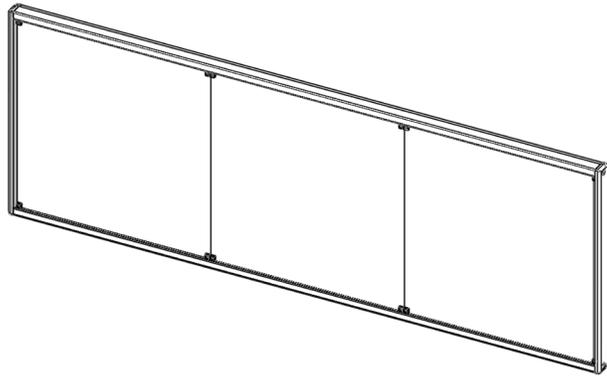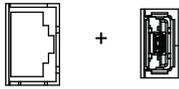# Installation Manual

Alpha 9000i RGB Signs

Alpha 9000i RBG signs are indoor, four-line, full matrix LED displays. These signs can display both text and graphics and can be networked together.

Before you begin

1. This manual explains how to physically install your sign.
2. For information about connecting your sign to your network and communicating with your sign, please read the related documentation listed below which can be found at the Adaptive web site http://www.adaptivedisplays.com

Document name	Part number	Description
AlphaNET User Manual	97088081	Allows the creation and scheduling of messages for display on signs.
Messaging Software User Manual	97010202	Basic sign messaging with a PC.
ActiveX Developer's Reference	97092054	Explains how to use the Alpha ActiveX Marquee Control software.
Alpha Sign Communications Protocol	97088061	Used to create custom messaging solutions.

3. Determine your network connection:

Wireless network	Wired network	
	Ethernet	or RS485
		Access is via the removal panel on the back of the sign. Requires hard wiring directly to the sign.
Requires Wi-Fi kit. Uses Ethernet for communication and USB for power.	Located on side of the sign.	

4. Determine how you will mount the sign, either mount on a wall or hang from a ceiling.

   Notice: Hardware for attaching to the mounting surface is not included. Hardware and mounting surface must be able to support four times the weight of the sign. See "Sign weights and measurements" on page 6.

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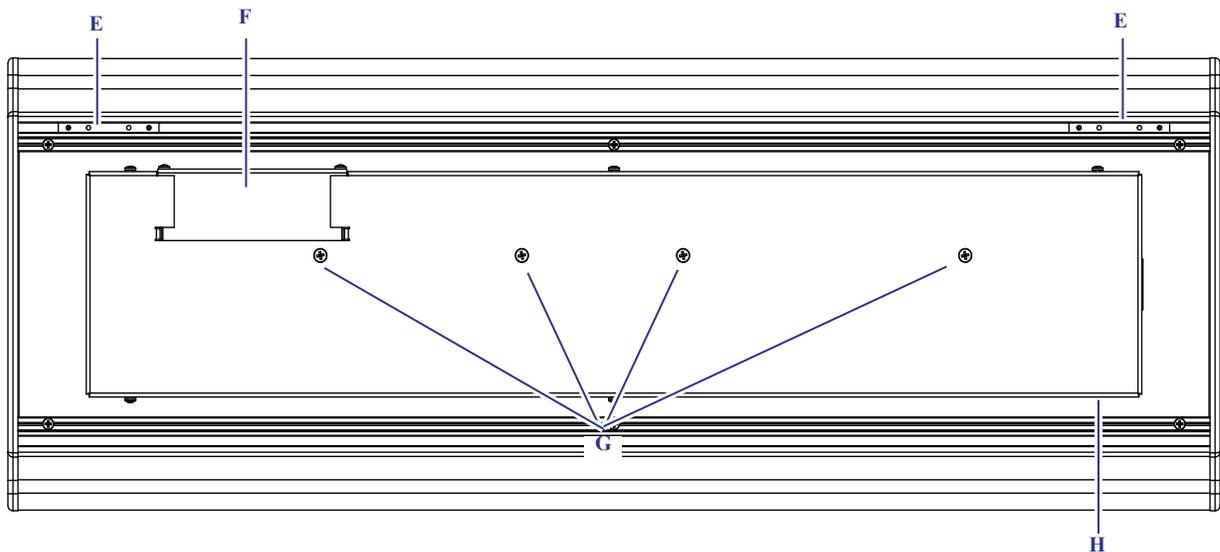
Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Sign Overview

Side view
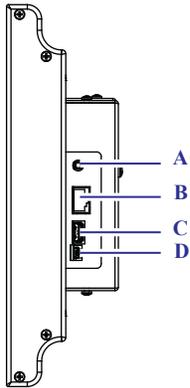
Back view

Item	Name	Description	Item	Name	Description
A	Audio jack	Plug in external speakers here.	E	Hanging hardware location	Attach hanging brackets here.
B	Ethernet jack	Ethernet connection to communicate with sign.	F	Removable RS485 wiring panel	Remove plate to access wiring. Requires hard wiring.
C	USB port	Provides power to Wi-Fi kit.	G	Screws	Attach wall mounting bracket here.
D	USB OTG	Reserved for future accessories.	H	Power plug location	Provides power to the sign.

