Installation Manual

Alpha 4000 RGB NEMA 12
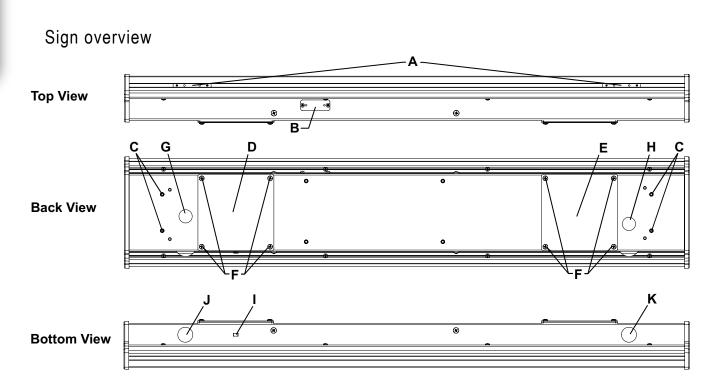
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Alpha 4000 RGB NEMA 12

Introduction

The Alpha 4000RGB NEMA 12 displays are full color Industrial grade displays designed to NEMA 12/IP52 standards which are intended for indoor use only. Performance scoreboards communicate critical information to Production Operators and Managers for an effective productivity improvement program, ensuring KPIs are met, eliminating waste and increasing productivity. Factory floor displays are proven tools for displaying useful, accurate, current & visible production measurements, allowing production teams to focus on continuously improving production performance. NEMA 12 displays provide protection against falling dirt and circulating dust and light splashing water making them the right choice for the plant floor.

Sign overview

Top View

Back View

Bottom View

Item	Name	Description	Item	Name	Description
A	CEILING MOUNT ATTACHMENT POINTS	Optional ceiling mount. Attach provided hanging brackets here.	G	COMMUNICATION ENTRY POINT	1/2 inch trade size hole (.875") for communication wiring entry.
B	MICRO SD CARD ACCESS PANEL	Removable panel to access micro SD card.	H	POWER ENTRY POINT	1/2 inch trade size hole (.875") for AC power wiring entry.
C	REAR BRACKET MOUNT	Attach wall mounting brackets at this location.	I	CABLE TIE WRAP MOUNT	Tie wrap mount for cable management (if needed).
D	REAR COMMUNICATION ACCESS PANEL	Removable panel to access RS232, RS485, or Ethernet communication input connections.	J	ALTERNATIVE COMMUNICATION ENTRY POINT	Alternative 1/2 inch trade size holes (.875") for communication wiring with removable water tight plug (if used replace into rear communication entry point (G)).
E	REAR POWER ACCESS PANEL	Removable panel to access 120-240VAC power input connection.	K	ALTERNATIVE POWER ENTRY POINT	Alternative 1/2 inch trade size holes (.875") for power wiring with removable water tight plug (if used replace into rear power entry point (H)).
F	REAR ACCESS PANEL SCREWS	8-32 Phillips screws. Take care not to lose screws.			

Temperature protection

The Alpha 4000 RGB NEMA 12 sign includes automatic temperature controls to determine when the internal temperature of the sign is too hot to continue normal operation. The temperature controls are based on the internal temperature of the sign, which is influenced by the ambient temperature, the sign's display load, and the duration the sign is on.

If the internal temperature rises above the temperature limit, the LED output is forced into a reduced power mode which dims the brightness of the LEDs. If the internal temperature rises above the highest limit, the display will blank to prevent damage to the sign. If the temperature falls below the auto-dimming threshold level, then auto-dimming stops and the LED brightness returns to normal level.

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.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Environmental requirements

Care must be taken to observe these considerations when selecting a location for the sign.

Signs:

*   Are for use in an indoor environment and should not be continuously exposed to direct sunlight.
*   Are not designed to be hung in a window. Hanging the sign in a window will void the warranty.
*   Should only be used in an environment where the temperature is between 0°C and 55°C (32° and 131°F).
*   Should only be used in an environment where the humidity (non-condensing) does not exceed 95%.
*   Must be installed with at least 1 in (2.5 cm) clearance on each end of the case and at least 2 in (5.1 cm) clearance above the case.
*   Warranty will be voided by any form of misuse of abuse of the product.

Reducing electrical noise

Adaptive recommends the following to decrease the amount of electrical emissions and noise with the Alpha 4000 RGB NEMA 12 signs:

*   Route incoming power to assign a path separate from a sign's communication wires. Do NOT run the power and communication wires in the same conduit or directly next to one another.
*   Where power and serial communications wires must cross, the intersection should be perpendicular.
*   Shield all serial communication wires. Connect the shield to ground at only one point.

