

Alpha® Solar™ Sign

Installation and Operation Manual



ADAPTIVE®

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9/03/2001

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

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Warranty

Adaptive Micro Systems, Inc. warrants to the original purchaser that the sign, keyboard and power supply will be free of defects in workmanship and materials for a period of one year from the date of purchase.

Adaptive Micro Systems, Inc. will without charge, repair or replace, at its option, defective product or component parts upon delivery to the factory service department accompanied by proof of the date of purchase in the form of a sales receipt.

This warranty does not apply in the event of any misuse or abuse of the product, acts of God (lightning strikes, wind/storm damage, etc.) or as a result of any unauthorized repairs or alterations. This warranty does not apply if the serial number is altered, defaced or removed from the sign. Incandescent lamps used in incandescent products are not covered by this warranty.

The purchase price of this product does not include, from Adaptive Micro Systems, Inc., any on-site support, service or maintenance.

Local ordinances prohibiting the use of flashing signs may exist in some locations. Compliance with local ordinances is the sole responsibility of the customer.

To obtain warranty coverage, this product must be registered. Please complete the enclosed warranty registration card and mail it to Adaptive Micro Systems, Inc.

How to obtain warranty service

1. Contact the dealer/distributor from whom the sign was purchased. If you do not know where the product was purchased, contact Adaptive Micro Systems Customer Service at 414-357-2020.
2. If the dealer/distributor cannot service the product, obtain a Return Merchandise Authorization (RMA) number through that company. An RMA number is required to obtain warranty service.
3. Fill out the Return Merchandise Authorization (RMA) Form on the following page. To obtain warranty service, this form including the RMA number must accompany the product.
4. Follow return instructions on the RMA form to return to Adaptive Micro Systems, Inc.

Return Merchandise Authorization (RMA) form

RMA Number: _____

Date of Purchase: _____

Company Name: _____

Contact Person: _____

Address: _____

Phone Number: _____

Description of Problem: _____

Return Instructions:

- Step 1: Obtain an RMA number from your dealer/distributor.
- Step 2: Fill out this form and include proof of purchase receipt if product is under warranty.
- Step 3: Pack this form and the sign in the original carton (or a suitable replacement). Please write the RMA number on the outside of the package. Any damage to the product during shipment is the responsibility of the freight company or the owner of the sign.
- Step 4: Ship the package, postage/shipping prepaid to:

Adaptive Micro Systems, Inc.
Attn: RMA No. _____
7840 North 86th Street
Milwaukee, WI 53224

PLEASE WRITE THE RMA NUMBER ON THE LABEL OF THE SHIPPING
BOX - THANK YOU.

Description

The Alpha® Solar™ sign is intended for indoor and outdoor use.

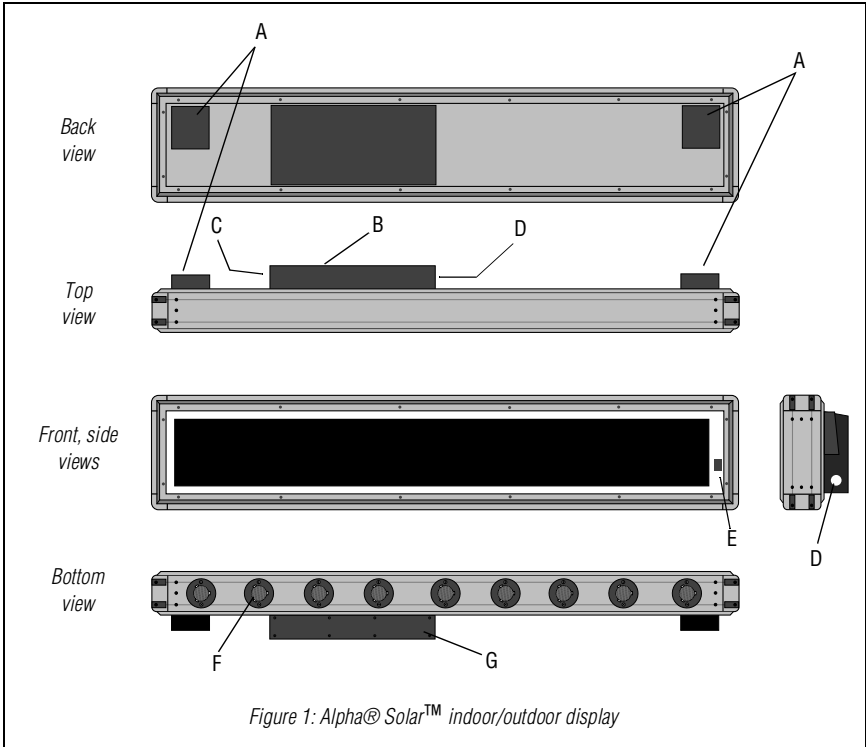
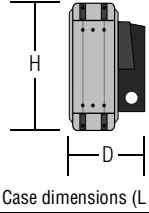


Figure 1: Alpha® Solar™ indoor/outdoor display

Item	Name	Description
A	Cooling fan duct	Vents air circulated by a sign's fan.
B	Power supply cover	Power supply connections are accessed by removing this panel. See "Installation" on page 16.
C	Power conduit opening	Electrical wiring to the power supply is run through this opening. See "Power supply wiring" on page 23.
D	Signal conduit opening	Wiring used to connect the sign to a network is run through this opening. See "Signal wiring" on page 22.
E	Infrared (IR) receiver and photocell window	Point the Remote Control keyboard (part number 1072-1111) at this window and use it to type in messages and program the sign's operation. The photocell senses brightness and is used for dimming the sign. See "Setting a sign's dimming level" on page 11.
F	Air filters	Draw in air for the sign's fans. Must be cleaned periodically — see "Appendix A: Periodic maintenance" on page 24.
G	Power supply access cover	See "Electrical connection" on page 20.

