M8D

Manual V1.0

2024.05

ToolkitRC

www.toolkitrc.com

ToolkitRC Technology (Shenzhen) Co., Ltd

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Introduction

Thank you for purchasing the M8D balance charger, please read this manual carefully before use.

Key Points

Tips Important Information

Further information

To ensure you have the best experience with this product please scan the QR code below to stay up to date with news, information and firmware updates for your charger. Or visit www.toolkitrc.com.

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Safety

1. M8D allows an input voltage of DC 10.0V-49.0V. To ensure that the power supply voltage is consistent, pay attention to the positive and negative polarity of the power supply before use.
2. Do not use this product in hot or humid environments, Keep away from flammable liquids and gases.
3. Never leave charging batteries unattended.
4. When not in use, please turn off/unplug the device.
5. When using the charging function, please set a current that matches the battery performance envelope. Do not set an excessive current for charging to avoid damage to the battery. Check the guidelines of your battery's manufacturer for correct charging instructions.

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Product description

M8D is a touch screen balanced charger product, the total charging power can reach 1600W, using IPS bright display, capacitive touch screen plus roller encoder coexist, more convenient operation.

- Charge, discharge and balance management of LiPo, LiHV, LiFe, Lion LTO 1-8S, NiMh 1-20S, PB 1-15S batteries.
- DC power supply: 10.0-49.0V MAX 1600W.
- Charging power: MAX 30.0A @MAX800W*2 ASYN
  MAX 50.0A @MAX1600W SYNC
- Discharging power: MAX 10A@40W*2 normal
  MAX 30A@800W*2 recycle
- Charging accuracy: <0.005V.
- Balancing current: 2000mA.
- Built-in 65W USB-C fast charger.
- Lithium battery cut-off voltage can be set (TVC).
- Automatically allocate input power.
- Multi-language system, can set 11 kinds languages.
- Can record 10 commonly used batteries.
- Can record 3 groups of commonly used power sources, convenient and fast translation.

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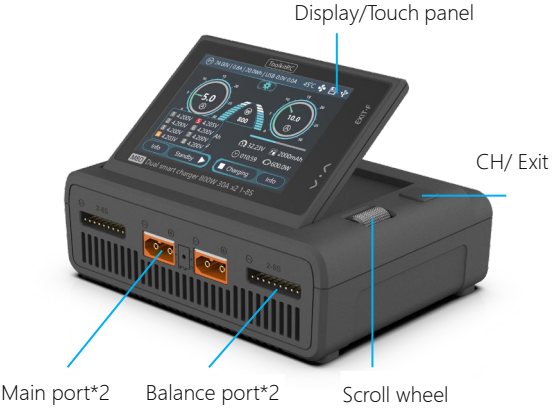
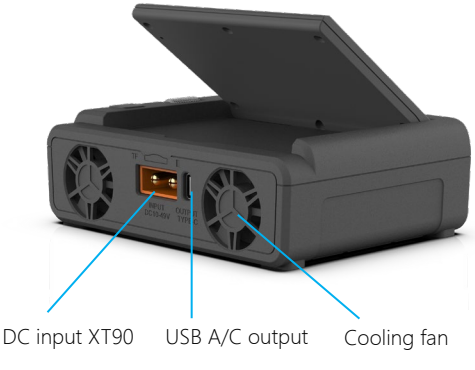
M8D Layout



Front



Back

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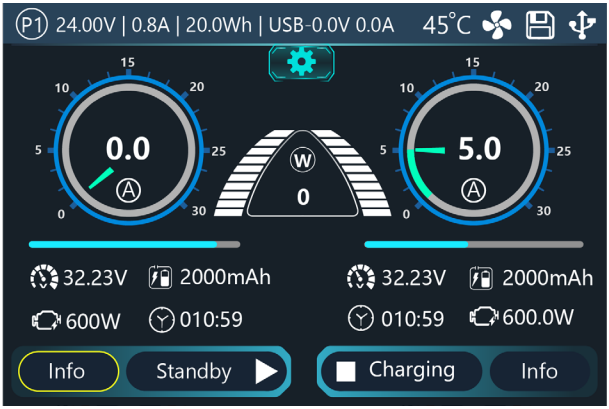
Quick start

1，Connect the device to DC 10-49V power source.

