



LED Maintenance Instructions

This guide describes the maintenance procedures for the LED portion of your Aurora or Polaris sign.

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Corrective Maintenance

Our signs have been designed and manufactured to provide years of trouble-free operation. LED signs, like all machines, eventually need maintenance. They wear, they tear, they are vulnerable to harmful particles. They take a beating from the elements. This section describes some corrective maintenance steps that may be needed from time to time.



Danger - Electrical Hazard.

Turn off power and lock out, using your lockout/tagout procedures, before servicing.



Image 5.3

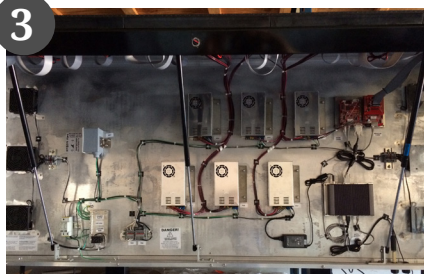


Image 5.4

Aurora or Polaris

Two cabinet types exist within the Aurora or Polaris series, hinged or non-hinged.

Hinged

The signs internal components are accessed by lifting the sign face. The sign face is hinged at the top and is supported by gas springs.

1. Remove the fasteners from the bottom of the sign. (Image 5.3)
2. The number and size of the fastener will vary depending on the size of the sign.
3. The gas springs will safely hold the face open while servicing. (Image 5.4)

Non-Hinged

The sign's internal components are accessed by removing the LED board(s).

1. If you have a vandal cover, see the Aurora or Polaris with vandal cover section.
2. Locate the LED board to be removed. (Image 5.5)
3. Find both service points on the front of the board.
4. Insert an Allen wrench and turn one-quarter turn counter-clockwise to remove the LED board.
5. Carefully pull out the LED board. (Image 5.6)
6. Disconnect the ribbon cables.
7. Remove the power wires.

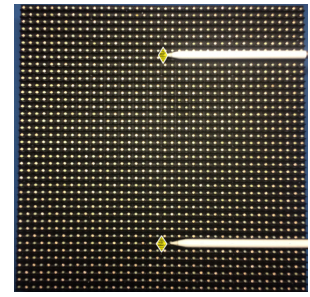


Image 5.5

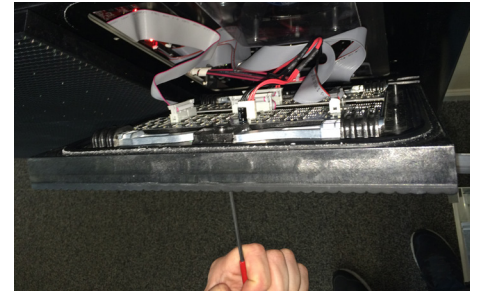


Image 5.6

Aurora or Polaris with Vandal Cover

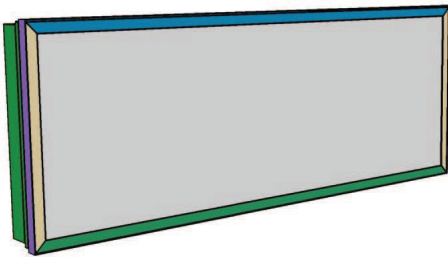


Image 5.7

Two cabinet types exist within the Aurora or Polaris series, hinged or non-hinged. If you have a vandal cover, you may have to open it to access the LED boards. (Image 5.7)

Open the Vandal Cover (only when needed)

1. Remove the fasteners from the bottom of the vandal cover.
2. Once the screws are removed, the vandal cover will swing freely. (Image 5.8)
3. Hold it open using the integrated support rods.



Image 5.8

Hinged

The sign's internal components are accessed by lifting the sign face. The sign face is hinged at the top and is supported by internally by gas springs.

1. Remove the fasteners from the bottom of the sign.
2. The number and size of the fastener will vary depending on the size of the sign.
3. The gas springs will safely hold the face open while servicing.
4. Before servicing the sign's internal components, remove power at the sign's internal power disconnect.

