



# LED TROUBLESHOOTING



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

*Last update 2/18/16*

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.

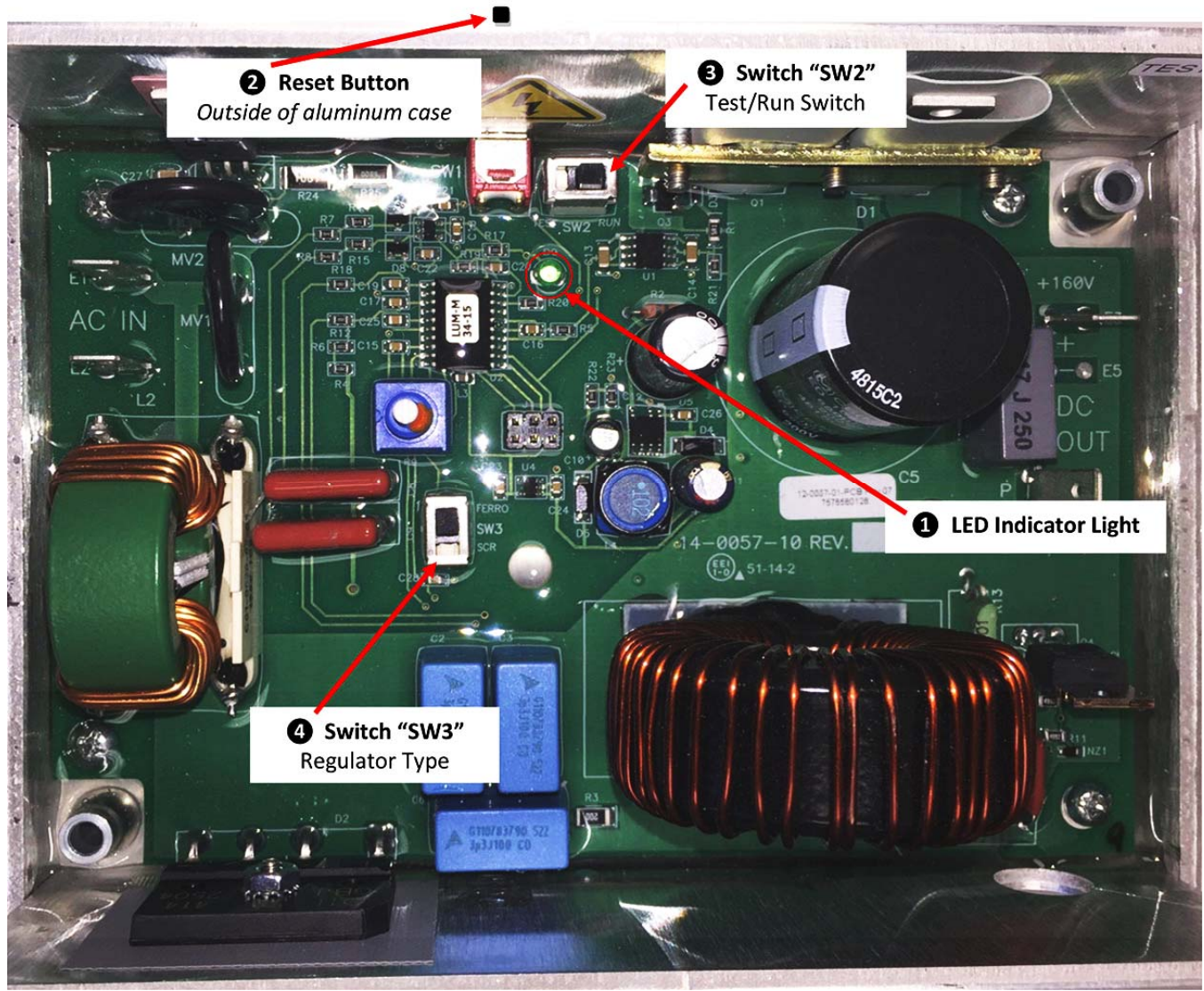
## **Table of Contents:**

| <u>TOPIC</u>                                    | <u>PAGE</u> |
|---|-------------|
| Introduction to the LED Controller .....        | 2.          |
| Description of LED Controller Components .....  | 3.          |
| Scenario 1: LED Sign is Not Lighting.....       | 4.          |
| Scenario 2: LED Sign Needs Reset Regularly..... | 5.          |
| Scenario 3: LED Sign is Flashing .....          | 7.          |

