

HOBBYMATE



D6 Duo Pro AC/DC Dual Channel Smart Charger Operating Instructions

www.hobbymatehobby.com

D6 Duo Pro AC/DC Dual Channel Smart Charger

Thank you for purchasing HOBBYMATE charger. Please read the entire operating instructions completely and attentively as it contains a wide variety of specific programming and safety information.

Please visit: www.hobbymatehobby.com for more details on the functions of this smart charger.



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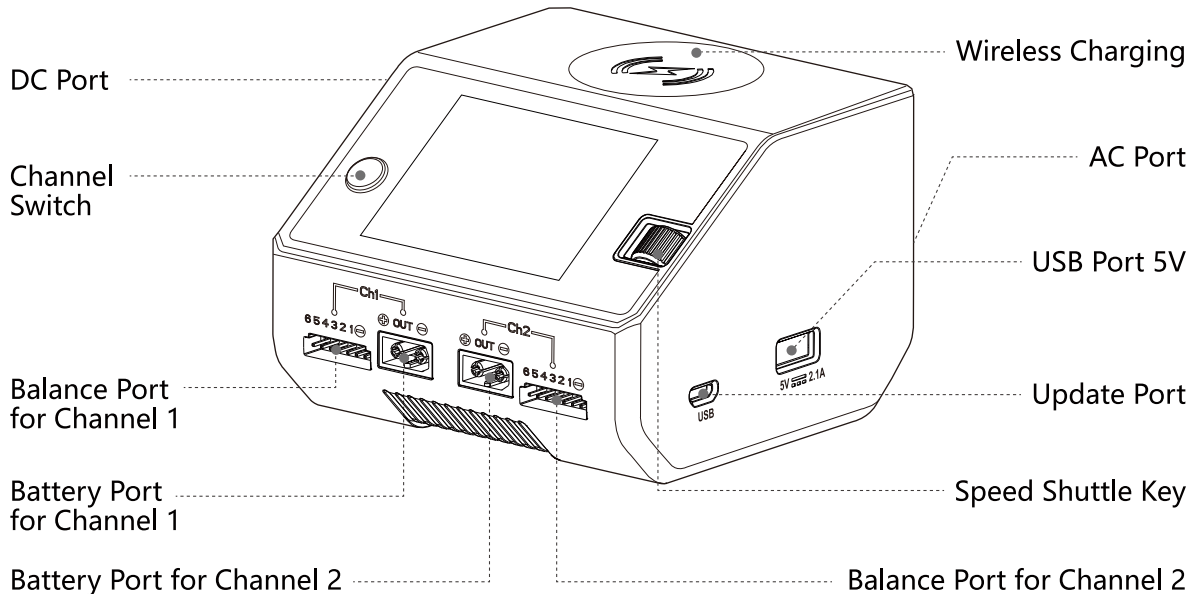
▶▶ Product Overview

Specifications

Input Voltage	AC100~240V / DC 6.5~30V	Balance Current	1600mA x 2
Charge Current	0.1~15A x 2	Discharge Current	0.1~3A x 2
Charge Power	DC 325W x 2	External Discharge Current	1~15A x 2
Discharge Power	Internal discharge:15W × 2 (balance port 10W)	USB Output	5V / 2.1A
	External discharge: 325W × 2(650W)	Storage Temperature	-20~60°C
Battery Type	LiHv/LiPo/LiFe/Lilon/Lixx : 1~6S	Operating Temperature	0~40°C
	NiZn/Nicd/NiMH : 1~16S	Screen Size	2.8 " 320×240 260000 colors
	Smart Battery : 1~6S	Dimensions	108mm×105mm×76mm
	Lead Acid(Pb) : 2~24V	Net Weight	555g
Eneloop : 1~16S			
Wireless Charging	Max 5W output	Color	white, black, gray
Protection Function	Temperature protection, time protection, capacity protection, input reverse protection, Output protection, short circuit protection, output overcurrent protection, Output overvoltage protection, overcharge protection		

▶▶ Product Overview

Introduction



Warnings and Safety Notes

1. Do not use the charger in an unattended manner, in case of any functional abnormality, please stop using it and refer to the manual.
2. Keep the charger away from dust, humidity, rain and high temperature, as well as avoid direct exposure to sun and intense vibration.
3. Make sure input voltage for D6 is DC 6.5-30v.
4. Please place the charger on a heat-resisting, non-flammable and insulating surface. Do not use it by placing it on the car's seats, carpet or other similar place. Keep inflammable and explosive objects away from operation areas of the charger.
5. Make sure the heat emission hole at the bottom of the charger is uncovered while in use, and ensure the cooling fan smoothly extracts heat.
6. Please fully understand the charging and discharging characteristics as well as the battery's specifications. Additionally, set up proper charging parameters in the charger. Incorrect setting of parameters can cause damage to the charger and battery and / or result to disastrous consequences such as fire or explosion.
7. When charging or discharging is completed, please press the speed shuttle key to terminate current task, and remove the battery when charger shows the standby screen.

▶▶ Product Overview

Recommended Connected Way

1. Connect the power supply, wait for self-testing to be completed;
2. Select the channel you wanna use then connect your battery to the chosen channel;
3. Set up charging parameters applicable to your battery through the display and speed shuttle key;
4. Enjoy.