Non-Hinged

1. The sign's internal components are accessed by removing the LED Board(s).
2. If you have a vandal cover, See the Aurora or Polaris with vandal cover section.
3. Open the vandal cover.
4. Locate the LED Board to be removed.
5. Find both service points on the front of the board.
6. Insert an Allen wrench and turn one-quarter turn counter-clockwise to remove the LED board.
7. Carefully pull out the LED board and disconnect the ribbon cables.
8. Remove the power wires.

Replacing Components

Replace an LED Board

There are two ways of securing the LED boards to the sign face. Screw down (Polaris) and dual maintenance (Aurora).

Polaris - Screw Down

Screws are used to secure the LED board to the signs face frame. (Image 5.9)

1. Remove power from the sign using your lockout/tagout procedures.
2. Open the sign (See section 1 of this chapter for instructions).
3. Identify the faulty LED board.
4. With the power now disconnected, unplug the ribbon cables.
5. Disconnect the power wires from the LED board to be replaced.
6. Using a #2 Phillips screwdriver, remove the screws holding the LED board to the sign. (Image 5.10)
7. Before attaching the replacement LED board, ensure the locator pins are correctly positioned, and the LED board sits flush within the sign.
8. Attach new LED board with the screws.
9. Reconnect the power wires.
10. Reconnect the ribbon cables; they are direction specific. Do not use force to connect them.
11. Close the sign carefully, using your lockout/tagout procedures. **DO NOT DAMAGE ANY CABLES.**
12. Turn the power on.

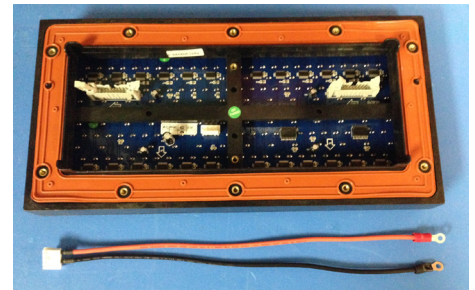


Image 5.9

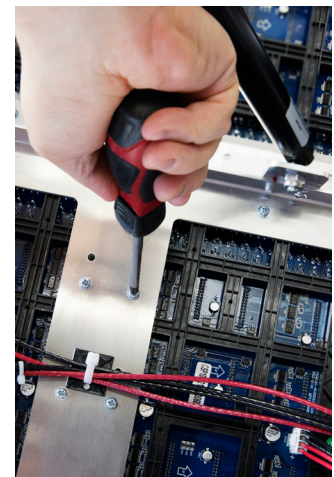


Image 5.10

Aurora - Dual Maintenance

Access and LED board removal are important aspects of the overall serviceability of the display. These LED boards may be **easily removed** from the front, or from the back using an Allen wrench or hex key. (Image 5.11)

1. Remove power from the sign using your lockout/tagout procedures.
2. Locate the LED board to be replaced.
3. Find both service points on the front of the LED board.
4. Insert an Allen wrench and turn one-quarter turn counter-clockwise to remove the LED board.
5. Carefully pull out the LED board. (Image 5.12)
6. Disconnect the ribbon cables.
7. Remove the power wires.
8. Before connecting the replacement LED board, check the markings on the back of the LED board to ensure it is orientated correctly.
9. The ribbon cables and power wires are direction specific, (do not use force to reconnect them).
10. Place the new LED board into the sign, **DO NOT DAMAGE ANY CABLES**.
11. Re-insert the Allen wrench and rotate one-quarter turn clockwise to secure the new LED board into place.
12. With the sign now closed, turn the power back on.



