M8D

Dual balance charger 2× 800 W
User manual



Please read this entire manual carefully before first use and keep it for future reference. Never leave charging batteries unattended.

Manufacturer: ToolkitRC Technology (Shenzhen) Co., Ltd, South of 5F, B2 Building, Shanghe Industrial Park, Nanchang Road, Hangcheng Street, Bao'an District, Shenzhen, China · www.toolkitrc.com
EU importer: Rotorama, s.r.o. · www.rotorama.cz

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1. Safety

Thank you for purchasing the ToolkitRC M8D balance charger. Please read this manual carefully before use. The following marks are used in this manual: ❖ tip or additional information, **red text** important warning.

- The M8D allows an input voltage of **DC 10.0–49.0 V** only. Make sure the power supply voltage is within this range and pay attention to the positive and negative polarity (+ / −) of the power supply before use.
- Do not use this product in hot or humid environments. Keep away from flammable liquids and gases.
- **Never leave charging batteries unattended.** During charging, make sure someone is supervising the charge throughout the process to deal with abnormalities safely.
- When not in use, please turn off / unplug the device.
- When using the charging function, set a current that matches the battery performance envelope. Do not set an excessive charging current to avoid damage to the battery. Check the guidelines of your battery's manufacturer for correct charging instructions.

Choosing the wrong battery type for charging may damage the battery and the charger, cause fire and other dangers. Always choose the battery type carefully. Do not charge batteries that are not labelled with a battery type.

▶ General rules for safe charging

- Charge on a non-flammable surface, away from flammable objects, and keep a suitable fire extinguisher within reach.
- Do not charge batteries that are mechanically damaged, swollen, overheated or have damaged insulation of wires and connectors.
- Do not charge batteries that are not designed to be recharged (primary batteries).
- Do not cover the vents and fans of the charger and ensure free air flow around the device.
- Always charge lithium batteries with the balance connector connected so that the charger can monitor the voltage of the individual cells.
- If you notice smell, smoke, excessive heating or swelling of the battery during charging, stop charging immediately and disconnect the battery safely.
- The product may only be used by persons aged 14 and over. Keep the device and batteries out of the reach of children.

2. Product description

The M8D is a touch screen balance charger with a total charging power of up to 1600 W. It uses a bright IPS display and a capacitive touch screen together with a scroll wheel encoder for more convenient operation.

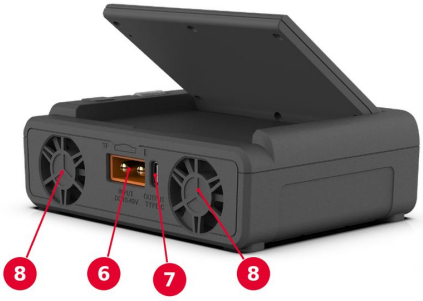
2.1 Features

- Charge, discharge and balance management of LiPo, LiHV, LiFe, Li-Ion and LTO 1–8S, NiMH 1–20S and Pb 1–15S batteries.
- DC power supply: 10.0–49.0 V, max. 1600 W.
- Charging power: max. 30.0 A / max. 800 W × 2 (asynchronous, each channel independently); max. 50.0 A / max. 1600 W (synchronous, both channels on one battery).
- Discharging power: max. 10 A / 40 W × 2 (normal); max. 30 A / 800 W × 2 (recycle).
- Charging accuracy: < 0.005 V.
- Balancing current: 2000 mA.
- Built-in 65 W USB-C fast charger.
- Adjustable lithium battery cut-off voltage (TVC).
- Automatic allocation of input power.
- Multi-language system – 11 languages.
- Memory for 10 commonly used batteries.
- Memory for 3 groups of commonly used power sources – quick switching.

