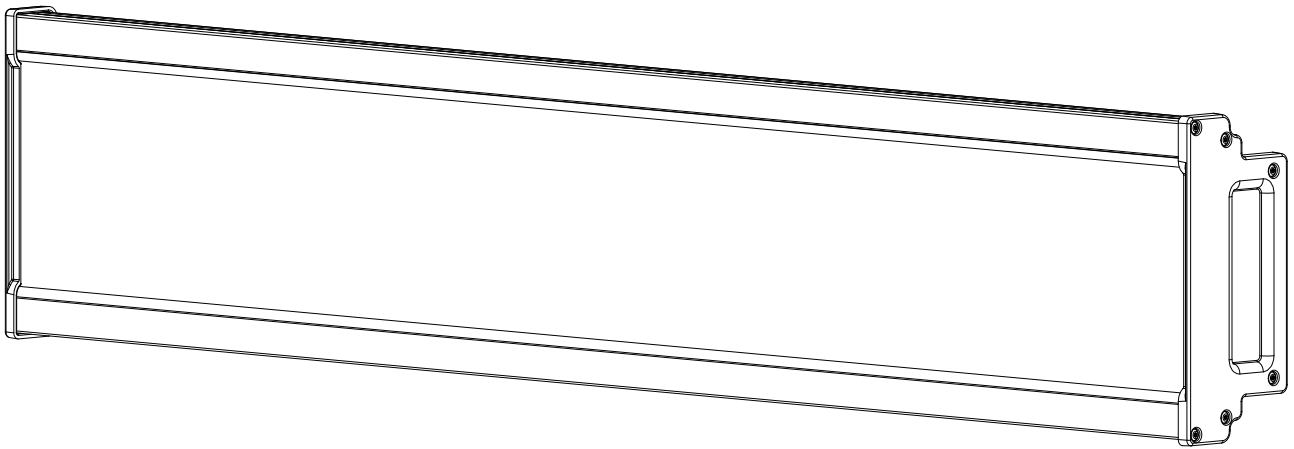




Alpha 4000 MNS RGB LED Display Series
24V Models
Power over Ethernet Models

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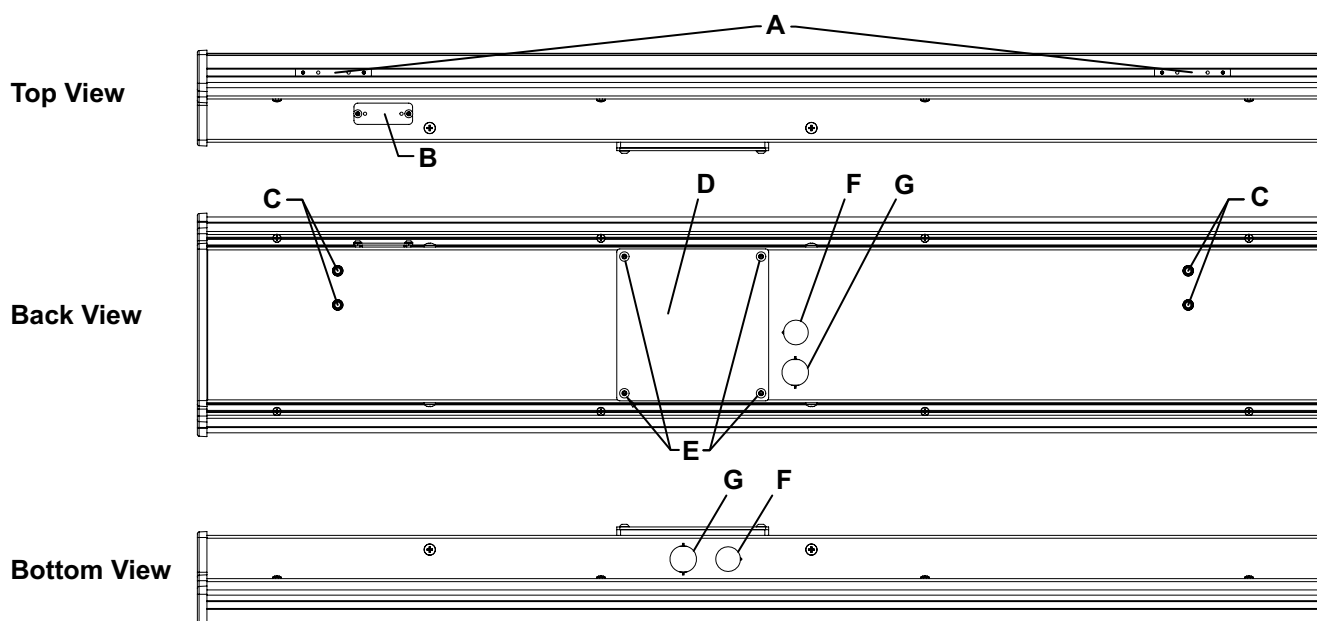
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Introduction



