

M14DAC

Manual V1.1

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ToolkitRC Co., Ltd

Introduction

Thank you for purchasing the M14DAC 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. M14DAC allows an input voltage of AC 100V-240V. 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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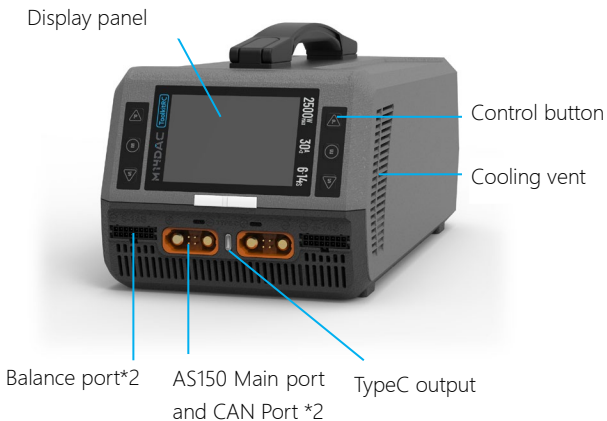
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Product description

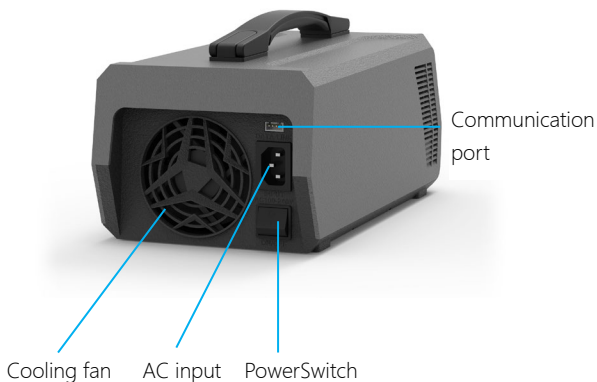
The M14DAC is an easy-to-use balance charger with a total charging power of up to 2500W. It features an IPS high-brightness display, simplified display and operation buttons, making it more convenient to use.

- Charge, discharge and balance management of LiPo, LiHV, 6-14S, batteries.
- AC power supply: 100.0-240.0V MAX 2600W.
- Charging power: MAX 30.0A@MAX1250W*2 ASYN
MAX 50.0A @MAX2500W SYNC
- Discharge power: MAX 5A@60W*2 normal ASYN
MAX 10A@120W normal SYNC
- Charging accuracy: <0.005V.
- Balancing current: 2000mA.
- Built-in 65W USB-C fast charger.
- Automatically allocate input power.
- Multi-language system, can set 11 kinds languages.

M14DAC Layout



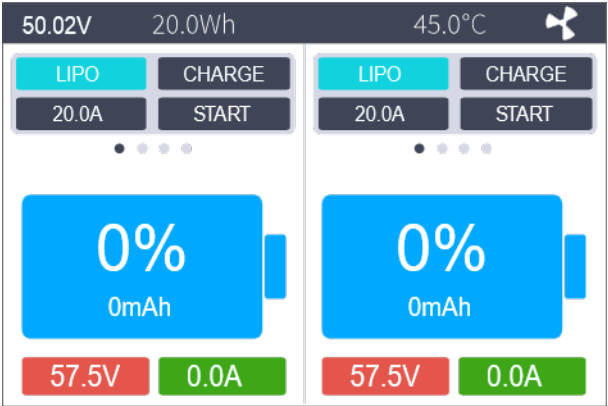
Front



Back

Quick start

- 1, Connect the device to AC 100-240V power source.
- 2, The screen shows the boot logo for 2 seconds.
- 3, After booting up, the screen enters the main interface as shown below:



4. Press the button briefly to move the cursor and select a setting option.
5. Press the button briefly to confirm the selection.
6. Press the button briefly to modify the setting.
7. When the cursor is on the [Start] menu, press the button briefly to start operation.
8. Press and hold the button to switch the information page.
9. Press and hold the button to enter the system settings menu (when the charger is idle).