2，The screen shows the boot logo for 2 seconds.

3，An audible tone will accompany the boot sequence.

4，After booting up, the screen enters the main interface as shown below:



4. Touch the main interface. Or scroll [Scroll Wheel], select the desired function, and press [Scroll Wheel] to determine the current function.

5. Touch the [Settings icon], or press and hold [Scroll Wheel] to enter the system settings.

6. Touch the [Info] button, or scroll the [Scroll Wheel] to select the [Info] button to display the voltage and internal resistance in the corresponding channel.

7. Touch [Status], short press [Scroll Wheel] to select [Status], or touch [Status] to select the charging task when the channel is idle. You can adjust and end the

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work while the channel is working.

8. Press the [Exit Button] to end the modification or return to the previous interface.

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1. Short press [Scroll Wheel] once to confirm the function.

2. Long press [Scroll Wheel] for 2 seconds, it is the delete key function.

3. If any key is successfully operated, there will be a didi sound.

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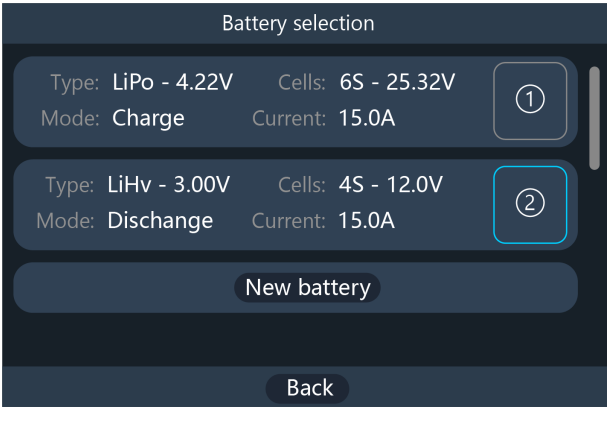
Charging settings

In the main interface, select and short press [Scroll Wheel] to enter the charging function. If the "Battery selection" is turned on in the main setting interface, 10 battery records can be saved, and the following interface is displayed. Otherwise, it will default to the first battery record, skip this step.



1, Battery type

Select the battery that has been set, or press [New Battery], select the battery number to enter the new battery setting interface, which is displayed as follows.

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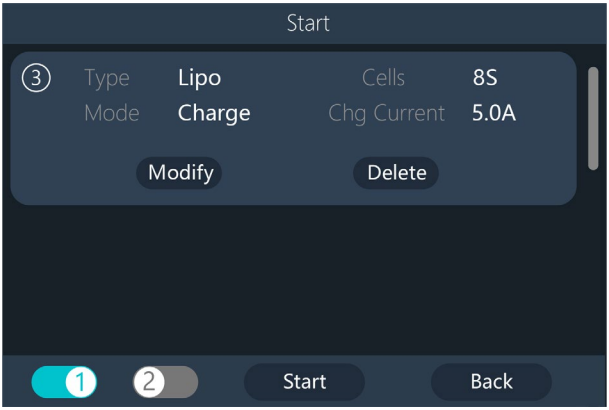
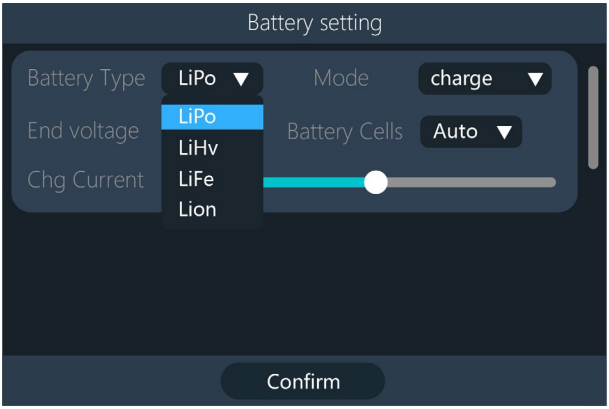


When you need to modify the battery settings, select [Modify] to modify the battery type, which is displayed as follows.



