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Multi-Voltage Rechargeable Battery Packs

IMPORTANT: Charge battery for at least five hours prior to first use.

When sizing a battery pack for your project, the two values that must be considered are instantaneous power consumption and overall power consumption.

Instantaneous Power Consumption

This number refers to the power being consumed at any given time. It is generally rated in Watts (W), which for DC power is equivalent to voltage (V) multipled by amperage (A). Each battery pack and voltage level has limits on the instantaneous power output, as follows:

- Battery-22Wh at 5VDC: 10W (2A)
- Battery-22Wh at 12VDC: 15W (1.25A)
- Battery-44Wh at 5VDC: 10W (2A)
- Battery-44Wh at 12VDC: 38W (3.2A)
- Battery-44Wh at 24VDC: 38W (1.6A)

Overall Power Consumption

The overall power consumption refers to the total power being consumed between battery charging cycles, in Watt-hours (Wh). This number can be roughly estimated using the initial instaneous power consumption (in Watts, as calculated above) multiplied by the amount of time the lights will be powered for.

The functional power capacity of each battery is 50% of the total electrical capacity. This is due to the nature of lithium ion batteries, and these batteries have a built in shut off to protect battery life. Furthermore, as a battery discharges it decreases the output voltage, which decreased the overall brightness of the lights. We have optimized these batteries for LED usage, to maintain an optimal level of brightness when in use. For that reason, the following functional power capacities are recommended when estimating total capacity for an installation:

- Battery-22Wh: 13Wh
- Battery-44Wh: 28Wh

Examples

- You have a 1.6A, 5V load. 1.6A*5V=8W, which is less than 10W, so it matches the instaneous power consumption of both batteries. It will run for 13Wh/8W =1.6 hours on the battery-22Wh or 28Wh/8W=3.5 hours on the battery-44Wh.
- You have a 2A, 12V load. 2A*12V=24W, so it should only be used with the battery-44Wh based on instantaneous power consumption. It will run for 28Wh/24W=1.2 hours.