Alpha® Solar™ sign technical specifications

AMS part number	LED rows x columns	LED color	Input VAC (±10%)	Input AMPS	Number of fans (36CFM)	 Case dimensions (L x H x D)	Weight
1051-1111	96 x 16	Red	120	2.5	2	49.72 x 12.47 x 7.40 (in) 126.29 x 31.67 x 18.80 (cm)	57 lbs 25.9 kg
1051-1112	96 x 16	Amber	120	2.5	2	49.72 x 12.47 x 7.40 (in) 126.29 x 31.67 x 18.80 (cm)	57 lbs 25.9 kg
1051-1113	96 x 16	Red	230	1.2	2	49.72 x 12.47 x 7.40 (in) 126.29 x 31.67 x 18.80 (cm)	57 lbs 25.9 kg
1051-1114	96 x 16	Amber	230	1.2	2	49.72 x 12.47 x 7.40 (in) 126.29 x 31.67 x 18.80 (cm)	57 lbs 25.9 kg
1051-1211	128 x 16	Red	120	2.8	3	64.12 x 12.47 x 7.40 (in) 162.86 x 31.67 x 18.80 (cm)	66 lbs 29.9 kg
1051-1212	128 x 16	Amber	120	2.8	3	64.12 x 12.47 x 7.40 (in) 162.86 x 31.67 x 18.80 (cm)	66 lbs 29.9 kg
1051-1213	128 x 16	Red	230	1.4	3	64.12 x 12.47 x 7.40 (in) 162.86 x 31.67 x 18.80 (cm)	66 lbs 29.9 kg
1051-1214	128 x 16	Amber	230	1.4	3	64.12 x 12.47 x 7.40 (in) 162.86 x 31.67 x 18.80 (cm)	66 lbs 29.9 kg
1051-1311	160 x 16	Red	120	3.1	3	78.52 x 12.47 x 7.40 (in) 199.44 x 31.67 x 18.80 (cm)	76 lbs 34.5 kg
1051-1312	160 x 16	Amber	120	3.1	3	78.52 x 12.47 x 7.40 (in) 199.44 x 31.67 x 18.80 (cm)	76 lbs 34.5 kg
1051-1313	160 x 16	Red	230	1.5	3	78.52 x 12.47 x 7.40 (in) 199.44 x 31.67 x 18.80 (cm)	76 lbs 34.5 kg
1051-1314	160 x 16	Amber	230	1.5	3	78.52 x 12.47 x 7.40 (in) 199.44 x 31.67 x 18.80 (cm)	76 lbs 34.5 kg
1051-1411	192 x 16	Red	120	3.3	3	92.92 x 12.47 x 7.40 (in) 236.02 x 31.67 x 18.80 (cm)	85 lbs 38.6 kg
1051-1412	192 x 16	Amber	120	3.3	3	92.92 x 12.47 x 7.40 (in) 236.02 x 31.67 x 18.80 (cm)	85 lbs 38.6 kg
1051-1413	192 x 16	Red	230	1.6	3	92.92 x 12.47 x 7.40 (in) 236.02 x 31.67 x 18.80 (cm)	85 lbs 38.6 kg
1051-1414	192 x 16	Amber	230	1.6	3	92.92 x 12.47 x 7.40 (in) 236.02 x 31.67 x 18.80 (cm)	85 lbs 38.6 kg

NOTES: 120 VAC transformer output = 400 W (57 A @ 7 VAC)

230 VAC transformer output = 400 W (57 A @ 7 VAC)

Sign cases are extruded aluminum frame with cast aluminum corners. Back is sheet aluminum and front is a polycarbonate lens. Units are designed to be used outdoors and all power and signal connections must be hardwired.

Operating temperature range: -20°C to +55°C.

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 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 Alpha® Solar™ that have not been expressly approved by Adaptive Micro Systems, Inc. could void your authority to operate the Alpha® Solar™ sign.

Remote control keyboard description (optional)

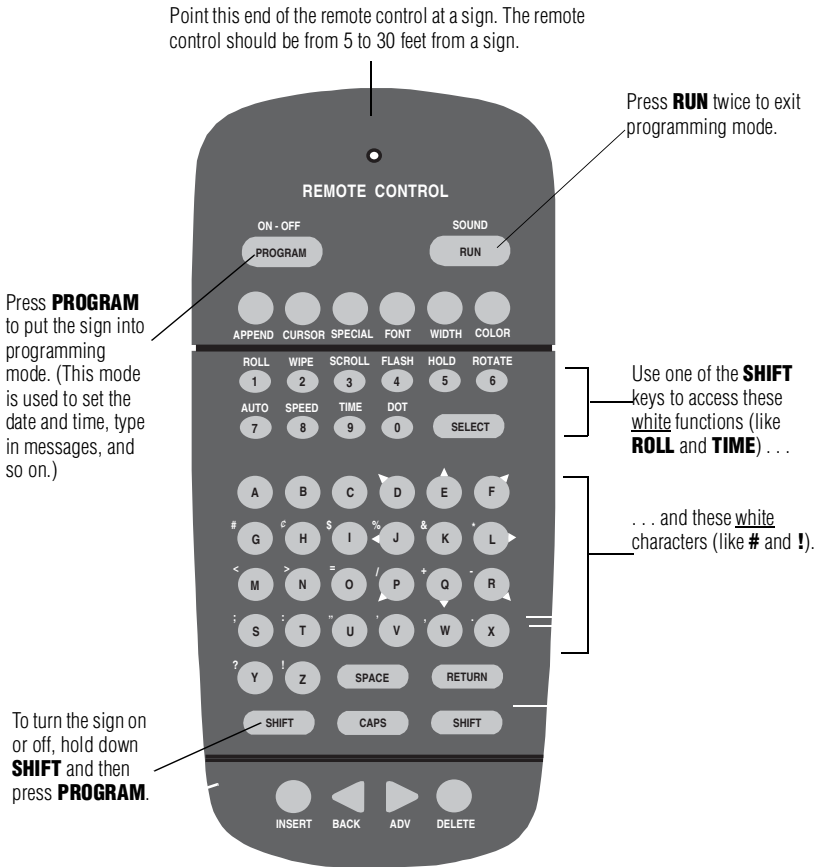


Figure 2: Infrared (IR) remote control keyboard.

Basic sign operation

Turning a sign on and off

When power is applied to a sign, it starts up automatically.

Removing power turns a sign off.









There is also another way:

*Holding down **SHIFT** and pressing **PROGRAM** turns a sign's display on and off.
(However, this method does not turn a sign's power on and off.)*

NOTE: Messages that you have programmed into the sign will *not* be lost when you turn a sign off. Messages will be retained for up to 30 days if the sign is not powered.





Setting a sign's time and date

Once set, a sign will remember the time and date unless the sign is unplugged or interrupted by a power loss. However, models equipped with battery-backed clocks will continue to keep accurate time.