Item	Name	Description	Item	Name	Description
A	CEILING MOUNT ATTACHMENT POINTS	Connection points for optional ceiling mount and hanging mount hardware. Optional items must be ordered.	E	REAR ACCESS PANEL SCREWS	6-32 tamper proof screws. Removable with a T15 pin Torx driver (not included).
B	MICRO SD CARD ACCESS PANEL	Removable panel to access micro SD card.	F	RS485 KNOCKOUT	Two 1/2" knockouts for RS485 wires and 24V DC wires. One knockout is on back of the sign and one is on bottom of sign.
C	REAR BRACKET MOUNT	Attach wall mounting brackets at these locations.	G	ETHERNET KNOCKOUT	Two 1/2" knockouts are provided for routing and connecting an Ethernet cable - one is on back of sign and one is on bottom. Remove only one knockout.
D	REAR ACCESS PANEL	Removable panel to access a POE sign's Ethernet Port, and a 24V sign's DC Power Terminal Block and RS485 Terminal Block			

Temperature Protection

Alpha 4000 MNS Displays include automatic temperature controls that determine when the internal temperature of the display is too hot to continue normal operation. The temperature controls monitor the temperature inside the display enclosure. The internal temperature is influenced by the ambient temperature, the display's LED display load, and the length of time the sign is on.

If the internal temperature rises above the normal temperature limit, the LED output is forced into a reduced power mode that dims the brightness of the LEDs. If the internal temperature rises above the high temperature limit, the display will dim to zero LED output to prevent damage to the sign. When the internal temperature drops below the auto-dimming threshold levels, then auto-dimming stops, and LED brightness returns to the normal level.

EMI Compliance

Alpha 4000 MNS Displays generate, use, and can radiate radio frequency energy. If the display is not installed and used in accordance with installation guidelines, it may cause harmful interference to radio and device communications being used in proximity to the display.

Alpha 4000 MNS Displays have been tested and found to be compliant within FCC limits for a Class A digital device, according to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful or disruptive radio frequency interference when the equipment is operated in a commercial environment.

If using this equipment in a residential environment causes harmful interference, the user will be required to correct the interference at his own expense.

Changes or modifications not expressly approved that cause harmful interference or non-compliance with FCC limits for a Class A digital device, could limit or void the user's authority to operate the equipment in that area.

Environmental Requirements

Care must be taken to observe the following guidelines when selecting an installation location for an Alpha 4000 MNS Display:

- They are designed for use in an indoor or sheltered environment.
- They should not be continuously exposed to direct sunlight. UV light will darken the materials in the LEDs, lowering their brightness.
- They are not designed to be directly exposed to rain or water seepage.
- They are not designed to be used as a window display. Window use will void the 2-year factory warranty.
- They should only be used in an environment where the temperature is between -30°C and 50°C (-22° and 122°F).
- They should only be used in an environment where the humidity (non-condensing) does not exceed 95%.
- They must be installed with at least 1 in (2.5 cm) clearance on each end of the display enclosure and at least 2 in (5.1 cm) clearance above the display enclosure.
- The display warranty will be voided by any form of misuse or abuse of the display.

Reducing Electrical Noise

Adaptive recommends that the following steps be taken to decrease the amount of electrical emissions and noise from Alpha 4000 MNS Displays:

- Route incoming power to assign a path separate from a display's serial communication wires. Do NOT run the power and communication wires in the same conduit or directly next to one another. This does not apply to Alpha 4000 MNS PoE-only units.
- Where power and serial communications wires must cross, the intersection should be perpendicular. This does not apply to Alpha 4000 MNS PoE-only units.
- Shield all serial communication wires. Connect the shield to ground at only one point.

Installation

Important Precaution Notices:

- Alpha 4000 MNS Displays should be installed by qualified personnel.
- Any modifications made to the display or its enclosure will void the 2-year factory warranty.
- Always disconnect the Ethernet or RS485 communication cable before disconnecting the power cord.
- Do not change or alter the factory applied finish of the Alpha 4000 MNS Display.

Setting up an Alpha 4000 MNS 24V RGB LED Display

Open Box and Verify Contents

- Quantity 1 - Alpha 4000 MNS 24V Display
- Quantity 2 - Mounting Brackets
- Quantity 4 - ¼-20 x ½ long Hex Head Cap Screws
- Quantity 1 - Ferrite Clamp
- RS485 Cable, Conduit, and Conduit Fittings for power and data connections to the Alpha 4000 MNS 24V Display are not provided.

