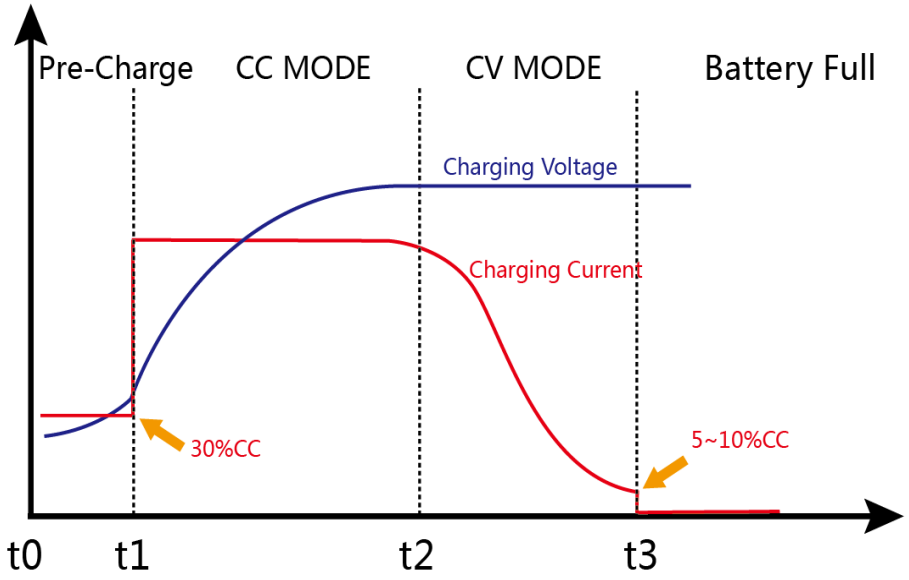
I. Overview

In the original model plus MCU control, so more intelligent charger, but also to provide a more customizable features - charging curve, timing, and other specific capacity, personalized charging function.

1602LCD also added a screen can display the battery voltage during charging, charging current, charging time, charged capacity, and fault information when a fault occurs, allowing the user to see more intuitive charger and battery charge status. It is conducive to maintenance charging of the battery to protect the battery life.

Second, the default charging curve



1. FIG default charging curve

The default current charging curve as shown in FIG. Details are as follows:

- t0 ~ t1: preconditioning phase

Charger will charge the battery in the first 20 seconds after the power connected to the battery 30% of the maximum current. 20 seconds after the start detect the battery voltage, if the battery voltage is higher than the set value (default iron lithium battery 2.6V / cell, polymer battery 3V / cell), constant current charging started.

- t1 ~ t2: Constant current charging phase

At this time, the maximum current to the battery by the constant current charging, the battery voltage is gradually increased. Reached the set value (default iron lithium battery 3.65V / cell, polymer battery 4.2V / cell) After the constant voltage charging starts.

- 2.3 t2 ~ t3: constant voltage.

At time t2, the voltage of the battery has reached nearly full voltage, but the charge capacity has not reached 100%. So in this case the constant voltage charging (avoiding overcharge), continue charging the battery. As the charging time increases the charging current gradually decreases, when the charging current is less than 5% to 10% of the maximum charging current (t3 time point), the charge capacity of the battery has reached about 98%. In this case determines that the battery is fully charged.

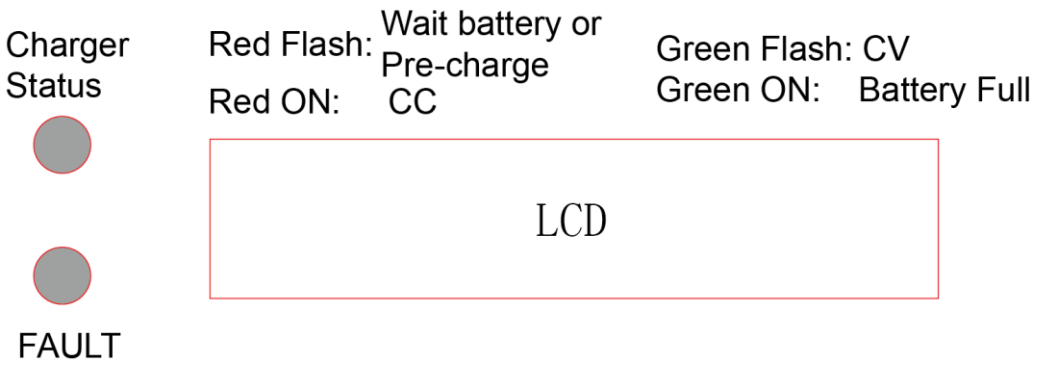
- t3: the battery is full. Charging charging output OFF, the charging current is zero.