Standard Battery Parameters

	NiCd NiMH	LiFe	Lilon	LiPo	LiHv	NiZn	Lixx	Smart Battery	Pb	Eneloop
Rated Voltage	1.20V	3.20V	3.6V	3.70V	3.80V	1.50V	3.7V	3.70V	2.00V	1.20V
Full Charger Voltage	1.50V	3.65V	4.10V	4.20V	4.35V	1.93V	4.20V	4.20V	2.46V	1.50V
Storage Voltage	No supported	3.30V	3.70V	3.80V	3.85V	1.60V	3.80V	3.80V	No supported	No supported
Discharge Voltage	0.90V	2.90V	3.20V	3.30V	3.40V	1.20V	3.30V	3.30V	1.90V	0.90V
Balance Charge	No supported	supported	supported	supported	supported	supported	supported	supported	No supported	No supported
Unbalanced Charge	supported	supported	supported	supported	supported	supported	supported	supported	supported	supported
Support Cells	1-16S	1-6S	1-6S	1-6S	1-6S	1-16S	1-6S	1-6S	1-12S	1-16S
Max Charge Current	15.0A	15.0A	15.0A	15.0A	15.0A	15.0A	15.0A	15.0A	15.0A	15.0A
Max Charge C Value	≦2C	≦4C	≦1C	≦1C	≦1C	≦0.5C	≦1C	≦1C	≦0.5C	≦0.5C



Be very careful to choose the correct voltage for different types of battery otherwise you may cause damage to the batteries. Incorrect settings could cause the cells to vent, burn or explode leading to injury or loss of property.

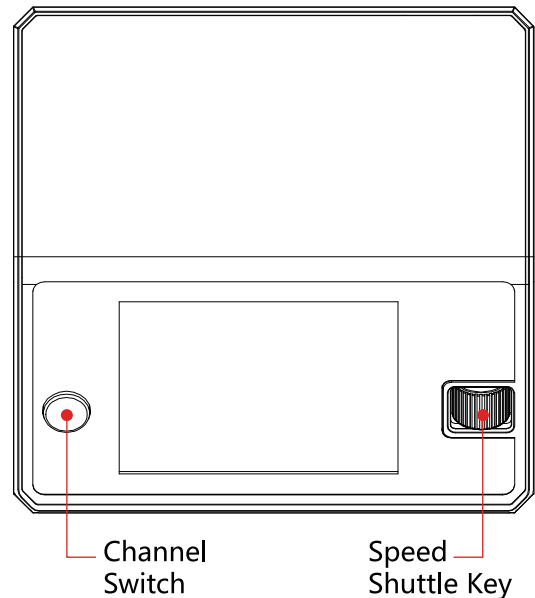
▶▶ Operation and Setup

How to Confirm Charging Current

- It is very important to know the maximum charging current of the battery as excessive current could influence the life span of battery and/or cause damages. In addition, excessive current can cause heating and/or explosion of the battery during the charging process.
- The charging and discharging capacity of battery is usually marked with C value. Multiplying the charging C value and battery capacity equals to the maximum charging current supported by the battery. For example, for a 1000 mAh battery with a charging capacity of 5C, the maximum charging current would be $1000 \times 5 = 5000\text{mA}$; therefore, the maximum charging current is 5A.
- For a lithium battery, if it is impossible to confirm the supported charging C value, please set the charging current below 1C for the sake of its (lithium battery) safety.
- The reference relation between C value and charging time: charging time ≥ 60 minutes / charging C value (it therefore needs around 60~70 minutes to complete charging with 1C). Due to differences in battery conversion efficiency, the period to complete the charging might be extended.

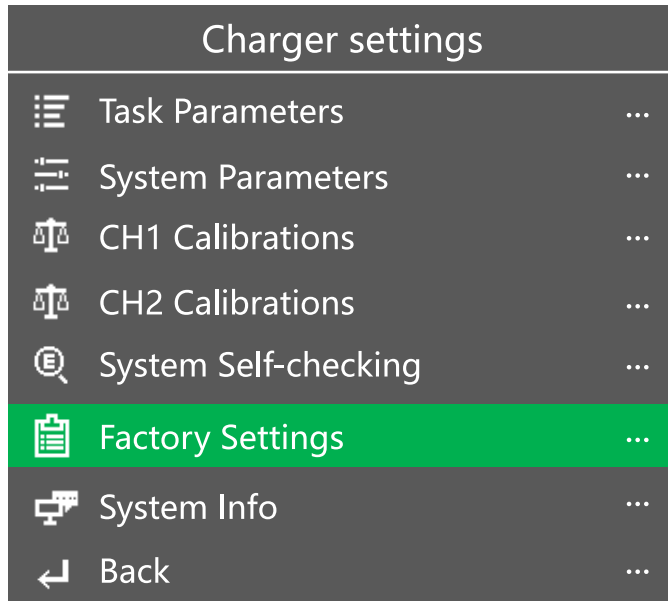
Operative Skills

- Connect the charger to the power supply and wait for the system to complete the self testing. Connect the battery to the charger under standby interface, and short press the shuttle key to select the switching channel freely, after select the corresponding channel, short press the shuttle key to make the task setting menu to pop up.
- When the task is executing, short press the shuttle key to make the task setting menu to pop up, will adjust the task current.
- Long press channel switch, to quick stop current operation or to enter setting menu for corresponding channel.