Step	When you do this...	You see this...
1	Press PROGRAM .	
2	Press BACK until SET TIME AND DAY appears.	
3	Press ADV .	
4	Press D to set the day. Press H to set the hour. Press M to set the minute. NOTE: Press SELECT to change from 12-hour (AM/PM) to 24-hour mode (0–23).	
5	Press BACK until SET DATE appears.	
6	Press ADV .	 THEN 
7	Press D to set the day. Press M to set the month. Press Y to set the year. NOTE: Press SELECT to display the date in different formats—for example, JAN 26, 1994, 1/26/94, 26/1/96, and so on.	
8	After setting the date and time, press RUN twice to return to normal operation.	

Clearing a sign's memory

NOTE: Clearing a sign's memory erases all messages and graphics, and the password that has been programmed into the sign.









Step	When you do this...	You see this...
1	Press PROGRAM .	
2	Press BACK until CLEAR MEMORY appears.	
3	Press ADV .	 THEN 
4	Press Y to clear the sign's memory. The sign will return to normal operation and display a series of demo messages.	

Setting a sign's password

Some signs allow you to set a personal password to protect your messages and graphics from tampering by others.




NOTE: DON'T FORGET YOUR PASSWORD! If you do, you won't be able to operate the sign.

If you do forget the password, see "What to do when you forget a sign's password" on page 9.

Step	When you do this...	You see this...
1	Press PROGRAM .	
2	Press BACK until SET PASSWORD appears.	
3	Press ADV .	
4	Press Y to set a password.	
5	Type a 6-character password. (Asterisks will appear on the sign as you type.) Retype the password when prompted. CORRECT will appear if you entered the same password. If you failed to type the same password, ERROR will appear, and you'll have to start over from Step 1.	 THEN  THEN  THEN 

6	Press RUN twice.	
7	Press Y to password protect the sign. NOTE: If you select N , a password will not be needed when you press PROGRAM .	 THEN The sign will return to normal operation. Now, whenever you press PROGRAM , you'll have to type the password you just entered.

What to do when you forget a sign's password

Step	When you do this...	You see this...
1	Press PROGRAM .	
2	Hold down SHIFT and press L six times.	 THEN 
3	Enter a new password. (See "Setting a sign's password" on page 8.)	

How to delete a sign's password





If you no longer want to be prompted to password protect a sign, you must clear the sign's memory to delete the password. To do this, see "Clearing a sign's memory" on page 7.

Setting a sign's serial address

The serial address is a number you can assign to a sign. Typically, this feature is used for a sign that is connected to other signs on a network. Assigning a unique serial address allows you to send messages to that *particular* sign.







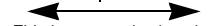
See the document **Network Configurations** (part number 9708-8046) for more detailed information on networking signs.

NOTE: The serial address can also be set by using DIP switches inside the sign. See "Appendix B: Using DIP switches to set the serial address" on page 25.

Step	When you do this...	You see this...
1	Press PROGRAM .	
2	Press BACK until SET SERIAL ADDRESS appears.	
3	Press ADV .	
4	Type a number, like 10. NOTE: A serial address is actually a number from 0 to 255 in <i>hexadecimal</i> (00 to FF). Typically, however, entering a number from 00 to 99 is fine. NOTE: When a sign leaves the factory, its serial address is set to 00.	
5	Press RUN twice to set the new serial address and return the sign to normal operation.	

Setting a sign's dimming level



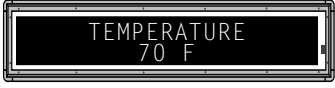


The dimming level is used to adjust a sign's brightness. You can program a sign to dim early or late in the day.

Step	When you do this...	You see this...
1	Press PROGRAM .	
2	Press BACK until SET DIMMING LEVEL appears.	
3	Press ADV .	
4	Press SELECT to set how bright the sign should be when it dims — LEVEL 1, LEVEL 2, LEVEL 3, or LEVEL 4. (LEVEL 4 is the "dimmest" setting.) NOTE: Setting the brightness at 100% means that the sign won't dim at all.	
5	Press ADV .	
6	Press SELECT to set the dimming level. (When the bar is close to EARLY, the sign will dim early in the day. When the bar is close to LATE, the sign will dim late in the day.) NOTE: If there is no bar, then the sign will <u>not</u> dim at all.	  This bar moves back and forth as you press SELECT .
7	Press RUN twice to return the sign to normal operation.	

Setting a sign's temperature

NOTE: This section only applies if you have the optional external temperature probe connected to your sign.

You can adjust the accuracy of the temperature displayed on your sign:

Step	When you do this...	You see this...
1	Press PROGRAM .	
2	Press BACK until TEMPERATURE appears.	
3	Press SELECT to change from Celsius to Fahrenheit.	
4	Press ADV if you want to adjust the sign's temperature reading to match the actual temperature.	
5	Press SELECT to increase the sign's temperature reading, or press DELETE to decrease the sign's temperature reading.	
6	Press RUN twice to set the sign's adjusted temperature and return the sign to normal operation.	

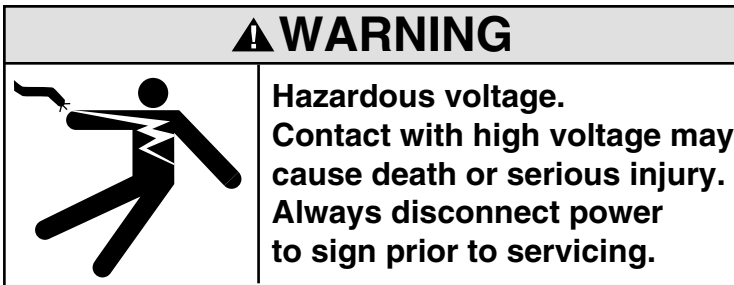
Connecting a sign to a personal computer

Messages can be programmed using the hand-held remote control, but a more convenient method is to connect the sign to a personal computer or a network (for networks, see document **Network Configurations** (part number 9708-8046).