Alpha 9000i RBG

Temperature protection

The Alpha 9000i RGB 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.

Installation

Notice: Sign installation must be performed by qualified personnel.

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

Environmental requirements

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

- are for *indoor use only* 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 and 50 degrees Celsius (32° to 122° F)
- should only be used in an environment where the humidity (non-condensing) does not exceed 95%
- must be connected to earth-grounded electrical outlet
- must be installed with at least 1" (2.5 cm) clearance on each end of the case and at least 2" (5.1 cm) clearance above the case

Reducing electrical noise

Adaptive recommends the following to decrease the amount of electrical emissions and noise with the Alpha 9000 RGB signs:

- Connect the sign to its own branch circuit.
- Protect the input power source with a circuit breaker rated at no more than 20 amperes.
- Do not connect more than 7 signs through a single circuit breaker.
- Route incoming power to a sign a path separate from a sign's serial communication wires. Do NOT run the power and communication wires in the same conduit.
- Where power and serial communications wires must cross, the intersection should be perpendicular.
- Shield all serial communication wires. Connect the shield to ground at the controller only.
- Use the included ferrites to reduce noise emissions. For both wired and wireless connections, install ferrites on the power cable and ethernet entry as shown below.
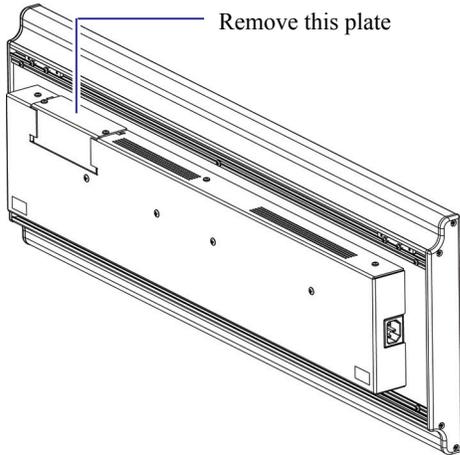
Ferrite installed on power cable   Ferrite installed on Ethernet cable

RS485 connection

To connect your sign to your network using an RS485 connection, remove the plate on the back of the sign to access the hard wire connections and terminate the network. Adaptive recommends performing these steps before mounting the sign.

Remove this plate

When an Alpha 9000i RGB sign is on an RS485 network, an End of Line (EOL) terminator is required at the beginning of the RS485 network and at the end of the RS485 network. The beginning of the network can be a device such as an RS232 to RS485 converter or an Alpha 9000i RGB sign. In either case, it must be terminated. The end of the network is typically an Alpha 9000i RGB sign and it should also be terminated.

Termination on the Alpha 9000i RGB sign is achieved by jumping pin 4 (D-) to pin 5 (term) on the customer interface terminal block on the controller. **Notice: The jumper wire is customer supplied.**
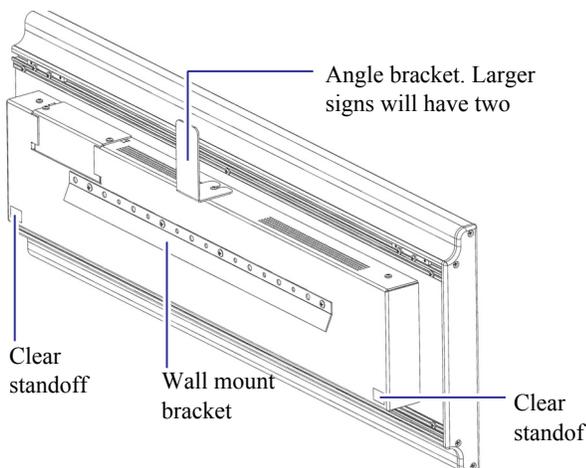
Jump pin 4 (D-) to pin 5 (term)
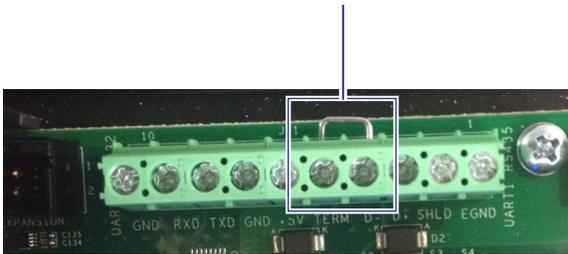
Customer interface terminal block