The charger supports charging 7 kinds of batteries: LiPo, LiHV, LiFe, Lion, LTO, NiMH, and PB. after selecting the battery that matches the actual battery. Press [Confirm] takes effect and rewinds to the previous page.

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Important

1, Choosing the wrong battery type for charging may damage the battery, charger, burn, and other dangers, please be sure to choose carefully.

2、Do not charge batteries that are not labeled with a battery type.

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Nomenclature

1, **Lipo**: Often called a lithium polymer battery, a battery with a nominal voltage of 3.70V and 4.20V when fully charged.

2, **LiHV**: Often referred to as a high-voltage lithium battery, a battery with a nominal voltage of 3.85V and 4.35V when fully charged.

3, **LiFe**: Often referred to as a lithium iron battery, a battery with a nominal voltage of 3.30V and 3.60V when fully charged.

4, **Lion**: Often referred to as a lithium-ion battery, a battery with a nominal voltage of 3.60V and 4.10V when fully charged.

5, **LTO**: often referred to as a lithium-ion battery with a nominal voltage of 2.40V and a fully charged battery of 2.70V.

6, **NiMh**: often referred to as nickel-hydrogen battery, nominal voltage 1.20V.

7, **PB**: often called lead-acid battery, nominal voltage 2.00V.

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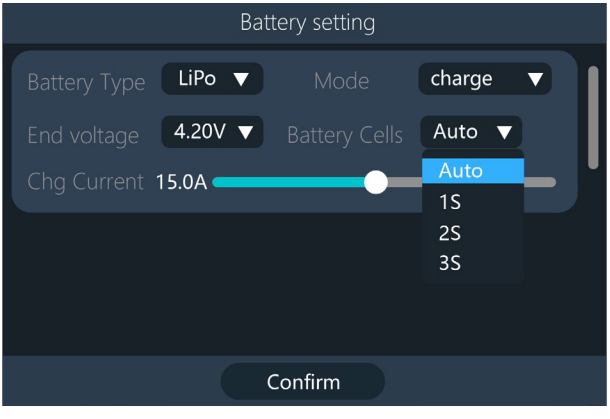
2，Number of cells

Move the cursor to the position of “Battery Cells”, short press [Scroll Wheel] to modify the number of battery cells. The display is as follows:



Scroll the [Scroll Wheel] to adjust the value. When set to [Auto], the charger will automatically identify the number of strings of connected batteries based on the voltage of the battery connected to the output port. Press [Confirm] will take effect and go back to the previous page.

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Tips: 1, access to the battery over-discharge or overcharge, may lead to the battery string number identification error, need to manually set the correct number of strings. 2, incorrectly set the number of strings, you may not be able to charge the batteries, or overcharging damage to the batteries, please be

careful with the settings. 3, Lixx batteries can be identified more accurately when they are connected to the balance port

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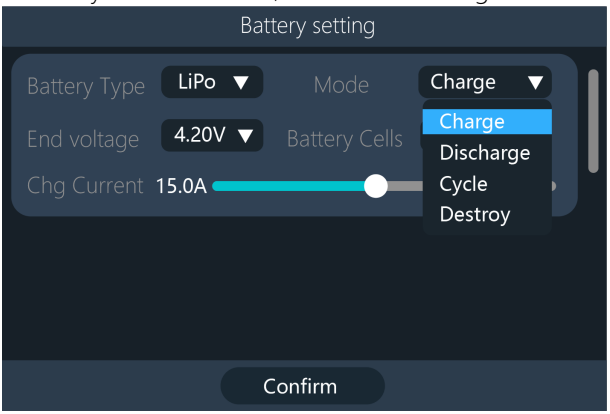
3，Mode

Modify the work Mode, as shown in the figure below.