▶▶ Operation and Setup

Charger Settings

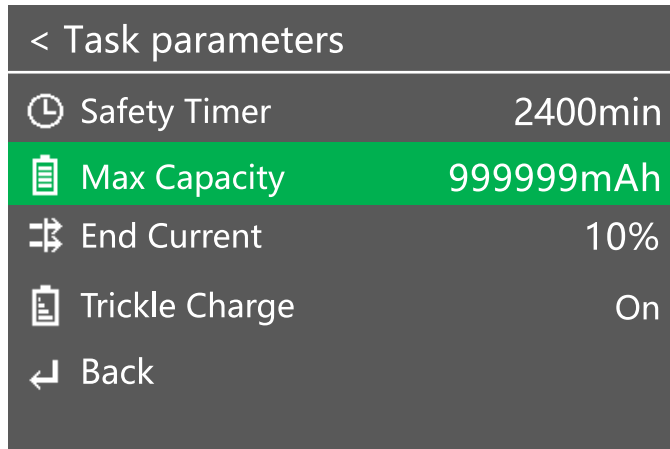


Long press the shuttle key in standby interface to make the system default menu pop up, and the items are as follows:

Task Parameters	Adjust Safety Timer, Max Capacity, End Current and Trickle Charge
System Parameters	Adjust Language, input power, input voltage and so on
CH1 Calibrations	Used for channel 1 data calibration
CH2 Calibrations	Used for channel 2 data calibration
System Self-checking	Start charging Self-checking
Factory Settings	Restore all parameters to factory settings(User calibration data cleanup)
System Info	Display system information、 serial number
Back	Exit system Settings

▶▶ Operation and Setup

Task Parameters

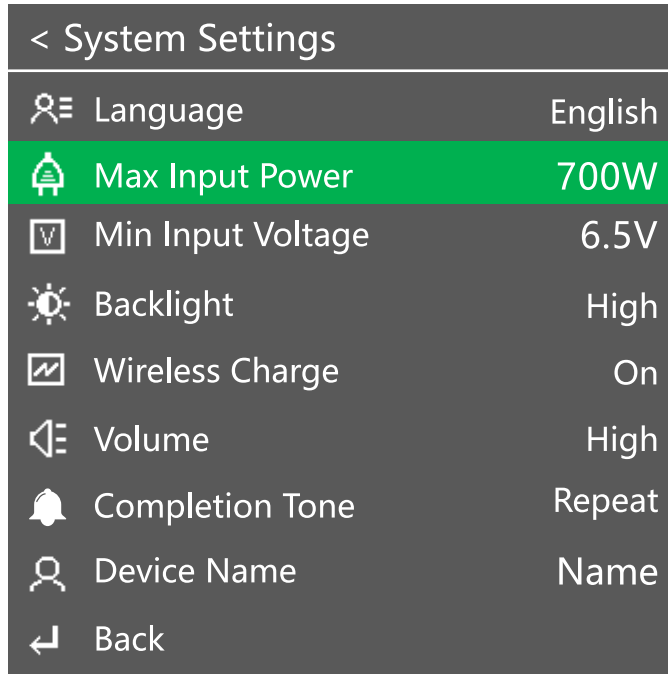


Long press the shuttle key in standby interface to make the task parameters menu to pop up, and then choose task parameter item, the menu items are as follows:

Safety Timer	Cut off exceed the setting time
Max Capacity	Cut off exceed the setting capacity
End Current	Cut off less than the ratio between completed current and set up current
Trickle Charge	ON or OFF
Back	Save all settings and exit, back to Charger Settings

▶▶ Operation and Setup

System Parameters



<	System Settings	
☰	Language	English
⚡	Max Input Power	700W
⚡	Min Input Voltage	6.5V
☀	Backlight	High
🔌	Wireless Charge	On
🔊	Volume	High
🔔	Completion Tone	Repeat
🔍	Device Name	Name
↩	Back	

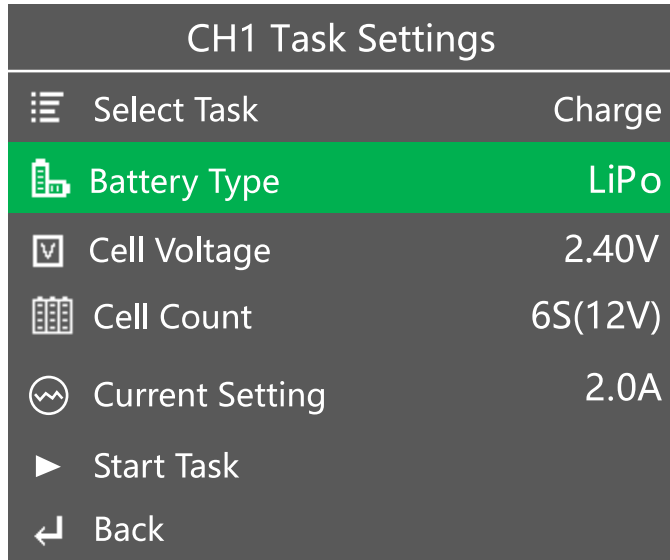
Long press the shuttle key in standby interface to make the System Settings menu to pop up, and then choose system parameter item, the menu items are as follows:

Language	System language setting
Max Input Power	Input power limit setting
Min Input Voltage	Input voltage limit setting
Backlight	backlight adjustment: high, middle, low
Wireless Charge	ON or OFF
Volume	buzzer volume adjustment: high, middle, low
Completion Tone	Single or Repeat
Device Name	Customizing device names through shuttle keys
Back	Save all setting and exit the system settings menu

Buzzer volume: the default is OFF, the operation sound would be blocked, but not the sound of error warning.