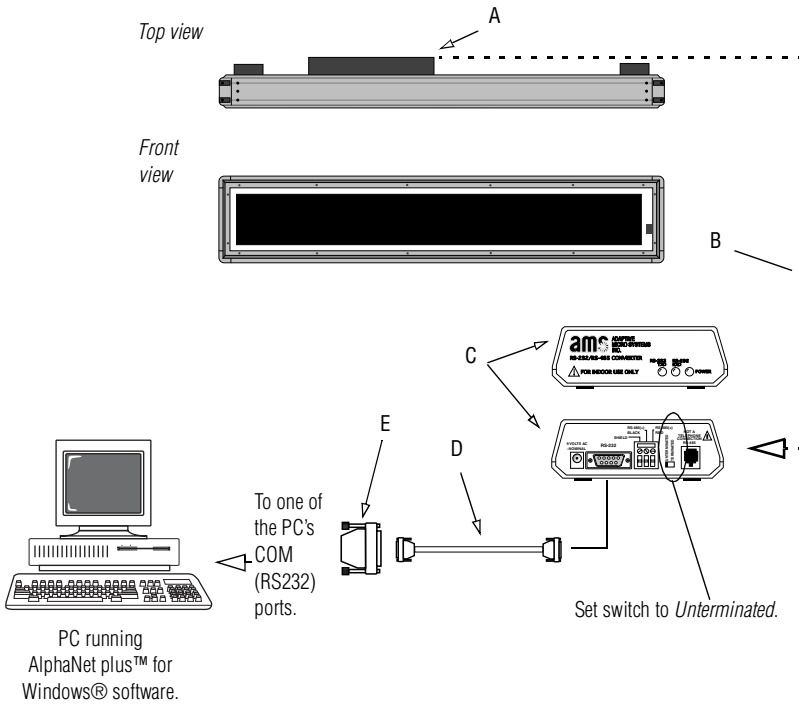
Two options for connecting an Alpha® Solar™ sign to a personal computer:

- Data communication through an RS485 converter box interface (see the illustration on the next page) will allow for a long distance physical separation of the sign and PC. Separation distance increases in direct proportion to any decrease in the selected speed of data transmission, measured in baud rate. 9600/4800/2400 baud rates have separation distance limits of (respectively) 4,000/8,000/10,000 feet.
- Data communication through an RS232 serial port interface requires a specially modified data cable (see the illustration on page 15) no longer than 50 feet. In this configuration, it's not necessary to include a converter box.

Before starting, make sure you disconnect the power cord to the sign.



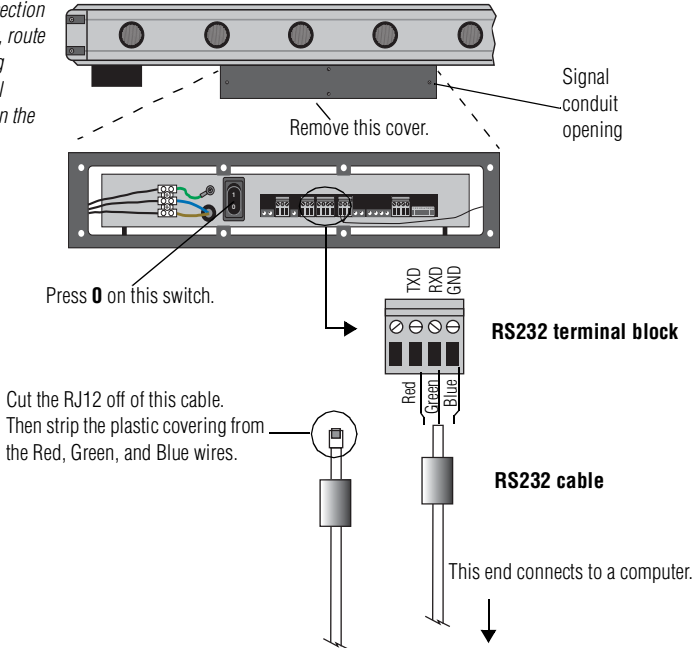
Data communication through an RS485 converter box interface
















Item	Part #	Description
A	—	One end of the RS485 cable connects here.
B	1088-8000	RS485 cable connects sign to the RS485 connector block on the Converter Box III.
C	1088-1111	Converter Box III.
D	1088-8634	10 foot, 9 pin-to-9 pin, type "A9" RS232 cable.
E	—	Serial port DB25-to-DB9 adapter (may be required by your computer).

Data communication through an RS232 serial interface

If the RS232 connection will be permanent, route the RS232 cabling through the signal conduit opening in the sign.



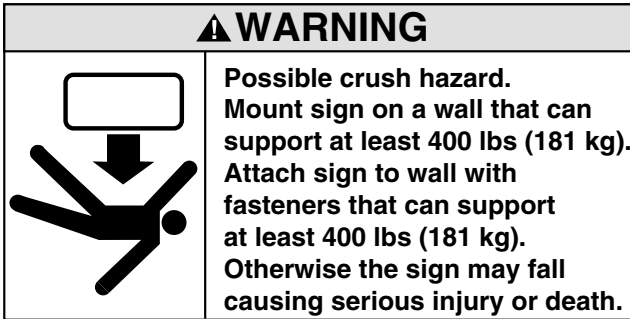
Cabling Methods

1	   <p>Solar™ sign</p> <p>25-foot RS232 cable (pn 1036-9010)</p> <p>PC running sign messaging software</p>
2	    <p>Solar™ sign</p> <p>25- or 50-foot RS232 cable (pn 1088-8625 or 1088-8627)</p> <p>RJ12-to-DB9 connector (pn 1088-9108)</p> <p>PC running sign messaging software</p>
3	      <p>Solar™ sign</p> <p>25-foot RS232 cable (pn 1088-8625)</p> <p>RS232 cable connector (pn 4331-0603)</p> <p>25-foot RS232 cable (pn 1088-8625)</p> <p>RJ12-to-DB9 connector (pn 1088-9108)</p> <p>PC running sign messaging software</p>

