



D6 Pro AC/DC Dual Channel Smart Charger Operating Instructions



ShenZhen HOTA Technology Co., LTD.

D6 Pro AC/DC Dual Channel Smart Charger

Thank you for purchasing the HOTA series of smart chargers. Please read this Instructions carefully before use so as to use the product better, please keep this Instruction in a place safe for easy access.

If you want to know more about our smart chargers, please visit our website: www.hota-exp.com

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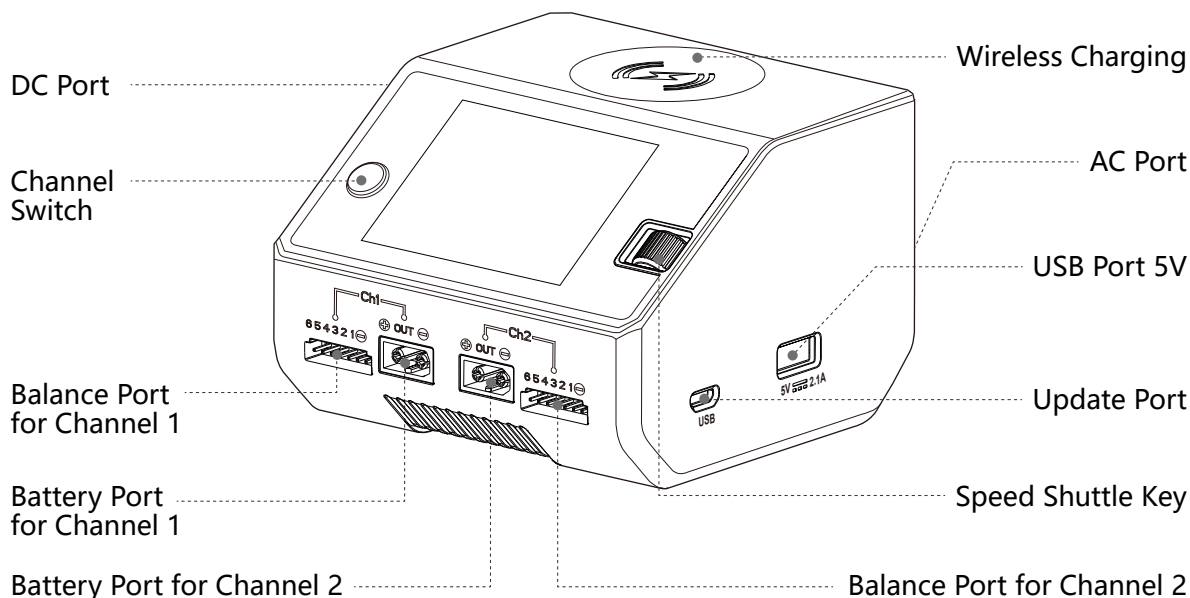
Product Overview

Specifications

Input Voltage	AC 100~240V / 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 @ input voltage > 24V	External Discharge Current	1~15A x 2
	AC 200W (Support power distribution)	USB Output	5V / 2.1A
Discharge Power	Internal Discharge: 15W x 2 (balance port 10W x 2)	Storage Temperature	-20~60°C
	External Discharge: 325W x 2(650W)	Operating Temperature	0~40°C
Battery Type	LiHV/LiPo/LiFe/Lilon/Lixx : 1~6S NiZn/NiCd/NiMH : 1~16S Smart Battery : 1~6S Lead Acid(Pb) : 1~12S(2~24V) Eneloop : 1~16S	Screen Size	2.8" 320×240 260000 colors
		Dimensions	108mm×105mm×76mm
		Net Weight	575g
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. Input voltage of the charger is 6.5-30V DC. When connecting the power supply, make sure that the input voltage match the operating voltage range of the charger.
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-checking to be completed;
2. Select the channel you wanna use then connect your battery to the chosen channel;
3. Set up task parameters applicable to your battery through the display and speed shuttle key;
4. Enjoy.

Standard Battery Parameters

Battery Task 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.