Installation

Notice: Sign installation must be performed by qualified personnel.

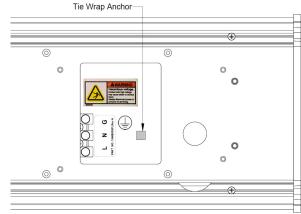**Notice: Any modifications made to the sign housing will void the warranty.**

Notice: Always disconnect the communication cable(s) before disconnecting the power.

Notice: Do not change or alter the factory applied finish of the ALPHA 4000RGB sign.
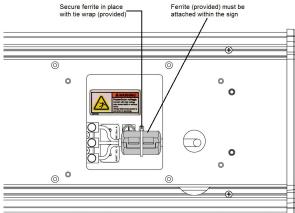
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Connecting the power wires:

WARNING! **Hazardous voltage, contact with high voltage may cause death or serious injury. Always disconnect power to unit prior to servicing.**

1. Begin by removing the four 8-32 Phillips screws holding the rear power access panel (take care not to lose these screws). *See Power - Rear View Cover Removed*

2. Choose the ½ inch trade hole to for your installation location. Two are provided. No other entry holes may be added to the sign or warranty will be voided.
   • Wire, conduit, conduit fittings for making connections to rear of LED sign are not supplied.
   • Use appropriate conduit fittings and connections to route wires for power and communication into the LED sign termination compartment.
   • If the bottom ½ inch trade hole is to be used, remove the water tight hole plug and reinstall it in to the rear ½ inch trade hole.

3. Wiring method shall be in accordance with:
   • In the United States, the National Electrical Code, NFPA 70, and the National Fire Alarm and signaling Code, NFPA 72;
   • In Canada, CSA C22.1, Canadian Electrical Code, Part I, Safety Standard for Electrical Installations, Section 32;

4. Connect the incoming power wires to the appropriate terminals within the termination compartment (L-Line, N-Neutral, G-Ground). *See Power - Rear Cover Removed.*
   • Torque the terminal connection points to a maximum of 7 lb-in.
   • In order to comply with Part 15 of the FCC Rules attach one of the provided ferrites around the incoming nominal 100-240VAC power wire(s) and secure with one of the provided tie wraps to the tie wrap anchor (ferrite must be attached within the sign). *See Power - Rear View Cover Removed Ferrite Installation.*

5. Replace the rear access power panel by inserting the four 8-32 Phillips screws.
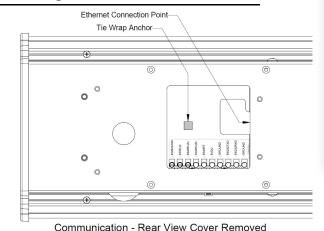   • Torque to a maximum of 10 lb-in.

Power - Rear View Cover Removed

Power - Rear View Cover Removed Ferrite Installation

Connecting the communication wire(s):

WARNING! **Hazardous voltage, contact with high voltage may cause death or serious injury. Always disconnect power to unit prior to servicing.**

1. Begin by removing the four 8-32 Phillips screws holding the rear communication access panel (take care not to lose these screws). *See Communication - Rear View Cover Removed*

2. Choose the ½ inch trade hole to remove for your installation location. Two are provided. No other entry holes may be added to the sign or warranty will be voided.
   - Wire, conduit, conduit fittings for making connections to rear of LED sign are not supplied.
   - Use appropriate conduit fittings and connections to route wires for power and communication into the LED sign termination compartment.
   - If the bottom ½ inch trade hole is to be used, remove the water tight hole plug and reinstall it in to the rear ½ inch trade hole.

3. Wiring method shall be in accordance with:
   - In the United States, the National Electrical Code, NFPA 70, and the National Fire Alarm and signaling Code, NFPA 72;
   - In Canada, CSA C22.1, Canadian Electrical Code, Part I, Safety Standard for Electrical Installations, Section 32;

4. Connect the incoming communication wire(s) to the appropriate terminals or connection point within the termination compartment. *See Communication - Rear View Cover Removed.*
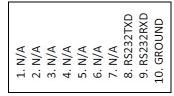
Communication - Rear View Cover Removed

IMPORTANT: ONLY CONNECT ONE KIND OF COMMUNICATION TYPE TO THE SIGN AT A TIME

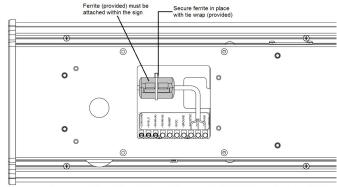Terminal connection points full pin diagram

1. EGROUND	2. SHIELD	3. RS485-(A)	4. RS485-(B)	5. RS485T	6. 5VDC	7. GROUND	8. RS232TXD	9. RS232RXD	10. GROUND

I. RS232 Communication:
   - Connect the incoming serial wires (bare-wire connection) to the following terminal connection points.