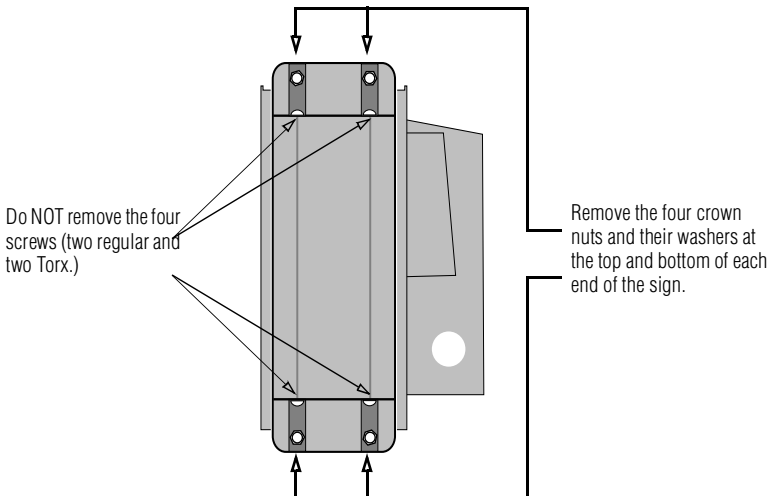
Installation

Mounting instructions

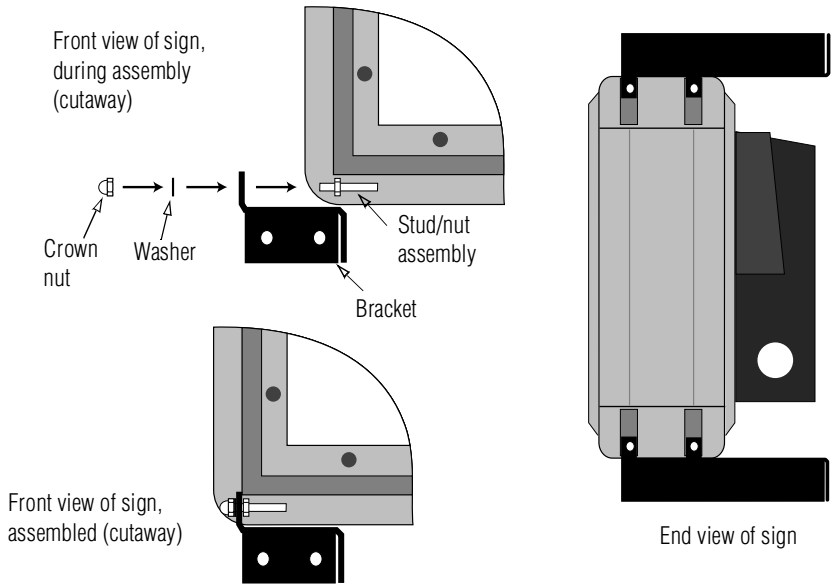
If possible, do not mount an Alpha® Solar™ in direct sunlight. Messages will be best seen when the sign is mounted in a shaded area.



1. Using a 1/4" socket wrench, remove the four crown nuts and washers from the upper and lower corners of each end of the sign. Keep these crown nuts and washers for attaching the mounting brackets. Do not attempt to remove the stud/nut assembly from which the crown nuts and washers were removed.

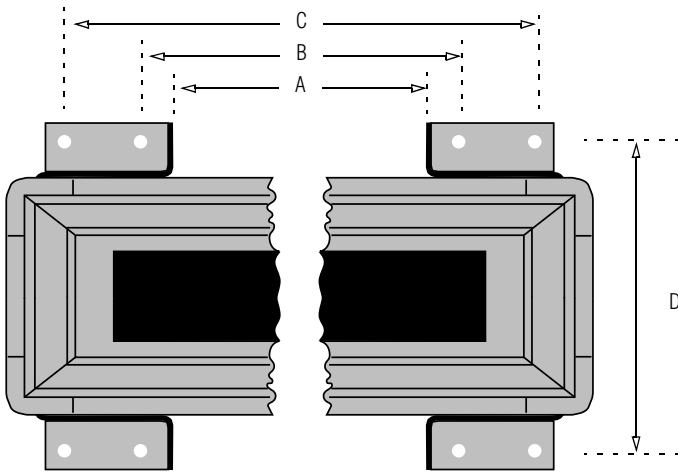


2. Assemble the mounting brackets, an internal tooth lock washer, and a crown nut onto the stud/nut assembly at the upper and lower corners of each end of the sign. The drawing below illustrates the lower left corner of the sign.



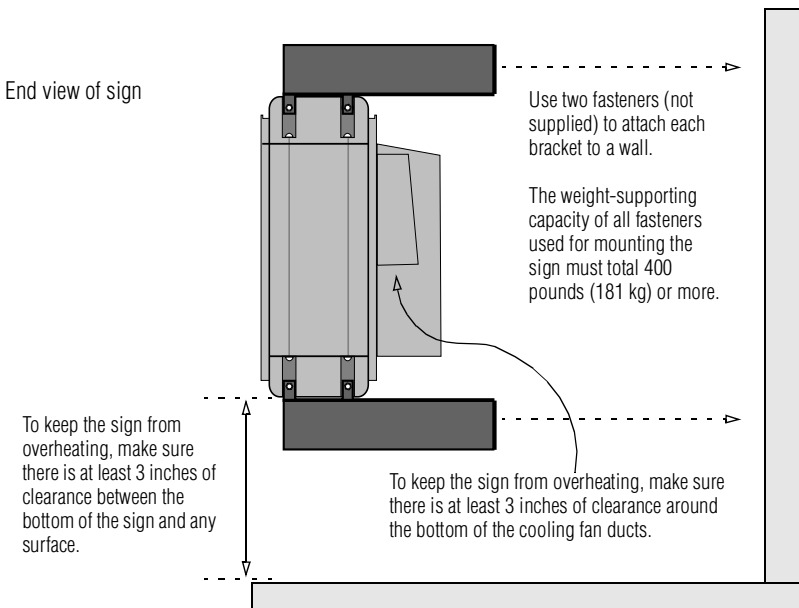
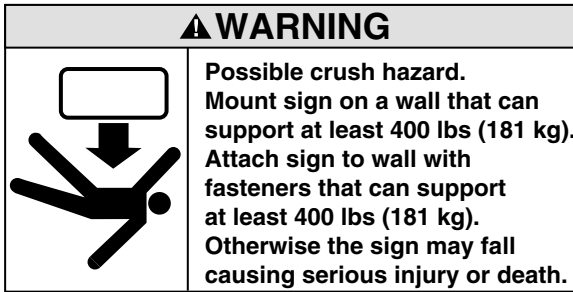
- Use the dimensions A, B, C, and D in the table below for predrilling holes in the supporting wall.

