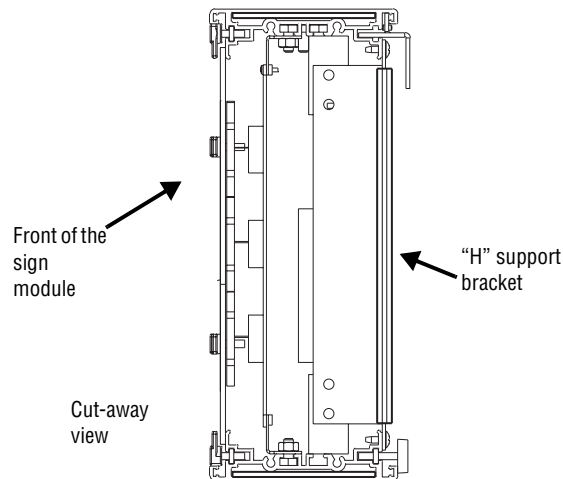
**4.** Repeat Step 2 to install EMI gaskets on the second sign to be connected.

**5.** Match the right and left open ends of the two signs to be interconnected.
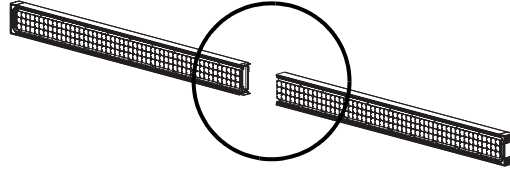


**6.** Slide the signs together so that:
- the "H" support bracket fits firmly over the rear support wall of each sign's case,
- the upper and lower flat plates fit firmly in the top and bottom of the extrusion of both signs, and
- the screw holes in the upper and lower flat plates match the screw holes in the sign case.
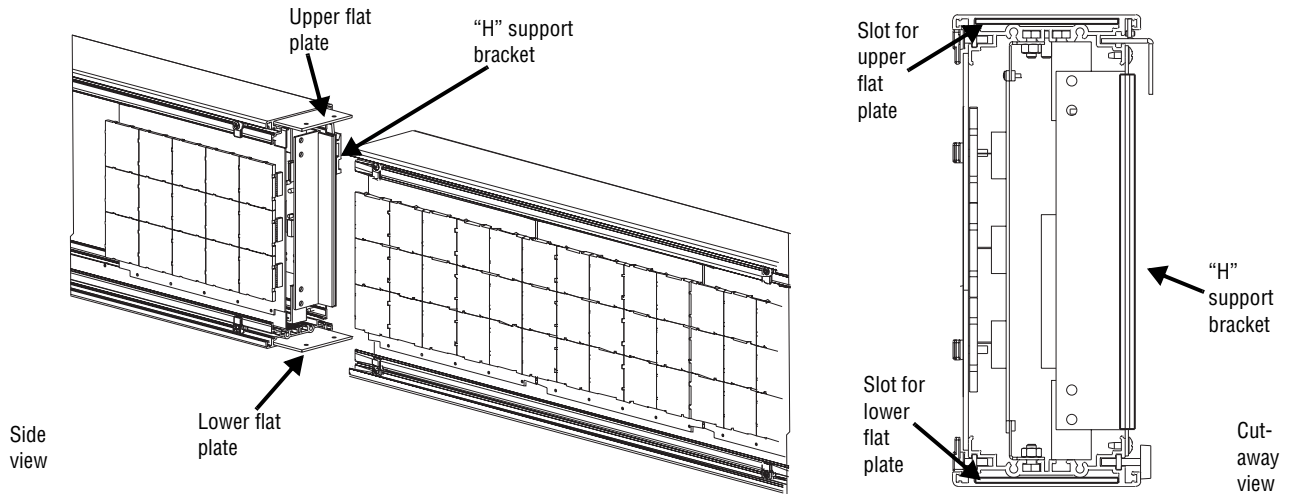


**7.** Using two (2) additional screws, screw the upper flat plate securely to the second sign. Torque to 70 lb-in, 90 lb-in maximum.
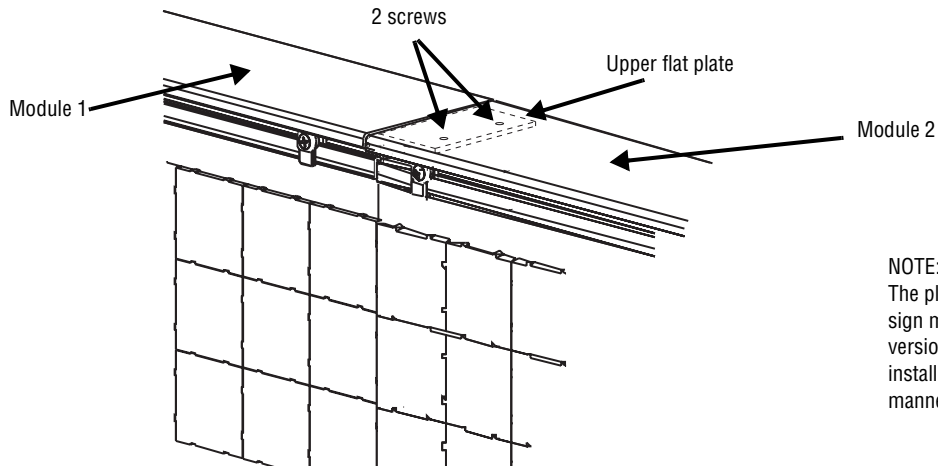


NOTE:
The plates for your sign may be the round version. They are installed in a similar manner.

**8.** Using two (2) more screws, screw the lower flat plate securely to the second sign. Torque to 70 lb-in, 90 lb-in maximum.
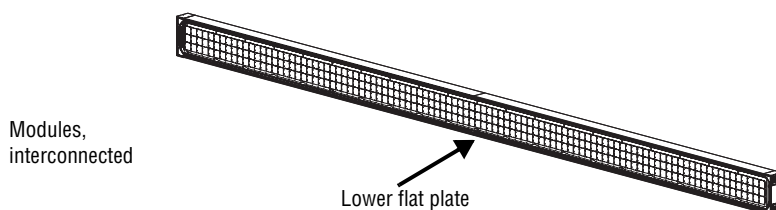
# Electrical installation

### Power configurations: Overview

There are several basic ways that multiple-module signs can be powered:

- variations of non-permanent connection with power cords
- permanent connection with conduit and/or hard-wiring

In a standard configuration, single or multiple modules all have their own power cords. In a custom configuration, multiple modules can share a common power source (either power cord or conduit). A custom configuration must be wired and installed by the factory and/or authorized personnel only.

### Power components

The power components are located near the center of any sign. Note that every power connection must be disconnected when opening a sign. See "Opening and closing a sign" on page 31 for more information.

AVST16 and AVST24



Module, front view                          Power                    Power
                                            supplies                 connector
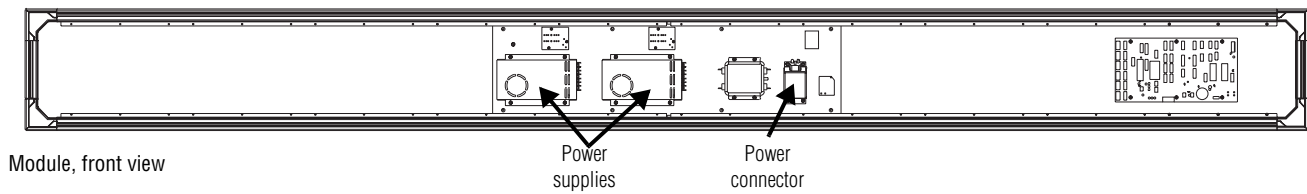
AVST32



                                                                    Power
                                                                    connector
                                            Power
                                            supplies
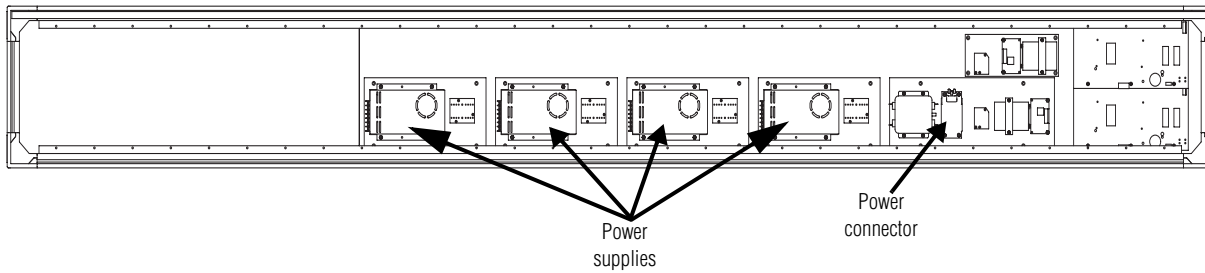
Module, front view                  NOTE: The number of power supplies depends on the length of the sign.

**Power safety considerations**

Please note the following when planning and installing the signs:

- *When signs share a common power source (either one power cord or one conduit connection) the signs may be connected in any combination to achieve the desired length as long as the combination complies with the specifications in Table 5, "Maximum number of power supplies per 20 amp circuit," on page 43.*

- *Each and every input power source should be protected by a circuit breaker rated at no more than 20 amperes. Refer to the specifications in Table 5, "Maximum number of power supplies per 20 amp circuit," on page 43.*

- *After all signs are mounted but before power is applied, the installer must verify ground continuity 1) between all joined signs and 2) between the metal case and any ground terminal block where the building's power connection is made.*

- *Electrical protection devices for signs with permanent connection using conduit and/or hard-wiring must include the following:*

    English

    A readily-accessible disconnect device must be installed in the fixed wiring supplying power to this equipment. The disconnect device should have a contact separation of at least 3 mm.

    This equipment relies on protective devices in the building installation for protection for short circuit and/or overcurrent protection. Install this equipment only where these protective devices are present. The size and type of the protective devices should be appropriate for the voltage and current ratings on this equipment.

    Français

    Un dispositif de déconnexion placé à un endroit pratique doit être installé sur le fil fixe qui alimente ce matériel. La distance des contacts de ce dispositif de déconnexion doit être de 3 mm minimum.

    Ce matériel s'appuie sur des dispositifs de protection dans l'installation du bâtiment pour se protéger des courts-circuits et/ou des surintensités. Installez ce matériel seulement là où de telles protections sont présentes. Le calibre et le type des protections doivent être adaptés à la tension et à l'intensité nominales du matériel.

    Deutsch

    In der Festverdrahtung muß eine leicht zugängliche Trennvorrichtung installiert werden, die dieses Gerät mit Strom versorgt. Die Trennvorrichtung muß eine Kontakttrennung von mindestens 3 mm aufweisen.

    Kurzschlußschutz und/oder Überstromschutz wird in diesem Gerät durch entsprechende Schutzvorrichtungen in der Gebäudeinstallation gewährleistet. Dieses Gerät nur dort installieren, wo diese Schutzvorrichtungen vorhanden sind. Größe und Art der Schutzvorrichtungen müssen den Spannungs- und Stromnennstärken dieses Geräts entsprechen.

    Italiano

    Un dispositivo di sconnessione prontamente accessibile dovrà essere installato nel cablaggio fissato che fornisce corrente alla presente apparecchiatura. Il dispositivo di sconnessione dovrà avere una separazione di contatto di almeno 3 mm.

