



LED TROUBLESHOOTING



Controller Version "L610 Rev 7M" or newer
(manufactured after 1/21/15)

Last update 11/5/18

The purpose of this document is to help the airfield electrician troubleshoot the Lumacurve LED lighting system.

Prior to completing the following tests, complete a visual inspection for damaged components as well as checking for loose wires. Sign function relies on a proper installation. Please verify this by completing the Lumacurve Electrical Installation Record for any sign that exhibits problems.

Please note, per FAA AC 150/5345-44, if one lamp burns out in a sign, the FAA requires that the entire sign go dark.

Helpful Tool: an electrical multi-meter with probe attachments
Meter must be capable of measuring DC Volts, AC Amps & AC Volts

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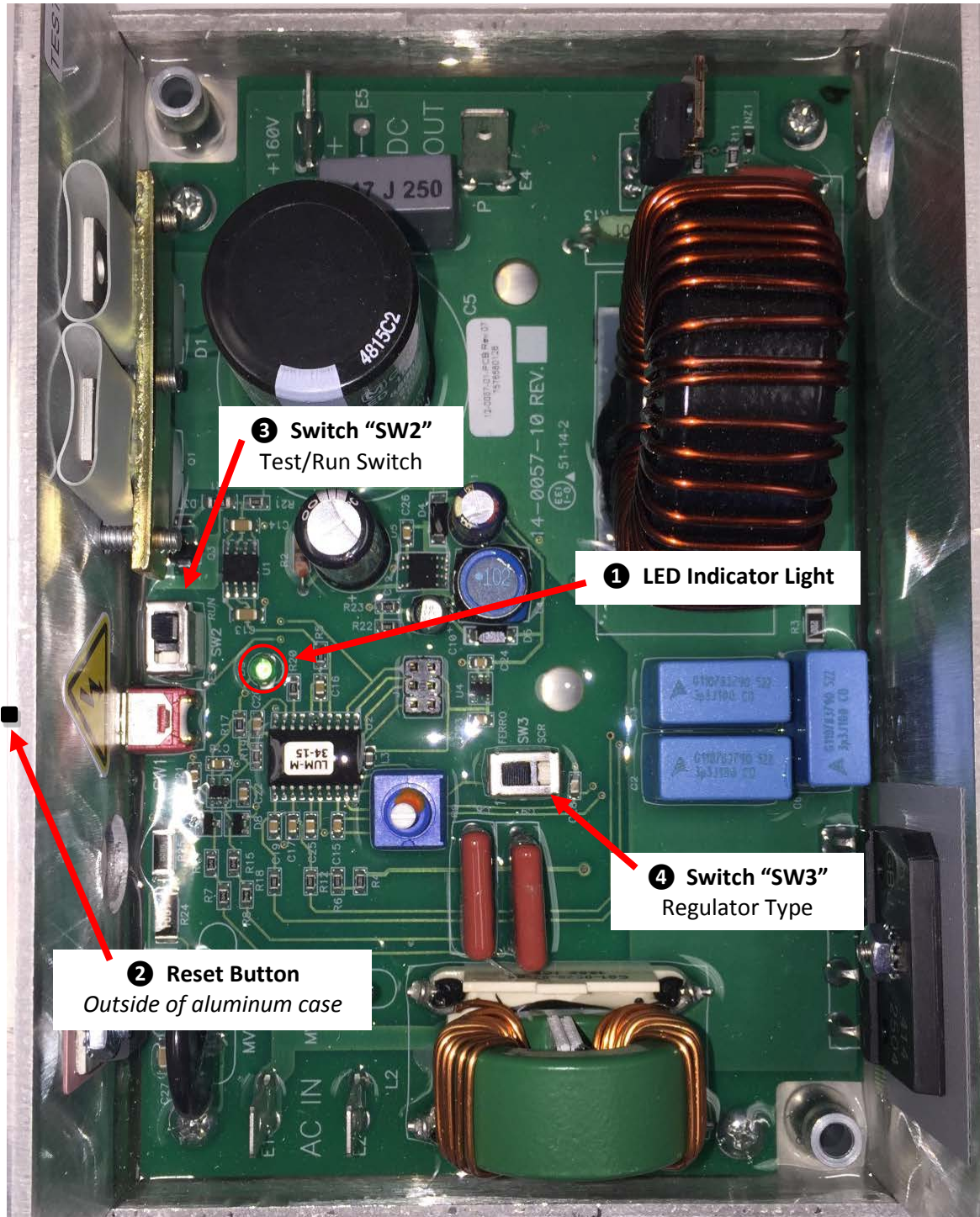
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Key Components of the LED Controller

Version L610 Rev 7M (manufactured after 1/21/15)

Identify the locations of the key components of the LED controller in the photo below. A familiarity of these components will help you maintain and troubleshoot your Lumacurve LED airfield signs.