▶▶ Operation and Setup

Task Settings



- Connect the charger to the power supply and wait for the system to complete the self testing. Connect the battery to the charger under standby interface, and short press the shuttle key to make the task setting menu to pop up. The items in the menu are as follows:

Select Task	Select task content: charge, discharge, external discharge, storage, balance
Battery Type	Select battery types: smart battery, LiHv, LiPo, Lilon, LiFe, LiXX, NiZn, Pb, NiCd, NiMH, Eneloop
Cell Voltage	End-voltage slight adjustment
Cell Count	Select batteries' s strings: 1-6S, and the item processes automatic test and needs no setting if inserted in balanced interface
Current Setting	Select current, charger/storage 0.1~15.0A, discharge 0.1-3.0A, external discharge 1-15.0A
Start Task	Save all changes, start to execute tasks
Back	Back

▶▶ Operation and Setup

Task Settings

The working mode of the D6 Duo Pro AC/DC Dual Channel Smart Charger is series charging; you must therefore connect it to the output line of the battery while charging. For a lithium battery, it is highly suggested that the balanced interface should be connected to carry out balanced charging to accurately monitor the voltage of each cell and balance the ones with bad consistency.

Charge Function

During the charging process, the screen displays an orange marking which turns into green or blue as the charging is completed. When the charging completes, the cells' voltage difference should be smaller than 20mV, while the screen marking turns into green. Therefore, if the battery is in urgent use, it's okay to stop charging. The charger should continue to balance the battery if the charging process is not terminated, and the screen light turns blue, since the voltage difference is smaller than 10mV. Additionally, the charger should continue to carry out accurate balancing of the battery after the light turns blue.

After the charging is complete, it is normal for voltage decline to occur due to different performances. As the number of the charge cycle grows, the performance decreases, and the voltage decline phenomenon becomes obvious. To charge the battery with a larger current would also cause a more obvious voltage decline after the charging is complete.

NB: When charging the battery in a hurry in outdoors, it is okay to stop charging when the screen light turns green. If there is enough time and the cells are assumed to be well balanced, it is better to stop charging when the screen light turns blue; alternatively, wait a little longer after that to gain more accurate balance effects.

Simultaneously Charging in Both Channels

While two batteries are the same type and same cells, complete charging setting. press bothselect button to initiate task.

Both channels operate under same parameters and would be assigned 50/50 from total power.

Power Distribution

Single channels operation can reach 200w

both channels simultaneously initiate task would get 100w for each

both channels non-simultaneous initiate task, the channel which initiate later will get 150w, if task needs less than 150w, remaining power will go into the other channel automatically. During dual Charging operation, current adjust in a channel will get that channel 150w priority, if task needs less than 150w, remaining power will go into the other channel automatically.

▶▶ Operation and Setup

Task Settings

Discharge Function

Discharge function can discharge the battery. It is recommended to discharge the battery with balance port connection. Due to the limitation of internal discharge power, the discharge may be slow, which is a normal phenomenon.

External Discharge Function

External discharge function makes use of external high-power load resistance to discharge the battery accurately quickly. When used, the battery to be discharged needs to be connected to the input port and output the connection resistance load. The recommended load resistance is between 1.5 and 2.5Ω. Other resistance values can be used normally, but may not run at full power. When external discharge is running, the load is very hot. Please pay attention to safety and avoid accidents or personal injury.

Storage Function

If battery voltage is lower than storage voltage, charger will charge battery to storage voltage. If battery voltage is higher than storage voltage, charger will discharge battery to storage voltage. In order to save storage time, battery might not be accurately balanced, this is normal and no harm to battery.

Balance Function

The balance function is used to balance all cells of battery to reach approximately equal voltage indivisually. The balance time is related to the voltage difference of the battery and the target voltage. Menu to balance cutting mode, the charger automatic analysis and set up the initial equilibrium voltage value, the user can also make adjustment, the charger charge capacity greater than the discharge capacity, balanced operation choice is greater than or equal to the balance of the current battery voltage usually can get faster speed.

▶▶ Operation and Setup

Task Settings

Internal Resistance Measurement Function

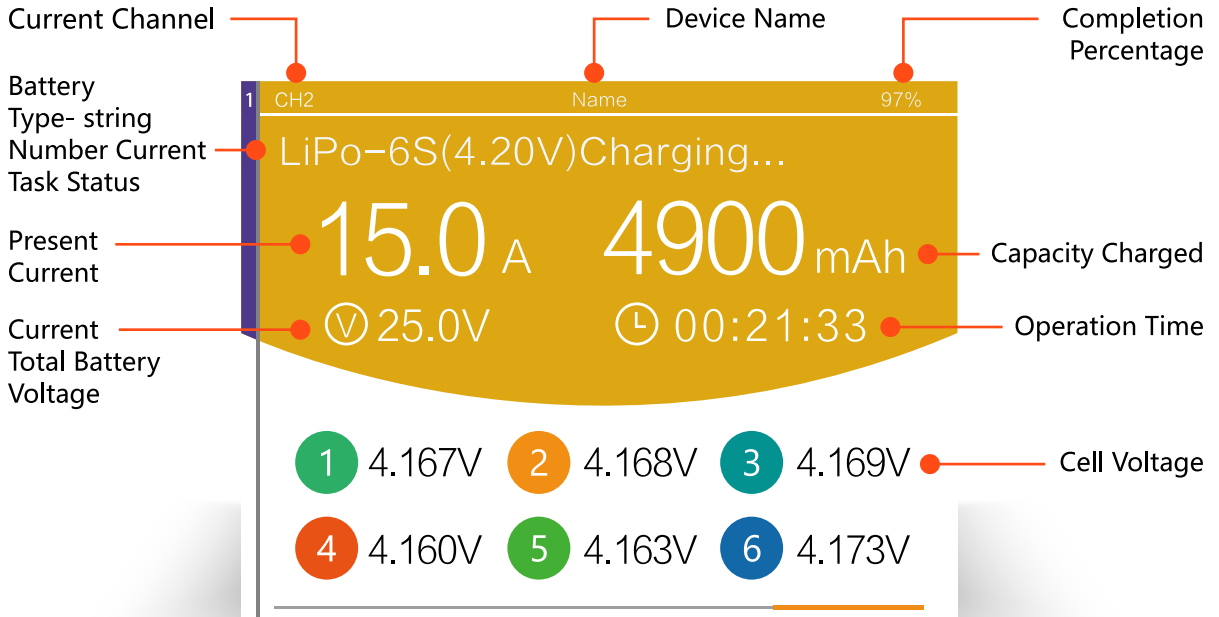
D6 Duo Pro AC/DC Dual Channel Smart Charger is equipped with a function of measuring the cells' internal resistance, which is only applied when conducting balanced charging. The cell voltage should be measured and calculated within 2 to 3 minutes after the charging task has been initiated. The battery internal resistance can slightly vary under different electric quantities while the measured resistance value is usually relatively low as the electric quantity is large. The charging current should be adjusted instantly as the charger measures the internal resistance of the battery; therefore, it is normal phenomenon for acute change of current to occur during charging.