2.2 M8D layout



Front



Back

No.	Part
①	Display / touch panel
②	CH / Exit button (end modification / back)
③	Scroll wheel – turn and press
④	Main ports, 2×
⑤	Balance ports, 2×
⑥	DC input, XT90 connector
⑦	USB output
⑧	Cooling fans

2.3 Specification

Parameter	Value
Input	DC 10.0–49.0 V, max. 60 A
Battery type	LiPo, LiHV, LiFe, Li-Ion, LTO: 1–8S NiMH: 1–20S Pb: 1–15S
Balancing current	2000 mA (2–8S)
Accuracy	< 0.005 V
Charging power	0.1–30.0 A, 800 W × 2 (asynchronous) 0.1–50.0 A, 1600 W (synchronous)
Discharging power	0.1–30.0 A, 800 W × 2 (recycle) 0.1–10 A, 40 W × 2 (normal)
USB output	USB-C 20 V / 65 W; protocols PD, QC, AFC, FCP, SCP, PE, SFCP, VOC
Cell voltage measurement	1.0–5.0 V (1–8S)
Internal resistance measurement	1–100 mΩ (1–8S)
Display	IPS LCD 3.5", 480 × 320 px
Touch panel	capacitive
Product size	130 × 97 × 42 mm
Product weight	450 g
Package size	140 × 110 × 50 mm
Package weight	700 g

※ The 65 W USB-C output is available when the input voltage is 10–36 V.

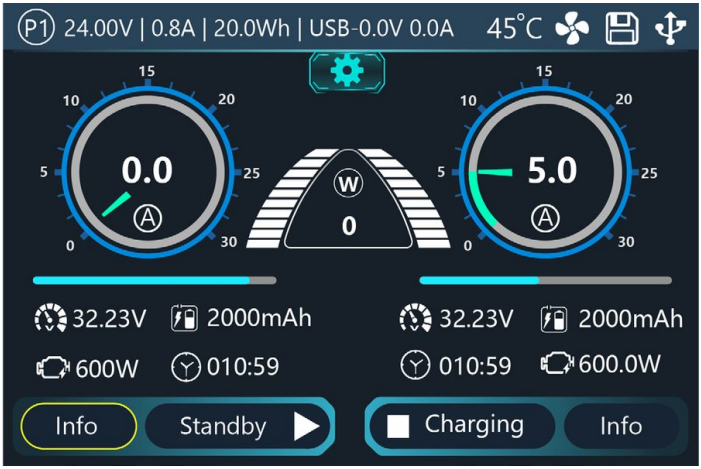
3. Quick start

① Connect the device to a DC 10–49 V power source.

② The screen shows the boot logo for 2 seconds.

③ An audible tone accompanies the boot sequence.

④ After booting up, the screen enters the main interface:



Main interface

⑤ Touch the desired function on the main interface, or select it by turning the scroll wheel and press the scroll wheel to confirm.

⑥ Touch the settings icon (gear), or press and hold the scroll wheel to enter the system settings.

⑦ Touch the *Info* button, or select it with the scroll wheel, to display the voltage and internal resistance of the cells in the corresponding channel.

⑧ Touch the channel status button, or select it and short press the scroll wheel, to select the charging task when the channel is idle. While the channel is working, you can adjust or end the task here.

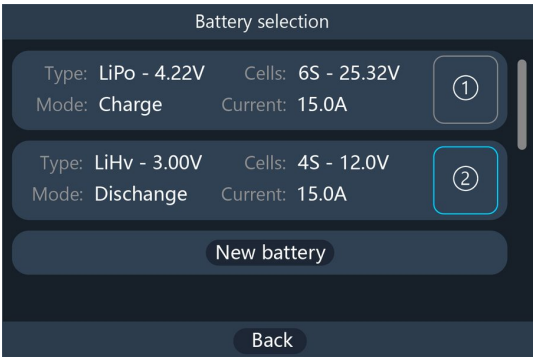
⑨ Press the *Exit* button to end the modification or return to the previous interface.