Lipo, LiHV, LiFe, and Lion batteries can be selected for charging and storage. NiMh and PB batteries can be selected for charging. Press [Confirm] to take effect and back to the previous screen interface.

4，End voltage setting（TVC）

Move the cursor to [End Voltage] to modify the end voltage of the monolithic battery, when the working mode is charging, it is charging the cut-off voltage, the range is ± 50mV of the full voltage. When the working mode is discharging, it is discharging cut-off voltage. Select the voltage adjustment value, step increment of 0.01V.

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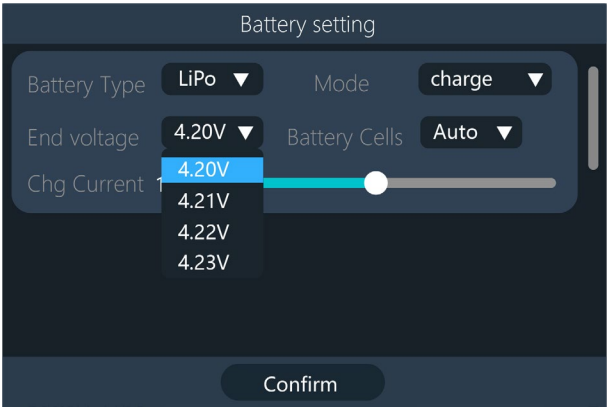

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1, Only LiPo, LiHV, LiFe batteries can set the cut-off voltage.

2, Do not modify the cut-off voltage when you are not familiar with the battery characteristics.

3, The charging cut-off voltage can be set to a range of ±50mV of full voltage.

4, **TVC:** Abbreviation for Terminal Voltage Control

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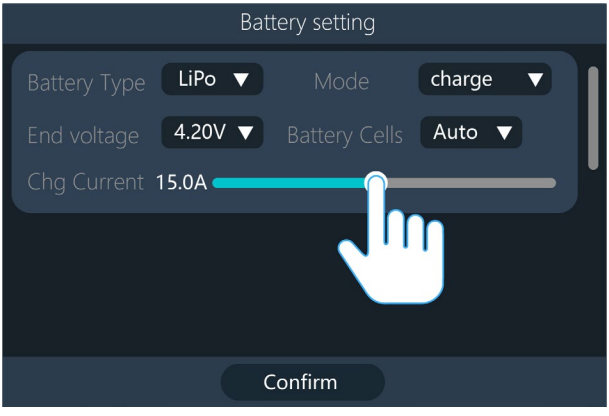
5，Charging current

Move the cursor to the [Charging Current] position, and slide the [Slider] to modify the current. Or scroll the [Scroll Wheel] to adjust the value in 0.1A steps. Scroll quickly [scroll wheel] to add or decrease faster. The charger supports up to 30A.



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Tips:

6. Please set the charging rate of 1-2C according to the battery capacity. For example, if the battery capacity is 2000mAh, please set the charging current to 2.0-4.0A. Check the guidelines of your battery's manufacturer for correct charging instructions.

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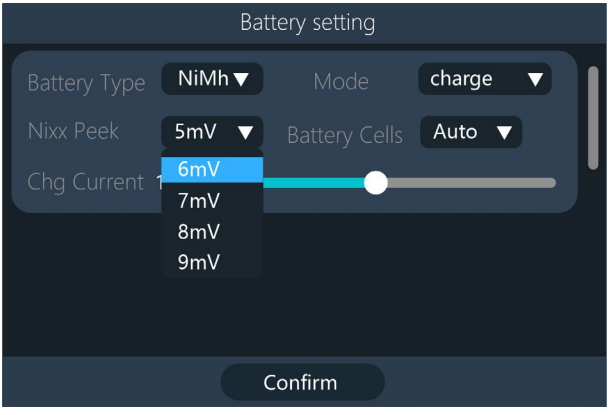
6，NiMh setting (PeakV)

When the battery type is NiMh, the PeakV value of can be set, and the setting range is 3mV-15mV, as shown below:



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Tips

1, Only NiMh battery can set the battery negative pressure value.