    La presente apparecchiatura si affida a dispositivi di protezione nell'installazione da edificio per protezione da corto circuito e/o protezione da sovracorrente. Installare l'apparecchiatura solamente in punti dove sono presenti questi dispositivi di protezione. Le dimensioni e il tipo di dispositivo di protezione dovranno essere appropriati alla tensione e ai valori di corrente della presente apparecchiatura.

Español

Se debe instalar en el cableado fijo que alimenta este equipo un dispositivo de desconexión fácilmente accesible. Dicho dispositivo tendrá una separación entre contactos de por lo menos 3 mm.

Este equipo depende del uso de dispositivos protectores en la instalación del edificio para protección en caso de cortocircuito y/o protección contra sobreintensidad. Instale este equipo únicamente en caso de disponer de dispositivos protectores. El tipo y tamaño de los dispositivos protectores deberán ser adecuados para los valores nominales de tensión y corriente de este equipo.

- *Electrical protection devices for signs using non-permanent connection with power cords and plugs must include the following:*

English

The plug on the power supply cord serves as the disconnect device for this display. During mounting and installation of the display, make sure that the electrical power socket/outlet is easily accessible and that it is located close by the display.

Français

La fiche du cordon d'alimentation sert de dispositif de débranchement pour cet affichage. Lors du montage et de l'installation de l'affichage, assurez-vous que la prise d'alimentation électrique est facilement accessible et qu'elle se situe près de l'affichage.

Deutsch

Der Stecker am Netzteilkabel fungiert als Trennvorrichtung für dieses Anzeigeschild. Während der Montage und Installation des Schildes ist sicherzustellen, dass die Netzsteckdose leicht zugänglich ist und sich nahe am Schild befindet.

Italiano

La spina del cavo di alimentazione serve anche come dispositivo di scollegamento di questo display. Durante il fissaggio e l'installazione del display, accertarsi che la presa di corrente sia facilmente raggiungibile e sia situata vicino al display.

Español

La clavija del cable de alimentación sirve como dispositivo de desconexión para este anuncio. Durante el montaje y la instalación del anuncio, asegúrese de que el receptáculo/tomacorriente eléctrico quede fácilmente accesible y que esté,ubicado cerca del anuncio.

#### REDUCING ELECTRICAL NOISE

These procedures are recommended to decrease electrical emissions and noise:

- A sign should be connected to its own branch circuit.

- Incoming power to a sign should be routed on a path separate from a sign's serial communication wires. Do NOT run the power and serial communication wires in the same conduit.

- Where power and serial communications wires must cross, the intersection should be perpendicular.

- All serial communication wires should be shielded per the networking information in "Network setup" on page 25. The shield should only be connected to ground at the converter box.

**⚠WARNING**

Hazardous voltage.
Contact with high voltage
may cause death or
serious injury. Always
disconnect all power to
sign before servicing.

**⚠WARNING**

Hazardous voltage.
A sign with multiple power entries
can still have power even if power
is removed from any one entry.
Always disconnect all power
to sign before servicing.

**Power configurations: Detailed installation**

**1.  One power cord to each sign:**

Each sign has an individual power cord that plugs into an outlet. This is the standard configuration and installation.

Front view,
all modules

Rise Ticker™ left module        Rise Ticker™ middle module(s)        Rise Ticker™ right module

To module's              To module's              To module's
power connection         power connection         power connection

To power outlet          To power outlet          To power outlet
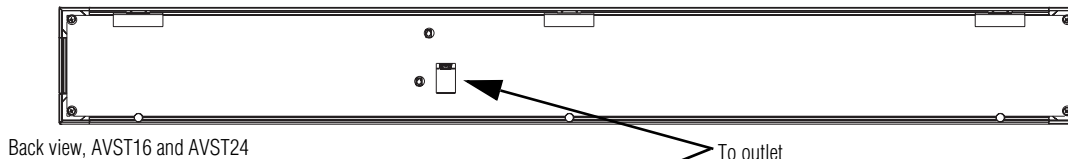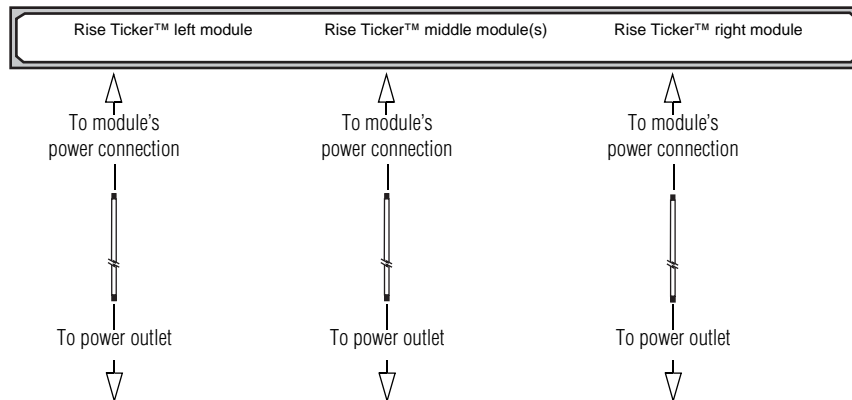
Back view, AVST16 and AVST24                                  To outlet
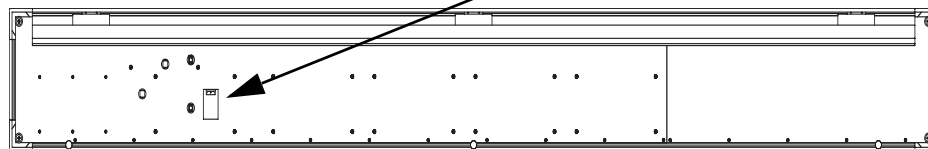
Back view, AVST32

NOTE: On AVST32 signs, there will be two connections, *either serial or Ethernet*. In other words, the sign will have either two serial *or* two Ethernet connections. This drawing shows you the location of all connections.

**2.**   One power cord to the first sign only:

On the right end of the first sign is a power cord that plugs into an outlet. Subsequent signs draw power through the first sign using 3-wire cabling between terminal blocks at both ends of each sign. This is a custom configuration which must be wired and installed by authorized personnel.

NOTE:  Refer to Table 5, "Maximum number of power supplies per 20 amp circuit," on page 43 to

determine the maximum number of signs per power cord.

Front view,
all modules

Rise Ticker™ left module          Rise Ticker™ middle module(s)          Rise Ticker™ right module

Internal power connections
between modules

To module's
power connection

⚠ **WARNING**

**High leakage current.
Contact with sign may cause
death or serious injury.
Earth connection essential
before connecting supply.**

To power outlet
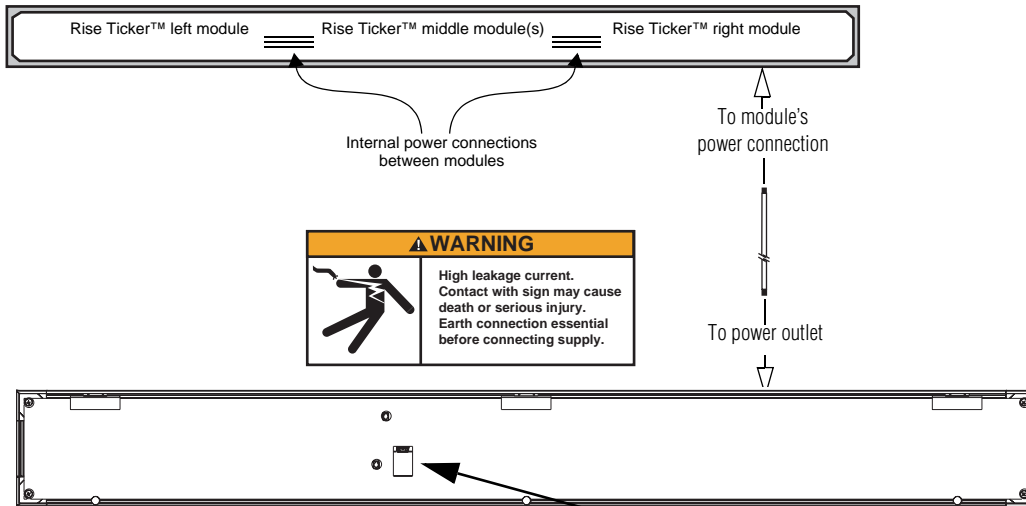
Back view, first module, AVST16 and AVST24
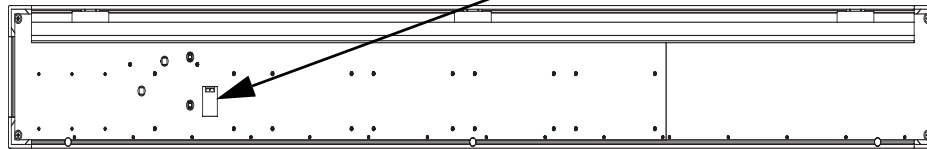
To outlet

Back view, AVST32

NOTE: On AVST32 signs, there will be two connections, *either serial or Ethernet*. In other words, the sign will have either two serial *or* two Ethernet connections. This drawing shows you the location of all connections.

Front view, exposed,
middle or left module

Front view, exposed,
right module

Minimum wire gauge: 16 AWG

Line
Ground
Neutral
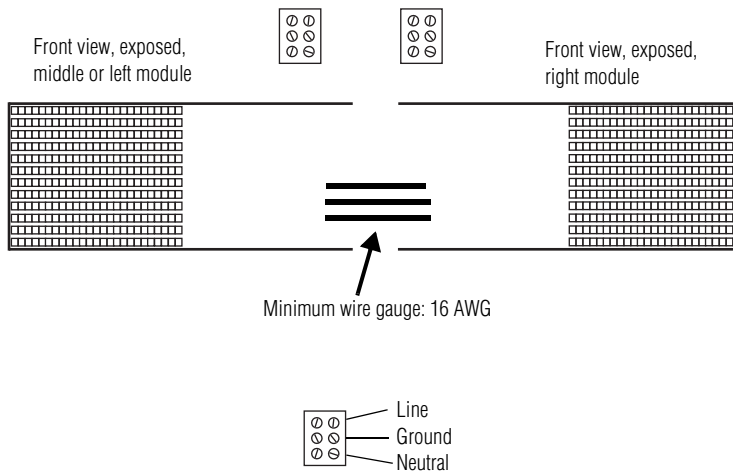
**3.    Direct wire connection via conduit to the first sign only:**

On the right end of the first sign is a direct connection to power through conduit. Subsequent signs draw power through the first sign using 3-wire cabling between terminal blocks at both ends of each sign. This is a custom configuration which must be wired and installed by authorized personnel.

NOTE:  Refer to Table 5, "Maximum number of power supplies per 20 amp circuit," on page 43 to determine the maximum number of signs per conduit input.

Front view,
all modules

Rise Ticker™ left module        Rise Ticker™ middle module(s)        Rise Ticker™ right module

To module's
power
connection

Internal power connections
between modules

Internal power connection

To power
source

Front view, exposed,
second and following modules

Front view, exposed,
first module

Minimum wire gauge: 16 AWG

To power
source

Line
Ground
Neutral

⚠ **WARNING**

**High leakage current.
Contact with sign may cause
death or serious injury.
Earth connection essential
before connecting supply.**

# Network setup

## A complex network example

Below is an example of a possible network setup. This is more complex than most would be, however it demonstrates many of the situations that might occur in a network.