Mounting dimensions				
Dimension	Alpha® Solar™ size (LED rows x columns)			
	96 x 16	128 x 16	160 x 16	192 x 16
A	42.5" (108 cm)	56.9" (144.5 cm)	71.3" (181 cm)	85.7" (217.7 cm)
B	43.75" (111.1 cm)	58.2" (147.8 cm)	72.6" (184.4 cm)	87" (221 cm)
C	46" (116.8 cm)	60.4" (153.4 cm)	74.75" (190 cm)	89.2" (226.6 cm)
D	14" (all sizes) (35.6 cm)			



- Mount the sign to a wall capable of supporting at least 400 pounds (181 kg).

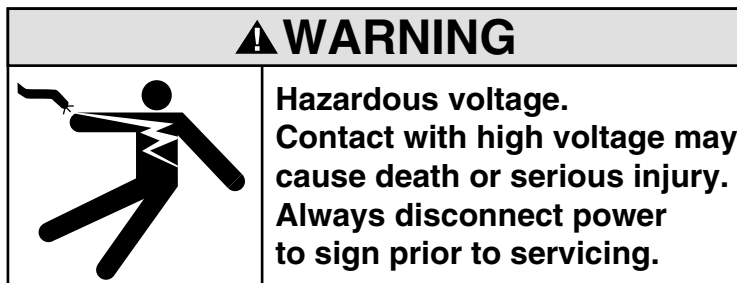
NOTE: Wall mounting fasteners are not supplied.



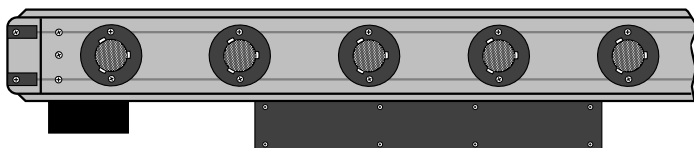
- Proceed with the electrical connection of the sign. (See “Electrical connection” on page 20.)

Electrical connection

The following procedure should only be attempted by a qualified electrician.



1. Mount the sign as described in “Mounting instructions” on page 16.
2. Unscrew the 8 screws on the power supply access cover. Then remove the cover:



Unscrew the 8 screws on the power supply access cover. Then remove the cover to expose the power supply.

NOTE: To remove one of the screws, you'll have to use a special Torx bit (supplied).

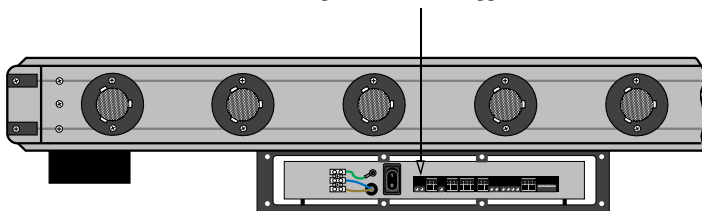


Figure 3: Alpha® Solar™ (bottom view) — Power supply access cover removal

3. After removing the power supply access cover, press **0** on the

sign's internal power switch:

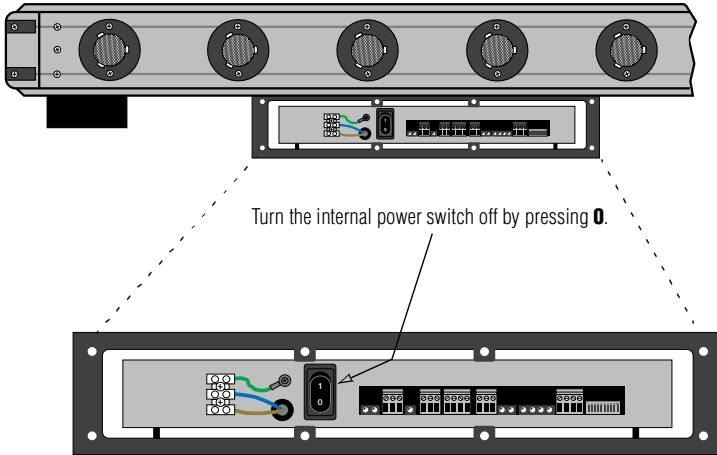


Figure 4: Alpha® Solar™ (bottom view) — Power supply internal switch

4. Per local electrical codes, run the appropriate electrical wiring from a power source through the power conduit:

NOTE: Separate conduits must be run to the sign for power and signal connections.

NOTE: If the sign is mounted *outdoors*, then all electrical connections (like the conduit) **must be watertight**.

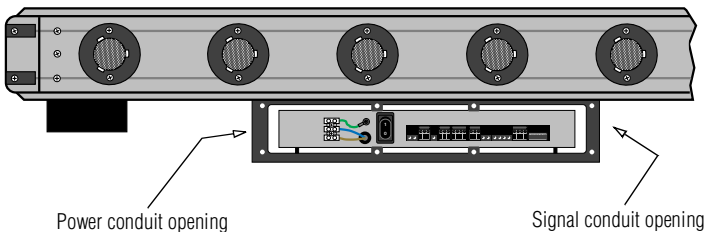


Figure 5: Alpha® Solar™ (bottom view) — Power and signal conduit locations

Signal wiring

- To connect the sign so messages can be sent to it by a computer, run RS485 signal wire (pn 1088-8000) through the signal conduit:

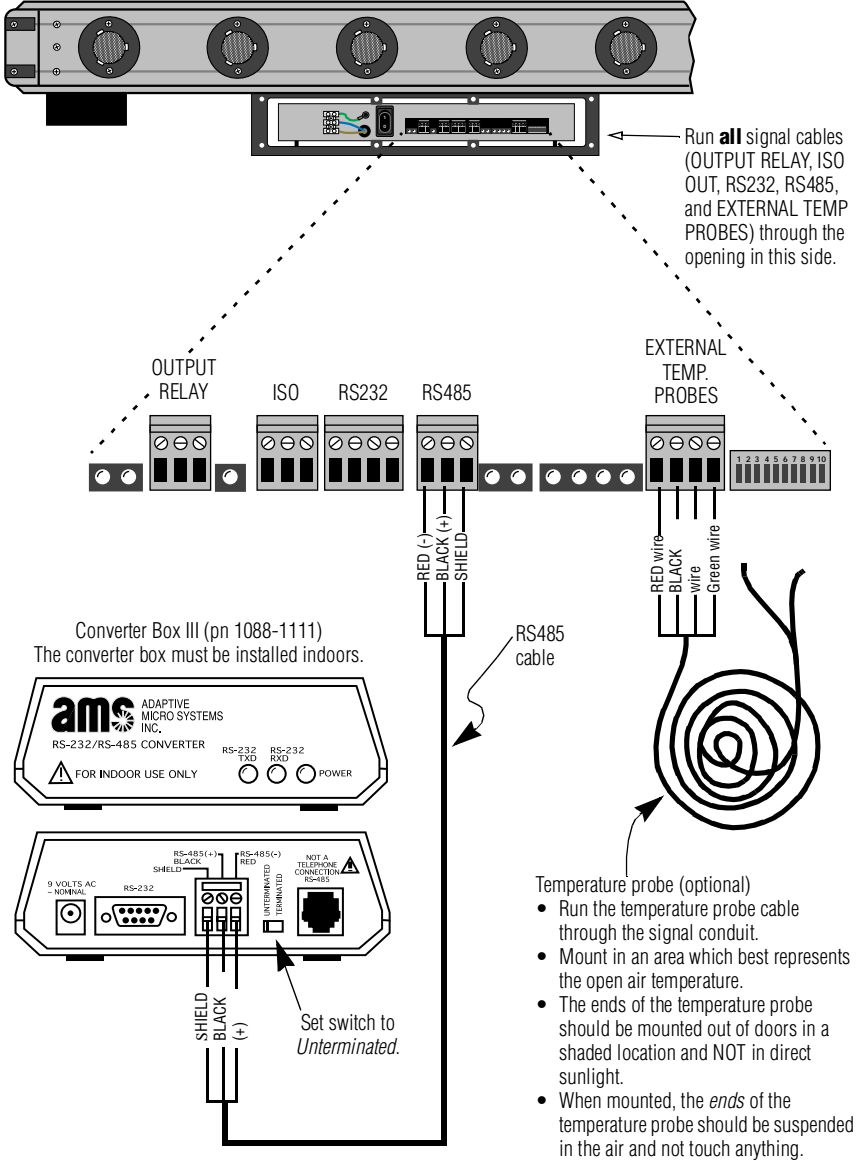


Figure 6: Alpha® Solar™ (bottom view) — RS485 and temperature probe connections

Power supply wiring

6. Connect the wires from the power conduit to the appropriate power supply wires:

Do NOT connect the other ends of the wires in the power conduit to a power source yet!

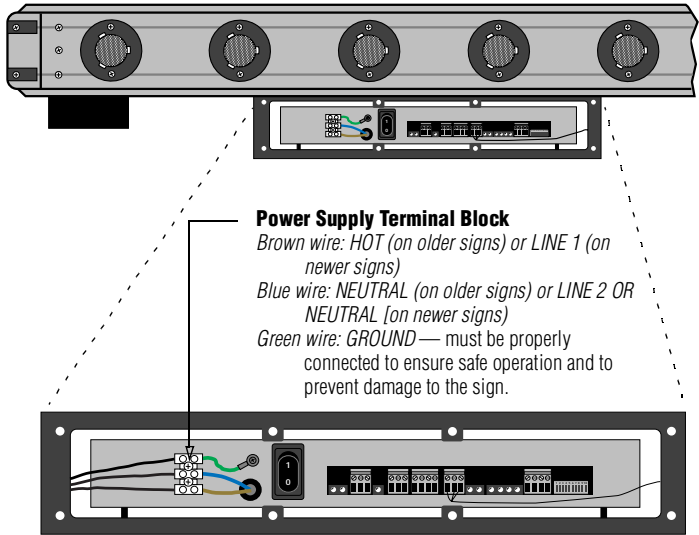
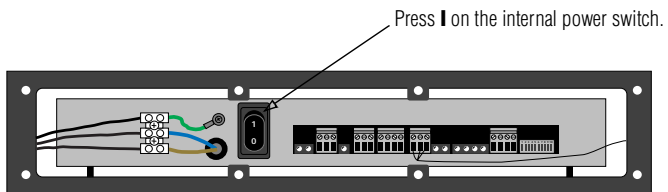


Figure 7: Alpha® Solar™ (bottom view) — Power supply connection

7. If you need to assign a serial address to this sign, see “Appendix B: Using DIP switches to set the serial address” on page 25.
8. Press **I** on the internal power switch:

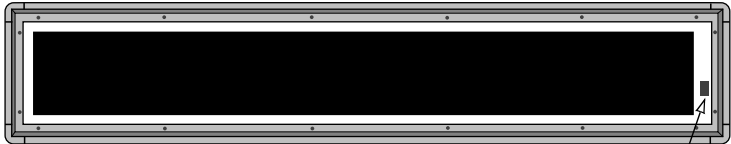


9. Using the eight screws you previously removed, replace the power supply access cover.
10. Connect the wires from the power conduit to a *switched, fused power source*.
11. The sign is now ready for use.

Appendix A: Periodic maintenance

Perform this maintenance as needed:

- Clean the front lens of the sign:

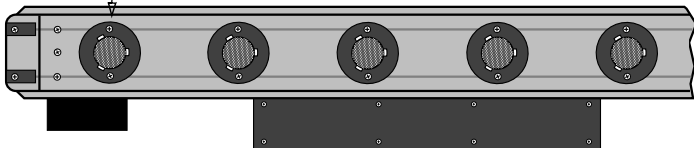


Keep this area especially clean. A photocell, which is used to adjust the sign's brightness, level is located here.

- Clean the sign's air filters at least every 6 months and more frequently in dusty environments:

If the air filters (located on the bottom of the sign) become clogged, the sign may become overheated and shut down.

To clean an air filter, remove the two screws on each filter cover. Remove the filter material and clean it in a mild detergent solution. Dry the filter material and return it to the sign.

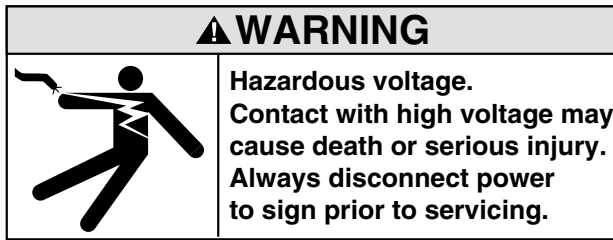


Appendix B: Using DIP switches to set the serial address

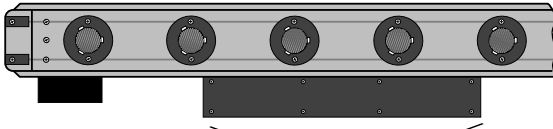
A sign's serial address can be set either by using the hand-held remote control or by changing the sign's *internal* DIP switches.