Wiring Guidelines

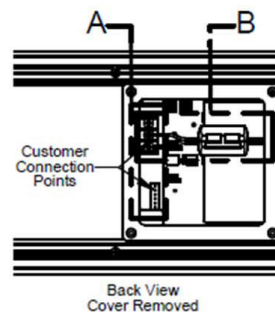
Connect power and communication cables before installing the mounting brackets on the rear of the display.

Wiring should be done in accordance with:

- In Canada, CSA C22.1, Canadian Electrical Code, Part I, Safety Standard for Electrical Installations, Section 32.
- In the USA, the National Electrical Code, NFPA70, and the National Fire Alarm and signaling Code, NFPA 72.

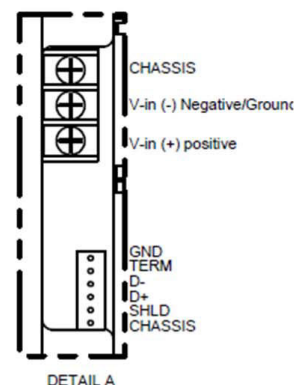
Open the Connections Compartment on the back of the display

- Use a T15 Pin in Torx Driver (not provided) to remove the four 6-32 tamper-proof screws that secure the removable cover.
- Take care not to lose the screws or the cover!



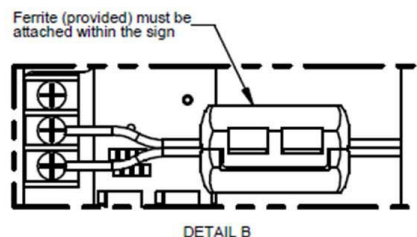
Attach Conduit to your Alpha 4000 MNS 24V Display

- Use ½-inch conduit, conduit fittings, and connections to route power and RS485 cables into the Connections Compartment.
- Decide which of the two ½-inch RS485 knockouts is most convenient for connecting your conduit and cable.
- Only remove one knockout blank!
- Be careful. DO NOT let the knockout blank fall inside the enclosure.
- DO NOT drill any holes in the enclosure. Doing so will compromise the environmental features of the display and will void the two-year factory warranty.

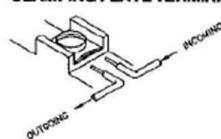


Connect the 24V DC Power Cable to the 24V Display

- Use a 24V DC power cable with a wire gauge from 28 AWG (minimum) to 12 AWG (maximum).
- Route the 24V DC power cable through the new conduit, into the display enclosure, and into the Connections Compartment.
- Connect the Positive wire to the V-in (+) Positive terminal.
- Connect the Negative/Ground wire to the V-in (-) Negative/Ground terminal.
- Torque the 24V DC connection terminals to a maximum of 7 lb-in.
- Snap and connect the Ferrite Clamp (provided) around the nominal 24V DC Positive and Negative/Ground wires inside the Communications Compartment. The Ferrite Clamp helps to reduce radio frequency emissions that can affect nearby devices, eg. TV, radio, headsets, etc.
- Connect the chassis terminal on the display to earth ground.



SWITCH TERMINAL CONNECTIONS CLAMPING PLATE TERMINAL



Caution: An uninsulated section of a single conductor should not be looped around the terminal to serve as two separate connections. The wire must be severed, thereby safeguarding the connection in the event that the wire becomes dislodged from under the terminal.

Connect the RS485 Communications Cable to the MNS 24V Display

- Use shielded twisted pair RS485 cable to connect the Alpha 4000 MNS 24V Display to a transmitting device.
- The RS485 cable should have a wire gauge of 28 AWG (minimum) to 18 AWG (maximum).
- On the display end, connect the Shield/Ground wire in the RS485 cable to the SHLD terminal in the Connections Compartment.
- On the transmitting device, connect the Shield/Ground wire of the RS485 cable to the chassis ground of the transmitting device.

- If the RS485 signal from the transmitting device is not isolated, the GND terminal of the display can be left open.
- Termination of the RS485 signal is determined by the application.
- If termination is used at the transmitting device, connect a jumper between the TERM and D- terminals in the Connections Compartment on the display.
- Torque the RS485 connection terminal points to a maximum of 5 lb-in.

Replace the removable cover on the Connections Compartment

- Replace the four 6-32 tamper proofscrews using the T15 Pin in Torx Driver.
- Torque the cover screws to a maximum of 10 lb-in.

Setting up an Alpha 4000 MNS PoE RGB LED Display

Open box and verify contents

- Quantity 1 - Alpha 4000 MNS PoE Display
- Quantity 2 - Mounting Brackets
- Quantity 4 - ¼-20 x ½ long Hex Head Cap Screws
- Quantity 1 - Ferrite Clamp
- Quantity 1 - ½ - inch NPT Liquid Tight Strain Relief Cord Grip
- Quantity 1 - .41-inch Liquid Tight Strain Relief Cord Grip for optional RS485 Cable
- Ethernet Cable, RS485 Cable, Conduit, and Conduit Fittings for power and data connections to the Alpha 4000 MNS PoE RGB LED Display are not supplied.