Image 5.11

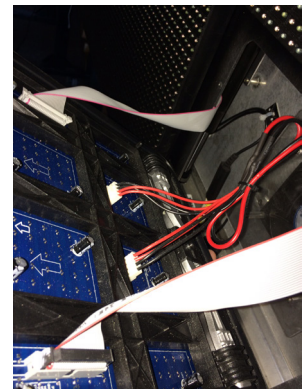


Image 5.12



Image 5.13

Replace the PC Controller

We use state-of-the-art industrial PC controllers for exceptional performance and rock-solid dependability. These units feature a powerful Intel™ processor and solid state drive (SSD) with the ability to store years' worth of messages, media and scheduling information. (Image 5.13)

1. Remove power from the sign using your lockout/tagout procedures.
2. Open the sign.
3. Locate the controller within the sign.
4. Disconnect the power cable, the HDMI or DVI cable, all USB cables, and data cable from the controller. (Image 5.14)
5. With a #2 Phillips screwdriver, remove the four screws holding the controller to the sign.



Image 5.14

6. Remove the controller from the sign and, place the new controller in the same location. Secure it with the same Phillips screws from the previous step.
7. Reconnect the USB cables, the DVI cable, power cable and data cable.
8. Close the sign carefully, using your lockout/tagout procedures. **DO NOT DAMAGE ANY CABLES.**
9. Turn the power on.

Replace the Receive Card

An LED receive card receives the video signal from the controller via the send card. The receive card then provides the proper part of the video to the LED boards connected to the HUB. The number of receive cards in an LED sign will vary based on sign type. (Image 5.15), (Image 5.16)

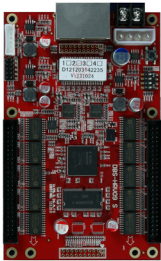


Image 5.15

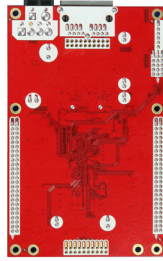


Image 5.16

1. Remove power from the sign using your lockout/tagout procedures.
2. Open the sign.
3. Locate the receive card within the sign.
4. Remove the 5v DC power connection.
5. Remove the Ethernet cables attached to the receiver card.
6. Disconnect the ribbon cables connected to the HUB on the receive card. Note each cable's proper slot for re-attachment later. Remove the HUB from the receive card. No tools are required to remove and attach the HUB from the receive card.
7. Remove the four screws that secure the receive card with a #2 Philips screwdriver. Remove the receive card being careful not to lose the four white standoffs.
8. Place new receive card in the correct position and secure using the four screws and four standoffs. To ensure that the HUB is centered on the receive card, use the raised guidelines on the side of the receive card. Finally, reattach the LED module ribbon cables to their appropriate positions on the HUB.
9. Reattach the 5v power and Ethernet cables.
10. Close the sign carefully, using your lockout/tagout procedures. **DO NOT DAMAGE ANY CABLES.**
11. Turn the power on.

Replace the Send Card

The LED send card sends the video signal and brightness level from the controller to all the receive cards in an LED sign. The send card has the following inputs. A DVI interface for video input. A USB interface for instructions like brightness levels from the controller. Rj45 Ethernet jack to send the video signal and instructions to all the receive cards in the LED sign. (Image 5.17), (Image 5.18)

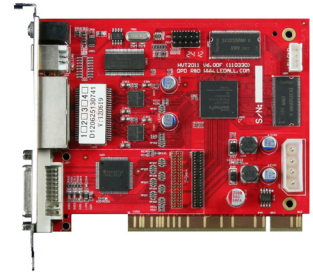


Image 5.17

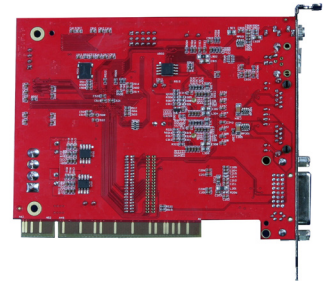


Image 5.18

1. Remove power from the sign using your lockout/tagout procedures.
2. Open the sign.
3. Locate the send card within the sign.
4. Remove the 5v DC power connection.
5. Remove the USB cable.
6. Remove the Ethernet cables attached to the receiver card.
7. Remove the DVI cable.
8. Remove the three screws that secure the receive card with a #2 Philips screwdriver. Remove the receive card being careful not to lose the three white standoffs.
9. Place new send card in the correct position and secure using the three screws and three standoffs.
10. Reattach the 5v power connection, USB cable, Ethernet cable(s) and DVI cable.
11. Close the sign carefully, using your lockout/tagout procedures. **DO NOT DAMAGE ANY CABLES.**
12. Turn the power on.