**Rise Ticker™ signs**
(Must display the *same* data)

**Rise Ticker™ signs**
(*Data can be different from that on other signs)

**Internal Alpha Ethernet Adapter**
(inside the sign)

RS485

Ethernet

RS485

RS485

**MSS485**

Ethernet

RS232

**PC** with
Windows NT and
data server software
such as from
Rise Softools

**Converter Box III**
connected to
different COM ports

Input data

**Figure 2:  A complex networking example**

To network a sign to a computer, choose from these methods:

- RS485 (See page 26.)

- Ethernet (See page 28.)

To network signs together, choose from these methods:

- Standard connection of individual signs (4-wire cabling) (See page 29.)

- Multiple connection of one sign to another (2-wire cabling) (See page 30.)

## Networking signs to a computer

In order to display messages on the sign, a computer using data server software, such as that from Rise Softools, must be connected to it. The software, then, is used to create and send the messages to the sign.

> **NOTE:  Use these same instructions when networking AVST32 signs. However, since AVST32 signs are essentially two signs in one, there will be two data lines (*either* two Ethernet *or* two RS485 lines). Perform the same set of actions to the second line.**

The following examples show how to connect a single computer to one sign. Signs can be connected using *either* RS485 *or* Ethernet cabling. Be aware that the Ethernet option can interfere with RS485 communication.

### RS485



| Item | Part # | Description |
|------|--------|-------------|
| **A** | 1088-8624 | 8-foot, 4-conductor RS485 cable, with ferrite end toward sign |
| **B** | 4331-0602 | Modular Network Adapter |
| **C** | 7122-0283 | 50-foot RS485 cable, 1-pair shielded |
| **D** | 1088-1111 | Converter Box III |
| **E** | 1088-8634 | 10-foot, DB9-to-DB9, type "A9" RS232 cable |
| **F** | — | Serial port DB25-to-DB9 RS232 adapter (may be required by your computer) |
| N/A | 1124-9010 | RS485 serial connection kit—includes all above parts except Item F |

**Figure 3:  High-level PC-to-sign RS485 wiring diagram**

For descriptions of labeled parts in this figure, see "Figure 3".

To right module's RS485 port

**A**

**B**

**D**

**C**

| | |
|---|---|
| BL | WH |
| OR | BR |
| BK | YL |
| RD | GN |

SHIELD — SHIELD

RS-485(+) BLACK — BLACK

RS-485(-) RED — RED

**Figure 4: Detailed Converter Box-to-sign RS485 wiring**

---

If substituting an MSS485 (part # 1088-411A) for a Converter Box III, use this diagram.

For descriptions of labeled parts in this figure, see "Figure 3".

**A**

**B**

NOTE:
Either shield screw terminal on the MSS485 can be used.

| | |
|---|---|
| BL | WH |
| OR | BR |
| BK | YL |
| RD | GN |

Screw terminal block of MSS485

**C**

BLACK RS485(+)

RED RS485(-)

SHIELD SHIELD

**Figure 5: Detailed MSS485-to-sign RS485 wiring diagram**
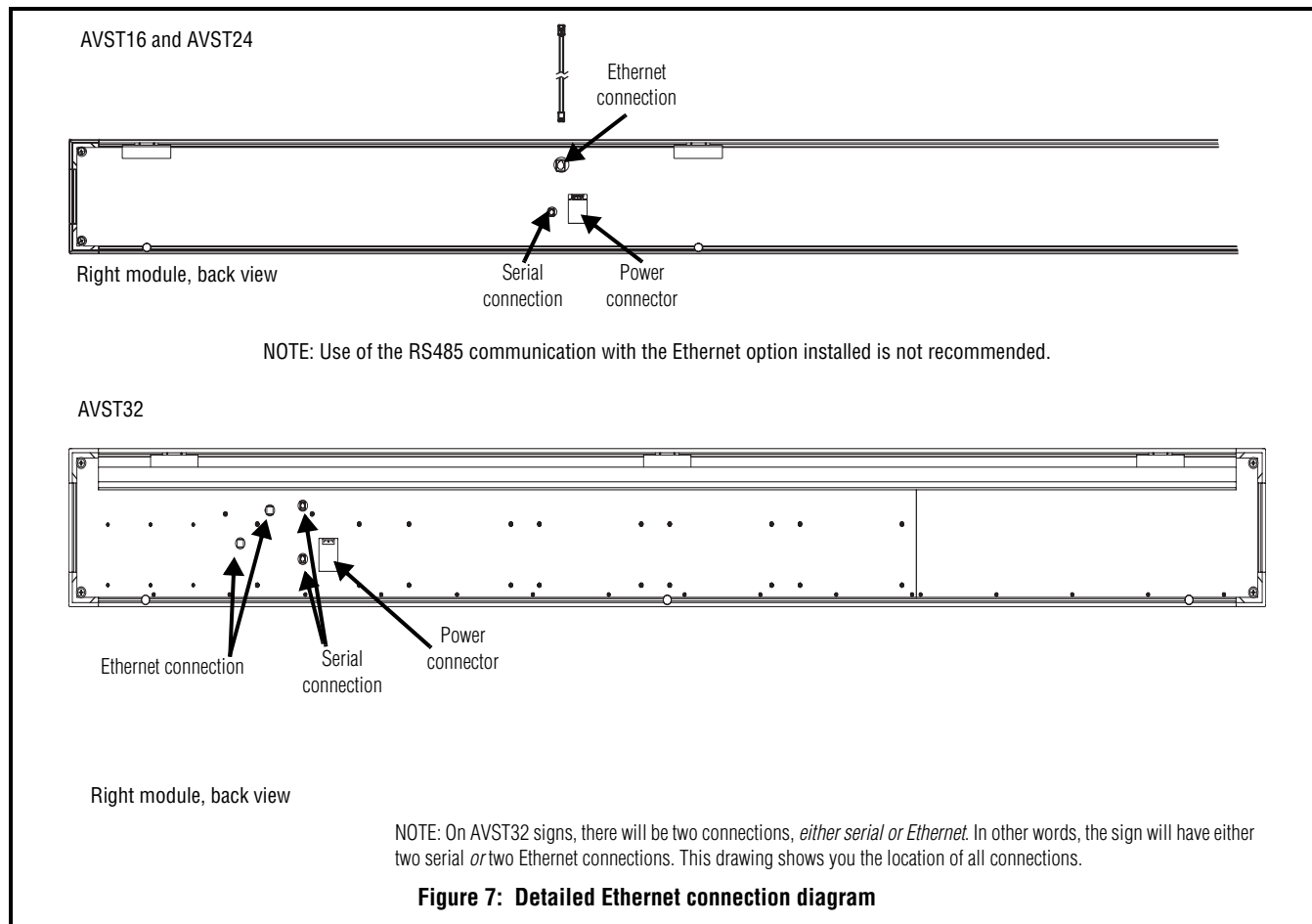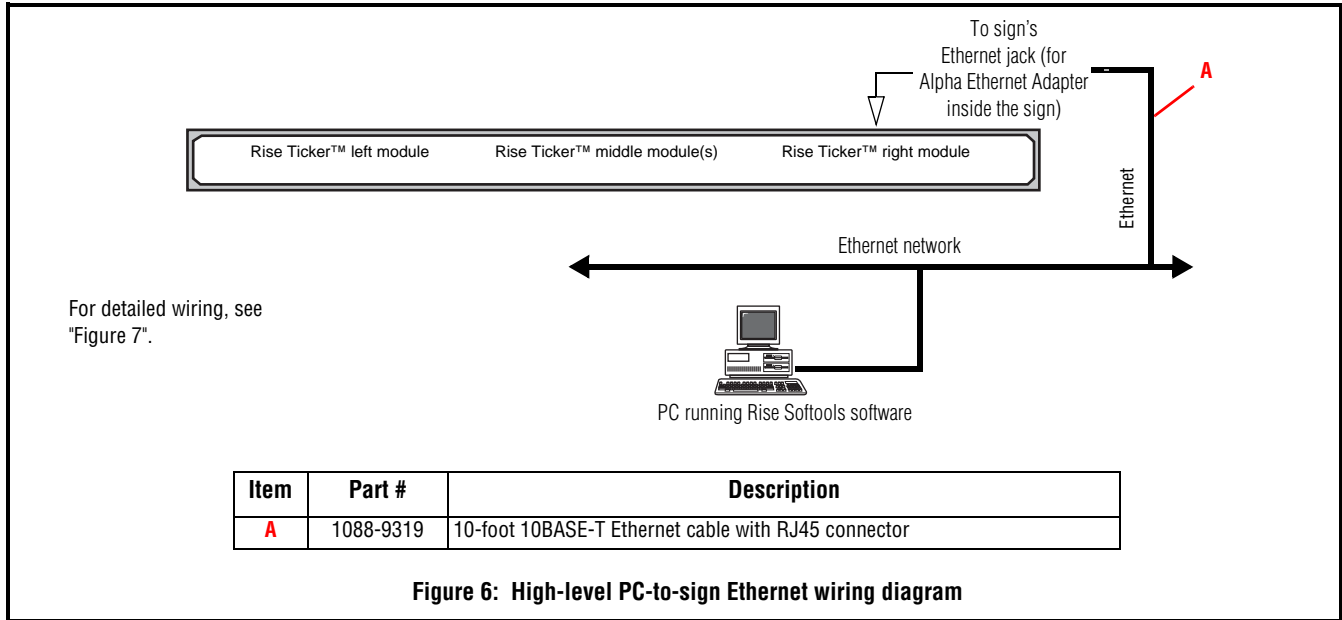
### Ethernet

**NOTE: A network administrator should be involved in connecting the sign to the Ethernet.**

The Ethernet configuration for the Rise Ticker™ sign includes an internal 10BASE-T Ethernet card with an external RJ45 jack. Ethernet cabling (not supplied) can be any length.

After installation, the sign must be configured for addressing by Ethernet.



| Item | Part # | Description |
|------|--------|-------------|
| A | 1088-9319 | 10-foot 10BASE-T Ethernet cable with RJ45 connector |

**Figure 6:  High-level PC-to-sign Ethernet wiring diagram**



NOTE: Use of the RS485 communication with the Ethernet option installed is not recommended.

NOTE: On AVST32 signs, there will be two connections, *either serial or Ethernet*. In other words, the sign will have either two serial *or* two Ethernet connections. This drawing shows you the location of all connections.