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


1. Press [button] briefly once to use the confirm function.

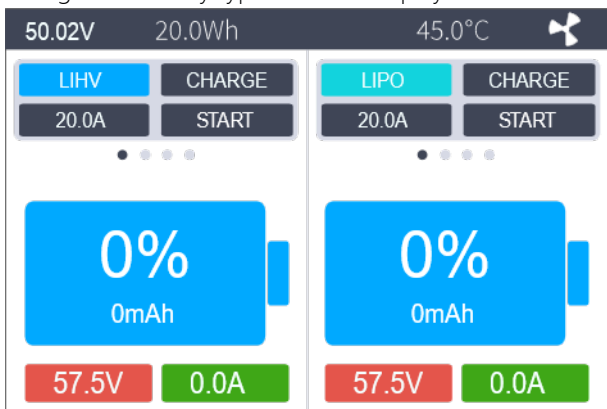
2. Successfully operating any button will trigger a 'didi' sound.


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Charging settings

1, Battery Type Setting

After turning on the device, press the  button to move the cursor to the [LIPO] or [LIHV] menu, press the  button once, and the cursor will turn dark blue. Set the battery type by pressing the  button again to change the battery type, which is displayed as follows.



The M14DAC supports charging LiPo and LiHV batteries. After selecting the category that matches the actual battery, press the  button once to confirm.



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.




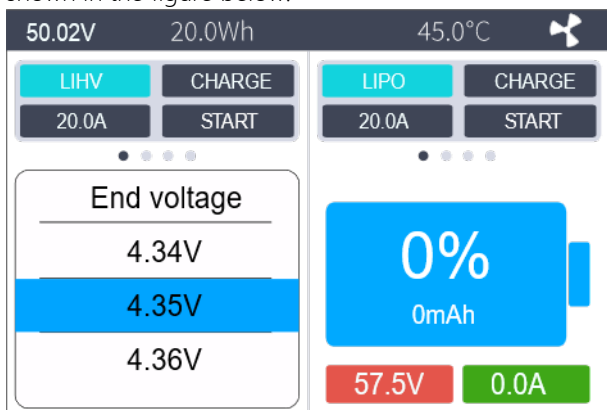
Nomenclature

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.

2, End voltage

When the cursor selects the battery type [LIHV], press and hold the  button to set the cutoff voltage, as shown in the figure below:



1. If you are not familiar with battery characteristics, do not modify the cutoff voltage.


Setting the voltage too high may damage the battery or cause a fire hazard.

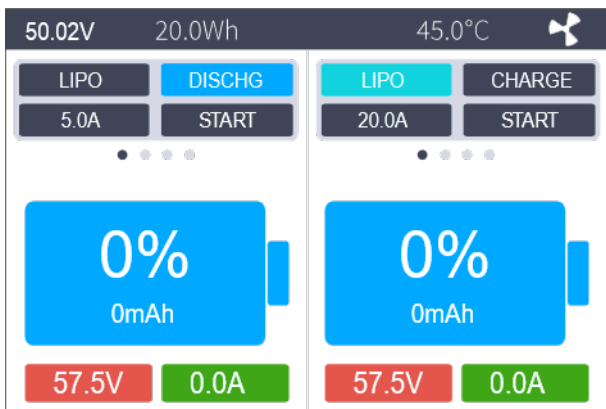
2. The charging cutoff voltage can be set within a range


of $\pm 50\text{mV}$ of the full voltage.

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3, Work Mode Selection

Press the  button to move the cursor to the [Charge] menu and change the work mode, as shown in the figure below.

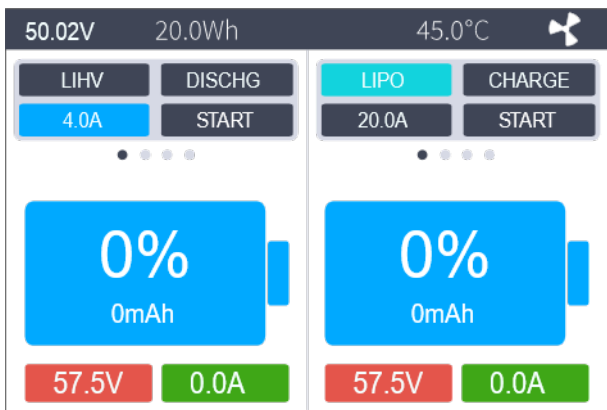


Lipo and LiHV batteries can be set to three working modes: charging, discharging, and storage. Press the  button once to confirm.

4, Current Setting

Press the  button to move the cursor to the [Current] position and adjust the working current.



Supports charging and storing charge, with a maximum current of 30A. Supports discharging and storing discharge, with a maximum current of 5A.