2, Vocabulary explanation:

PeakV: When the NiMH battery is fully charged, the voltage drop peak value of each cell.

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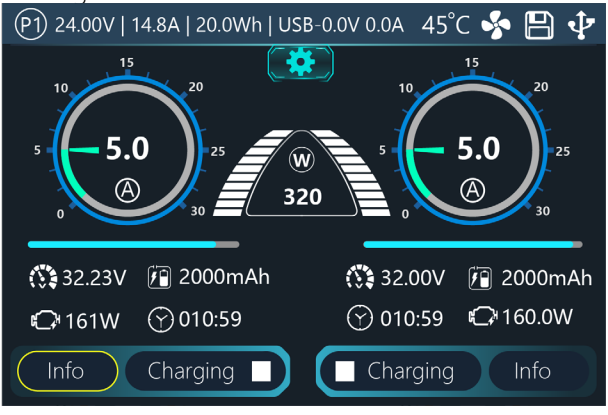
Charging

When charging starts, the charger enters the working interface as shown below:



Select the [Info] button on this interface to view the voltage value of the corresponding channel, slide the voltage information to the left, and switch to the internal resistance display.

Select [Status Bar] to dynamically set the working current or stop working. As shown in the figure below

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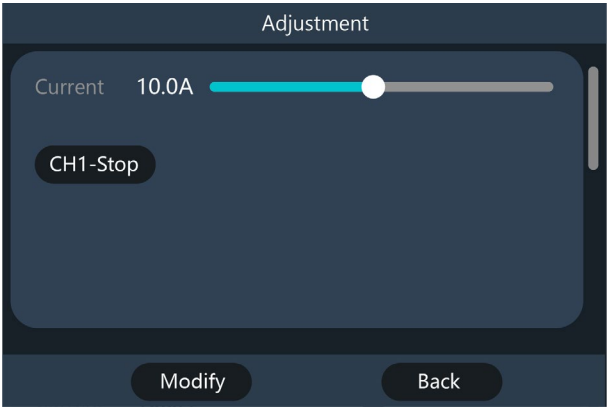

To end the charging and discharging work, select [Channel 1 - Stop] to stop the work and return to the main interface.

When charging is complete or charging error occurs. A prompt box will pop up with a prompt sound.

Display content description:

24.0V: Input supply voltage.

14.8A: Input supply current.

20Wh: the cumulative power consumption of the input power supply.

45°C: The internal temperature of the charger.

32.23V: the voltage of the main port of the first channel.

5.00A: the current of the main port of the first channel.

10:59: First channel working hours.

2000mAh: the cumulative capacity of the first channel.

1 **4.200V**: The first battery voltage

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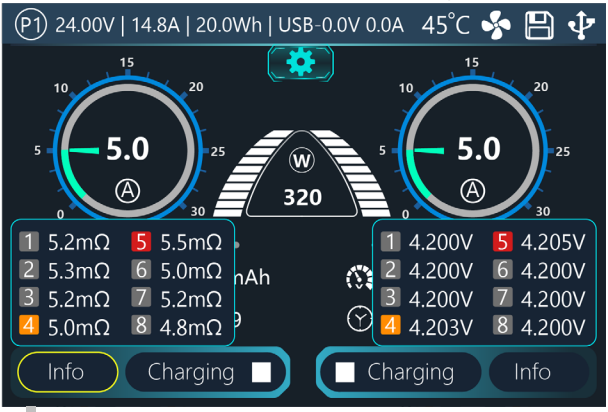
4 **4.200V:** The fourth battery voltage (Red mark means this battery is under balance management)

-.--V: No battery connected.