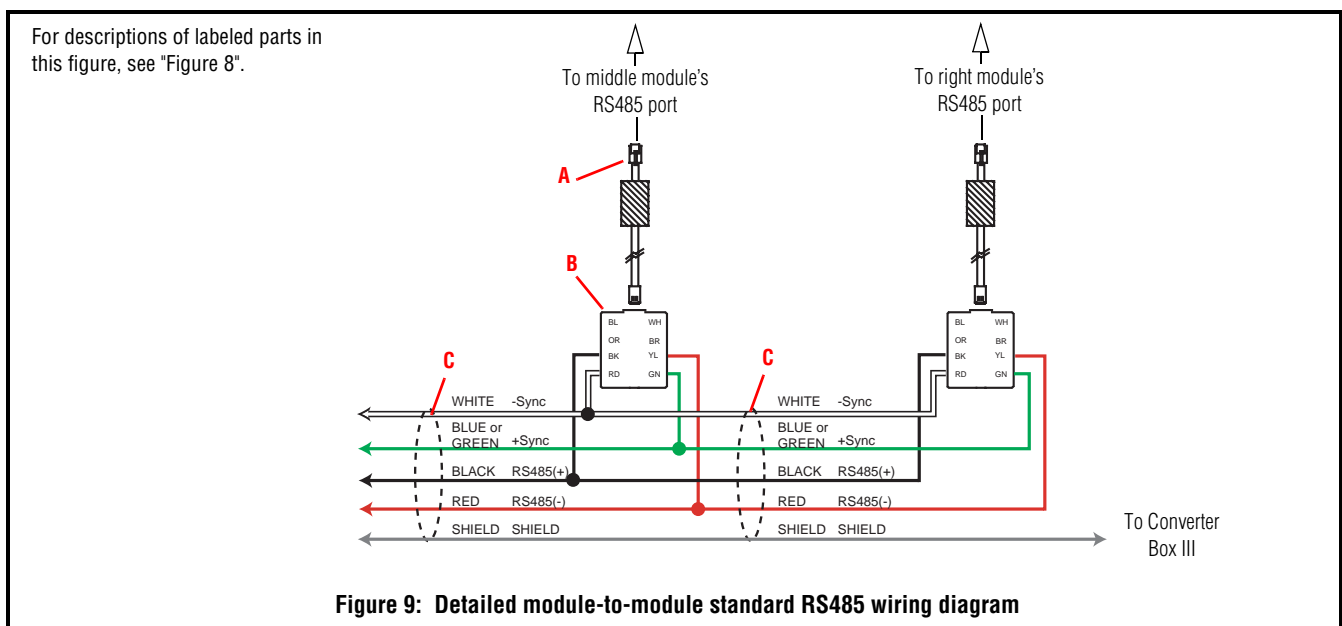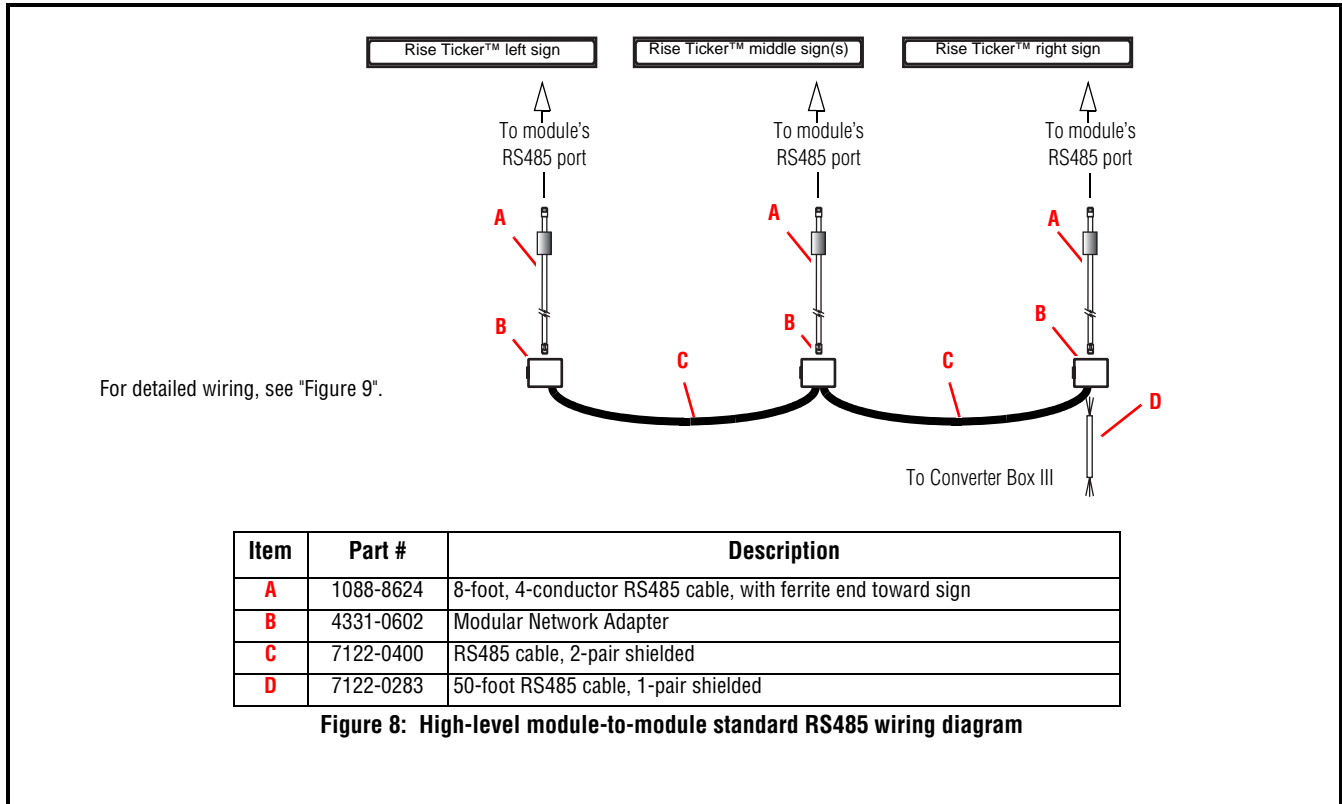**Figure 7:  Detailed Ethernet connection diagram**

# Networking signs together

### Individual signs: standard connection

Individual Rise Ticker™ signs that are connected together (so they will display the same stream of data) must be connected using 2-wire RS485 cabling, labeled Part C below.

It is recommended that the total length of cabling (parts C and D in the diagrams below) be kept to a minimum.



| Item | Part # | Description |
|------|--------|-------------|
| A | 1088-8624 | 8-foot, 4-conductor RS485 cable, with ferrite end toward sign |
| B | 4331-0602 | Modular Network Adapter |
| C | 7122-0400 | RS485 cable, 2-pair shielded |
| D | 7122-0283 | 50-foot RS485 cable, 1-pair shielded |

**Figure 8: High-level module-to-module standard RS485 wiring diagram**



**Figure 9: Detailed module-to-module standard RS485 wiring diagram**

### Multiple-module signs: custom connection

Rise Ticker™ signs composed of more than one module may be connected internally between terminal blocks on the micro controller boards. This uses 4-wire RS485 cabling, labeled Part C below.

It is recommended that the total length of cabling (parts C and D in the diagrams below) be kept to a minimum.



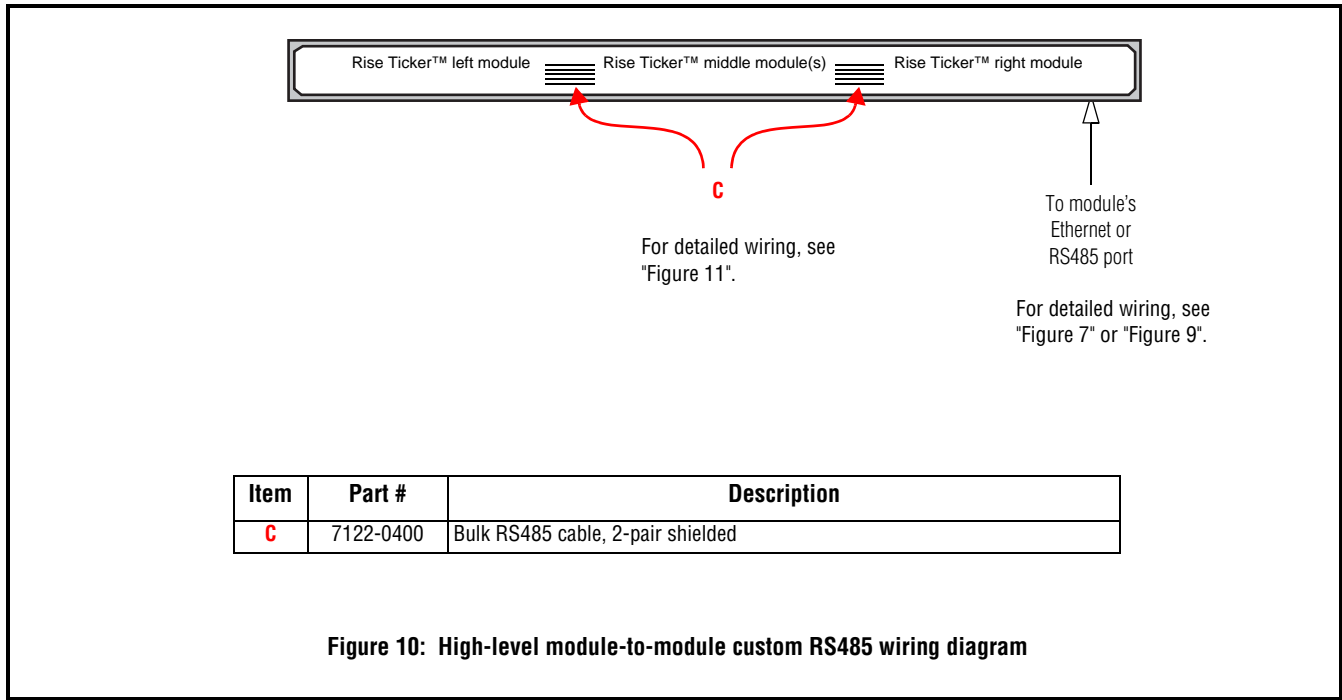| Item | Part # | Description |
|------|--------|-------------|
| C | 7122-0400 | Bulk RS485 cable, 2-pair shielded |