Replace the Sensor Board

The sensor board offers a simplified USB interface to the PC controller with external sensors. (Image 5.19)

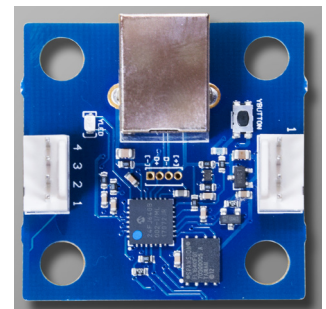


Image 5.19

1. Remove power from the sign using your lockout/tagout procedures.
2. Open the sign.
3. Locate the sensor board within the sign.
4. Remove the sensor cables.
5. Remove the USB cable.
6. Replace the sensor board.
7. Reconnect the USB and sensor cables.
8. Close the sign carefully, using your lockout/tagout procedures. **DO NOT DAMAGE ANY CABLES.**
9. Turn the power on.

Replace the Temperature Sensor

The current temperature can be displayed at any point and embedded within the custom text and graphics. Temperature is derived from a temperature probe attached to the sign. (Image 5.20)

1. Remove power from the sign using your lockout/tagout procedures.
2. Open the sign.
3. Locate the temperature probe in the bottom right corner of the parent sign cabinet.
4. Remove the zip ties securing the temperature probe wire to the back of the sign cabinet.
5. Disconnect the temperature probe cable from the sensor board. (Image 5.21)
6. Loosen the temperature probe strain relief by turning it counter-clockwise to remove the temperature probe from inside the cabinet.
7. Install the new temperature probe into strain relief. There should be at least one inch of the temperature probe that sticks out the bottom of the strain relief. Turn clockwise to tighten. (Image 5.22)
8. Plug the other end of the temperature probe into one of the open ports of the sensor board.
9. Secure the temperature probe cable with zip ties to the back plate to prevent it from getting caught on other components when opening and closing the sign.
10. Close the sign carefully, using your lockout/tagout procedures. **DO NOT DAMAGE ANY CABLES.**
11. Turn the power on.



Image 5.20

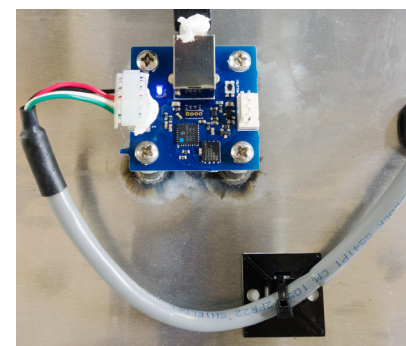


Image 5.21

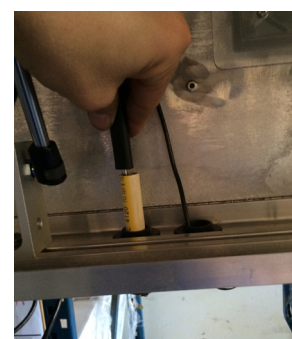


Image 5.22

Replace the Light Sensor

Users can tailor the display to the light levels and unique circumstances of their location. The integrated light meter will adjust the display brightness automatically to ambient light conditions. (Image 5.23)

1. Remove power from the sign using your lockout/tagout procedures.
2. Open the sign.
3. The light sensor is mounted during the signs installation, and its location will vary.



Image 5.23

4. Once located, remove the zip ties that secure the sensor's wiring to the back of the sign.
5. Remove the connection from the sensor board. (Image 1.4.7.4)
6. Pull the cable out through the bottom cord grip. Remove the mounting screws holding the sensor to the sign, and remove the sensor.
7. Attach the new light sensor and feed any excess wiring back up through the cord grip.
8. Plug the new light sensor into the sensor board.
9. Secure the light sensor cable by zip tying it to the back plate to prevent it from getting caught on other components.
10. Close the sign carefully, using your lockout/tagout procedures. **DO NOT DAMAGE ANY CABLES.**
11. Turn the power on.