▶ Scroll wheel operation

- Short press – confirm the function.
- Long press (2 s) – delete function.
- Every successful operation is confirmed by a short beep.

4. Charging settings

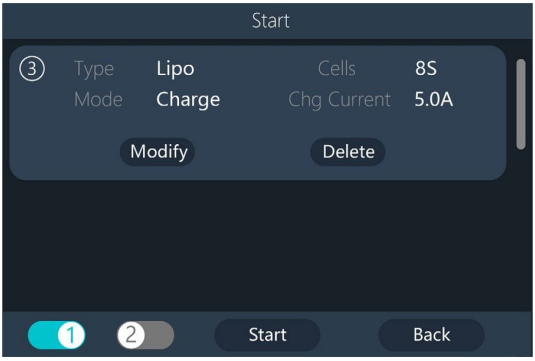
On the main interface, select a channel and short press the scroll wheel to enter the charging function. If *Battery selection* is turned on in the system settings, 10 battery records can be saved and the following interface is displayed. Otherwise, the first battery record is used by default and this step is skipped.



Battery selection

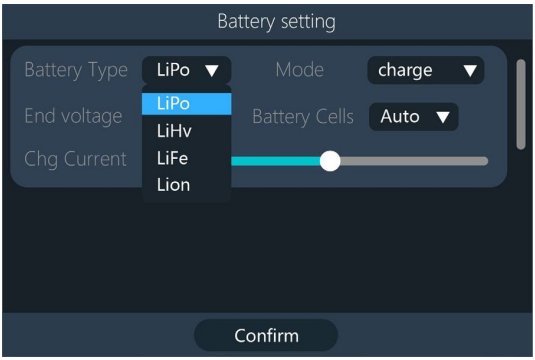
4.1 Battery type

Select a battery that has already been set, or press *New battery*, select the record number and enter the new battery setting interface:



Battery record

When you need to modify the battery settings, select *Modify* and change the battery type:



Battery type selection

The charger supports 7 battery types: LiPo, LiHV, LiFe, Li-Ion, LTO, NiMH and Pb. Select the type that matches the actual battery and press *Confirm* to save the setting and return to the previous page.

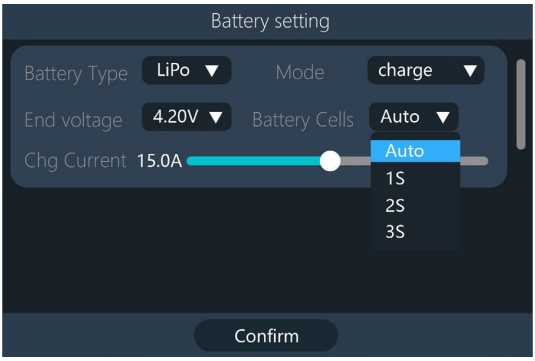
Choosing the wrong battery type for charging may damage the battery and the charger, cause fire and other dangers – choose carefully. Do not charge batteries that are not labelled with a battery type.

▶ Battery types

Type	Description	Nominal cell voltage	Fully charged cell voltage
LiPo	lithium polymer	3.70 V	4.20 V
LiHV	high-voltage lithium	3.85 V	4.35 V
LiFe	lithium iron phosphate	3.30 V	3.60 V
Li-Ion	lithium-ion	3.60 V	4.10 V
LTO	lithium titanate	2.40 V	2.70 V
NiMH	nickel-metal hydride	1.20 V	–
Pb	lead-acid	2.00 V	–

4.2 Number of cells

Move the cursor to *Battery Cells* and short press the scroll wheel to modify the number of battery cells:



Number of cells

Turn the scroll wheel to adjust the value. When set to *Auto*, the charger automatically identifies the number of cells in series based on the voltage of the battery connected to the output port. Press *Confirm* to save the setting and return to the previous page.