## 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.



## 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*

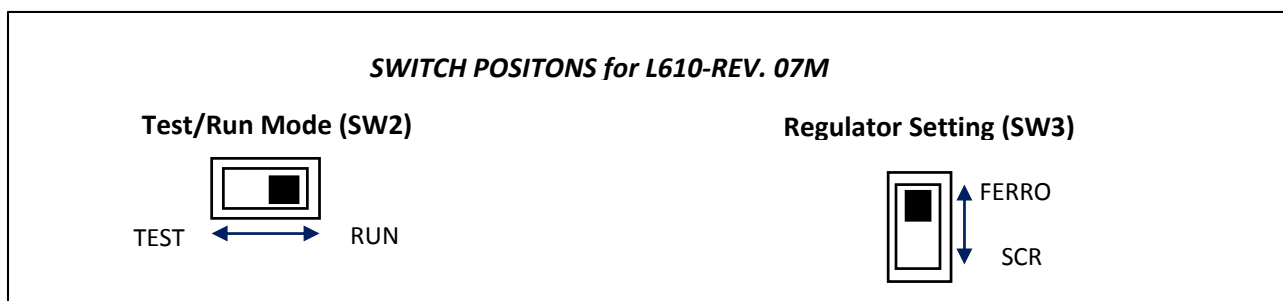
The test switch position is used to disable the "one-out-all-out" lamp feature as required by the FAA.

**"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 type switch is used to set controller programming to match the type of constant current regulator (CCR) powering the sign circuit. By matching the CCR type, the controller will function more effectively when a poor quality sign wave is produced by the CCR. However, we may need to switch the regulator setting once the sign is installed.



## 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 on?  
(either steady or blinking)

**Yes**, Controller is good.

**No**, 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 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:** Select the “SCR” setting on the Controller

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 Two:** Check for loose connections

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

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

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

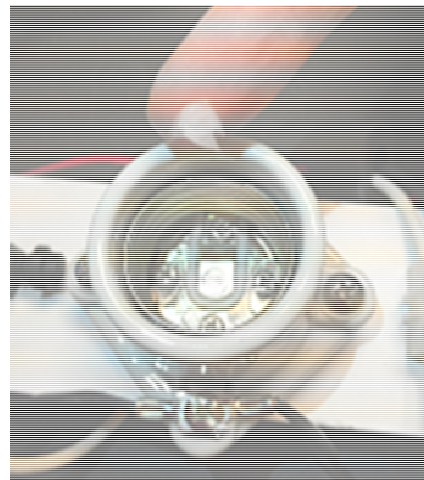


Figure 2, adding dielectric grease to sockets

#### **Step Four:** Investigate “suspect” lamps

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

Replacing all lamps in the sign should eliminate this variable.

*Keep failed lamps and contact Lumacurve for replacements.*

#### **Step Five:** Check DC voltage from the controller to the lamps

With power on, touch the screws on either side of the lamp with your Multi-meter probes set at DC volts. A reading near 170 DC volts is required.

*(red probe on red wire & black probe on black wire)*

#### **Step Six:** Check input amperage coming into the controller

Set your multi-meter to AC amps. With power on, measure the amperage through the power cord at the terminal strip. This is done by placing meter probes on the set screws where the power cord enters the white terminal strip.

The LED controller requires a minimum of 2.8 amps at the lowest regulator setting. For a reading under 2.8A, adjust the regulator to increase the delivered power or try increasing the size of isolation transformer.

#### **Step Seven:** Check DC Voltage from the Controller (with lamps disconnected)

With power on, unscrew a lamp to shut off the controller output. Remove the output wires to the lamps at the terminal strip (Red,Black). Reset the sign. 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.

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

## Scenario 3: 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)*

### 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***