If the charger does not disconnect after the battery is full at time t3, the charger will automatically detect the battery voltage, if the battery voltage is less than the set value (default iron lithium battery 3V / cell, polymer battery 3.7V / cell), the charger will automatically to recharge the battery, the charging process from the start t0.

The default timer charging time (t0 ~ t3) was 10 hours.

Note: In general, this default charging curves for almost all lithium batteries. If the customer has a special battery charging curve requirements, user requirements can also be customized to accept, and to provide privacy services. Please also make client confidentiality to our company.

Third, the protection status and displays instructions



A schematic view of a display panel 2. FIG.

A display panel on the charger 2 shown in FIG. The above two LED-- left is the charging status indicator (Charger Status), for indicating the state of charge; The following is a fault tips (Fault), used to prompt the fault condition. Details are as follows:

Charging status indicator	Flashing red waiting cell access, or being pre-charge stage constant-current charging	
	phase red light green light flashes the green light is constant-voltage charging phase the	
	battery is fully	
Fault indication Off		No fault, the charger is working properly
	Red light fails, the charger output is cut off	

Display box on the right panel is an LCD display, display is described below:

Power display

The first line "GZUY" Our name is short for the second

line charger models.

Display the normal charge

The first row shows the left half of the current battery voltage, also the current charging voltage. The right half of the charging current is the current. The second line of the left half portion shows the charged capacity, the right half of the time is charged.

No-load display

After the charger power load more than 10 seconds, the output will be turned off, while the contents of the LCD display as FIG. The first line shows the load, the second row displays the time and the charged capacity. Normal charging state can be automatically restored after the battery charger is connected correctly.

Battery is fully charged state

After the battery is fully cut off the charger output, LCD display contents as FIG. The first line shows the battery is fully charged, the charging time and the second line of the display capacity.

Reverse polarity protection display

Charger output of the battery is detected reverse, the output will be cut off, into the protected status, LCD display contents as FIG. The first row shows the reverse state, the second row displays the time and the charging capacity. After the battery charger is connected to the normal normal charging state can be automatically restored.

! Note: To ensure the reliability of reverse polarity protection, please **Charger before starting** ,or **Charger no-load display** The battery is connected.

Over-temperature protection display

The charger internal temperature exceeds 80 ℃, will stall protection, cut off the output, LCD display contents as FIG. The first line shows overtemperature second row shows the time and the charged capacity. After the inside temperature drops below the charger 60 ℃, automatically reverts to the normal charging state.

Overvoltage protection

If the charger detects a charging voltage of the battery voltage exceeds the limit (default iron lithium battery 3.7V / cell, polymer battery 4.3V / cell), it will cut output into the protected status. As the display content of FIG. The first row shows an overvoltage condition, the second row displays the time and the charging capacity. After the overvoltage troubleshooting properly connected and the battery charger automatically resume normal charging state.

Overcurrent protection

If the charger detects the charging current is too large (120% default maximum charging current), the output will be cut into the protected status. Show the internal above. The first row shows an overcurrent condition, the second line shows the time and the charged capacity.

Over-current protection self-locking state, the need for troubleshooting Restart charger To resume charging.

Short circuit protection

When the charger output short circuit, the output will be cut off into the protected status, LCD display contents as FIG. The first line shows the short-circuited state, the second row displays the time and the charging capacity. Short circuit protection **self-locking state, after troubleshooting Need to restart the charger To resume charging.**

Charge timeout

If the charging time exceeds 10 hours, the charger output cut off into a standby state, LCD display contents as FIG. The first line shows the **time-out, the second row displays the time and capacity. need Restart charger Before it can re-charge the battery.**