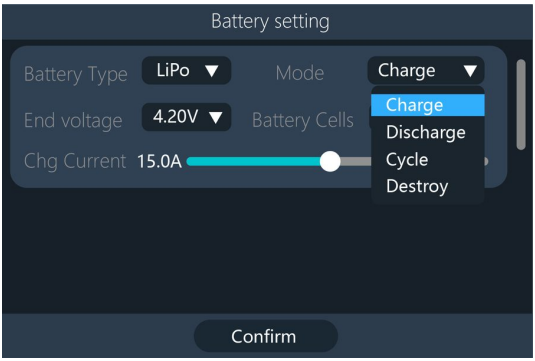
※ If the connected battery is over-discharged or overcharged, the number of cells may be identified incorrectly – in that case, set the correct number of cells manually.

※ Lithium batteries are identified more accurately when they are also connected to the balance port.

If the number of cells is set incorrectly, it may not be possible to charge the battery, or the battery may be overcharged and damaged. Please be careful with the settings.

4.3 Mode

Modify the work mode as shown in the figure:

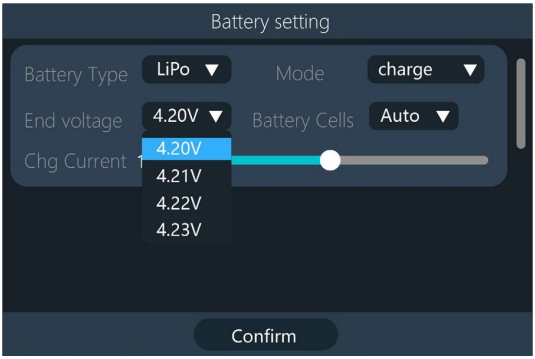


Mode selection

For LiPo, LiHV, LiFe and Li-Ion batteries, charging and storage can be selected. For NiMH and Pb batteries, charging can be selected. Press *Confirm* to save the setting and return to the previous page.

4.4 End voltage setting (TVC)

Move the cursor to *End voltage* to modify the end voltage of a single cell. In charging mode, it is the charging cut-off voltage, adjustable within ±50 mV of the full voltage. In discharging mode, it is the discharging cut-off voltage. The value is adjusted in 0.01 V steps.

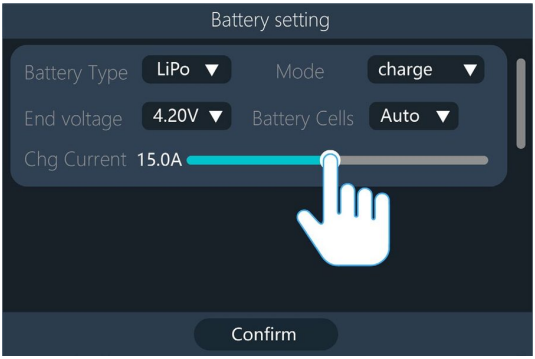


End voltage setting

- Only LiPo, LiHV and LiFe batteries allow the cut-off voltage to be set.
- Do not modify the cut-off voltage if you are not familiar with the battery characteristics.
- The charging cut-off voltage can be set within ±50 mV of the full voltage.
- TVC is an abbreviation for *Terminal Voltage Control*.

4.5 Charging current

Move the cursor to *Chg Current* and set the current with the slider, or turn the scroll wheel to adjust the value in 0.1 A steps. Turning the scroll wheel quickly changes the value faster. The charger supports up to 30 A.

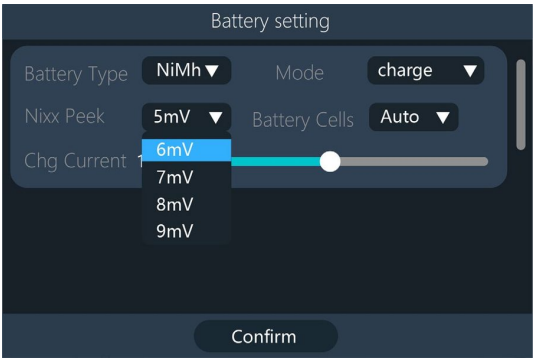


Charging current setting

※ Set a charging rate of 1–2C according to the battery capacity. For example, for a 2000 mAh battery, set the charging current to 2.0–4.0 A. Always check the guidelines of your battery's manufacturer.