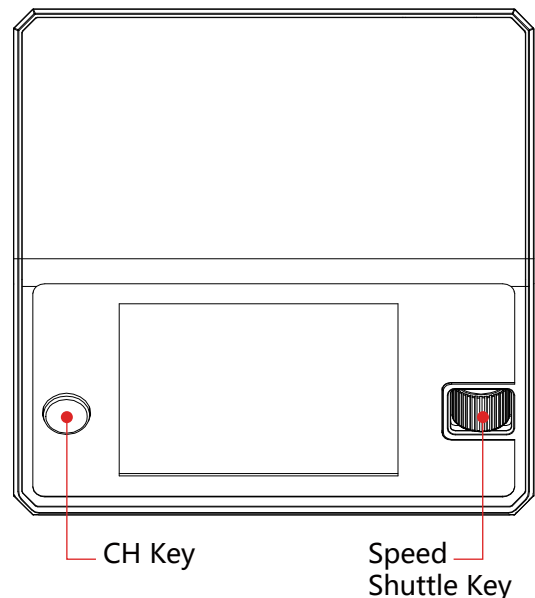
▶▶ Operation and Setup

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.

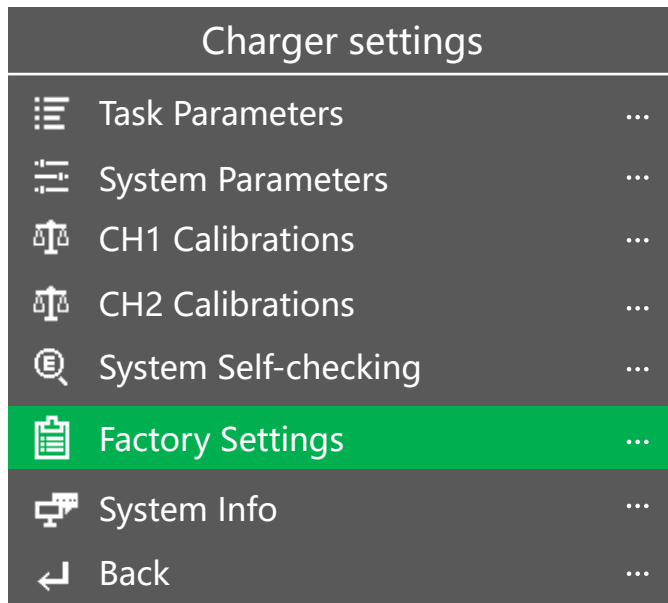
Operative Skills

- Connect power supply to the charger's AC or DC port, wait for the system to complete the self-checking. Connect the battery to the charger under standby interface, and short press the speed shuttle key to select the switching channel freely, after select the corresponding channel, short press the speed shuttle key to make the "Task Setting" menu to pop up. When the task is being executed, you can short
- press the speed shuttle key to pop up the "Adjust Task" menu to adjust the task's current. Long press CH key to quick stop current operation or to enter the "Task Settings" menu for corresponding channel.



»» Operation and Setup

Charger Settings

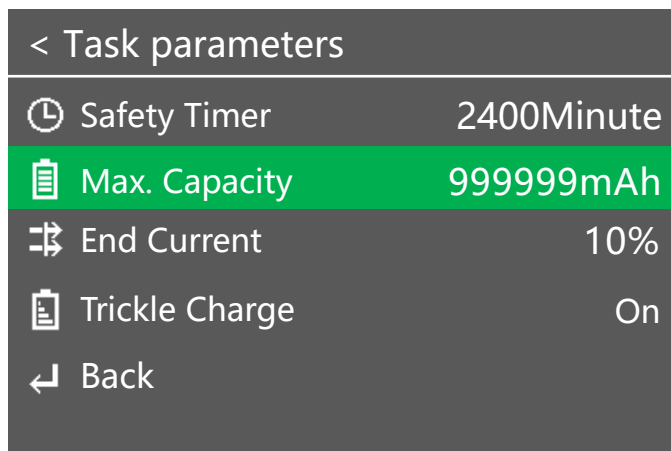


In the standby interface, Long press the speed shuttle key to pop up the “Charger Settings” menu. The menu items are as follows:

Task Parameters	Adjust Safety Timer, Max Capacity, End Current and other parameters
System Parameters	Adjust Language, input power, Volume and other parameters
CH1 Calibrations	Used for channel 1 data calibration
CH2 Calibrations	Used for channel 2 data calibration
System Self-checking	Start self-checking of the charger
Factory Settings	Restore all parameters to factory settings(User calibration data cleanup)
System Info	Display system information, serial number
Back	Exit “Charger Settings”

»» Operation and Setup

Charger Settings > Task Parameters












In the standby interface, Long press the speed shuttle key to pop up the “Charger Settings” menu. and then choose “Task parameters” item, the menu items are as follows:

Safety Timer	Allows maximum running time; running beyond this setting, automatic protection will stop the task.
Max. Capacity	Allows maximum charging capacity; running beyond this setting, automatic protection will stop the task.
End Current	Cut off when less than the ratio between completed current and set up current
Trickle Charge	Whether to turn on trickle charge : On or Off
Back	Exit the “Task parameters” menu

»» Operation and Setup

Charger Settings > System Parameters

< System Settings		
	Language	English
	Max. Input Power	700W
	Min. Input Voltage	6.5V
	LCD Backlight	High
	Wireless Charge	On
	Volume	High
	Completion Signal	Repeat
	Device Name	Name
	Back	








In the standby interface, Long press the speed shuttle key to pop up the “Charger Settings” menu. and then choose “System parameters” 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
LCD Backlight	Backlight adjustment: high, middle, low
Wireless Charge	Buzzer volume adjustment: high, middle, low
Volume	buzzer volume adjustment: high, middle, low
Completion Signal	Single or Repeat
Device Name	Press the speed shuttle key to enter, need to manually enter the name of the device, long press the speed shuttle key to exit
Back	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

CH1 Task Settings		
	Select Task	Charge
	Battery Type	LiPo
	Cell Voltage	2.40V
	Cell Count	6S(12V)
	Current Setting	2.0A
	Start Task	
	Back	

Connect power supply to the charger's AC or DC port, wait for the system to complete the self-checking. Connect the battery to the charger under standby interface, and short press the CH key to select the switching channel freely, after select the corresponding channel, short press the speed shuttle key to make the "Task Setting" menu to pop up.

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 battery's strings: 1~6S, if balance port is inserted, then it processes automatic test, no need to do setting
Current Setting	Select current, charger/storage 0.1~15.0A, discharge 0.1~3.0A, external discharge 1.0~15.0A
Start Task	Start to execute task
Back	Back

▶▶ Operation and Setup

Task Settings and Notes

The D6 Pro AC/DC Dual Channel Smart Charger is operation in a series charging mode. When connecting the battery, the battery output cable must be connected. For lithium batteries, it is strongly recommended to connect the balance ports for balanced charging so as to ensure that the charger can accurately monitor the voltage of each cell and balance the cells with poor consistency. When charging in unbalanced mode (without connecting to the battery balance port), the charger will have a warning before starting the task.

Charge Function

When charging is in progress, the screen is marked in orange, and the screen turns green or blue when charging is completed. When the charging is completed, the cell voltage difference is less than 20mV, and the screen turns green. If you need to use it urgently, you can stop charging it. If charging is not stopped at this time, the charger will continue to balance the battery. When the voltage difference is less than 10mV, the screen will turn blue. When turned blue, the charger will continue to accurately balance the battery.

After having the battery charged, the voltage will drop back due to the difference in performance and this is normal. As the number of charging increases, the performance of the battery gradually declines, such a phenomenon will become obvious. Charging with a larger charging current will also cause the voltage to fall back after a full charge, which is more obvious.

Tips: If you are charging outdoors, and you want to finish it quickly, you can stop charging when you see the appearance of green state. When there is enough time, and you hope that the battery can achieve a good balance, then wait for the blue color to appear, or wait for a while more after the blue appear to get more accurate effect.