**Figure 10:  High-level module-to-module custom RS485 wiring diagram**
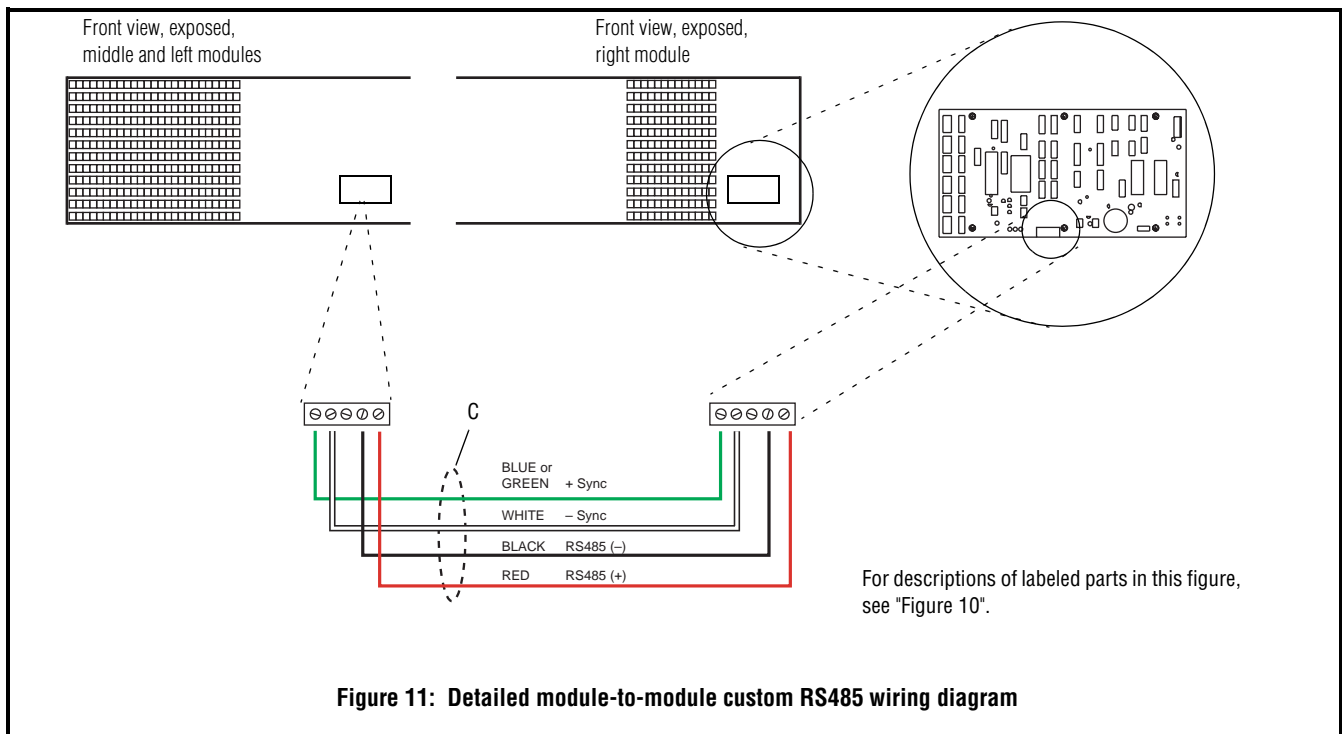


**Figure 11:  Detailed module-to-module custom RS485 wiring diagram**

# Service and maintenance

## Routine cleaning

When cleaning the case is necessary, use a soft lint-free cotton cloth with mild soap and water. Two drops of soap per quart of water is adequate. Alcohol and cleaners with alcohol are not recommended.
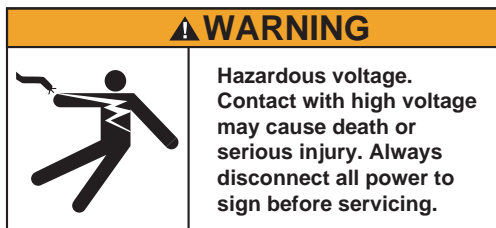
If the front lens becomes dusty, use a vacuum cleaner that has a soft brush on an extension wand.

If additional cleaning is necessary, remove the lens as in "Opening a sign" below. Then rinse with warm water, taking care to not damage or bend the lens. Dry with a lint-free cloth. Re-install the lens as in "Closing a sign" on page 33.

## Opening and closing a sign

If it is necessary to access an Rise Ticker™ sign's internal components, such as a power supply, LED display board, or controller board, follow these instructions.

### Opening a sign



**⚠ WARNING**

Hazardous voltage. Contact with high voltage may cause death or serious injury. Always disconnect all power to sign before servicing.

**ATTENTION**
OBSERVE PRECAUTIONS
**ELECTROSTATIC SENSITIVE DEVICE**

1. Disconnect all power to the sign. If the sign is modular, disconnect all power to each module. Disconnecting power to one module does not assure that power has been disconnected from adjacent modules.

2. Support the front lens, which is secured using a hook-and-loop fastening like Velcro. Gently pull the top of the lens away from the sign's case and then lift the lens up and out.

   **NOTE:** Two people may be needed to perform this process: one to loosen the lens while the other holds it.
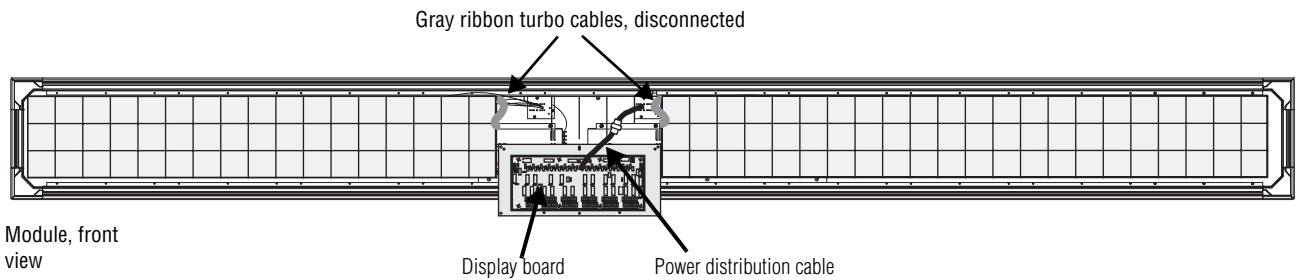
### Accessing internal components

3. Using a small Phillips screwdriver, unscrew the three screws at the top and three screws at the bottom of the LED display board holding it to the horizontal top and bottom rails. (Save the screws for reconnection later.)



Top screws,3 per board

Module, front left end

Bottom screws,3 per board
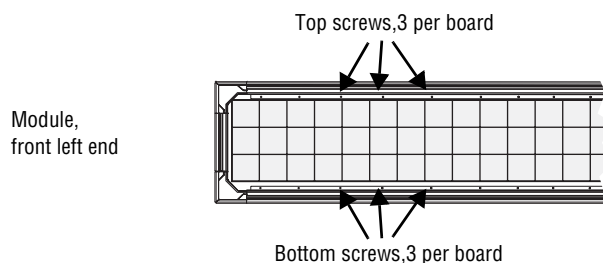
**4.** Disconnect the gray ribbon turbo cables at the top left and top right of the LED display board.

Gray ribbon turbo cables
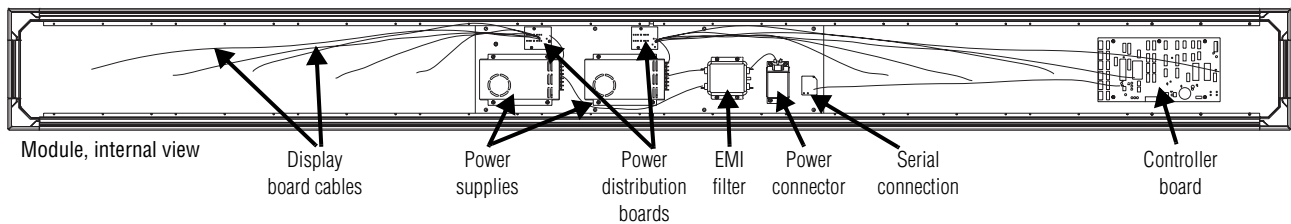
Module, front
view

Display board, loose
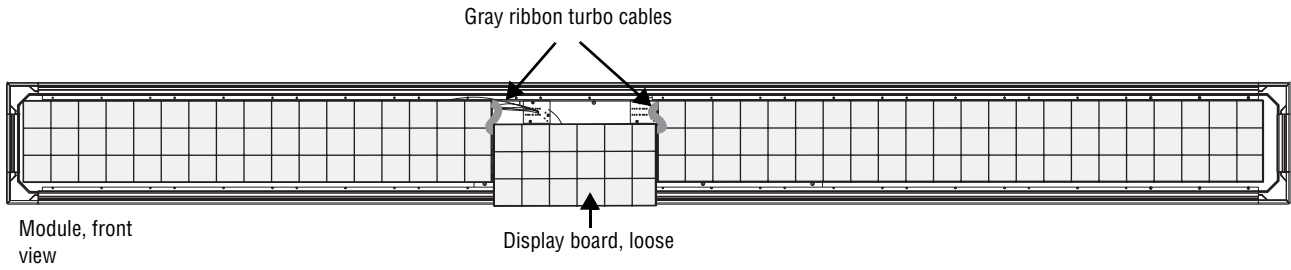
**5.** Carefully tip the board forward and down and rest it on a flat surface, such as a table, or else tip the board up and rest it on the top of the sign's case.

**6.** Disconnect the power distribution cable from the LED display board and remove the LED display board from the case. If you are removing more than one LED board, note which display board cable goes to which LED display board location.

Gray ribbon turbo cables, disconnected

Module, front
view

Display board      Power distribution cable

The power components are located near the center of any module. Note that every power connection must be disconnected when opening a sign. The controller board is located on the right end of the front of the module.

AVST16 and AVST24

Module, internal view

Display
board cables    Power
supplies    Power
distribution
boards    EMI
filter    Power
connector    Serial
connection    Controller
board

AVST32

Serial connection

Module, internal view

EMI
filter    Power
connector    Ethernet connection
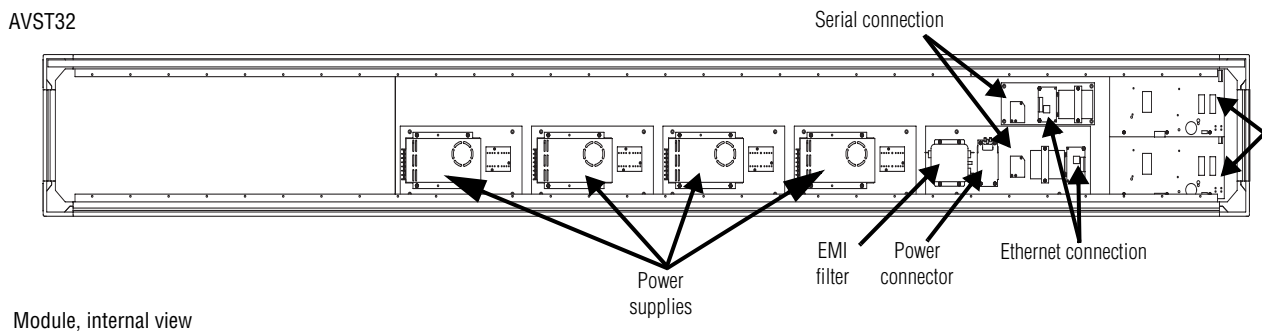
Power
supplies

NOTE: The number of power supplies depends on the length of the sign.

### Closing a sign

1. Connect the LED display board to the power distribution board.

2. Connect the gray ribbon turbo cables to the top left and top right of the LED display board. Be sure no wires are caught between components.

3. Using the screws saved when opening the sign, screw the three screws at the top and three screws at the bottom of the LED display board holding it to the horizontal top and bottom rails.