4.6 NiMH setting (PeakV)

When the battery type is NiMH, the PeakV value can be set within a range of 3–15 mV:

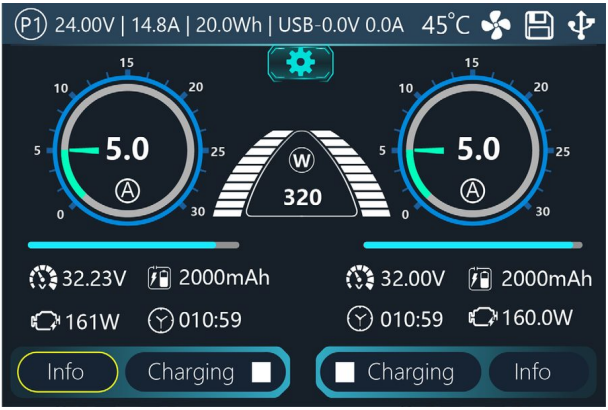


PeakV setting

- The voltage drop value can only be set for NiMH batteries.
- **PeakV** – the peak voltage drop of each cell by which the charger detects that the NiMH battery is fully charged.

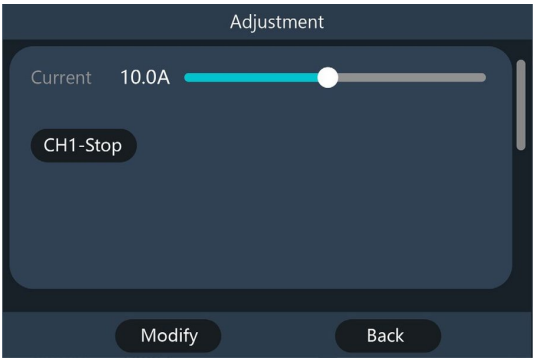
5. Charging

When charging starts, the charger enters the working interface:



Working interface

Select the *Info* button to view the cell voltages of the corresponding channel; slide the voltage information to the left to switch to the internal resistance display. Select the channel status button to adjust the working current or stop the work while the channel is running:



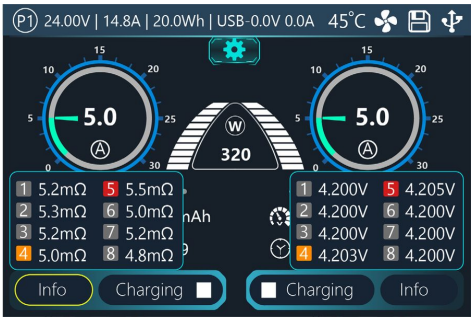
Adjusting the current and stopping the work

To end charging or discharging, select *CH1-Stop* (stop channel 1); the charger returns to the main interface. When charging is complete or a charging error occurs, a prompt box pops up together with a prompt sound.

▶ Display content description (example)

Value	Meaning
24.00V	input supply voltage
14.8A	input supply current
20.0Wh	cumulative energy consumption of the input power supply
45°C	internal temperature of the charger
32.23V	voltage of the main port of channel 1
5.0 A	current of the main port of channel 1
010:59	working time of channel 1
2000mAh	cumulative capacity of channel 1
1 4.200V	voltage of cell 1
4 4.200V	voltage of cell 4 – a red mark means this cell is under balance management
-.--V	no cell connected

Slide the voltage information to switch to the internal resistance of the individual cells:



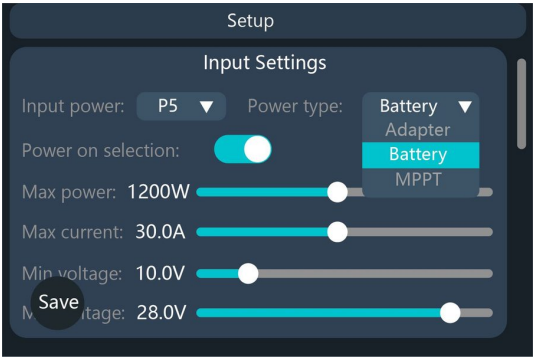
Internal resistance – e.g. "1 5.2mΩ" = internal resistance of cell 1 is 5.2 mΩ

- **When charging, make sure someone is supervising the charge throughout the process to deal with abnormalities safely.**
- When a lithium battery is connected to the main port only, no balance management is performed – pay attention to the balance of the battery. After connecting the balance port, balance management starts automatically.
- After charging is completed, unplug the battery and connect a new one – the charger automatically continues to charge or discharge according to the set mode. When a fixed number of cells is set, a battery with the same number of cells must be connected. When automatic cell detection is used, check that the detected number of cells matches the actual number.

6. System settings

Select the settings icon on the main interface, or press and hold the scroll wheel for 2 s, to enter the system settings. This is possible only when both channels are idle.

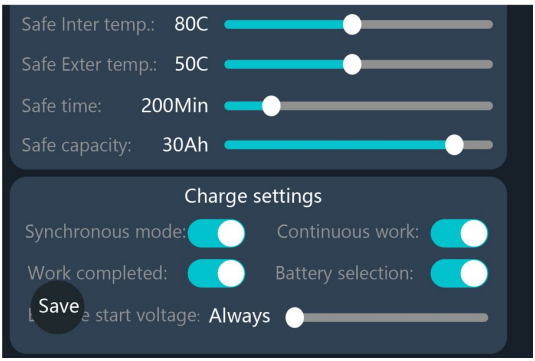
6.1 Input settings



Input power supply settings

Item	Meaning
Input power	Power supply – P1, P2 and P3 can be saved and selected. For each, the power, current, voltage and other information of the input power supply can be set.
Power type	Type of the input power supply. Recycle discharging can be selected only when the input is set to battery.
Power on selection	When turned on, the charger prompts you to select a power supply each time it is powered on.
Max power	Maximum power drawn from the input port during charging.
Max current	Maximum current drawn from the input port during charging.
Min voltage	Lowest allowable input voltage.

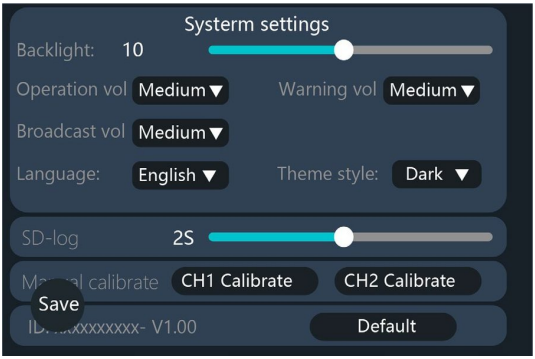
6.2 Charging safety and charge settings



Safety and charge settings

Item	Meaning
Safe Inter. temp.	Safe internal temperature – above this value, the device stops the main port output.
Safe time	Maximum time of continuous charging; charging stops if it is exceeded.
Safe capacity	Maximum capacity of continuous charging; charging stops if it is exceeded.
Synchronous mode	When turned on, the two channels are combined via the main port to charge the same battery; the maximum current can reach 50 A.
Continuous work	When turned on, after removing the fully charged battery and connecting the next one, charging starts automatically with the same settings as for the previous battery.
Work completed	Determines whether to stop or continue with trickle charging when charging is over.
Battery selection	Selection from 10 saved battery records when charging is started (Chapter 4).
Balance start voltage	Voltage, relative to the full voltage, at which the battery starts balancing.

