Summary

Choice of batteries, as well as shade installation and setup, can have a significant impact on battery life in Serena® and QS Triathlon® shades. By choosing the right batteries, optimizing the installation environment, and optimizing the Homeworks® QS or RadioRa® 2 system configuration (where applicable), you can expect a shade to require fewer battery replacements over the course of its life.

Battery Life Checklist

The checklist below and explanations that follow can be used to help ensure the longest possible battery life for a shade.

1.1 Batteries:

- Replace all the batteries in a shade at the same time with brand new batteries from the same package. Brand new batteries will be unopened, and have an expiration date of no less than 8 years from the date of installation.

- Choose batteries from a well-known, high-quality manufacturer. **DO NOT** mix batteries from different manufacturers or of different types (i.e. Carbon-Zinc and Alkaline).

- Use alkaline batteries for shades requiring D-size batteries – they will last longer than other types. At the time of this publication, an appropriate lithium equivalent does not exist in a D size. Lutron recommends the use of Rayovac ReadyPower or Duracell Coppertop alkaline D batteries.

- Use Lithium batteries for AA shades – they will last longer than other types.

- Don’t use batteries with dents, scratches, damages to the label, corrosion at the metal terminals, or leakage.

1.2 Shade:

- Know when to replace your batteries by observing the shade button blink codes and shade movement speed (see the following pages for more information).

- Make sure the shade is clear of physical obstructions and snags throughout its travel.

- HONEYCOMB ONLY: Don’t set the open limit too tightly. The fabric shouldn’t “relax” after opening, and the drive shouldn’t blink after opening.

- Note that how often the shade is moved will have a noticeable impact on battery life; Lutron battery life estimates assume two cycles (two full up & down motions) per day.

1.3 System:

- Where possible, keep shades on their own main repeater (and their own channel). Sensors and other devices sharing a channel have the potential to keep a shade awake more often, resulting in shorter battery life. See the following pages for more information.
Battery Life Expectancy Estimate in SCT

The battery life estimates provided in the SCT are intended to set an expectation for typical battery life for each particular shade configuration. Actual battery life will vary with the batteries used, the application, and environment. As indicated by the arrows above and below the colored life estimate bar, the range is provided based on varying assumptions of application and environment, particularly with respect to the size of the system and the frequency of shade movement. Sensors are identified in particular, as they have a more significant impact on shade battery life than other devices.

Hibernation and Feedback

Serena® and Sivoia® QS Triathlon® battery-powered shades have internal battery-monitoring technology that is intended to reduce the probability of battery leakage by entering a hibernation state when batteries are near end-of-life. In hibernation, the shade sleeps, listens for radio commands, and provides LED feedback (see table 3.1 below for more information about LED blink codes).

Typically, the following sequence of events will occur when batteries are reaching end of life:

1. The shade button will blink RED once every five seconds (item 2 in table below)
2. The shade will start to move at ½ speed, and the button will light solid RED throughout movement (item 3 in table below)
3. The shade will no longer move (hibernation), and the button will light solid RED when a command is received

Blink Code | Meaning | Possible Causes | Troubleshooting Steps
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RED-GREEN-RED-GREEN | Hardware Reset | • Batteries replaced • Obstruction to Movement/Motor Stall | Replace Batteries Remove Obstructions
RED blink every 5 seconds | Low Batteries: expect to replace within the next 3 months | • Batteries are Dying • Low Quality Batteries • Unmatched Battery Stack | Replace Batteries
Solid RED during Movement | Very Low Batteries: expect to replace within the next 2 weeks | • Batteries are Dead • Low Quality Batteries • Unmatched Battery Stack | Replace Batteries
Eight fast RED blinks per second for 15 seconds | Obstruction | • Obstruction to Movement | Clear Obstruction
Constant RED for 15 seconds after reset | Excess RF Activity on Channel | • Neighboring Lutron System • Excess Traffic on Shade Channel | Change Channel*

*For more information on changing the channel of your shade, refer to Application Note #477

Table 3.1 - LED Blink Codes
Shades spend the majority of their life in a sleep state, in which they’re conserving energy and waiting for a radio signal to issue a raise or lower command. Once a radio signal of Lutron origin is detected, the shade wakes up and decodes the message to determine if it should take action based on the command it processed. Each time this occurs, a small amount of energy is consumed. As a result, shades consume more energy in areas with more system radio traffic on the shade’s channel.

When a shade is part of a Lutron RadioRA® 2 or Homeworks® QS system, it is likely to consume more energy when dormant, as it will be responding to more radio signals than would a standalone shade. In a typical system, this impact is minimal—but as systems grow larger (especially when there are sensors included), the toll on battery life does as well. Sensors are particularly prone to having this impact, as they are transmitting much more frequently than other devices (such as keypads, which only transmit during direct user interaction).

To mitigate this impact in systems with more than one main repeater/processor, it is possible to change the channel on which shades operate* and effectively isolate them from any other RF activity in your area:

* For information pertaining to RF channel-change procedures for RadioRA® 2 main repeaters, Homeworks® QS processors, Serena® and Sivoia® QS Triathlon® battery-powered shades** and related controls, please contact Lutron Technical Support.

** Battery-powered shades have an internal mechanism to detect excess radio traffic and suggest a channel change via blink code. Refer to Table 3.1 on page 2 for more information.