4. Place the front lens into the bottom of the sign, align it in the center, and press the top edge to the sign. Press all edges tightly together.
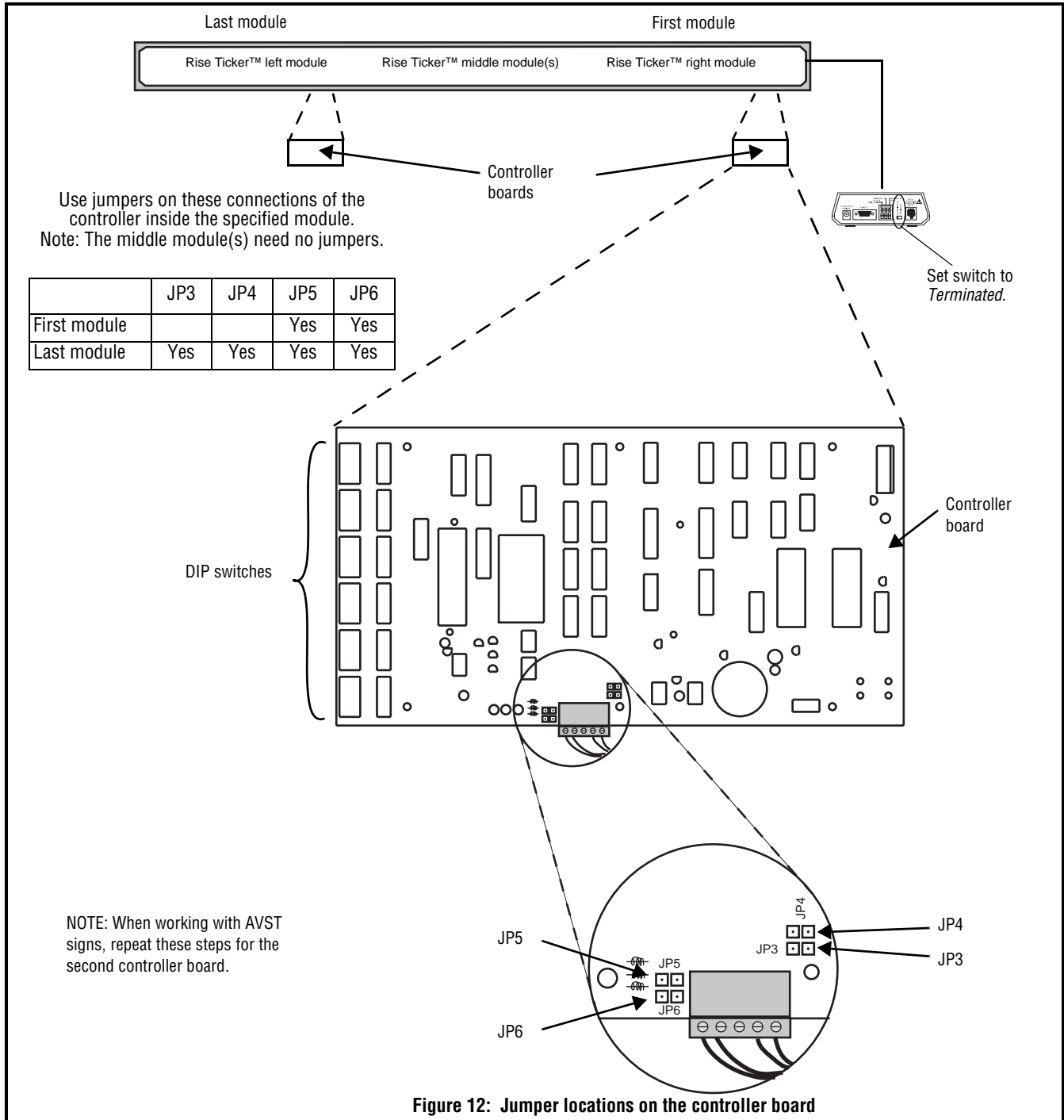
   **NOTE:** Two people may be needed to perform this process.

5. Re-connect power to the sign.

# Appendices

## Configuring a controller board

### Replacing jumpers

If a controller board needs replacing, shorting jumpers may need to be installed onto the jumper posts, as indicated on labels near the jumpers (also shown below).



|              | JP3 | JP4 | JP5 | JP6 |
|--------------|-----|-----|-----|-----|
| First module |     |     | Yes | Yes |
| Last module  | Yes | Yes | Yes | Yes |

**Figure 12: Jumper locations on the controller board**

### Using DIP switches to set up a sign

If a controller board needs replacing, DIP switches may need to be reset. These settings are pre-configured on a new sign by the manufacturer according to label(s) near the DIP switches, but if you wish to change the settings, follow the instructions in this section.

The Rise Ticker™ sign can be described in terms of the physical configurations. Understanding these configurations is important to properly set the DIP switches.

Physically, an Rise Ticker™ sign can be enclosed as a single cased sign. It can also be a modular sign, composed of a left end, a right end, and possibly one or more centers, all having a portion of the case.
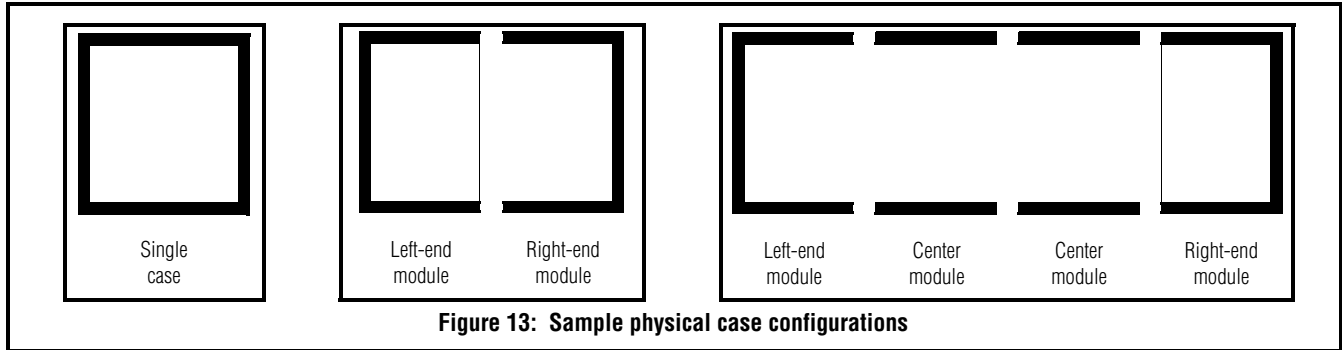


| Single case | Left-end module | Right-end module | Left-end module | Center module | Center module | Right-end module |

**Figure 13: Sample physical case configurations**

### DIP switches

The Rise Ticker™ sign uses a bank of DIP switches to allow configuration information to be set via the module's hardware. These DIP switches are read and used to set the configuration when a sign first powers up or when it is reset by the message protocol data. The DIP switches are set initially by the factory, but may be changed manually. They are accessed through the front of the sign.

### Setting the DIP switches

1. Open the front of the sign. (Refer to "Opening a sign" on page 31.)

2. Locate the DIP switches inside the sign behind the LED display. Each controller board has a set of six banks of 8 DIP switches, for a total of 48 DIP switches, along the right edge. These are labeled on the controller boards as SW1 through SW6.
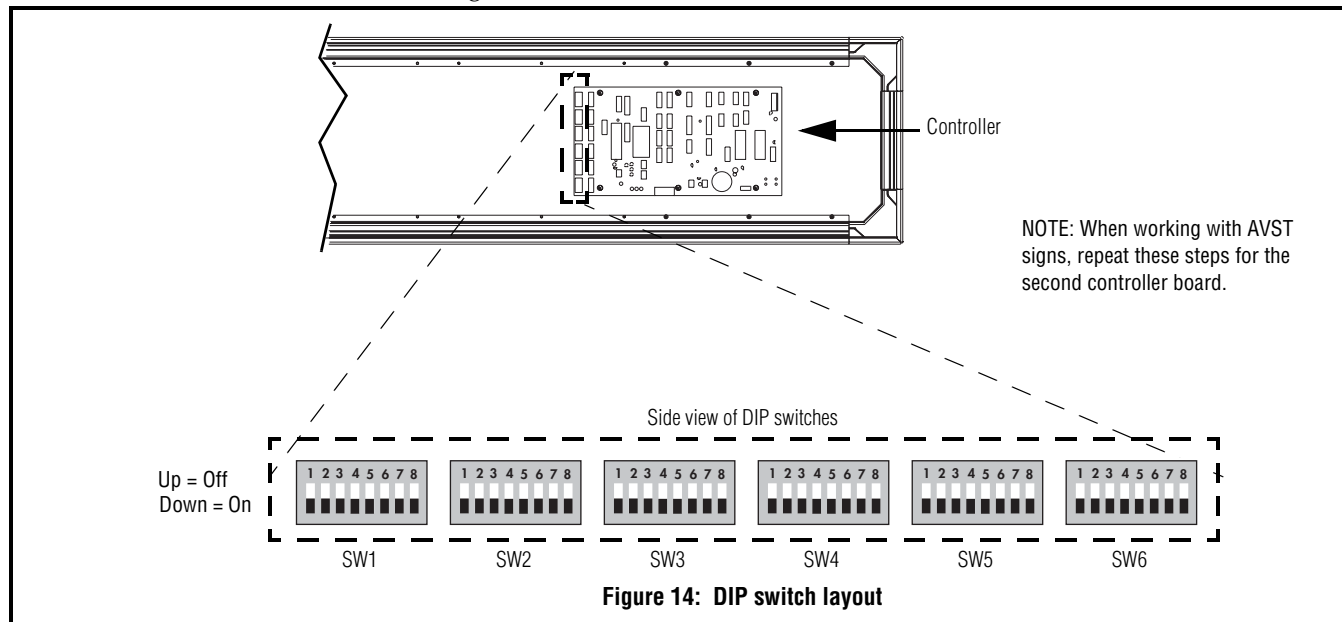


Controller

NOTE: When working with AVST signs, repeat these steps for the second controller board.

Up = Off
Down = On

Side view of DIP switches

| SW1 | SW2 | SW3 | SW4 | SW5 | SW6 |

**Figure 14: DIP switch layout**

Information about DIP switches:

- Each switch represents a 1-bit binary number. This means a switch can have a value of 0 (off) or 1 (on). The default setting is zero for all DIP switches.

- Groups of DIP switches can be combined logically to create multi-number settings.

- The DIP switches must be set to represent various meanings. Some settings span two banks of DIP switches.

**3.** Using the tip of a pen or similar object, press the toggle on each switch as needed to set it. To determine a specific DIP switch setting that corresponds to a desired decimal number, see Table 2, "DIP switch settings," on page 38.
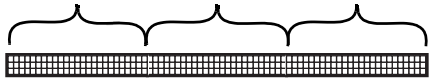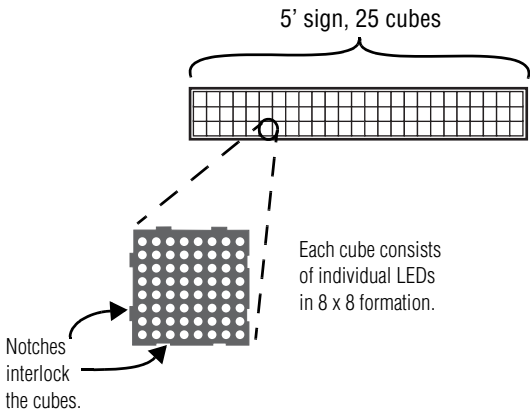
**Table 1: DIP switches and values**

| Starting bank and switch number | Ending bank and switch number | Term | Meaning |
|---|---|---|---|
| SW1–1 | SW2–8 | Offset | The distance, in number of cubes, the master is from a slave module.<br><br>For a master module, the distance, in number of cubes, the last slave module is from the right end of the master.<br><br>For a slave module, the distance, in number of cubes, the right-most end of the module is from the start of the display (the right-most end of the right-most module.) The start of the sign is on the right, therefore the modules are sequenced right to left.<br><br>5' = 25 cubes<br>6' = 30 cubes<br>7' = 35 cubes<br>8' = 40 cubes<br>9' = 45 cubes<br>10' = 50 cubes<br><br> |
| SW3–1 | SW3–8 | Width | The width of the complete module, in number of cubes. For example, a 5' module is 25 cubes wide.<br><br>Settings are:<br><br>5'    25 cubes<br>6'    30 cubes<br>7'    35 cubes<br>8'    40 cubes<br>9'    45 cubes<br>10'   50 cubes<br><br> |
| SW4–1 | SW4–1 | Colors | Whether the module displays 1 color (red) or 3 colors (red, green, amber).<br><br>Settings are:<br>0          1-color<br>1          3-color |