↑ Top of Sign



LED Controller Components and their Functions

1 LED Indicator Light

The green LED light indicates the basic status of the LED controller.

Solid green light (with the power on) indicates the LED controller is functioning properly and the output voltage to the lamps is within range.

Flashing green light (with the power on) indicates a lamp is out. The failed lamp will need to be identified and replaced. The controller must then be reset.

False trips are possible. See troubleshooting scenarios.

No green light (with the power on) indicates the controller is receiving no power or has failed. Contact Lumacurve technical support.

2 Reset Button

The reset button is used to reset the sign when the sign is dark and the LED indicator light is flashing. It is located on the side of the controller, protruding through the aluminum case. A failed lamp that needs replacement is typically the source of the problem.

Reset Procedure: with the sign energized, press and hold the reset button until the lamps are illuminated. Release button immediately once the lamps are illuminated. This will reveal the failed lamp.

3 Test/Run Switch (“SW2”) see “Switch Positions” diagrams below

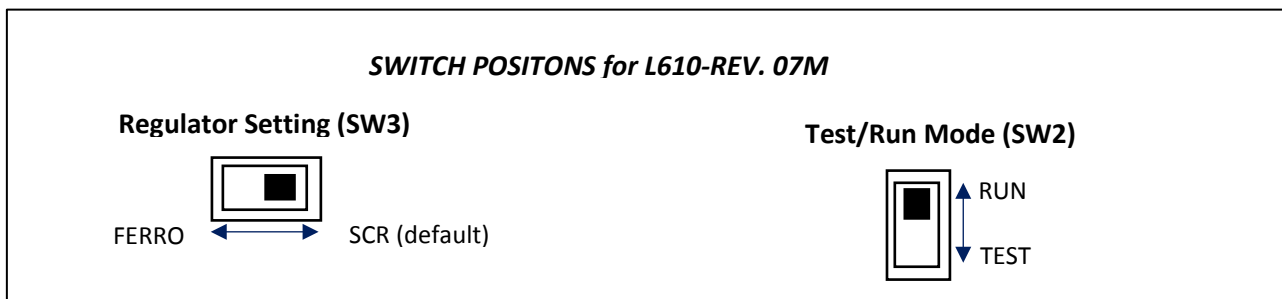
The test switch position is used to disable the “one-out-all-out” lamp feature as required by the FAA.

“TEST” position- select this setting to troubleshoot a sign that is exhibiting inexplicable problems. This will eliminate “failing” sign lamps as a source of false “one-out-all-out” trips.

“RUN” position- the default setting for the controller to perform per FAA specifications.

4 Regulator Type Switch (“SW3”) see “Switch Positions” diagrams below

The regulator switch is factory set to the “SCR” position. This setting is more accommodating when the power supplied by the airfield circuit is irregular or inadequate. In most cases, the controller will function more effectively in the “SCR” position. However, we may need to switch the regulator setting once the sign is installed. During troubleshooting, our technical department will advise if a switch setting change is recommended.



Scenario 1: LED sign is not lighting

Sign function relies on a proper installation.

Please verify this by referencing the Lumacurve Electrical Installation Records for your signs.

Step One: Check Controller

With the power on, does the controller have an illuminated green LED indicator light, either steady or blinking?

If **Yes**, the controller is good.

If **No**, the controller is not receiving power or has failed & needs replaced.

Step Two: Check for Failed Lamp

Is the green LED indicator light on the controller blinking?

If **yes**, the one-out-all-out feature has tripped. Press and hold the reset button (located on the side of the controller) until the lamps illuminate. Release immediately.

Is there a lamp that has not illuminated?

If **Yes**, replace the lamp (problem solved).

(Keep failed lamps within the 4 year warranty period and contact Lumacurve for replacements.)

** If the above steps do not address the problem,
call Lumacurve technical support for additional assistance **800-258-1997***

Scenario 2: LED sign needs to be reset regularly

Step One: Investigate for “suspect” or failing lamps

Although sometimes difficult to identify, an “intermittent” or failing lamp is often the reason a sign needs to be reset regularly.

Set the Test/Run switch (“SW2”) to the “TEST” position then reset the controller. Monitor the sign for 3 weeks. With the power continuously on (and the “one-out-all-out” feature temporarily disabled) a failing lamp should burn itself out completely. When the failed lamp is identified, replace the lamp, return the Test/Run switch to the “RUN” position and reset the sign.

If a lamp is failing after years of service (outside the warranty period), we recommend replacing all the lamps in the sign. Record in your maintenance log.

Keep failed lamps under the 4 year warranty and contact Lumacurve for replacements.