Wiring Guidelines

Connect Ethernet Cable and optional RS485 Cable before installing mounting brackets on the rear of the display.

Wiring should be done in accordance with:

- In Canada, CSA C22.1, Canadian Electrical Code, Part I, Safety Standard for Electrical Installations, Section 32.
- In the USA, the National Electrical Code, NFPA70, and the National Fire Alarm and signaling Code, NFPA 72.

Open the Connections Compartment on back of the Alpha 4000 MNS PoE Display

- Use a T15 Pin in Torx Driver (not provided) to remove the four 6-32 tamper-proof screws that secure the removable cover.
- Take care not to lose the screws or the cover!

Attach Conduit to your Alpha 4000 MNS PoE Display

- Use ½-inch conduit, conduit fittings, and connections to route Ethernet cable and optionally, RS485 cable, into the Connections Compartment.
- Decide which of the two Ethernet ½-inch knockouts is most convenient for connecting your conduit.
- Only remove one knockout blank!
- Be careful. DO NOT let the knockout blank fall inside the enclosure.
- DO NOT drill any holes in the enclosure. Doing so will compromise the environmental features of the display and will void the two-year factory warranty.

Connect an Ethernet Cable to your Alpha 4000 MNS PoE Display

- One ½ - inch NPT liquid tight strain relief cord grip and lock nut are provided as an alternative to using conduit.
- Otherwise, route the PoE Ethernet Cable through the new conduit into the display enclosure and into the Connections Compartment.
- Plug the PoE Ethernet cable into the Ethernet connection port inside the Connection Compartment (see Detail Drawing C on page 9).
- Snap the Ferrite Clamp (provided) on the Ethernet cable inside the Connection Compartment to minimize RFI emission.

Optional RS485 Feature Connection

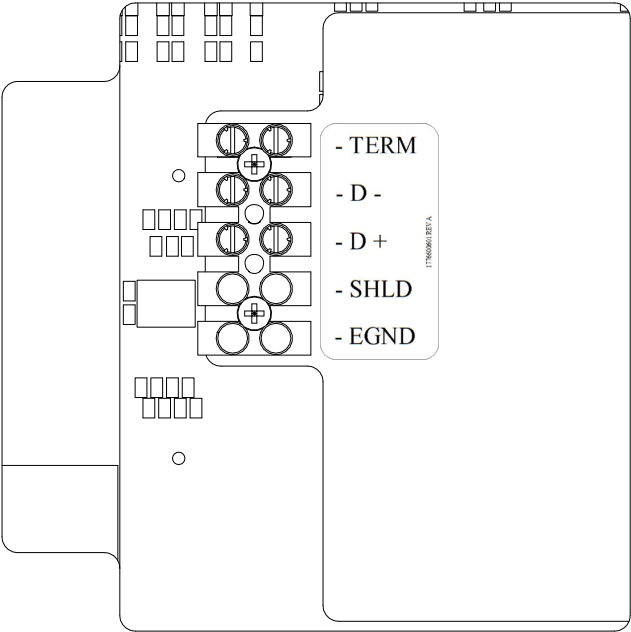
An RS485 communications feature may be ordered as a factory-installed option. A field-installed RS485 communications feature is not available.

For Alpha 4000 MNS PoE Displays that have an RS485 communications feature installed, the following instructions are provided.

1. If you have not done so already, connect the PoE power connection to the display following the instructions provided in this manual (see Detail Drawing C). Insert the PoE Ethernet Cable (not provided) into the Ethernet Port in the Connection Compartment.
2. For RS485 communications, use a shielded twisted pair cable with a wire gauge of 28 AWG (minimum) to 18 AWG (maximum).
3. Connect the shield of the RS485 cable to the SHLD terminal in the Connection Compartment of the Alpha 4000 MNS PoE Display.
4. Connect the shield of the R485 cable to the chassis ground of the transmitting device.
5. Connect the RS485 wires to the D+ and D- terminals in the Connection Compartment.
6. Connect the RS485 wires to the RS485 + and RS485 - terminals of the transmitting device.
7. If the RS485 signal from the transmitting device is isolated, then connect EGND (Earth Ground) terminal of the display to the signal ground terminal of the transmitting device.
8. If the RS485 signal from the transmitting device is not isolated, the GND terminal of the display can be left open.
9. Torque the RS485 connection terminal points to a maximum of 5 lb-in.
10. Once all connections have been made snap the Ferrite Clamp (provided) around both RS485 wires in the Connection Compartment.
11. One .41-inch liquid tight strain relief cord grip and lock nut are provided as an alternative to using conduit.