**Table 1: DIP switches and values**

| Starting bank and switch number | Ending bank and switch number | Term | Meaning |
|---|---|---|---|
| SW4–2 | SW4–2 | Master | Whether the module is used as a master or as a slave. The master coordinates functions (such as scrolling) across all divisions.<br>The right-most module must be set as a master. All others should be set to slave.<br><br>Settings are:<br>0      Slave<br>1      Master |
| SW4–3 | SW4–3 | Slaves attached | On a master module, whether there are slave modules or not.<br>On a slave module, set this to 0.<br><br>Settings are:<br>0      No slaves are attached.<br>1      One or more slaves are attached. |
| SW4–4 | SW4–4 | Ack/Nak | On a master module, whether the sign sends acknowledgement of messages or not. (Usually set to 0.)<br>On a slave module, set this to 0.<br><br>Settings are:<br>0      Sends ack/nak acknowledgement.<br>1      Does not send ack/nak acknowledgement (is silent.) |
| SW4–5 | SW4–5 | Rotate | How rotation appears on the sign.<br><br>Settings are:<br>0      Normal rotation of characters. (May appear as if the characters have a slight slant.)<br>1      Half-speed rotate with double-dot blending of characters.<br>This means that the sign rotates the characters at half the speed, therefore they appear more clear. They also appear as if twice the number of LEDs are used for each stroke in a character, filling in-between the original LEDs. |
| SW4–6 | SW4–6 | Refresh rate | How fast the display is refreshed.<br><br>Settings are:<br>0      Normal refresh rate.<br>1      Double-speed refresh rate.<br>Only recommended in signs 6 feet or less, and only for the slowest 2 settings for scroll speed for the display. |
| SW4–7 | SW4–8 | Unused | Reserved—Required setting is: 0. |
| SW5–1 | SW5–8 | Unused | Reserved—Required setting is: 0. |
| SW6–1 | SW6–1 | Test/ no test | Whether a test pattern is displayed on the sign or not.<br><br>Settings are:<br>0      Normal display<br>1      Test display |
| SW6–2 | SW6–3 | Test pattern | Determines the pattern displayed on the sign when SW6–1 is set to 1.<br><br>Settings are:<br>00      Displays a pattern of forward slashes followed by squares.<br>10      Displays all red LEDs.<br>01      Displays all green LEDs.<br>11      Displays all amber LEDs. |
| SW6–4 | SW6–8 | Unused | Reserved<br>*Required setting is: 0.* |

**NOTE:  A baud rate of 19,200 and a data format of 8N1 (8 bits, no parity, 1 stop bit) is used.**
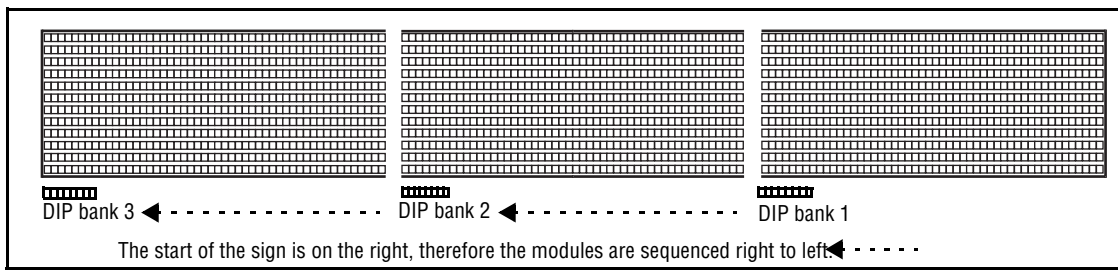
**Table 2: DIP switch settings**
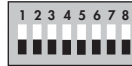
| Setting in Decimal | DIP switch settings (1 = ON, 0 = OFF) | | | | | | | | Setting in Decimal | DIP switch settings (1 = ON, 0 = OFF) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** |
| 00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 51 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 |
| 01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 52 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 |
| 02 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 53 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 |
| 03 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 54 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 |
| 04 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 55 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 |
| 05 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 56 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 |
| 06 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 57 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 |
| 07 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 58 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 |
| 08 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 59 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 |
| 09 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 60 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 |
| 10 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 61 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 |
| 11 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 62 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 |
| 12 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 63 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 |
| 13 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 64 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| 14 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 65 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 15 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 66 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |
| 16 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 67 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 |
| 17 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 68 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 |
| 18 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 69 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 |
| 19 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 70 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 |
| 20 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 71 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 |
| 21 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 72 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 |
| 22 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 73 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 |
| 23 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 74 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 |
| 24 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 75 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 |
| 25 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 76 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 |
| 26 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 77 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 1 |
| 27 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 78 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 |
| 28 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 79 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 |
| 29 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 80 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 |
| 30 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 81 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 |
| 31 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 82 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 |
| 32 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 83 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 |
| 33 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 84 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 |
| 34 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 85 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 |
| 35 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 86 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 |
| 36 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 87 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 |
| 37 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 88 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 |
| 38 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 89 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 |
| 39 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 90 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 |
| 40 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 91 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 |
| 41 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 92 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 |
| 42 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 93 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 |
| 43 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 94 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 0 |
| 44 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 95 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 |
| 45 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 96 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| 46 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 97 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 |
| 47 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 98 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 |
| 48 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 99 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 |
| 49 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 100 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 |
| 50 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | | | | | | | | | |

### DIP switch setting examples

#### EXAMPLE 1

An example of a 3-color 30′ sign made up of three 10′ modules:



**Figure 15: DIP switch settings for a single sign**

**EXAMPLE 2**

An example of two red 12′ signs, each composed of two 6′ modules, with both signs displaying the same messages:
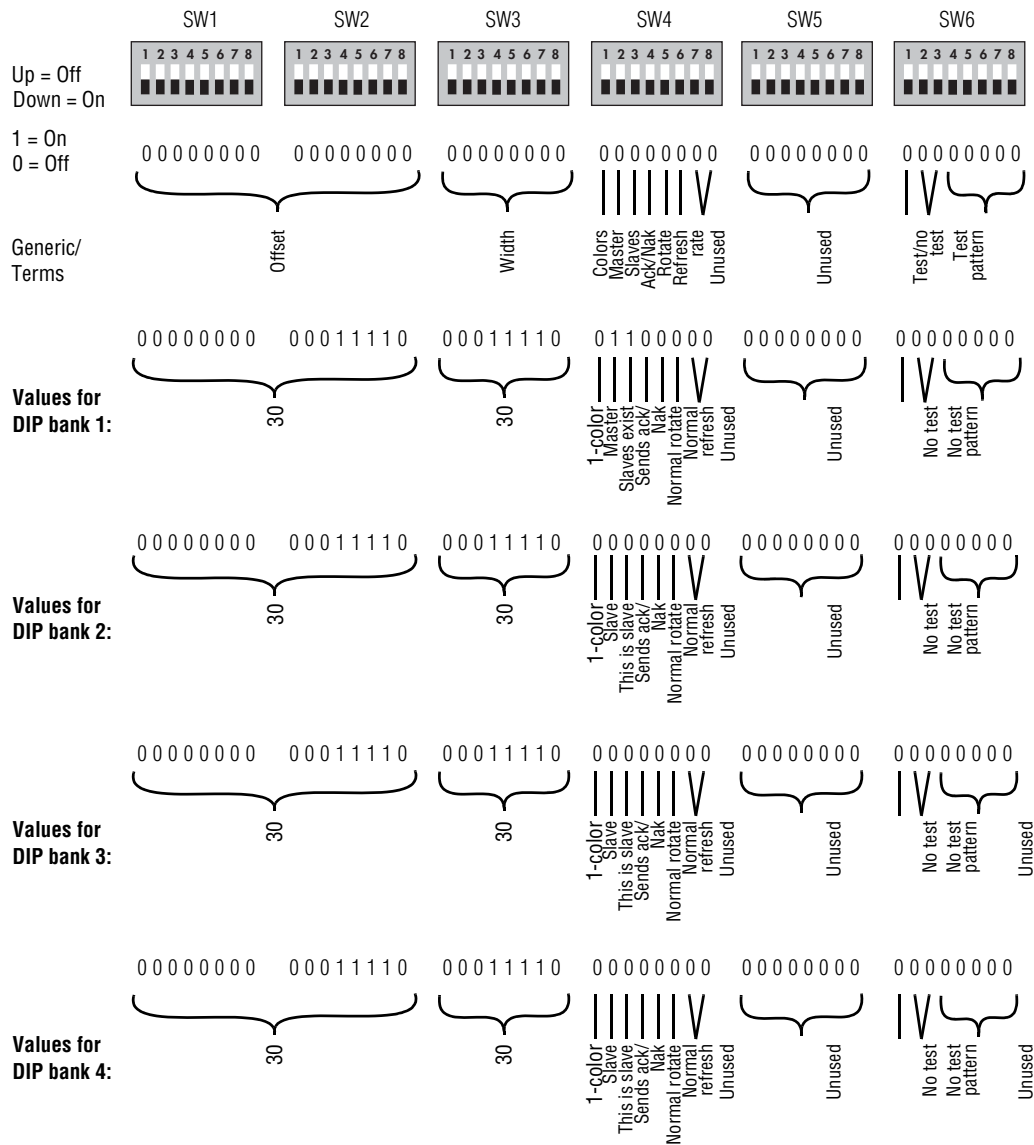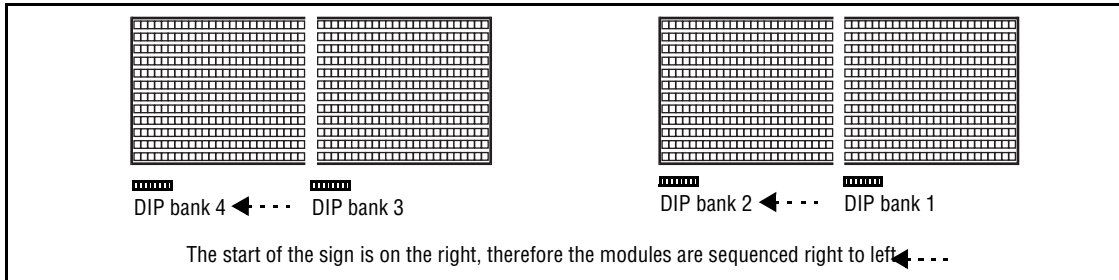


