WHAT IS LITHIUM ION?

Lithium-ion (Li-ion) is a type of rechargeable battery commonly used in high portable electronic devices such as smartphones, laptops, and cameras and some home application we are also use in car battery. They are also used in **electric vehicles**, **renewable energy storage systems**, and other applications.

Lithium-ion batteries have a high energy **density**, which means they can store a lot of energy in a relatively small and **lightweight package**. They also have a long cycle life, which means they can be charged and discharged many times before they need to be replaced. Because it is rechargeable.

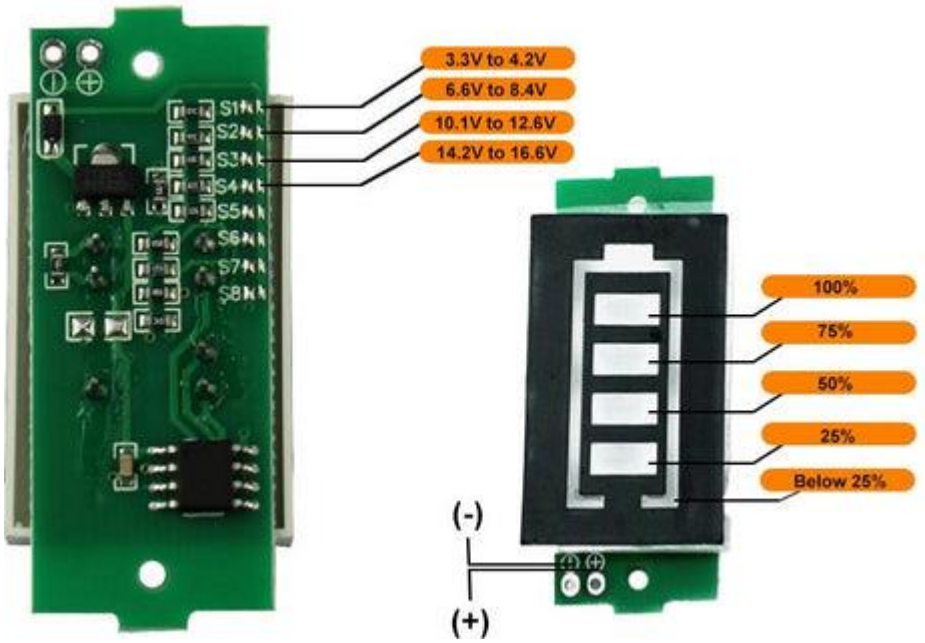
The basic principle behind a lithium-ion battery is the movement of lithium ions from the positive electrode (cathode ion) to the negative electrode (anode ion) during charging, and the reverse process during discharge. The movement of these ions generates an electrical current that can be used to **power devices** like phone, power bank. Lithium-ion batteries are known for their fast charging times and low self-discharge rates because it have fast charging capacity , which make them ideals for use in portable **electronic items**.

LITHIUM ION USE AS BATTERIES

Lithium-ion batteries are used in a most of the applications, including portable electronic devices, electric vehicles, and renewable energy storage in your system. Here is a brief overview to how lithium-ion batteries are used as a battery which are given below:

1. **Charging**: Lithium-ion batteries are charged using a li-ion battery charger or other device that provides a specific voltage and current to the battery. The charger is designed to check that the **battery** is not overcharged, which can cause damage into the battery or even result in a fire or it will **harm your system**.
2. **Discharging**: When the battery is connected to a device, the stored energy in the battery is used to power the device and after we use it the battery discharges, the voltage decreases until it reaches a **pre-determined** minimum level, at which point the battery needs to be recharged at some point of time.
3. **Protection**: Lithium-ion batteries have built-in protection circuits that prevent **overcharging**, over-discharging, and **short circuits**. These circuits help to ensure the safe operation of the battery and prevent damage to the device it is powering and for extra supply.

LITHIUM BATTERIES INDICATOR



The lithium-ion battery percentage indicator is a feature widely found in electronic devices such as smartphones, laptops, and tablets. It shows the remaining charge of the battery as a percentage, usually displayed in the status bar of the **device**.

The percentage indicator is a useful tool for users to determine how much battery life is left and when they need to recharge their device. It is based on the voltage of the battery and the capacity of the battery, which are both measured by the device's battery **management system.**

As the battery discharges, the percentage indicator decreases. The percentage indicator can also be used to monitor the battery value and a battery that consistently shows a lower percentage than expected may indicate that the **battery capacity** has decreased over the pass time.

It's important to note that the accuracy of the percentage indicator can be affected by factors such as the age of the battery, **temperature**, usage patterns. Short circuit when it was fall down therefore, it's a good idea to use the percentage indicator as a general guide and not rely on it as the only indicator of **battery life**.