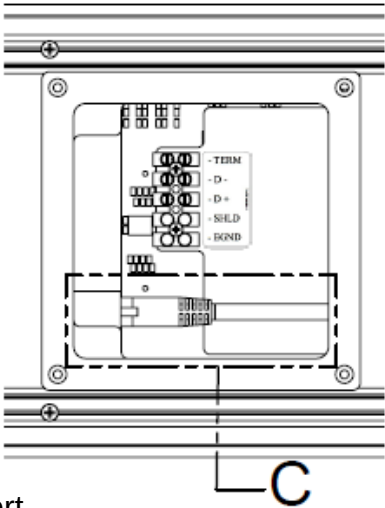
Replace the Cover on the Connections Compartment

- Replace the four 6-32 tamper proof screws using the T15 Pin in Torx Driver.
- Torque the cover screws to a maximum of 10 lb-in.

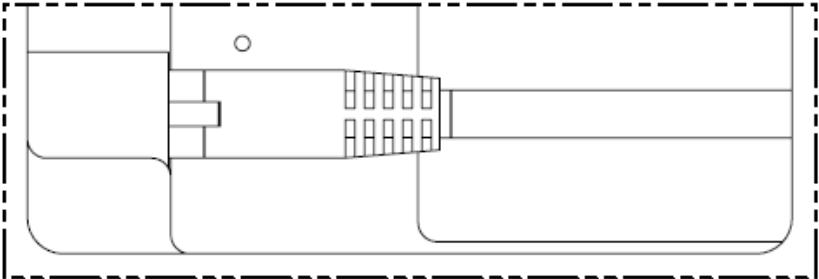


RS485 Connection Terminals

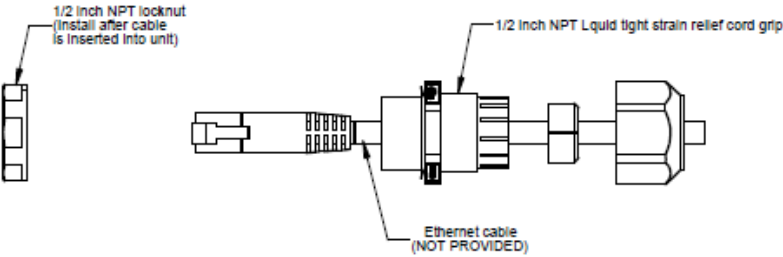
Connection Compartment
with Cover Removed



Ethernet Connection Port



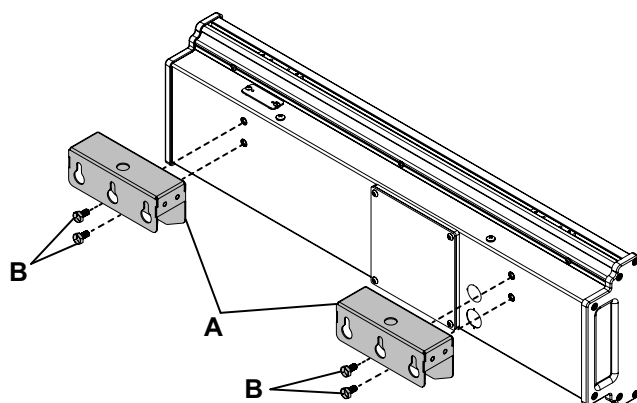
DETAIL C



ALPHA 4000 MNS Specifications by Model

Sign model number	Pitch	LED rows	LED columns	LED colors	Minimum brightness	Dimensions	Weight (approx)	Input voltage & power draw
4080 PoE	0.3 (in) 7.6 (mm)	16	80	RGB 4096 colors	750 Cd/m ²	25.2 x 3.2 x 7.4 (in) 64.0 x 8.1 x 18.8 (cm)	8 (lb) 3.6 (kg)	Type 2 (PoE+) per IEEE 802.3 at 25.5W max
4120 PoE	0.3 (in) 7.6 (mm)	16	120			37.2 x 3.2 x 7.4 (in) 94.5 x 8.1 x 18.8 (cm)	11 (lb) 5.0 (kg)	Type 3 (4PPoE) per IEEE 802.3 bt* 35W max
4160 PoE	0.3 (in) 7.6 (mm)	16	160			49.2 x 3.2 x 7.4 (in) 126.7 x 8.1 x 18.8 (cm)	14 (lb) 6.4 (kg)	Type 3 (4PPoE) per IEEE 802.3bt* at 45W max
4080 24 PRI	0.3 (in) 7.6 (mm)	16	80			25.2 x 3.2 x 7.4 (in) 64.0 x 8.1 x 18.8 (cm)	8 (lb) 3.6 (kg)	16-33VDC 1.8A max @ 16VDC (29W max)
4120 24 PRI	0.3 (in) 7.6 (mm)	16	120			37.2 x 3.2 x 7.4 (in) 94.5 x 8.1 x 18.8 (cm)	11 (lb) 5.0 (kg)	16-33VDC 2.2A max @ 16VDC (35W max)
4160 24 PRI	0.3 (in) 7.6 (mm)	16	160			49.2 x 3.2 x 7.4 (in) 126.7 x 8.1 x 18.8 (cm)	14 (lb) 6.4 (kg)	16-33VDC 2.5A max @ 16VDC (40W max)