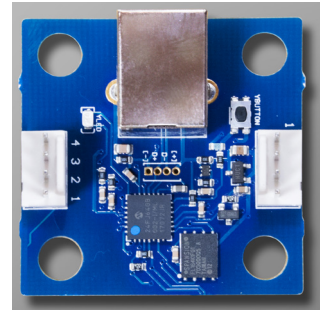


Image 5.19

Replace the Power Supply

Our UL listed (UL60950-1) power supplies have built in protections for short circuits, overload, over voltage and temperature. That will automatically recover after the fault condition is removed. Ensure a fault condition doesn't exist before replacing.

1. Remove power from the sign, open the sign.
2. Locate the power supply to be replaced. (Image 5.24)
3. Disconnect the 120-volt or 240-volt AC power from the power supply; these are marked on the power supply by 'L', 'N' and ground symbols \perp . (Image 5.25)
4. Remove the 5-volt wires from the power supply. The red wires are positive and black are negative.
5. Remove the four screws on the right-hand side of the power supply.
6. Remove the faulty power supply and install the new power supply.
7. Secure the power supply to the sign with the four screws on the right-hand side.
8. Connect the 120 volt or 240 volt AC power to the power supply, which is marked on the power supply by L, N and ground symbols. Make sure wires are in their correct locations—the live-wire is black, neutral is white or red, and ground W is green.
9. Connect the 5-volt power wires, remember red is positive and black is negative.
10. Close the sign using your lockout/tagout procedures.
11. Turn the power on.

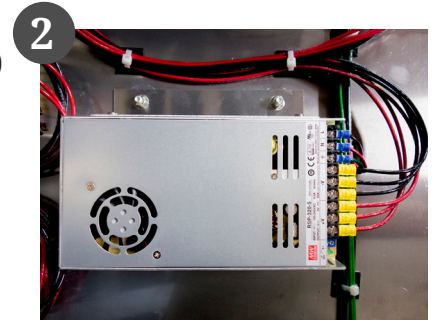


Image 5.24



Image 5.25

Replace the Short-Range Wireless

Short-range wireless consists of a pair of wireless radios, radio (RF) signal is used to transfer data. One device is pre-installed inside the sign, and the other on the outside of the building. This device is then connected to the computer or network via an Ethernet cable.

1. Replace the building radio and POE. (Image 5.27)
2. From the power adapter, plug in the POE port to the radio and the LAN port to your network or computer.
3. Once installed, the bottom light should be lit indicating the unit has power. The second light from the bottom should be on or flash to indicate a network connection. (Image 5.26)
4. Replace the sign radio and POE.
5. Remove power from the sign, open the sign.
6. Locate the short range wireless radio.
7. Unscrew the antenna cable from the top of the radio.
8. Slide the cover, protecting the Ethernet cable, down.
9. Disconnect the Ethernet cable.
10. Slide the radio off its mounting bracket; no tools are needed to remove the radio from the bracket.
11. Install the new radio onto the bracket.
12. Connect the Ethernet cable then reattach the sliding cover.
13. Reattach and tighten the antenna cable on the top of the radio.
14. It is recommended to replace the POE adapter whenever the radio is replaced. (Image 5.28)
15. While observing the sign radio **restore power to the sign**.
16. Just like the building radio, the bottom light should be lit indicating the unit has power. Also, the light above should be on or flash to showing a network connection to the signs PC controller.
17. As the sign radio powers up, the status lights will begin to show communication to the building or office radio.
18. You may now close the sign using your lockout/tagout procedures.

