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For Your Information ...



Battery Backup and Sivoia QED™

Summary

Some applications of Sivoia QED use window shades and draperies to increase both privacy and security. In these types of applications, it may be desirable to move Sivoia QED shades and draperies during a power failure. This can be accomplished using an Uninterruptible Power Supply (UPS). With an additional SVQ-CCI-8 and a simple relay, it is possible to make Sivoia QED move *automatically* in the event of a power failure (or power returning).

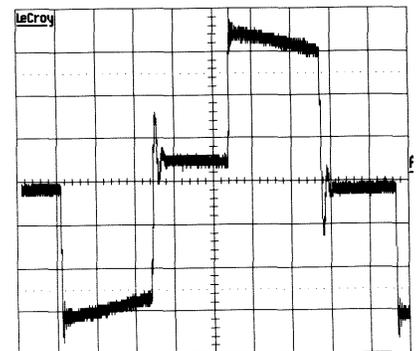
There are four important variables that need to be considered when choosing a UPS: voltage (V), waveform, power delivery (VA), and runtime. For US markets, we recommend using the APC Smart-UPS 1500.

Voltage

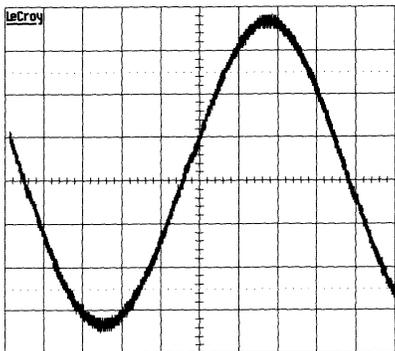
The UPS should be designed to operate at the same voltage as your power panel or transformers. (ex, 120v for USA, 230v for Europe). For US markets, the recommended APC Smart-UPS 1500 is a 120v device, suitable for powering a SVQ-10-PNL.

Waveform

When operating off the battery, some UPSs will produce different output waveforms than others. Many UPSs will produce a waveform similar to the one shown to the right, which is often referred to as “modified sine”. While this “modified sine” waveform is suitable for a personal computer, it will not work properly with devices such as transformers.



“Modified Sine” - NO!



“Pure Sine” - Yes

Since Sivoia QED is powered by a low voltage transformer, a UPS that generates the “pure sinewave” shown to the left **must** be specified.

NOTE: Using a UPS that is not “pure sinewave” will cause the transformer to overheat and vibrate or buzz when the UPS is running from the battery, which may damage both the UPS and the transformer!

Power Delivery

Power delivery is typically rated in VA. The UPS should be capable of supplying more VA than the Sivoia QED transformer(s) that it is powering. For example, if the UPS is powering a SVQ-10-PNL, then the UPS should be capable of providing at least 800 VA of power.

Runtime

Most UPS manufacturers will provide a table allowing you to estimate how long the UPS will be able to run off the battery based on the load (measured in VA).

Condition	Load (approx)
SVQ-10-PNL with 10 EDUs (running)	< 800 VA
Individual Transformer (running)	< 100 VA

We recommend the APC Smart-UPS 1500 (model #SUA1500, ~\$500) because it outputs a pure sine waveform, and has the correct voltage and power delivery. The table to the right is an excerpt from APC's online UPS runtime approximation for the SUA1500.

Load	Runtime (approx) of APC Smart-UPS 1500
minimum	5 hours
100 VA	3 hours
800 VA	10 minutes

This information allows us to estimate the amount of runtime that will be provided by our UPS:

- We should expect up to 5 hours of runtime off the battery backup.
- Each time the Sivoia QED shades or draperies are moved, the runtime will be reduced.
- By making some assumptions, we can estimate that each time the shades move, the runtime is reduced by 15 minutes:

Assume a shade takes 30 seconds to fully open or close.

Assume a completely full SVQ-10-PNL (10 shades) is being supplied power by the UPS.

The chart from APC says that at 800 VA (full panel), the UPS will last only 10 minutes.

Calculate the ratio: $(30 \text{ sec/motion}) \times (5 \text{ hrs}) / (10 \text{ min}) = 15 \text{ minutes/motion}$.

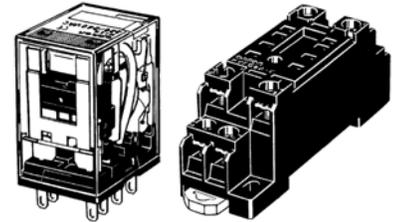
Using these assumptions, the UPS will have a runtime of approximately 5 hours. Every time the shades are moved, the runtime will be reduced by 15 minutes.

Automatic Operation

With the use of a SVQ-CCI-8 and a high-voltage relay or contactor (double throw), it is possible to make Sivoia QEDs move automatically in the event of a power failure.

We suggest the following (for 120v applications):

- Omron MY2N-AC110/120(S) relay
- Omron PYF08A-E relay socket
- SVQ-CCI-8



This relay, socket, and their datasheets are available from Mouser Electronics (<http://www.mouser.com/>). Other suppliers such as Grainger (<http://www.grainger.com/>) (Omron LY2N-AC110/120 and Dayton 2A582-M) and McMaster-Carr (<http://www.mcmaster-carr.com/>) (#69585K42 and #7122K22) have similar products.



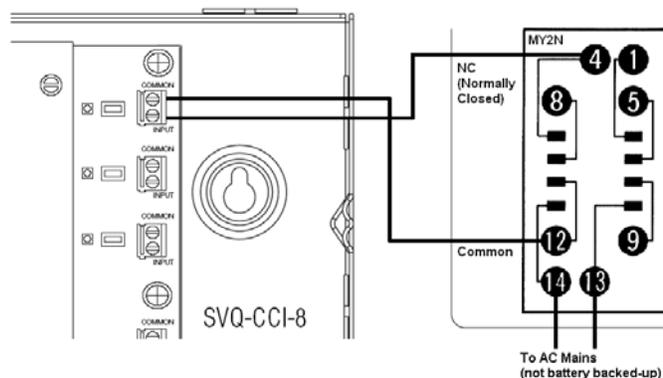
DANGER! Always turn off the circuit breaker or remove the main fuse from the power line before doing any work. **Failure to do so can result in serious personal injury.** Do not connect line/mains voltage power to low-voltage terminals. **Improper wiring can result in personal injury or damage to equipment.** All wiring should be done using National Electric Code wiring methods. Check with your local electrical inspector for the local code requirements and wiring practices allowed in your area.

Operation:

- When power is applied to the relay by the line voltage, the coil will be energized and the Normally Opened contact will be asserted.
- When the power fails, the UPS will kick in and continue powering the shades. The relay, however, will lose power, and the coil will de-energize. When this happens, the Normally Opened contact will be released, and the Normally Closed contact will be asserted.
- When the Normally Closed contact is asserted, this will trigger the SVQ-CCI-8 to move the assigned EDUs.

How to wire:

- Wire the SVQ-CCI-8 to the Sivoia QED communications link as per the instruction sheet.
- Wire the relay's "Normally Closed" output to the appropriate input on the SVQ-CCI-8 (for example, if you want the Sivoia QEDs to open when power is lost, then wire to the SVQ-CCI-8's open input).
- Similarly, you can use the "Normally Opened" output to have the Sivoia QEDs move when power returns.
- Wire the relay's input to the **NON-battery-backed-up** AC mains.



Worldwide Technical and Sales Assistance

If you need assistance call the toll-free *Lutron Technical Support Center*. Please provide exact model number when calling.

24 hours/day + 7 days/week
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