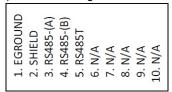| 1. N/A	2. N/A	3. N/A	4. N/A	5. N/A	6. N/A	7. N/A	8. RS232TXD	9. RS232RXD	10. GROUND

   - For the RS232 connection a wire gauge of 24AWG (minimum) to 18AWG (maximum) is required.
   - Torque the terminal connection points to a maximum of 5 lb-in.
   - In order to comply with Part 15 of the FCC Rules attach one of the provided ferrites around the incoming RS232 wire(s) and secure with one of the provided tie wraps to the tie wrap anchor (ferrite must be attached within the sign). *See Communication - Rear View Cover Removed RS232 Ferrite Installation.*

Communication - Rear View Cover Removed RS232 Ferrite Installation

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II. RS485 Communication:
- Connect the incoming serial wires (bare-wire connection) to the following terminal connection points.

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1. EGROUND
2. SHIELD
3. RS485-(A)
4. RS485-(B)
5. RS485T
6. N/A
7. N/A
8. N/A
9. N/A
10. N/A
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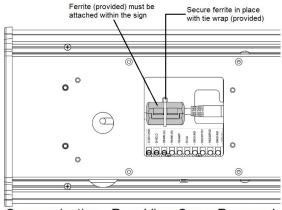- Shielded RS485 cable is recommended. Connect shield of cable to SHIELD terminal.
- RS485 connection to RS485-(A) and RS485-(B) terminal.
- Termination is recommended at both ends of all RS485 buses. The last sign in a RS485 bus should be terminated by placing a jumper wire between the RS485T and RS485-(B) terminals (jumper wire not included).
- For the RS485 connection a wire gauge of 24AWG (minimum) to 18AWG (maximum) is required.
- Torque the terminal connection points to a maximum of 5 lb-in.
- In order to comply with Part 15 of the FCC Rules attach one of the provided ferrites around the incoming RS485 wire(s) and secure with one of the provided tie wraps to the tie wrap anchor (ferrite must be attached within the sign). *See Communication - Rear View Cover Removed RS485 Ferrite Installation.*

Ferrite (provided) must be attached within the sign

Secure ferrite in place with tie wrap (provided)

Communication - Rear View Cover Removed RS485 Ferrite Installation

III. Ethernet Communication:
- Insert Ethernet cable into connection point.
- In order to comply with Part 15 of the FCC Rules attach one of the provided ferrites around the incoming Ethernet cable and secure with one of the provided tie wraps to the tie wrap anchor (ferrite must be attached within the sign). *See Communication - Rear View Cover Removed Ethernet Ferrite Installation.*

5. Replace the rear access power panel by inserting the four 8-32 Phillips screws.
   - Torque to a maximum of 10 lb-in.

Ferrite (provided) must be attached within the sign

Secure ferrite in place with tie wrap (provided)

Communication - Rear View Cover Removed Ethernet Ferrite Installation
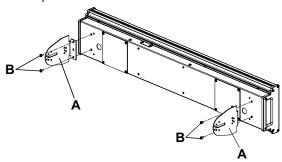
Sign specifications

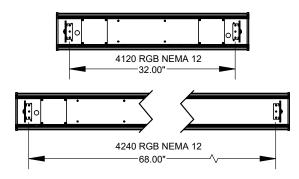| Sign model number	Pitch	LED rows	LED columns	LED colors	Brightness (typical)	Dimensions L x W x H	Weight (approx)	Input voltage & power draw
4120 RGB NEMA 12	0.3 (in) 7.6 (mm)	16	120	RGB 4096 colors	1200 NITS	37.2 x 3.2 x 7.4 (in) 94.5 x 8.1 x 18.8 (cm)	13 (lb) 5.9 (kg)	100-240VAC at 0.7-0.3A MAX
4240 RGB NEMA 12	0.3 (in) 7.6 (mm)	16	240			73.2 x 3.2 x 7.4 (in) 185.9 x 8.1 x 18.8 (cm)	22 (lb) 10.0(kg)	100-240VAC at 1.1-0.5A MAX

Wall mounting

Guidelines

Wall-mounting brackets and fasterners are provided with the sign. Hardware to secure the brackets to the wall will vary based on the type of material (e.g., concrete, brick, wood) and are not included.
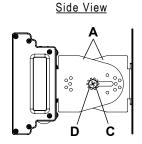
- The hardware for attaching to the mounting surface must be rated for the mounting surface and capable of supporting four times the weight of the sign.