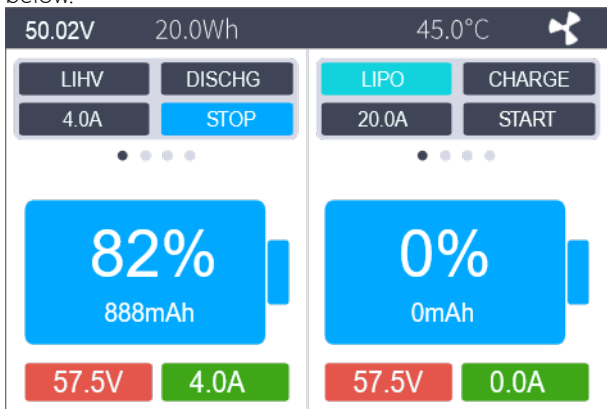



Tips:


1, 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.

Charging

Press the  button to move the cursor to the [Start] position, then press the  button once to start the charger on this channel. As shown in the figure below.



Press and hold the  button to switch the information page, where you can view the voltage value, internal resistance, and operating status of the corresponding channel.

50.02V 20.0Wh 45.0°C 


LIHV	DISCHG	LIPO	CHARGE
4.0A	STOP	20.0A	START

● ● ● ● ●

1 4.102V	8 4.102V
2 4.100V	9 4.101V
3 4.100V	10 4.101V
4 4.101V	11 4.113V
5 4.098V	12 4.099V
6 4.100V	13 4.100V
7 4.200V	14 4.100V

0%
0mAh

57.5V 0.0A

50.02V 20.0Wh 45.0°C 

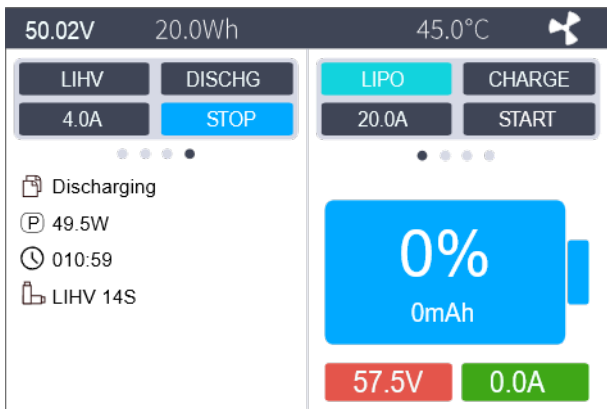
LIHV	DISCHG	LIPO	CHARGE
4.0A	STOP	20.0A	START

● ● ● ● ●

1 1.2mΩ	8 1.5mΩ
2 1.3mΩ	9 1.2mΩ
3 1.0mΩ	10 1.1mΩ
4 1.2mΩ	11 1.5mΩ
5 1.2mΩ	12 1.2mΩ
6 1.1mΩ	13 1.3mΩ
7 1.4mΩ	14 1.0mΩ

0%
0mAh

57.5V 0.0A



To stop the charging and discharging operation, select [Stop] and briefly press the **E** button once to stop the operation. A prompt box and alert sound will appear when charging is complete or if a charging error occurs. Display content description:

24.0V: Input supply voltage.

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

45°C: The internal temperature of the charger.

33.5V: the voltage of the main port of the left channel.

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

10:59: Left channel working hours.

88mAh: the cumulative capacity of the left channel.

1 4.200V: The first battery voltage

.....

4 4.210V: The fourth battery voltage (**Red** mark means this battery is under balance management)

-.--V: No battery connected.

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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. please pay attention to whether the detected cell number matches the actual number.

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System settings

Press and hold the  button, and when the charger is idle, you can enter the system settings interface. The settings are as follows:

Back: Exit the settings page and return to the main interface.

Setup	
 Back	
 Input settings	
Power select	Auto 
Power type	Adapter
Max power	1200W
Max current	50.0A
Voltage range	22.0 - 26.0V
 Security settings	

Input Power: Default internal AC power DC voltage.






Power Type: The type of current input power is an internal adapter.

Max power: The maximum power the adapter can provide when charging.

Max current: The maximum current the adapter can provide during charging.

Voltage range: Effective voltage range of the internal adapter.