Wall Mounting Brackets



Wall Mounting Brackets (A) are provided with each Alpha 4000 MNS Display. Fasteners (B) are provided for attaching the Wall Mounting Brackets to the rear of the display

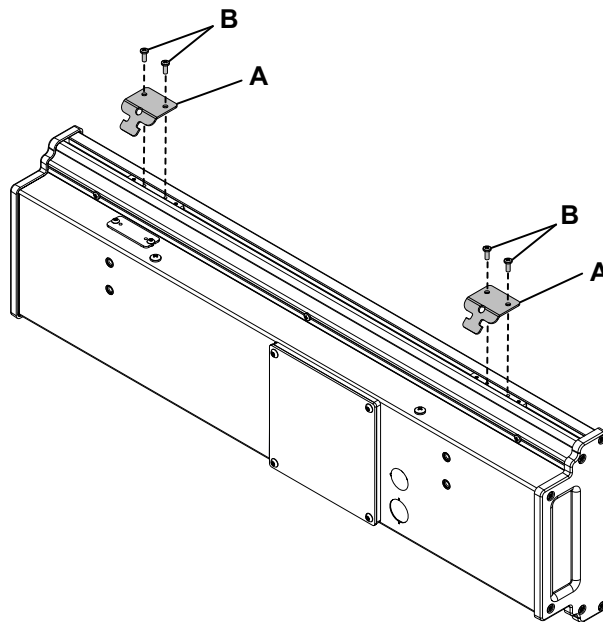
Torque (tighten) the fasteners to 15 in-lb.

Hardware used to secure the Wall Mounting Brackets to the wall (not included) must be appropriately rated for the wall material and mounting surface (e.g., concrete, brick, wood).

- To insure safe operation, DO NOT install the display or fasteners directly to drywall, plasterboard, or other fragile supports.
- Hardware used to attach Wall Mounting Brackets to the wall and mounting surface must be capable of supporting four times the weight of the display for safety.
- The wall (or a wall-mounted support system) must be capable of supporting at least four times the weight of the display for safety.

Ceiling Mounting Kit (optional)

1776-250101



The Ceiling Mounting Kit includes two ceiling mounting brackets (A), that attach to the Alpha 4000 MNS Display using four 6-32 screws (B). This kit allows an Alpha 4000 MNS Display to be suspended or hung using braided wire or chain (not included).

The maximum weight of an Alpha 4000 MNS Display is approximately 14 pounds (the 4160 model).

Fasteners used to secure braided wire or chain to a ceiling using the Ceiling Mounting Kit must be appropriately rated for the type of ceiling material (e.g., concrete, brick, wood) and mounting surface.

- Do NOT suspend ceiling-mounted displays from drywall, plasterboard, or other fragile supports.
- Hardware for attaching braided chain or wire and the Ceiling Mounting Kit to the mounting surface must be capable of supporting four times the weight of the display.
- The ceiling and ceiling-mounted support system must be capable of supporting at least four times the weight of the display.

Back-To-Back Ceiling Mounting Kit (Optional Accessory) 1776-250201

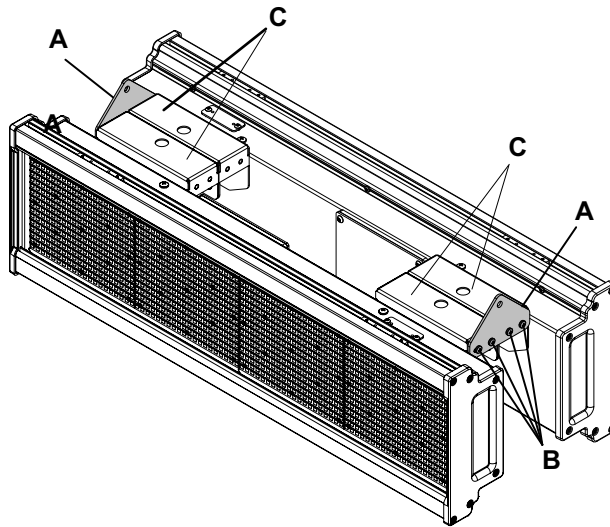
The **Back-to-Back Ceiling Mounting Kit** is designed to facilitate hanging or suspending two Alpha 4000 MNS Displays in a back-to-back configuration.