6.3 System settings



System settings

Item	Meaning
Backlight	Display backlight brightness, levels 1–10.
Operation / Warning / Broadcast vol	Volume of operation sounds, warnings and voice announcements – high, medium, low or off.
Language	System display language.
Theme style	Colour theme – Light or Dark.
SD-log	Logging interval.
Manual calibrate	Manual calibration – when the displayed voltage deviates from the actual battery voltage, the voltage values of both channels can be calibrated (Chapter 7.5).
Default	Restores all settings to factory values.
ID	Unique factory ID of the device.

7. Other functions

7.1 Firmware upgrade

Connect the M8D to a computer with the USB data cable included in the box. The computer recognizes a USB drive named *Toolkit*. Download the firmware upgrade file from the manufacturer's website (www.toolkitrc.com), copy it to this drive and overwrite the existing file to upgrade the firmware.

7.2 Automatically continue charging

When a battery is fully charged, unplug it and connect the next battery – the device automatically continues charging. This function can be turned on and off in the settings menu (*Continuous work*).

7.3 Stepless fan speed regulation

When the internal temperature of the device exceeds 43 °C, the fan speed increases linearly with the internal temperature or power. This keeps the noise low at low temperatures or low power.

7.4 USB fast charging

The M8D has built-in USB fast charging protocols with up to 65 W on the USB-C port. Supported protocols: PD, QC, AFC, FCP, SCP, PE, SFCP, VOC.

※ The 65 W USB-C output is available when the input voltage is 10–36 V.

7.5 Manual voltage calibration

This function is available in the system settings. Use a voltmeter to measure the actual voltage of each cell, move the cursor to the corresponding voltage value and modify it to match the voltmeter reading. After the calibration is completed, move the cursor to *Save* – the calibration is saved. Then exit the menu or switch the device off.

7.6 Fully charged replenishment

When a lithium battery has been charged, the charger reports “Fast charging has ended”. If the battery is not removed, it is automatically trickle charged at constant voltage to bring it to a fuller state.

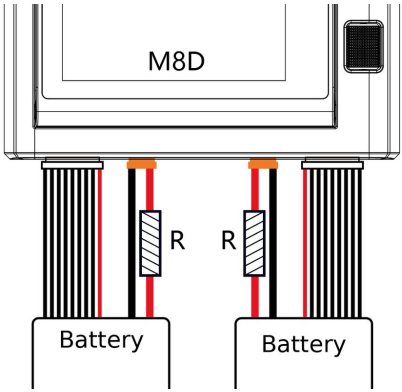
7.7 Battery destruction (Destroy)

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

Do not use this function on batteries in normal use – the battery is fully drained and irreversibly damaged.

7.8 Extended discharge with an external resistor

The discharge power of the M8D can be extended with an external power resistor as shown in the diagram below. The input port must be connected to the power supply and turned on. The power resistor is connected in series at the positive end of the main port; the battery must also be connected to the balance port. Select internal discharge as the discharge mode.



Connecting the external power resistor R

In this mode, the total discharge power P is the sum of the internal discharge power Pi and the resistive discharge power Pr.

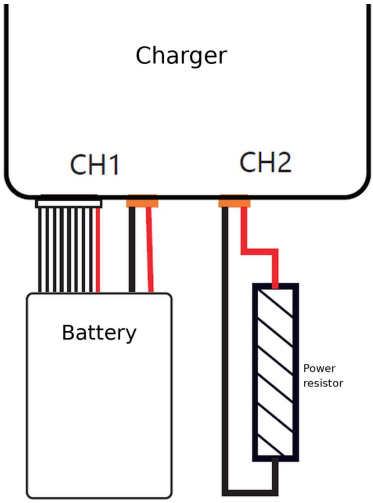
▶ Selection of the external power resistor

- R = battery voltage / discharge current
- P = battery voltage × discharge current
- Choose a resistor power of 100–500 W according to your needs.