- The wall (or a wall-mounted support system) must be capable of supporting at least four times the weight of the sign.
- Do NOT install directly to drywall, plasterboard, or other fragile supports.

1. Begin by attaching the wall mounting backets (A) to the sign using the four 10-32 x $^3/_8$" Phillips screws (B).
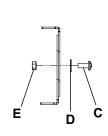   - Torque to 24 lb-in.

2. Attach the two remaining wall mounting brackets the mounting wall, verify the brackets algin with the brackets on the sign.
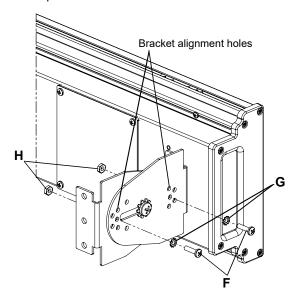

3. Attach the mounting brackets (on each end of the sign) to each other using the two 5/16-18 x $^3/_4$" Philliphs screws (C) and the two 5/16 lock washers (D) through the mounting holes as shown below, secure with the two 5/16-18 nuts (E).
   - **DO NOT** tighten the nuts at this time

4. Match the alignment holes of the brackets on the sign with the holes of the brackets on the wall so that the sign is at the desired viewing angle.

5. Fasten the mounting brackets together using the four 10-32 x $^3/_4$" Philliphs screws (F), the four #10 lock washers (G), and the four 10-32 lock nuts (H) through the selected alignment holes on each end of the sign.
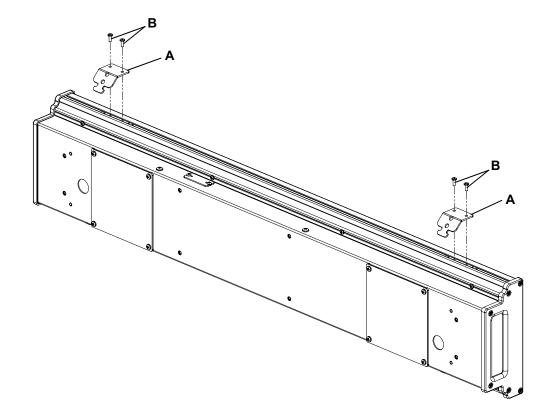   - Torque to 24 lb-in.

6. Tighten the two 5/16 nuts (E), see Step 3 for reference.
   - Torque to 24 lb-in.

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Ceiling mounting

Guidelines

The ceiling mounting brackets and fasteners are provided with the sign. These brackets allow the customer to hang the sign with the appropriate braided wire or chain or rope, etc. The mounting wire/chain is not provided. The maximum weight of the 4240 unit is approximately 22 pounds. Hardware to secure the sign to the ceiling will vary based on the type of ceiling material (e.g., concrete, brick, wood) and is not included.

- The hardware for attaching to the mounting surface must be rated for the mounting surface.
- Hardware for attaching to the mounting surface, including hanging chains, must be capable of supporting four times the weight of the sign.

- Do NOT install directly to drywall, plasterboard, or other fragile supports.
- The ceiling (or a ceiling-mounted support system) must be capable of supporting at least four times the weight of the sign.

1. Attach the ceiling mounting backets (A) to the sign using the four 6-32 x $^3/_8$" Phillips screws (B), as shown.
    - Torque to 10 lb-in.

Start-up

After installing a sign according to the previous sections, make sure the unit is installed properly by applying power to it. It may take up to 30 seconds for the loading icon to appear. Then, information similar to the following should display on the sign if Alpha Net Player is installed.

Sign display	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)

The following information should display on the sign if oOh! Media Player is installed:

Sign display	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.

Routine 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 this sign. Contact Adaptive Displays for service and repair information.

Alpha 4000 RGB NEMA 12

Supplier's Declaration of Conformity
47 2.1077 Compliance Information

Unique Identifier:
1778851037 – ALPHA 4120RGB,NEMA 12,120X016,120-240PRI
1778851067 – ALPHA 4240RGB,NEMA 12,240X016,120-240PRI

Party issuing Supplier's Declaration of Conformity
ADAPTIVE Micro Systems LLC
7840 N 86th Street
Milwaukee, WI
53224
USA
http://www.adaptivedisplays.com/

Responsible Party – U.S. Contact Information
ADAPTIVE Micro Systems LLC
7840 N 86th Street
Milwaukee, WI
53224
USA
http://www.adaptivedisplays.com/

FCC Compliance Statement (for products subject to Part 15)
This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Thomas Mandler
Adaptive's FCC Compliance Officer
(02/27/2019)