SOME IMPORTANT POINTS ARE MENTION

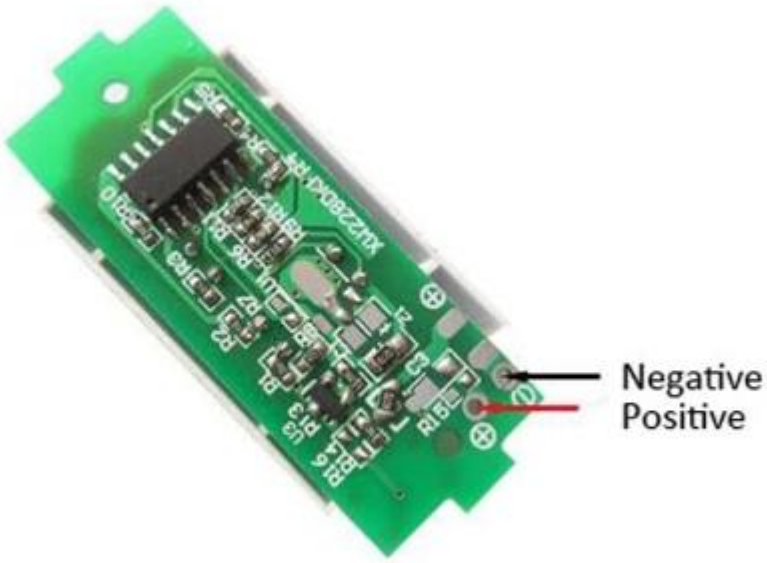
There is four line indicator each line indicate **25%** of battery range. First line show **25%** and second line show you **50%** of capacity, third show **75%** and forth show **100%** capacity.

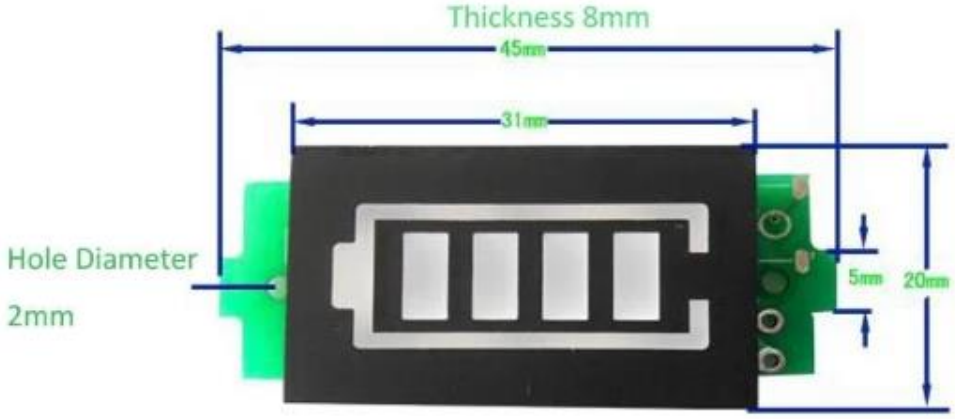
Here we can see we can use it to measure **multi range** of battery like 3.7v, 11v, 16v, 32v.

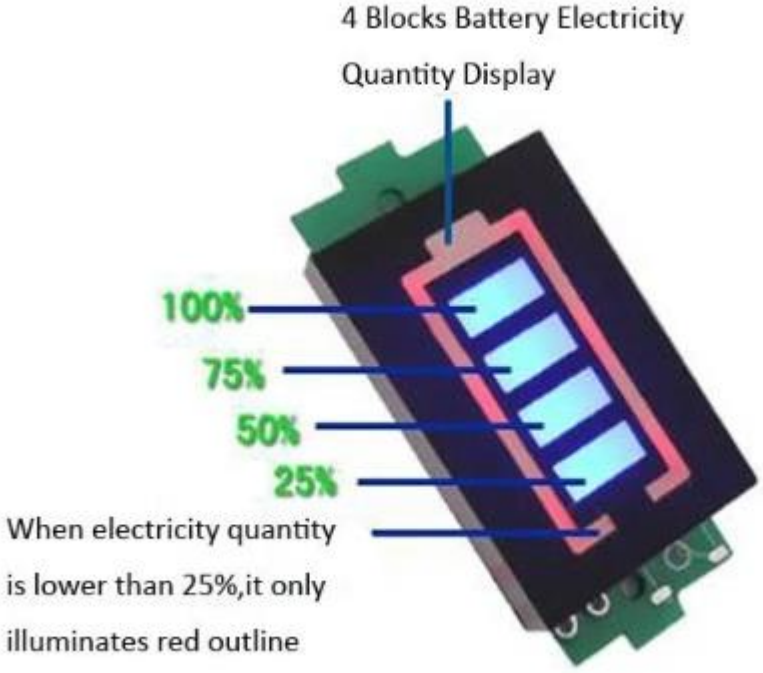
- Slot 1:- if you want to short S1 then you can measure **3v to 4.2v**
- Slot 2:- if you want to short S2 then you can measure **6v to 8.4v** .
- Slot 3:- If you want to short S3 then you can measure **1v to 12.6v** .
- Slot 4:- If you want to short S4 then you can measure **2v to 16.6v**.