1



Image 5.26

3



Image 5.27

14



Image 5.28



Image 5.29

Replace the Long-Range Wireless

Using a wireless data modem that is pre-installed inside the LED display, a cellular network connection is used to transfer data. The customer must subscribe to a wireless data plan through a provider such as AT&T, Sprint or Verizon. (Image 5.29)

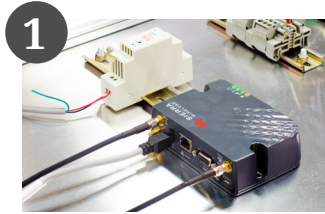


Image 5.30

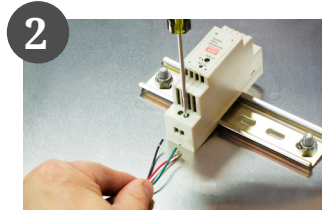


Image 5.31

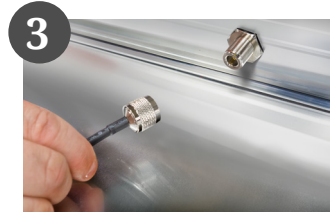


Image 5.32

1. Remove power from the sign using your lockout/tagout procedures.
2. Open the sign. (Image 5.30)
3. Disconnect the power cable. (Image 5.31)
4. Unscrew the antenna cable. (Image 5.32)
5. Disconnect the Ethernet data cable.
6. Remove the long range wireless Radio from the sign.
7. Using the provided double-sided tape on the modem adhere the new long range wireless radio to the back of the sign.
8. Connect the power cable, antenna cable, and data cable to the new long range wireless radio.
9. Close the sign using your lockout/tagout procedures.
10. Turn the power on.

Replace the USB Box

The panel interface connector (PIC) by MENCOR is the device mounted on the outside of the sign. This allows the user to interface with the sign control. These convenient access ports eliminate the need to open the sign, creating a safer environment to update the sign via USB. These devices adhere to the safety standards set forth by NFPA 70E. (Image 5.33)



Image 5.33

1. Remove power from the sign using your lockout/tagout procedures.
2. Open the sign.
3. With the power now disconnected, remove the USB box from the sign. This component is secured with either four 5/16" hex screws or four #2 square head screw.

4. You may have to raise the handle with the cover open to access the lower screws.
5. From inside the LED cabinet, disconnect the USB cable from the controller.
6. Tie a string to the USB cable and pull the cable outward until the connector is out of the sign. (Image 5.34)
7. Remove the string and attach it to the cable on the new USB box. If you have a USB lock bracket, thread the cable through the bracket.
8. Using the string pull the cable back up, into the sign.
9. Attach the USB box and bracket to the sign.
10. Reconnect the USB cable to the controller.
11. If you are using the USB lock bracket, use a padlock with a shackle of at least 5 inches in length. (Image 5.35)
12. Close the sign using your lockout/tagout procedures.
13. Turn the power on.

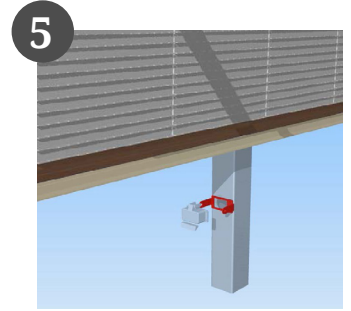


Image 5.34

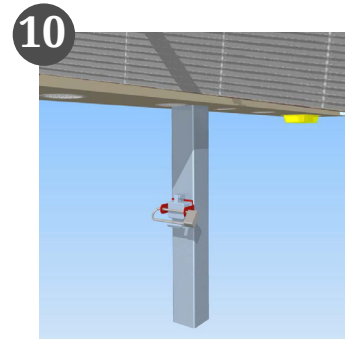


Image 5.35

1400 8th Street North
Clanton, AL 35045

FCC Notice

All components have 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.

The user is cautioned that any changes or modifications not expressly approved by the party responsible for FCC compliance could void the user's authority to operate the equipment.

This image shows a full page of blank, lined paper. It features approximately 20 evenly spaced horizontal grey lines across its entire width, providing a template for writing or drawing. The margins are consistent on all sides.