Slide the [Voltage Information] to switch to the internal resistance information. As shown in the figure below:



1 5.2mΩ: Internal resistance of the first cell battery

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Tips:1. When charging, please ensure someone is supervising the charge throughout the process to deal with abnormalities safely.

2. When charging a lithium battery, only connecting to the main port will not perform balance management. Please pay attention to the balance of the battery. After connecting to the balance port, it will automatically begin balance management.

3. After charging is completed, unplug the battery and insert a new battery, it will automatically continue to charge and discharge according to the set mode. When set to a fixed number of cells, batteries with the same number of cells need to be connected. When setting to automatically detect the battery string number, please pay attention to whether the detected cell number matches the actual number.

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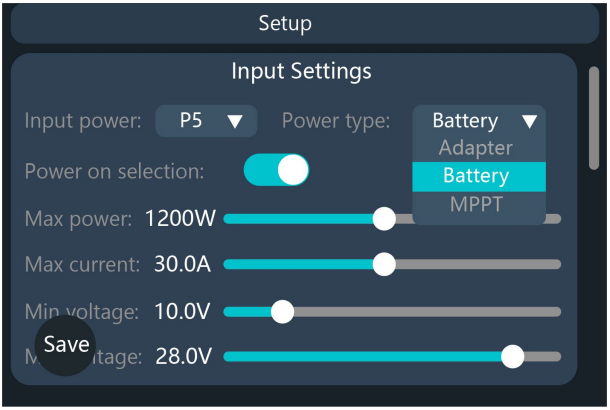
System settings

Select the [Settings icon] on the main interface, or press and hold the scroll wheel for 2 seconds, you can enter the system settings interface when both channels are idle, as shown in the following figure

Input Settings: Enter the relevant settings of the power supply, as shown in the following figure.



Input Power: P1, P2 and P3 can be saved and selected. Users can set the power, current, voltage and other information of the input power supply.

Power Type: The type of input power supply for the current value, the discharge function can be selected as recycling **Only** when the input was set to battery.

Power Selection: When this setting is turned on, each time charger power on it prompts you to select a power unmber.

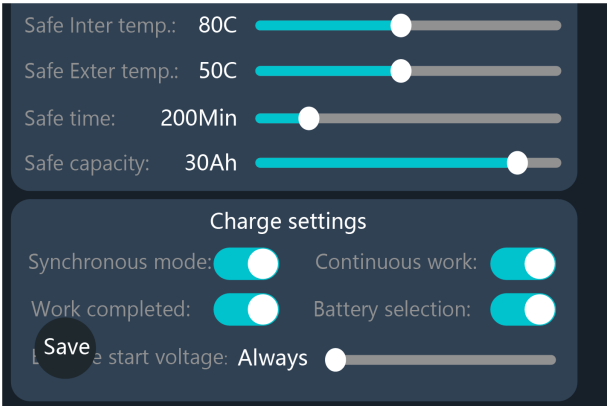
Max power: the maximum power absorbed from the

input port when charging.

Max current: the maximum current drawn from the input port during charging.

Min voltage: is the lowest allowable input voltage.

Charging safety settings: Work-related security settings. As shown in the figure below.



Safe Inter. Temp.: above this temperature value, the device will stop the main port output.

Safe time: the maximum time of continuous charging, it will stop charging if it exceeds this.

Safe capacity: the maximum capacity for continuous charging, and it will stop charging if exceeded.

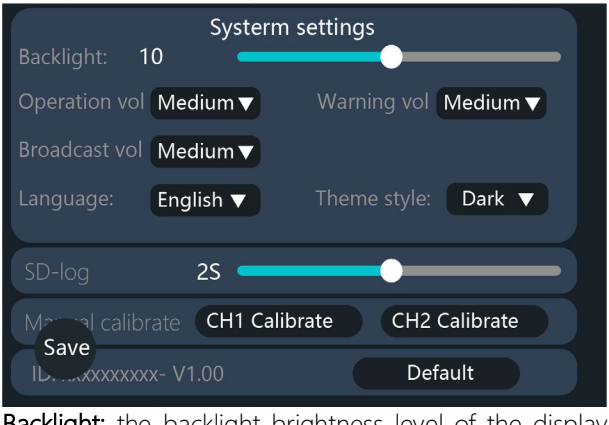
Synchronous mode: After turning on this function, the two channels can be combined with the main port to charge the same battery, and the maximum current can reach 50A.

