

BATTERY TIPS



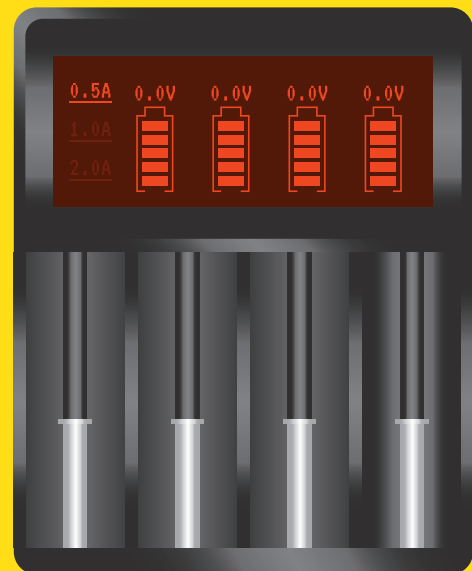
Battery Inspection

- Dents and scratches can warp batteries and impair electrical properties
- Heat shrink wraps work as a protective sleeve, that if broken, can short batteries
- Verify if batteries are authentic; standards can vary depending on manufacturer
- An 18650 battery generally takes about 4 hours to charge; longer times can mean it's time to change batteries



Charging Tips

- Smart chargers allow you to monitor your batteries and are the safest option
- Slow charging on 0.5 amps vs. 2.0 amp, will help prolong the life of your batteries
- Over-charging protected chargers stop charging a battery once process is complete
- An 18650 battery generally takes about 4 hours to charge; longer times can mean it's time to change batteries



Storage

Do

- + Store in a plastic container/case
- + Keep out of reach of children
- + Take off charger when batteries are full
- + Store in a cool dry place

Don't

- Store loose batteries in your pocket
- Store loosely in a purse or backpack
- Leave them in a hot car
- Leave/store batteries on your charger

BUILDING GUIDE



Understanding Your Batteries

mAH → A battery's energy capacity; usually more mAH means more battery life
(The size/capacity of the watertower)

Amps → The amount of energy able flow through the system (The amount of water flowing through the pipe)

Volts → The energy output of a battery or what makes electric charges move
(This is the water preassure)

Amp Guideline

The general or average continous discharge rating of a 18650 Battery is 20 amps. In order to stay in a "safe zone" you should allow for a 5 amp buffer. This will prevent batteries from overheating/venting

Ohms Law

V = voltage

I = amps

R = resistance (Ohms)



Ohm → The measure of resistance that a wire has (The size of the pipe carrying the water)

$$V = I \times R$$

$$I = \frac{V}{R}$$

$$R = \frac{V}{I}$$

These rules apply mainly to **mechanical devices**. Regulated devices have safety features in place to prevent **most** issues.

Dual Parallel 4.2 volts

1.0 ohm - 2.1 amps
0.8 ohm - 2.63 amps
0.6 ohm - 3.5 amps
0.3 ohm - 7 amps
0.25 ohm - 8.4 amps
0.2 ohm - 10.5 amps
0.15 ohm - 14 amps
0.14 ohm - 15 amps

Single 4.2 volts

1.0 ohm - 4.2 amps
0.8 ohm - 5.25 amps
0.6 ohm - 7 amps
0.3 ohm - 14 amps
0.25 ohm - 16.8 amps
0.2 ohm - 21 amps
0.15 ohm - 28 amps
0.14 ohm - 30 amps

Dual Series 8.4 volts

1.0 ohm - 8.4 amps
0.8 ohm - 10.5 amps
0.6 ohm - 14 amps
0.3 ohm - 28 amps
0.25 ohm - 33.6 amps
0.2 ohm - 42 amps
0.15 ohm - 56 amps
0.14 ohm - 60 amps

 = Caution Zone