The kit includes two back-to-back mounting plates/brackets (A) that attach to two mounting brackets (C) provided with each Alpha 4000 MNS display.

Eight 8-32 screws (B) are provided to secure the back-to-back Ceiling Mounting Kit hanging brackets to the Alpha 4000 MNS Display's wall mounting brackets.

The maximum support weight of two Alpha 4000 MNS Displays is approximately 29 pounds for two Alpha 4160 MNS RGB LED Display models.

- The lag bolts or ceiling attachment hardware and the braided wire or chain used must be properly rated for the mounting surface and weight of the two displays to insure safety.
- Do NOT suspend two Back-to-Back Alpha 4000 MNS Displays from drywall, plasterboard, or other fragile surfaces or supports.
- The ceiling (or ceiling-mounted support system) and the braided wire or chain being used must be capable of supporting at least four times the weight of the displays.



Alpha 4080 MNS Display Cantilever Mounting Kit (Optional Accessories)

1776-250301 Kit for one cantilever Alpha 4080 MNS Display

1776-250302 Kit for installing two cantilever Alpha 4080 MNS Displays back-to-back

The **Alpha 4080 MNS Cantilever Mounting Kit** is designed for installing one or two Alpha 4080 MNS Displays perpendicular to a wall. It is only available for installing the Alpha 4080 MNS Display model.

The kit includes one sidewall mounting arm (A) that is attached to a wall using two or four 3/8-inch lag bolts (not included).

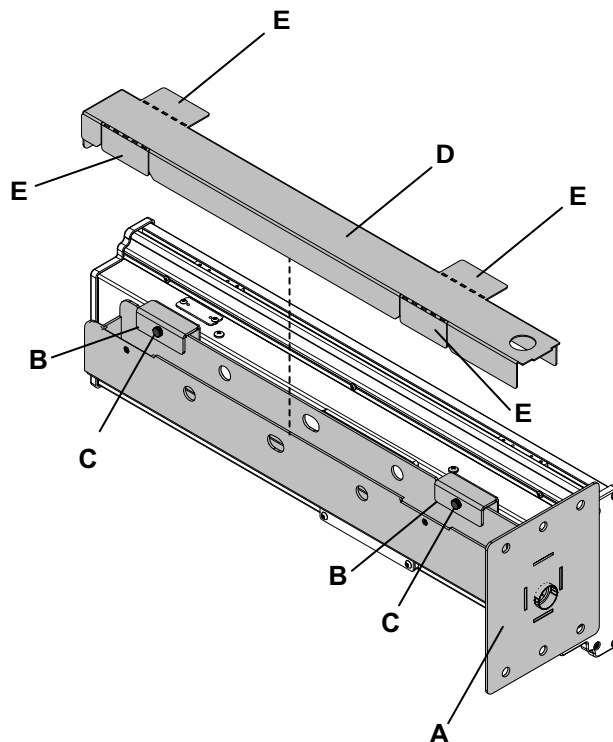
The kit may be ordered with two mounting brackets (B) for a single display installation or with four mounting brackets for a back-to-back cantilever installation with two Alpha 4080 MNS Displays.