Continuous Operation: After turning on the function, remove the full charged battery, and after connecting

the next battery, it will automatically start charging according to the previous charging setting as last battery.

Work complete: Determine whether to stop or trickle up when charging is over

Balancing start voltage: Set the voltage at which the battery starts balancing relative to the full voltage.



Backlight: the backlight brightness level of the display can be set from 1 to 10 level.

Sound Volume: The speaker announces the volume, which can be set to high, medium, low, and off.

Language: system display language can be changed

Theme style:two styles of Light and Dark can be selected

SD-log: Logging interval settings.

Manual Calibration: When the voltage display deviates from the actual voltage of the battery, this function can be selected to calibrate the voltage values of the two channels.

Default: restore all settings to factory values.

ID: the unique ID of the device factory settings.

Other functions

1. Firmware upgrade

After connecting the M8D to the computer with the USB data cable in the box, the computer will recognize a USB drive named Toolkit. Download the upgrade file app.upga on the official website. To update copy and past the new file and overwrite the files in the USB to upgrade the firmware.

2. Automatically continue charging

When a battery is fully charged, after unplugging the battery, connect to the next battery, the device will automatically continue to charge, you can start and stop this function in the settings menu.

3. Fan stepless speed regulation

When the internal temperature of the device exceeds 43°C , the fan will increase the fan speed linearly according to the internal temperature increase or power increase. Make it less noisy when operating at low temperatures or low power.

4, USB fast charging

M8D built-in USB fast charging protocol, up to C port up to 65W charging power, supported protocols are PD, QC, AFC, FCP, SCP, PE, SFCP, VOC.

5. Manually calibrate voltage

In the system settings, you can access the manual voltage calibration function. Use a voltmeter to measure the actual voltage of each battery, move the cursor to the corresponding voltage value, and modify the voltage value to be consistent with the voltmeter value

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to achieve calibration. After the calibration is completed, move the cursor to save, and the save is successful. Just exit or shut down

6. Fully charged replenishment

When the lithium battery is charged, it prompts "Fast charging has ended". If the battery is not removed, it will automatically be charged at a constant voltage trickle to bring the battery to a fuller state.

7. Battery destruction

When a lithium battery needs to be disposed of, the destruction function can be used to completely drain the battery's voltage. Prevents the risk of combustion due to residual voltage after discarding.

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Warning: 1, The battery in normal use cannot use this function, and the battery can be emptied by using the destroy function, causing irreversible damage.

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Specification

Charging	Input	DC10.0-49.0V@MAX60A
	Battery Type	LiPo LiHV LiFe Lion LTO @1-8S NiMh @1-20S Pb @1-15S
	Bal Cur.	2000mA @2-8S
	Accuracy	<0.005V
	Charge Power	0.1-30.0A@800W*2 ASYN
		0.1-50.0A@1600W*2 SYNC
	Discharge Power	0.1-30.0A@800W*2 Recycle 0.1-10A@40W*2 Normal
	USB	USB-C 20V@65W or upgrade PD,QC,AFC,FCP,SCP,PE,SFCP,VOC
	Battery Voltage	1.0V-5.0V @1-8S
	Battery Internal Resistance	1-100mR @1-8S
Display	LCD	IPS 3.5 inch 480*320 Pixel
	Touch	Capaticive
Product	Size	130mm*97mm*42mm
	Weight	450g
Individual Packing	Size	140mm*110mm*500mm
	Weight	700g

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