Activation And Restoration Function Of Excessive Discharged Battery

When the charging task begins, one tenth of the setting current should be applied to activate and restore the battery if the cell voltage is tested to be lower than the pre-charge voltage; on the other hand, it should be adjusted to a rated voltage for charging when the cell voltage is higher than the pre-charge voltage. This design can protect excessively discharged batteries, as well as conduct activation and restoration.

▶▶ Operation and Setup

Working Parameters Display

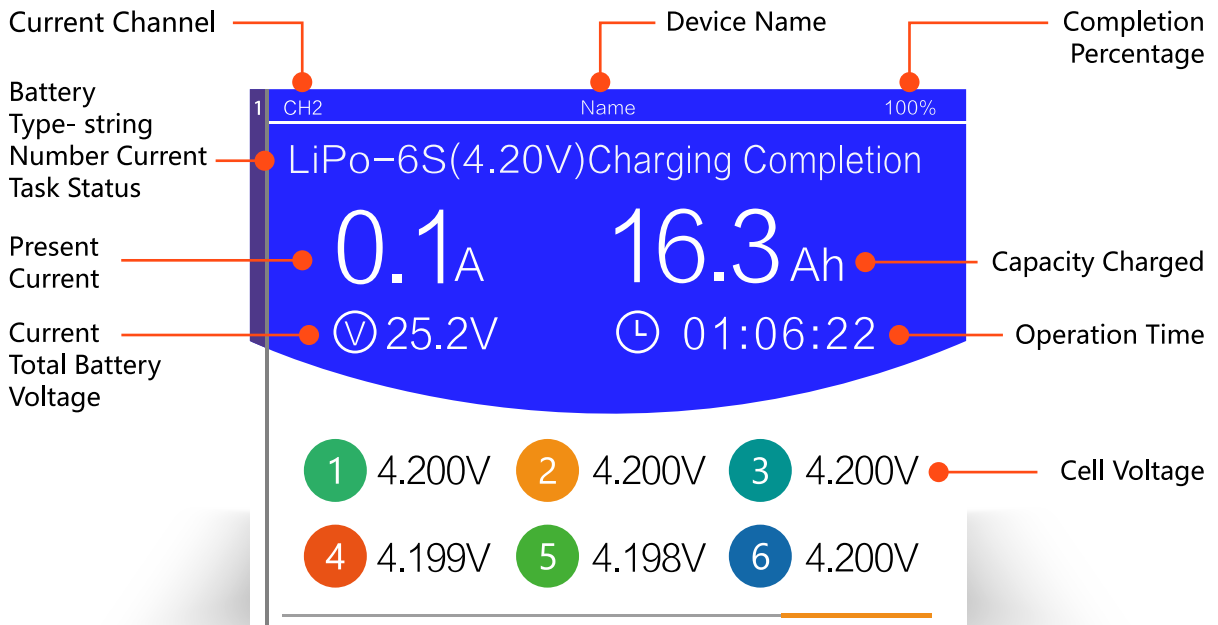


Fast Charging

Scroll the shuttle key during operation can switch the display information in the lower half of the screen, which are cell voltage, cell internal resistance and run data. The cell voltage and internal resistance can only be displayed in the mode of balance charging (2 minutes). Long press the CH key to stop the current task.