Cells	Recommended resistance	Discharge current
8S	6 Ω	5.5 A
6S	4 Ω	6.5 A
4S	3 Ω	7.0 A
2–3S	1.5 Ω	8.0 A

7.9 Bridge discharge mode

The M8D allows the battery to be discharged by dissipating electrical energy through a power resistor. The battery is connected to one channel, the resistor to the other channel, and bridge discharge is selected as the discharge mode. The connection is shown in the diagram:



Bridge discharge – battery on CH1, power resistor on CH2

- Recommended power resistor: 1.5–5 Ω, power 100–800 W.
- An adapter is required for the input power.

8. Information for the EU and Czech Market

8.1 Importer and responsible person in the EU

The product is placed on the European Union market by the importer stated below, who is at the same time the responsible person within the meaning of Article 16 of Regulation (EU) 2023/988 of the European Parliament and of the Council on general product safety (GPSR).

Importer / responsible person in the EU	Rotorama, s.r.o.
Company ID (IČO)	051 57 692
VAT ID (DIČ)	CZ05157692
Registered office	Okrajová 1351, 674 01 Třebíč, Czech Republic
E-mail	info@rotorama.cz
Phone	+420 252 252 098
Website	www.rotorama.cz

8.2 Product conformity

CE

- The product bears the **CE** marking and complies with the requirements of the applicable European Union harmonisation legislation.
- A copy of the **EU Declaration of Conformity** is available from the importer at the address stated above or at the e-mail address info@rotorama.cz.
- **Product identification:** the type designation (M8D) and the serial number are given on the product rating label; the unique device ID and the firmware version are shown in the bottom line of the *System settings* screen (Chapter 6).

8.3 Disposal of electrical equipment



- The crossed-out wheeled bin symbol on the product, its packaging or in the documentation means that at the end of its service life the product **must not be disposed of together with mixed municipal waste**.
- Hand it over at a take-back point for electrical equipment – at a collection yard, at a take-back point of a collective system, or at the retailer when purchasing a new equivalent product. Take-back is free of charge for the end user.
- The obligations under Act No. 542/2020 Coll., on end-of-life products, are fulfilled by the importer through a collective take-back system.
- Proper disposal helps prevent negative impacts on the environment and human health and contributes to the reuse of secondary raw materials.

Through its contractual partner **ASEKOL a.s.**, the company ensures the take-back of waste electrical equipment from households and the separate collection of waste electrical equipment, batteries and accumulators in accordance with the applicable legislation. The customer is entitled to hand over old electrical equipment or a battery or accumulator at any collection point of the above contractual partner. The addresses of these take-back points are listed at www.asekol.cz, www.ecobat.cz and also https://visoh2.mzp.cz/RegistrMistZO/RegistrMistZOPublic/MapaMistZpetOdberu.

9. Warranty and rights arising from defective performance

The rights and obligations of the contracting parties are governed by Czech law, in particular by Act No. 89/2012 Coll., the Civil Code, and Act No. 634/1992 Coll., on consumer protection. Any warranty terms of the manufacturer **do not in any way limit** the buyer's rights arising from these regulations.

- The seller is liable to the buyer for the product being free of defects on receipt. If the buyer is a consumer, a defect may be notified **within two years of receipt** of the product (Section 2165 of the Civil Code).
- If a defect appears within **one year** of receipt, the product is deemed to have been defective already at the time of receipt (Section 2161(5) of the Civil Code).
- When purchasing online, a consumer has the right to **withdraw from the contract within 14 days** of receiving the goods without giving a reason (Section 1829 of the Civil Code).
- Claims should be made with the retailer from whom you purchased the product. The importer's contact details are given in Chapter 8.1.
- The competent body for out-of-court settlement of consumer disputes is the **Czech Trade Inspection Authority**, Štěpánská 796/44, 110 00 Prague 1, www.coi.cz.