Sign weights and measurements

Sign model number	Pitch	LED rows	LED columns	LED colors	Dimensions	Weight (approx)
9630	6mm	40	120	RGB 4096 colors	29.8 x 10.7 x 3.2 (in) 75.7 x 27.2 x 8.2 (cm)	16 (lbs) 7.3 (kg)
9640	6mm	40	160		39.7 x 10.7 x 3.2 (in) 100.8 x 27.2 x 8.2 (cm)	21 (lbs) 9.5 (kg)
9650	6mm	40	200		49.5 x 10.7 x 3.2 (in) 125.8 x 27.2 x 8.2 (cm)	27 (lbs) 12.3 (kg)
9660	6mm	40	240		59.4 x 10.7 x 3.2 (in) 150.9 x 27.2 x 8.2 (cm)	31 (lbs) 14.1 (kg)
9670	6mm	40	280		69.2 x 10.7 x 3.2 (in) 175.8 x 27.2 x 8.2 (cm)	37 (lbs) 16.8 (kg)

Wall Mounting

Angle bracket. Larger signs will have two

Clear standoff

Wall mount bracket

Clear standof

Ceiling mounting

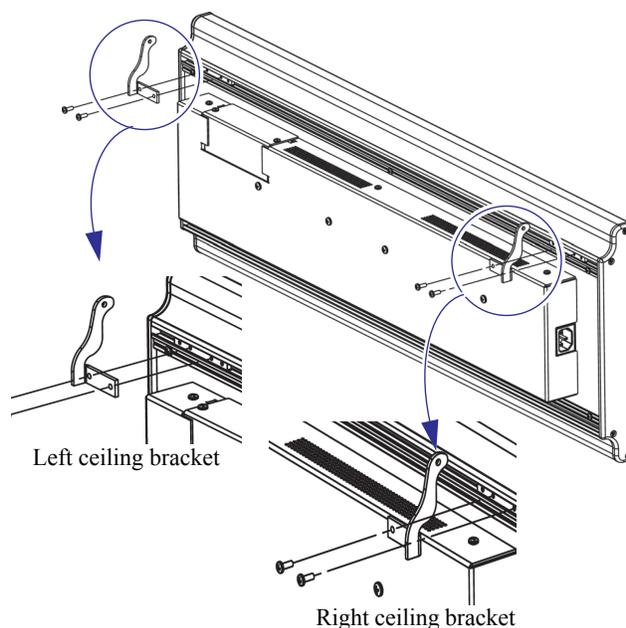Left ceiling bracket

Right ceiling bracket

Guidelines

Wall-mounting brackets are provided with the sign. Fasteners are supplied to attach the brackets *to the sign*. Hardware to secure the brackets to the wall will vary based on the type of 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.
- Do NOT install directly to drywall, plasterboard, or other fragile supports.
- Hardware for attaching to the mounting surface must be capable of supporting four times the weight of the sign.
- The wall (or to a wall-mounted support system) must be capable of supporting at least four times the weight of the sign

Directions

1. Follow the directions included with the mounting kit to attach the wall bracket to the wall.
2. Attach the mounting bracket to the back of the sign using the included screws.

   Notice: Using longer screws will prevent the sign from properly operating.

3. Tighten screws securely. 15in-lbs (1.7 Nm) is suggested.
4. Install the clear standoffs on the back of the sign.
5. Install the angled bracket(s) on the back of the sign. Loosen, but do NOT remove the screw to slide the bracket into place.
6. Place the sign on the wall, then install an additional screw (not included) into the angle bracket.
7. Connect the sign to your computer network. Please refer to the related documentation for instructions.

Guidelines

Ceiling brackets are provided with the sign. Fasteners are supplied to attach the brackets *to the sign*. 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. Hanging chains are not included.

- The hardware for attaching to the mounting surface must be rated for the mounting surface.
- Do NOT install directly to drywall, plasterboard, or other fragile supports.
- Hardware for attaching to the mounting surface, including hanging chains, must be capable of supporting four times the weight of the sign.
- The ceiling (or to a ceiling-mounted support system) must be capable of supporting at least four times the weight of the sign.

Directions

1. Install the included ceiling brackets onto the back of the sign.
2. Tighten screws securely. 15in-lbs (1.7 Nm) is suggested.
3. Install the hardware for securing the sign to the ceiling.
4. Hang the sign.
5. Connect your sign to your computer network. Please refer to the related documentation for instructions.

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.

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)

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.