Step Two: Verify the regulator switch position on the Controller is set to “SCR”.
(original factory setting)

Regardless of the type of constant current regulator (CCR) powering your airfield sign, locate the regulator setting switch (SW3) on the controller and select the “**SCR**” switch position. The “SCR” setting is more accommodating when the power supplied by the airfield circuit is irregular or inadequate. This may reduce the need to reset the controller.

Step Three: Check for loose connections

Verify all wire connection are secure by tugging on wires at their connection points.
(terminal strip, lamps and electrical components)

Step Four: Check lamp sockets for loose screws and signs of corrosion

With the power off, remove all lamps from their sockets. Check that all 4 internal screws in the base of the lamp sockets are tightened. (see figure 1)

Inspect lamp sockets for corrosion. Remove the corrosion or replace the socket if present. A light coating of dielectric grease should be present. If not, put an appropriate amount of dielectric grease on your finger and lightly coat the inside of the socket on the threaded perimeter as well as the contact tab centered in the base. (see figure 2)

WARNING: Applying too much dielectric grease in the socket will prevent the lamp from making a proper connection or block the drain holes.

Replace the lamps and ensure they are firmly tightened into their sockets.

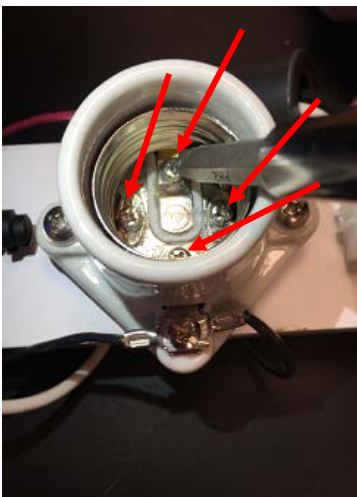


Figure 1, tightening the 4 socket screws



Figure 2, adding dielectric grease to sockets

**Scenario 3: (1) Sign lights after resetting controller, then goes dark or
(2) Controller indicator light is flashing but no lamps will illuminate**

Step One: Check the controller (DC Voltage output with lamps disconnected)

With power on, unscrew a lamp to shut off the controller output. Disconnect the output wires to the lamps at the terminal strip (Red,Black). Reset the controller by holding the reset button for approx. 4 seconds. With your multi-meter set on DC volts, place the meter leads (probes) on the controllers DC output at the terminal strip. You should get a reading near 170V.

Step Two: Check lamp sockets & wiring

Remove all lamps from their sockets. Reconnect the wires from the lamps to terminal strip (from above step). Reset controller if necessary (press and hold reset button for approx. 4 seconds). Sockets should be energized with a solid green LED indicator light on the controller.

With power on, touch the screws on either side of the lamp furthest from the controller with your Multi-meter probes set at DC volts. (*red probe on red wire & black probe on black wire*) A reading near 170 DC volts should indicate there is not a problem with the wiring or sockets.

Step Three: Check individual lamps

Continued from Step Six

All lamps should be removed with the power on and a solid green LED indicator light on the controller. Start with the lamp furthest from the controller and screw it into the socket. Wait 20 seconds then screw in the next lamp. Repeat this process with all sign lamps. If the controller trips and the lamps go dark during this process, the last lamp inserted is most likely bad. Remove this lamp, reset the controller and insert a new lamp. Repeat the process until all lamps are illuminated.

** If the above steps do not address the problem,
call Lumacurve technical support for additional assistance **800-258-1997***

Scenario 4: LED Sign is Flashing

Flashing sign lamps indicate inadequate or irregular power to the sign. When proper power is restored to the sign, the flashing will stop and the sign will resume regular operation.

Questions to be Asked

1. Is the sign at the end of the circuit? *(Possibly receiving less amperage than other fixtures?)*
2. What is the regulator type? *(Is the regulator type switch in the correct position?)*
3. Is the input amperage within the FAA specifications? (You should verify this at the sign as well as the vault) At the sign with your multi-meter set to AC Amps, place the probes on the power cord leads at the terminal strip. The meter will display primary circuit amps. *(2.8 amps minimum is required)*
4. What is the health of your circuits? *(When did you last megger your circuit?)*
5. Are there significant losses to ground? *(Circuits are in a state of constant erosion, compromising the power to lighting fixture)*
6. What is the current size and condition of the isolation transformer? *(undersized or transformers with compromised performance may be the culprit)*

Other Possible Solutions to Trouble Locations

1. Upsize the isolation transformer.
(Larger isolation transformers will not compromise electrical components.)
2. Regardless of the regulator type, move the Regulator Type Switch (**SW3**) to the “SCR” position. This setting is typically more accommodating of irregular or inadequate power.
3. Increase the amperage of the constant current regulator to a minimum of 2.8 amps at the lowest regulator step.

** If the above steps do not address the problem, call Lumacurve technical support for additional assistance **800-258-1997***