▶▶ Operation and Setup

Working Parameters Display



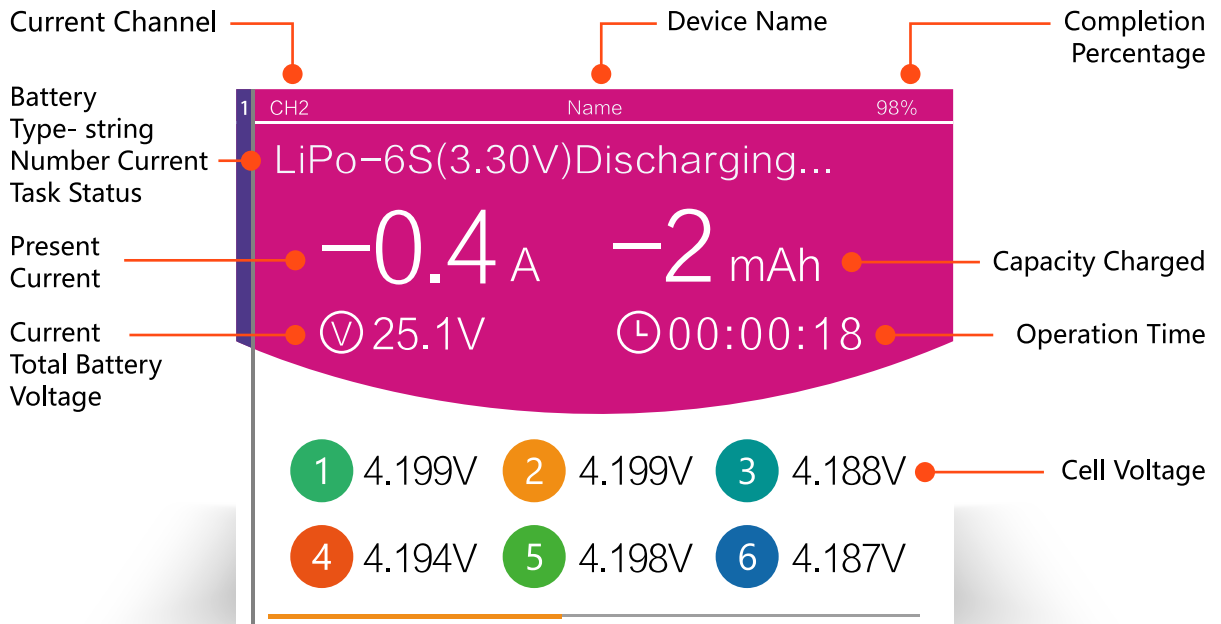
Fast Charging Completion

Rotating shuttle key can switch the information display content of the lower half of the screen, and the information content is in order: voltage of each core, internal resistance of each core, and run data. The batteries voltage only balance mode, according to the battery internal resistance in only the balance mode, the effective measurement to display (not a prefilled state without any piece of batteries and 3 minutes to reach full charge pressure)

Long press the CH key to stop the current task.

▶▶ Operation and Setup

Working Parameters Display

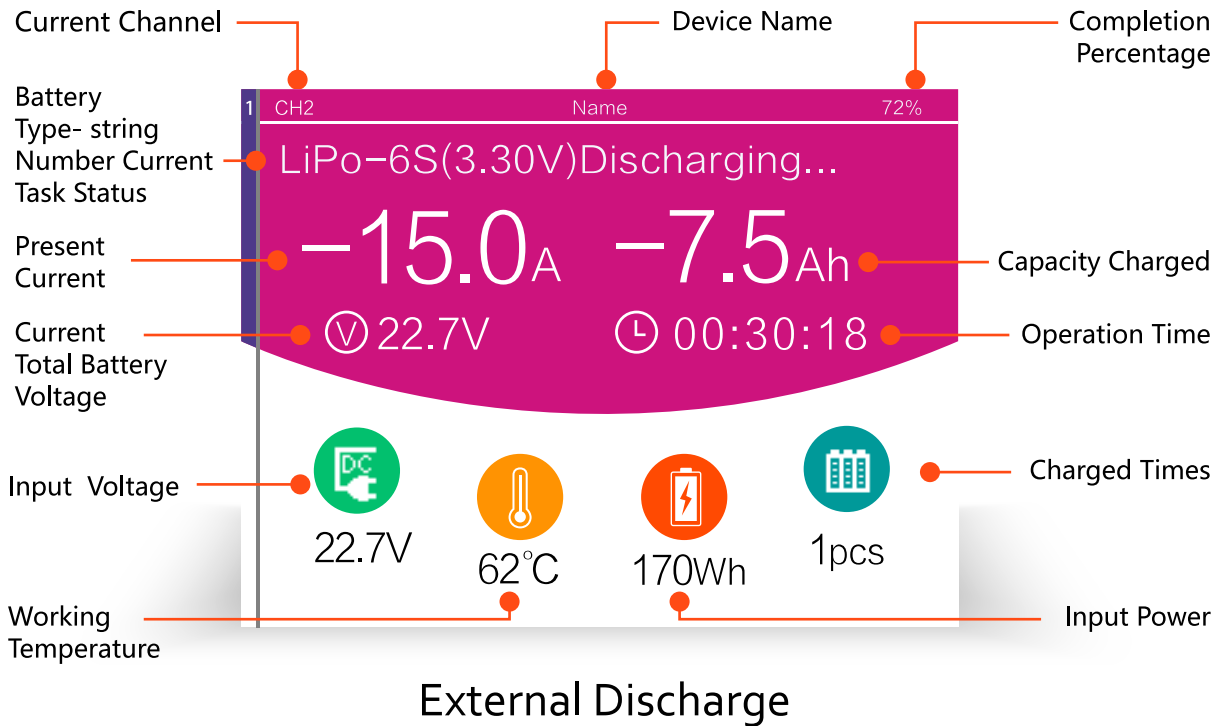


Discharging

Scroll the shuttle key during operation can switch the display information in the lower half of the screen, which are cell voltage and run data. The cell voltage and internal resistance can only be displayed in the mode of balance charging. Long press the CH key to stop the current task.