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

Setup		
	Security settings	^
	Safe Inter. Temp.	80°C
	Safe time	480Min
	Safe capacity	30Ah
	Synchronous mode	OFF
	Continuous work	OFF
	Work completed	End
	Balance start Vol.	Always

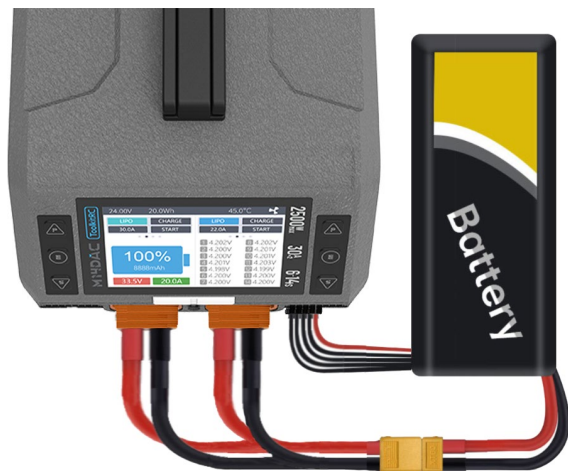
Safe Inter. Temp.: above this temperature value, the device will stop the main port output.









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.

As shown in the figure below:



Setup		
	Balance start Vol.	Always
	Backlight	10
	Buzzer	6
	Language	English
	Energy saving tips	Off
	Theme style	Light
	Band rate	9600
	Address	1

Continuous work: 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 off or from 1 to 10 level.

Buzzer: Buzzer sound settings, can be set to 1-7 tones.

Language: system display language can be changed

Setup		
	Buzzer	6
	Language	English
	Energy saving tips	Off
	Theme style	Light
	Band rate	9600
	Address	1
	Default	
	ID: XXXXXXXX -V3.00	

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

Baud rate: communication speed with the host.

Address: The slave address of this machine.

Default: restore all settings to factory values.

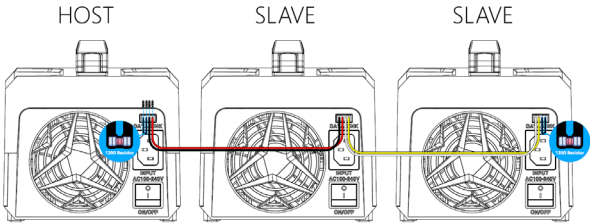
ID: the unique ID of the device factory settings.

Other functions

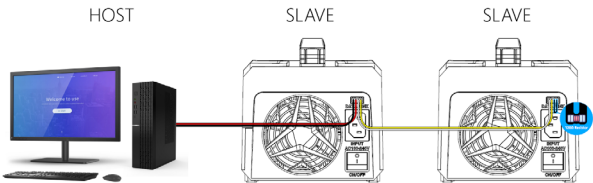
1. Cascaded synchronization mode

The M14DAC allows multiple units to be connected in cascade mode, with two working modes.

Mode 1: Set the address of one unit to 0, then this unit will act as the HOST, while the other units are set to any non-zero address between 1 and 15, operating in SLAVE mode. When the HOST sets the charging parameters, it will automatically send the set parameters to the other slave units via the cascade bus, achieving synchronized settings.



Mode 2: In this mode, a PC or other host computer serves as the host (HOST), and the charger serves as the slave. The slave is set with addresses 1-15, and the host can use the slave addresses to control a single slave or use address 0 to broadcast and control multiple slaves simultaneously.



Note: After the cascade is completed, the 120R resistor included in the packaging box should be connected in

parallel to the spare socket terminals of the machine, as shown in the picture above.

2. Firmware upgrade

After connecting the M14DAC 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.

3. 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.

4. 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.

5, USB fast charging

M14DAC 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.

6,Manual Voltage Calibration

Press and hold the S button on channel 2 while powering on to enter 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 adjust the voltage value to match the voltmeter reading to complete the calibration.

7. Fully charged replenishment

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

Specification

Charging	Input	AC100.0-240.0V@MAX2600W
	Battery Type	LiPo LiHV @6-14S
	Bal Cur.	2000mA @2-14S
	Accuracy	<0.005V
	Charge Power	1.0-30.0A@1250W*2 ASYN
		1.0-50.0A@2500W SYNC
	Discharge Power	1.0-5.0A@60W*2 ASYN
		1.0-10.0A@120W SYNC
	USB	USB-C 20V@65W or upgrade PD,QC,AFC,FCP,SCP,PE,SFCP,VOC
Battery Voltage	1.0V-5.0V @1-14S	
Battery Internal Resistance	1-100mR @1-14S	
UI	Display	IPS LCD 3.5 inch 480*320 Pixel
	Operation	3 button
Product	Size	315mm*154mm*146mm
	Weight	3.1kg
Individual Packing	Size	345mm*184mm*198mm
	Weight	3.85kg