The DIP switch method should be used if you want to assign a permanent serial address to the sign. For example, if your Alpha® Solar™ is attached to a network of other signs, you may want to give the Alpha® Solar™ a unique address so that you can send messages to *only* the Alpha® Solar™.

To change the serial address using DIP switches, do the following:

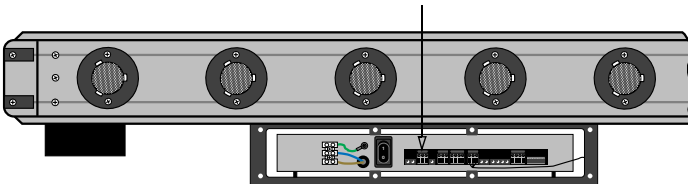


1. Turn off power to the sign.
2. Remove the sign's power supply access cover:

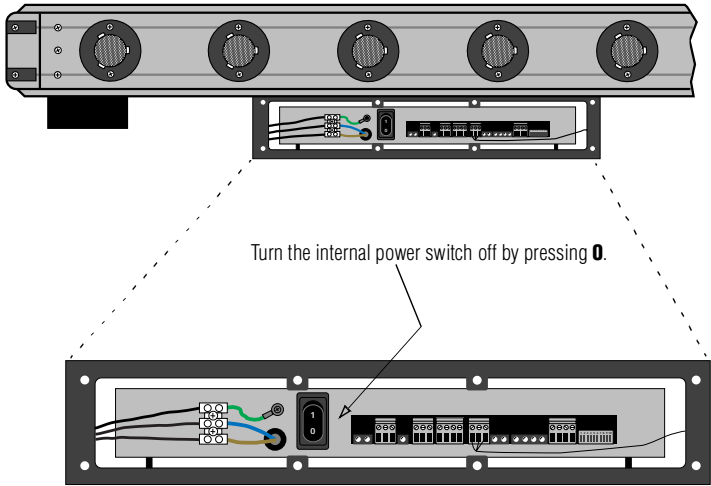


Unscrew the 8 screws on the power supply access cover. Then remove the cover to expose the power supply.

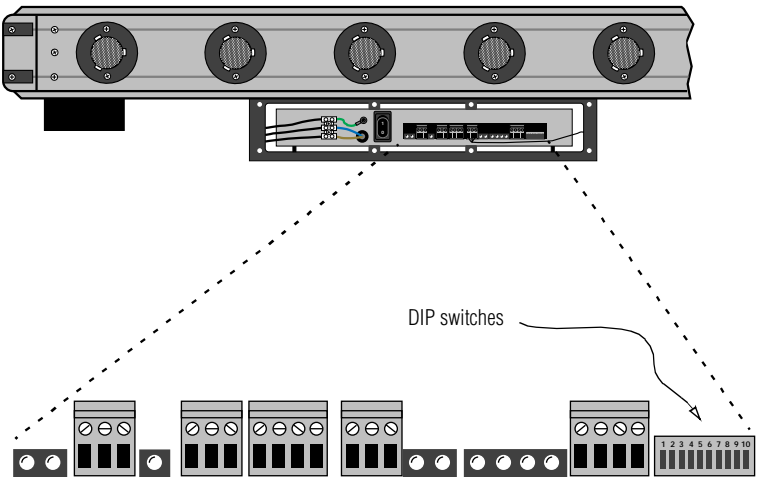
NOTE: To remove one of the screws, you'll have to use a special Torx bit (supplied).



3. After removing the power supply access cover, press **0** on the sign's internal power switch:



4. Locate and then set the internal DIP switch using "Serial Address Table" on page 27:



5. Turn the internal power switch on by pressing **1**.
6. Replace the power supply access cover.

Serial Address Table

Serial address (decimal)	DIP switch settings									
	1	2	3	4	5	6	7	8	9	10
0	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
1	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
2	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
3	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	
4	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	
5	ON	OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	
6	OFF	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF	
7	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF	
8	OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF	
9	ON	OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF	
10	OFF	ON	OFF	ON	OFF	OFF	OFF	OFF	OFF	
11	ON	ON	OFF	ON	OFF	OFF	OFF	OFF	OFF	
12	OFF	OFF	ON	ON	OFF	OFF	OFF	OFF	OFF	
13	ON	OFF	ON	ON	OFF	OFF	OFF	OFF	OFF	
14	OFF	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	
15	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	
16	OFF	OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF	
17	ON	OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF	
18	OFF	ON	OFF	OFF	ON	OFF	OFF	OFF	OFF	
19	ON	ON	OFF	OFF	ON	OFF	OFF	OFF	OFF	
20	OFF	OFF	ON	OFF	ON	OFF	OFF	OFF	OFF	
21	ON	OFF	ON	OFF	ON	OFF	OFF	OFF	OFF	
22	OFF	ON	ON	OFF	ON	OFF	OFF	OFF	OFF	
23	ON	ON	ON	OFF	ON	OFF	OFF	OFF	OFF	
24	OFF	OFF	OFF	ON	ON	OFF	OFF	OFF	OFF	
25	ON	OFF	OFF	ON	ON	OFF	OFF	OFF	OFF	

DON'T MOVE SWITCHES 9 AND 10!

Appendix C: Troubleshooting

Problem	Possible cause(s) and solution(s)
Messages not being displayed on the sign.	<ul style="list-style-type: none"> • No power — make sure that the sign has power supplied to it. • No messages programmed — messages have to be programmed into a sign using either (1) the remote control keyboard, or (2) a personal computer that is attached to the sign. • Messages deleted — someone might have mistakenly deleted the messages that were programmed into the sign. In this case, all the messages will have to be re-entered. • Sign overheating — if two LEDs in the lower right of the sign's display are blinking, then the sign has overheated and shut itself down. Clean the sign's air filters (see "Appendix A: Periodic maintenance" on page 24).
Temperature displayed on the sign is not accurate	<ul style="list-style-type: none"> • See "Setting a sign's temperature" on page 12. • Temperature probe not mounted properly — make sure (1) the temperature probe is mounted in an area which best represents the open air temperature; (2) the temperature probe is NOT in direct sunlight; and (3) the ends of the temperature probe are suspended in the air and not touching anything. • Temperature probe not connected properly — see "Signal wiring" on page 22.