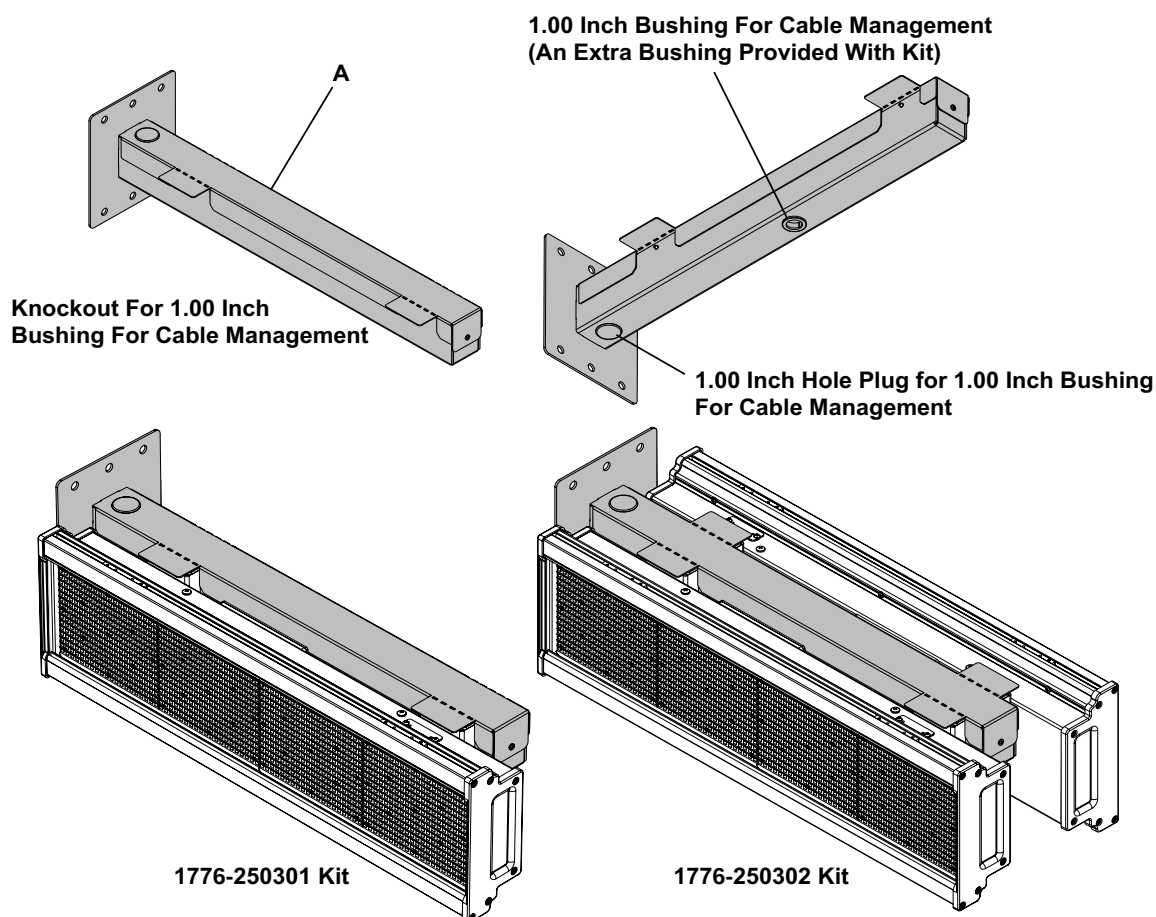
Each mounting bracket (B) includes two 6-32 thumb screws (C). The mounting brackets and thumb screws are used to attach the display(s) to the mounting arm and to hold the display(s) in place.

The mounting arm (A) is a welded assembly using 12 gauge (.1046" thick) cold rolled steel. The cover (D) is .050" thick aluminum with bendable wings (E) to accommodate either one or two displays.

The maximum support weight of two Alpha 4080 MNS Displays is approximately 17 pounds.

- The lag bolts or hardware used to attach the wall mounting arm (A) to the wall must be properly rated for the mounting surface to insure safety.
- Do NOT install the mounting arm on drywall, plasterboard, or other fragile surfaces.
- The hardware used to attach the wall mounting arm (A) to the wall mounting surface must be capable of supporting four times the weight of the display(s).





Start-Up Display Screens

After setting up your Alpha 4000 MNS Display according to the instructions in this manual, turn on the breaker to apply power. The display runs a self diagnostic routine for approximately 30 seconds before several start-up display screens appear.

When Alpha Protocol firmware is installed, the following messages will display during boot up:

Displayed Message	Meaning
ALPHA controller 1199663011 1.2.10	Software part number including revision and build
Sign Serial Number JY00000000	AMS Product serial number
Serial Address V 01	Alpha Protocol Type code character serial address in hexadecimal
Serial 9600 8N1	Serial baud rate data bits parity stop bits
IP 10.11.11.254	Current IP address of sign (default will be listed on the sign)
SUBNET 255.255.0.0	Current SUBNET of sign (default will be listed on the sign)
Gateway 0.0.0.0	Current Gateway of sign (default will be listed on the sign)
Port 3001	Current Sign Port (default will be listed on the sign)

When Ooh!Media Player firmware is installed, the following message will display during boot up.

Displayed Message	Meaning
LNxv1.5.7 10.11.11.254	Operating system type and version with IP seen below, one octet at a time.

Maintenance

Notice: Always disconnect the communication cable before disconnecting the power cord.

Routing Cleaning

Use only a soft, lint-free cotton cloth to clean the sign. Do not use soap and water, alcohol, cleaners with alcohol, or any other strong solvent.

Service and Repair

There are no user-serviceable parts in an Alpha 4000 MNS Display. The Alpha 4000 MNS Display is covered by a 2-year parts and labor factory warranty. After the warranty expires, Alpha 4000 MNS Displays are serviced by Adaptive Displays for a price that includes labor, materials and shipping. Call Adaptive or an Authorized Adaptive Distributor for service and repair information. Contact information may be found at the end of this document.



PART NUMBER 1776-610301 REV. D



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