▶▶ Operation and Setup

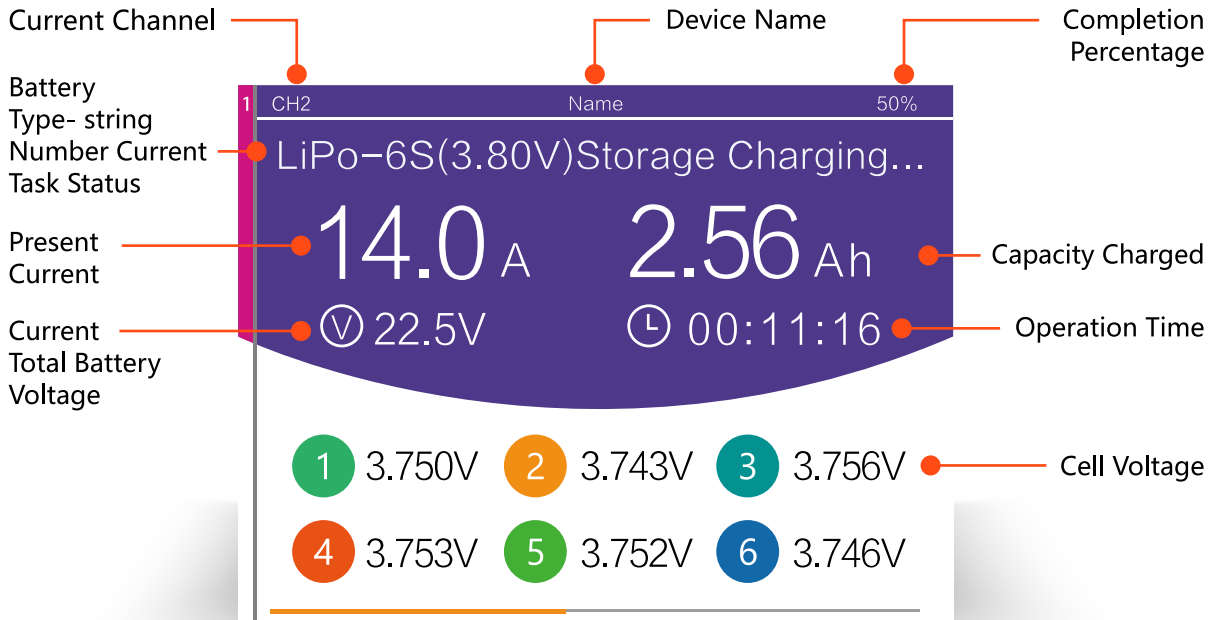
Working Parameters Display



Long press the CH key to stop the current task.

▶▶ Operation and Setup

Working Parameters Display

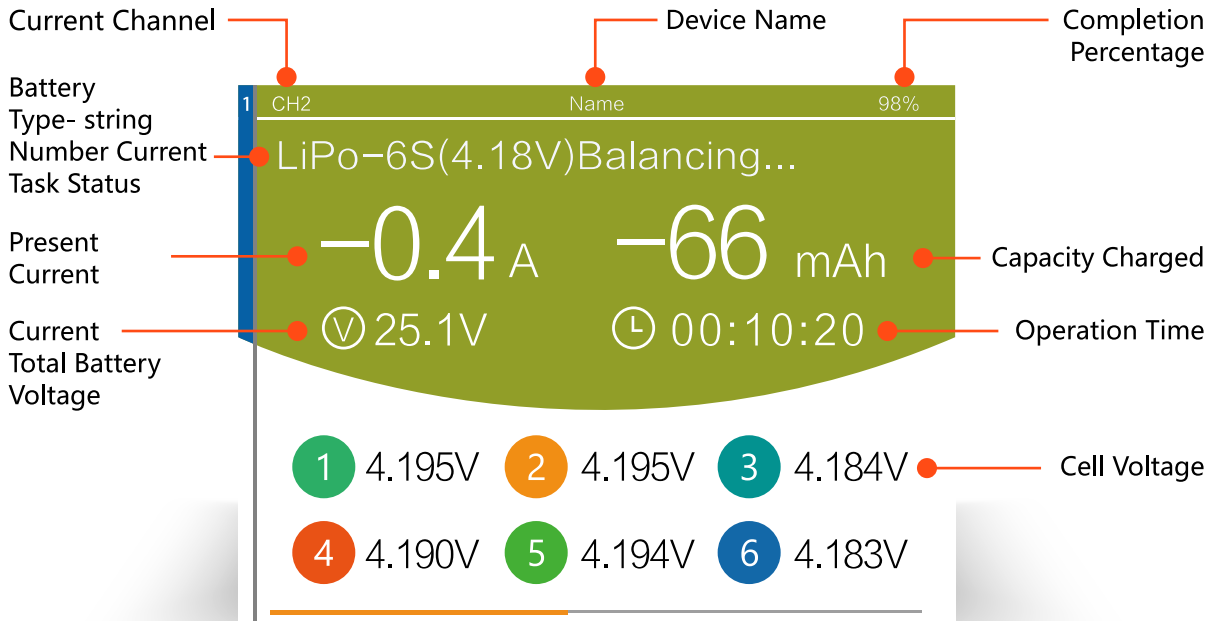


Storage Charging

Scroll the shuttle key during operation can switch the display information in the lower half of the screen, which are cell voltage and run data. The cell voltage and internal resistance can only be displayed in the mode of balance charging.
Long press the CH key to stop the current task.