**Figure 16:   DIP switch settings for a pair of signs**

# Alpha® Ethernet Adapter internal installation

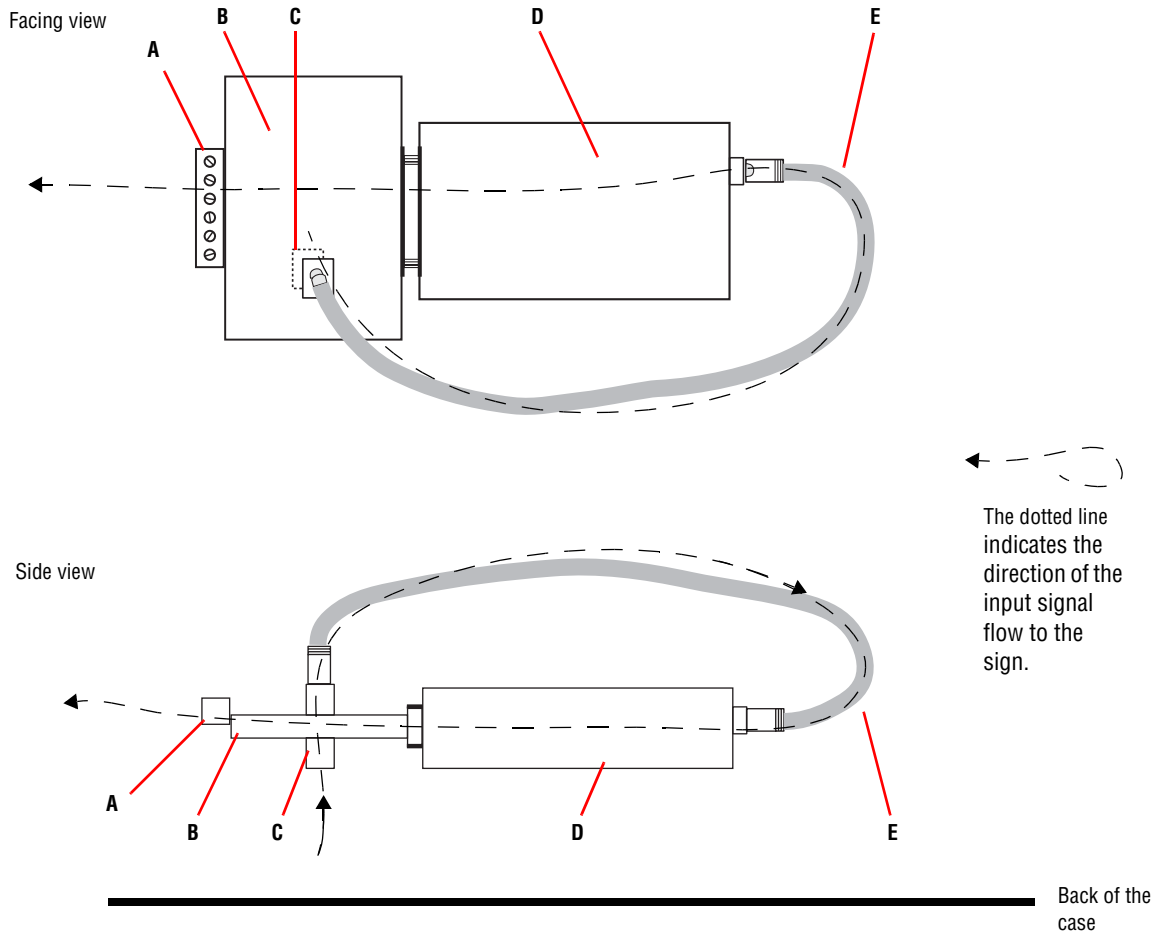The optional Alpha® Ethernet Adapter is installed internally at the factory inside the sign as shown.



**Table 3: Alpha® Ethernet Adapter installation components**

| Part | Description | Notes |
|------|-------------|-------|
| **A** | Terminal block | 1. Connects to micro controller board.<br>2. Provides 5V power from the sign for the Alpha® Ethernet Adapter. |
| **B** | Serial board | 1. Sends TCP/IP input from the Ethernet to the Alpha® Ethernet Adapter.<br>2. Converts RS232 input from the Alpha® Ethernet Adapter to RS485 output for the sign. |
| **C** | RJ45 Ethernet connector | Connects to the Ethernet at the back of the sign's case. |
| **D** | Alpha® Ethernet Adapter | Converts TCP/IP input to RS232 output.<br>(Installed with its top facing the back of the sign.) |
| **E** | Category 5e patch cable | Transfers signals through the serial board to the Alpha® Ethernet Adapter to be converted for the serial board. |

## Modular Network Adapter detail

Modular Network Adapters can be used, with proper cabling, for connecting modules of a Rise Ticker™ sign. See "Networking signs together" on page 29.

**RJ11**
(female)

1 — 4

| Pin | Signal |
|-----|--------|
| 1 | RS485 + |
| 2 | SHIELD |
| 3 | not connected (Green terminal) |
| 4 | RS485 − |
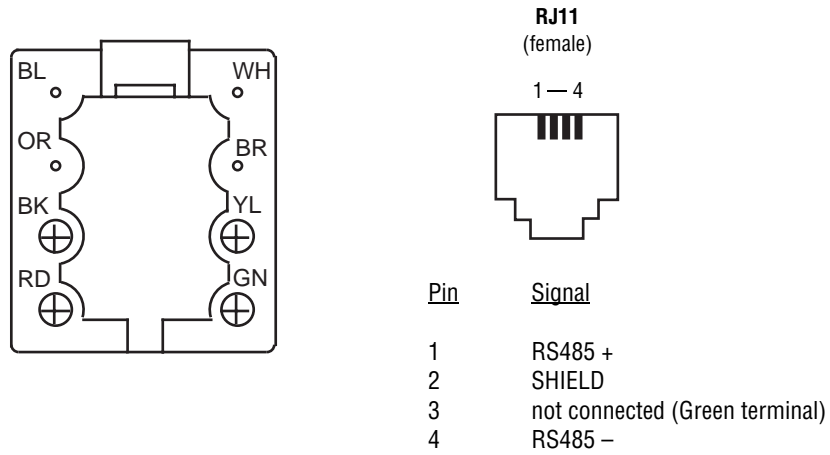
## Cable 1088-8624 pinout diagram

**RJ11**
(male)

4 — 1

**RJ11**
(male)

4 — 1

**RJ11**
(to sign)

**RJ11**
(to Modular Network Adapter)

RS485(+)  PIN 1 ———— Black* ———— PIN 1  RS485(+)
          PIN 2 ———— Red* ———— PIN 2  SHIELD
          PIN 3 ———— Green* ———— PIN 3
RS485(-)  PIN 4 ———— Yellow* ———— PIN 4  RS485(-)
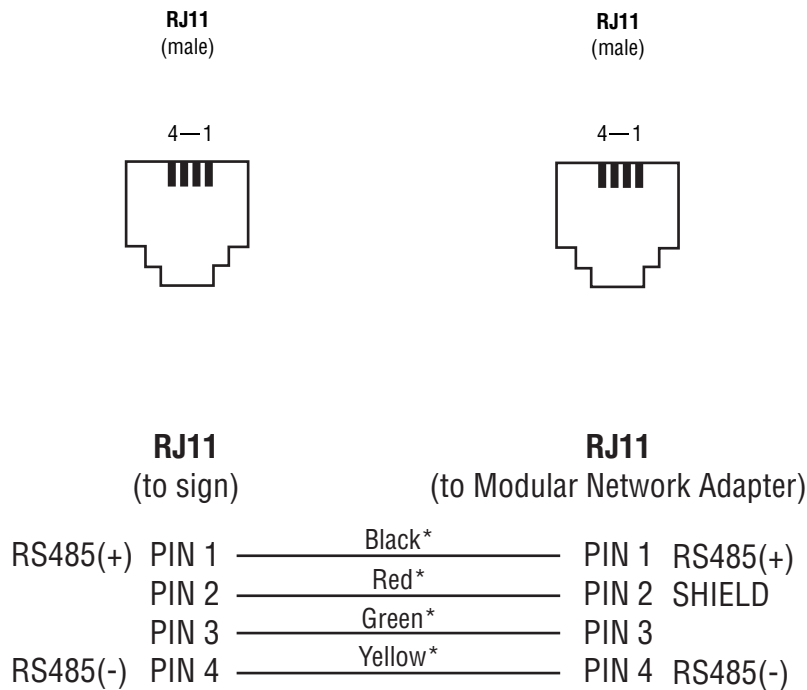
*These are also the wire colors in the Modular Network Adapter.

## Electrical specifications

Electrical rating: 100 – 240 VAC +/- 10% @ 50-60 Hz

Power consumption: 50 watts per foot (typical)

Display load: The total number of pixels (dots) which can be lit on the sign at any given time is limited, not to exceed 57% of full display (total pixels). Refer to the Stock Ticker Protocol Document (available from Adaptive) for details.

**Table 4: Rise Ticker™ electrical information**

| Model | Length, nominal (feet) | Number of power supplies (Mean Well SP200-5) | 100 VAC input current (amps) | 240 VAC input current (amps) |
|---|---|---|---|---|
| AVST16–5 | 5 | 1 | 1.53 | 0.87 |
| AVST16–6 | 6 | 1 | 1.67 | 1.00 |
| AVST16–7 | 7 | 1 | 1.87 | 1.13 |
| AVST16–8 | 8 | 2 | 2.40 | 1.27 |
| AVST16–9 | 9 | 2 | 2.40 | 1.27 |
| AVST16–10 | 10 | 2 | 2.67 | 1.40 |
| AVST24–5 | 5 | 1 | 2.30 | 1.30 |
| AVST24–6 | 6 | 1 | 2.50 | 1.50 |
| AVST24–7 | 7 | 1 | 2.80 | 1.70 |
| AVST24–8 | 8 | 2 | 3.60 | 1.90 |
| AVST24–9 | 9 | 2 | 3.60 | 1.90 |
| AVST24–10 | 10 | 2 | 4.00 | 2.10 |
| AVST32–5 | 5 | 2 | 4.60 | 2.30 |
| AVST32–6 | 6 | 2 | 4.60 | 2.30 |
| AVST32–7 | 7 | 3 | 6.90 | 3.45 |
| AVST32–8 | 8 | 3 | 6.90 | 3.45 |
| AVST32–9 | 9 | 3 | 6.90 | 3.45 |
| AVST32–10 | 10 | 4 | 9.20 | 4.60 |

**Table 5: Maximum number of power supplies per 20 amp circuit**

| Input (line) voltage | Conduit-connected | Cord-connected | |
|---|---|---|---|
| | Conduit-connected to building wiring (Minimum 16 AWG wire) | Factory-supplied North American line cord (Max. 12 amps: Plug must handle 125% of input current) | 10A for Factory-supplied European line cord |
| 100 VAC | 6 | 3 | N/A |
| 120 VAC | 7 | 4 | N/A |
| 240 VAC | 15 | N/A | 7 |

## Physical specifications

**Table 6: Physical specifications for Rise Ticker™ signs**

| Model number * | Length, actual inches (mm) | Weight, approximate lbs. (kg) |
|---|---|---|
| AVST16-5-xxx | 66.3 (1684) | 50 (23) |
| AVST16-6-xxx | 78.3 (1989) | 60 (27) |
| AVST16-7-xxx | 90.3 (2294) | 70 (32) |
| AVST16-8-xxx | 102.3 (2598) | 80 (36) |
| AVST16-9-xxx | 114.3 (2903) | 90 (41) |
| AVST16-10-xxx | 126.3 (3208) | 100 (45) |
| AVST24-5-xxx | 66.3 (1684) | 55 (25) |
| AVST24-6-xxx | 78.3 (1989) | 66 (30) |
| AVST24-7-xxx | 90.3 (2294) | 77 (35) |
| AVST24-8-xxx | 102.3 (2598) | 88 (40) |
| AVST24-9-xxx | 114.3 (2903) | 99 (45) |
| AVST24-10-xxx | 126.3 (3208) | 110 (50) |
| AVST32-5-xxx | 66.3 (1684) | 60 (27) |
| AVST32-6-xxx | 78.3 (1989) | 72 (33) |
| AVST32-7-xxx | 90.3 (2294) | 84 (38) |
| AVST32-8-xxx | 102.3 (2598) | 96 (44) |
| AVST32-9-xxx | 114.3 (2903) | 108 (49) |
| AVST32-10-xxx | 126.3 (3208) | 120 (54) |
| * "xxx" denotes either TRI or SBR color. | | |