Display Electricity Quantity Parameter:

1.When battery voltage is over N*3.3V,it will illuminate 1 block electricity quantity
(note:N represents battery quantity)
2.When battery voltage is over N*3.5V,it will illuminate 2 blocks electricity quantity
3.When battery voltage is over N*3.7V,it will illuminate 3 blocks electricity quantity
4.When battery voltage is over N*3.9V,it will illuminate 4 blocks electricity quantity
5.When battery voltage is less than N*3.3V,4 blocks display will be off;it represents battery
is less than 3.3V,and you can charge the battery

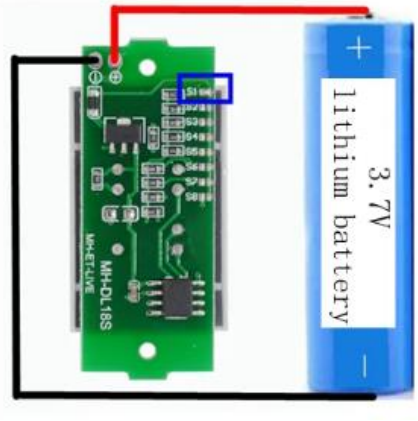

Negative
Positive

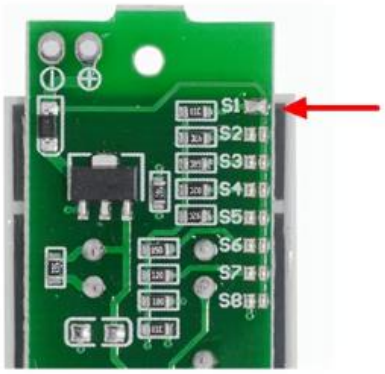

Thickness 8mm
45mm
31mm
Hole Diameter
2mm
5mm
20mm


4 Blocks Battery Electricity
Quantity Display
100%
75%
50%
25%
When electricity quantity
is lower than 25%,it only
illuminates red outline

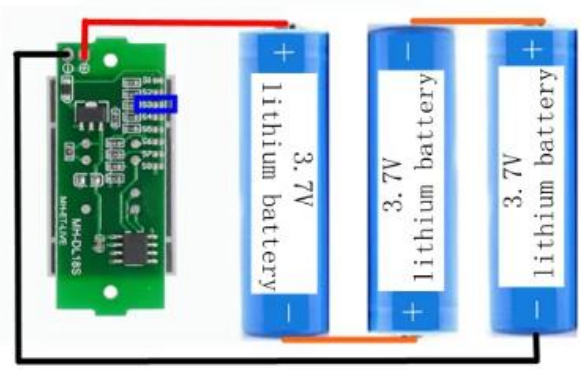
S1-S8 optional pads can only be connected one, not allowed
At the same time, 2 or more simultaneous shorts occur

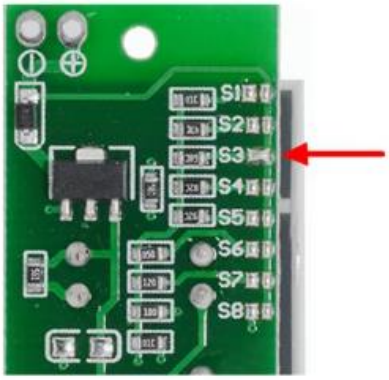
1-cell lithium battery connection:





3-cell lithium battery connection:





1、 Application areas: 1S to 8S lithium battery, the corresponding voltage battery can be (specifically as a table)

	25%	50%	75%	100%
1S	3.3V	3.5V	3.7V	3.9V
2S	6.6V	7.0V	7.4V	7.8V
3S	9.9V	10.5V	11.1V	11.7V
4S	13.2V	14V	14.8V	15.6V
5S	16.5V	17.5V	18.5V	19.5V
6S	19.8V	21V	22.2V	23.4V
7S	23.1V	24.5V	25.9V	27.3V
8S	26.4V	28V	29.6V	31.2V

3. Usage: Connect the positive and negative ports of the display panel to the positive and negative ports of the battery under test. The digital display tube will display the real-time battery power. Note that after connecting a few series of lithium batteries in series, it is necessary to connect tin to the corresponding pads. For connect tin to the corresponding pads. For example, if a 2S battery is measured (ie, two 3.7V lithium batteries are connected in series), a

short circuit on the pad corresponding to S2 of the board is required.

4. Pay attention to the number of corresponding battery strings and use them within the corresponding voltage range. Do not exceed a voltage of 4.3*N at most. (For example, if the tin on the pad of S3 is selected, the maximum voltage detected by the module should not exceed 4.3*3=12.9V)

The battery voltage is greater than N × 3.3V, and the battery voltage is 1 grid. (Note: N is the number of battery segments)

Display the quantity of electricity parameter:

(Note: N indicates the number of batteries)

1. When the battery voltage exceeds N * 3.3V, it will illuminate 1 block

2. When the battery voltage exceeds N * 3.5V, it will illuminate 2 pieces of electricity

3. When the battery voltage exceeds N * 3.7V, it will illuminate 3 blocks

4. When the battery voltage exceeds N * 3.9V, it will illuminate 4 blocks

5. When the battery voltage is less than N * 3.3V, the four display screens will be turned off, indicating that the battery power is less than 3.3V and needs to be charged.