▶▶ Operation and Setup

Working Parameters Display



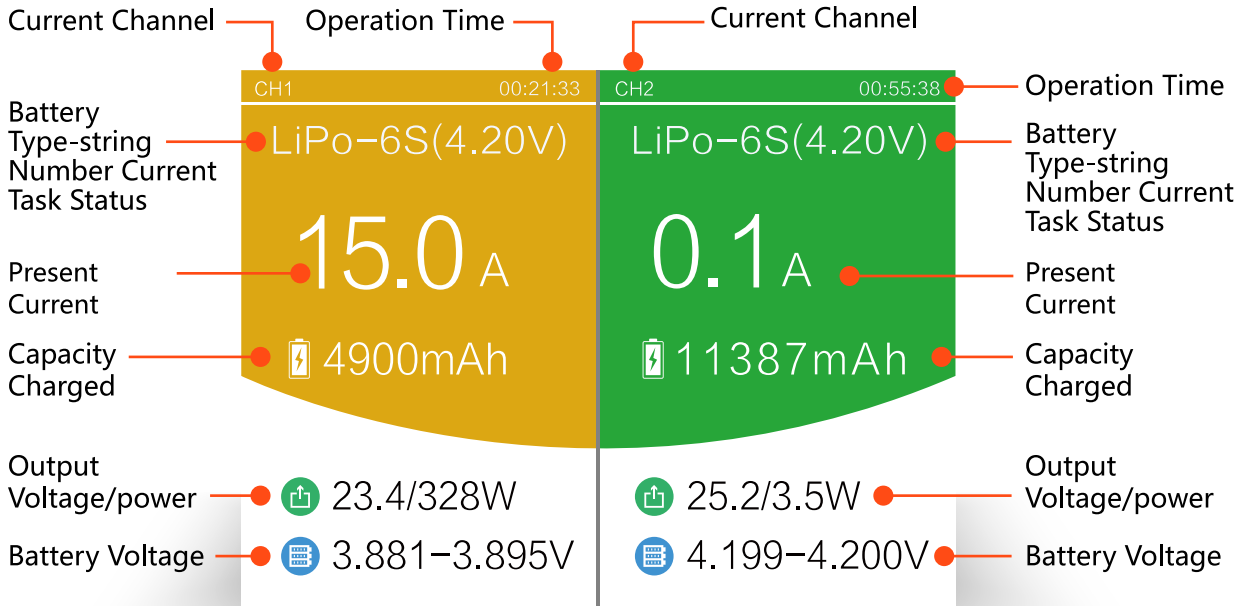
Balancing

Scroll the shuttle key during operation can switch the display information in the lower half of the screen, which are cell voltage and run data.

Long press the CH key to stop the current task.

▶▶ Operation and Setup

Working Parameters Display



Split-Screen Display

Short press CH, display the channel you chose,
long press the CH key to stop the current task.

▶▶ Troubleshoot

- 1. Error in power on self-testing: the charger can automatically carry out a self-testing when connected to a power supply. A self-testing error warning sound should be heard when the charger is connected to the battery; power on after removing the battery for 5 minutes. Do not insert the battery in the self-test, please do other operations after the completion of self-test.
- 2. Error for abnormal battery connection: pull out and plug in the battery again to ensure all connections are reliably contacted; if the error reminder continues, please check whether the metal parts on the battery interface are oxidized or burned resulting in unreliable connection.

Safety Tips

- Please do not charge/store the battery of the following types of batteries from different manufacturers, different models, different types and different capacity unchargeable battery.
- Cannot confirm the type or parameters of the battery
- Batteries with special requirements for charging technology
- Damaged or defective batteries
- Battery with a built-in combination or protection circuit
- Battery installed in other equipment or connected to other components
- The rechargeable battery suitable for carrying current of this charger has not been confirmed by the manufacturer

▶▶ Product Qualification Declaration

- D6 Duo Pro AC/DC Dual Channel Smart Charger conforms to relevant commands in B: 2017, PART15 CLASSB; PART15 CLASSC, FCC

Testing Standards	Result
EN 60950-1:2006+A11:2009+A1:2010+A12:2011+A2:2013	Yes
EN 62311:2008	Yes
ETSI EN 301 489-1 V2.2.0(2017-03) ETSI EN 301 489-3 V2.1.1(2017-03)	Yes
ETSI EN 303 417 V1.1.1(2017-09)	Yes



This symbol means that you must dispose of electrical from the General household waste when it reaches the end of its useful life. Take your charger to your local waste collection point or recycling center. This applies to all countries of the European Union, and to other European countries with a separate waste collection system.

▶▶ Warranty and Service

- We warrant this product for a period of one year (12 months) from the date of purchase. The guarantee applies only to such material or operational defects, which are present at the time of purchasing the product. During that period, we will repair or replace without service charge any product deemed defective due to those causes. You will be required to present proof of purchase (invoice or receipt). This warranty does not cover the damage due to wear, overloading, incompetent handling or using of incorrect accessories.

Statement

- The design of the D6 Duo Pro AC/DC Dual Channel Smart Charger is only applicable to the battery types listed in this manual. HOBBYMATE will not be held responsible for the use of the charger for purposes other than those listed in the manual.

All specifications and parameters are subject to change without prior notice!



WARNING!



FIRE HAZARD!

NEVER USE CHARGER UNSUPERVISED!

- Batteries pose a SEVERE risk of fire if not properly handled.
- Read Entire operation manual before using charger.
- This unit may emit heat during use.
- Only operate this device in a cool ventilated area away from flammable objects.
- Failure to observe safety procedures may cause damages to property or injury.