Discharge Function

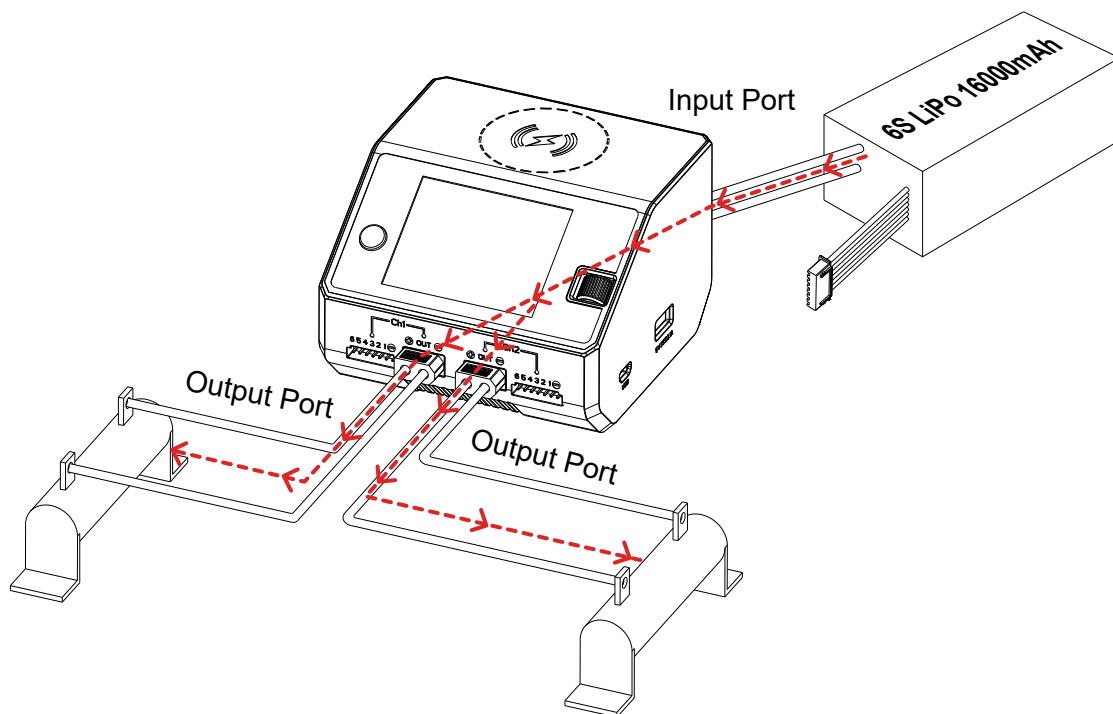
The discharge function can discharge the battery. It is recommended to connect the balance port for discharge, which is faster and the detection on discharge termination is more accurate. Due to The limitation of the internal discharge power , the discharge process may be slower, which is normal.

▶▶ Operation and Setup

Task Settings and Notes

External Discharge Function

The external discharge function uses the external high-power load resistor to quickly discharge the battery accurately. When it is used, the battery to be discharged needs to be connected to the input port, and the output is connected to the resistor load. It is recommended that the resistance of the load be between 1.5 and 2.5 ohms. Other resistance values can also be used normally, but may not be able to operate at full power. When the external discharge is running, the load is very hot. Please pay attention to safety and avoid accidents or personal injury.



Storage Function

When the storage function is selected, if the battery is lower than the preset storage voltage, the charging task will be automatically performed; if the battery voltage is higher than the preset storage voltage, the discharge task will be automatically performed. In order to save the task time, the storage and discharge tasks do not accurately balance the cell voltage. There may be some error between the cell voltage and the preset value at the end of the task, which is a normal phenomenon.

▶▶ Operation and Setup

Task Settings and Notes

Balance Function

The balance function is used to balance the voltage of cells and make them equal. The balance time is related to the cell voltage difference and the target voltage. When the menu is switched to the balance mode, the charger automatically analyzes and sets the initial balance voltage value, and the user can freely adjust it. The charger's charging ability is much larger than the discharge capacity; in the balance operation, selecting voltage equal or larger than the current battery voltage usually lets you attain faster effect in balancing.

About Internal Resistance Measurement

The D6 Pro AC/DC Dual Channel Smart Charger has a cell internal resistance measurement function that is only effective when performing balanced charging tasks on the battery. About two or three minutes after the start of the charging task, the internal resistance of the battery is measured and calculated. The internal resistance of the battery varies with different power levels. Generally speaking, the internal resistance measured is lower when the power is higher. When the charger measures the internal resistance of the battery, the charging current is instantaneously adjusted. Therefore, it is normal to find that the current is abruptly changed during the charging process.

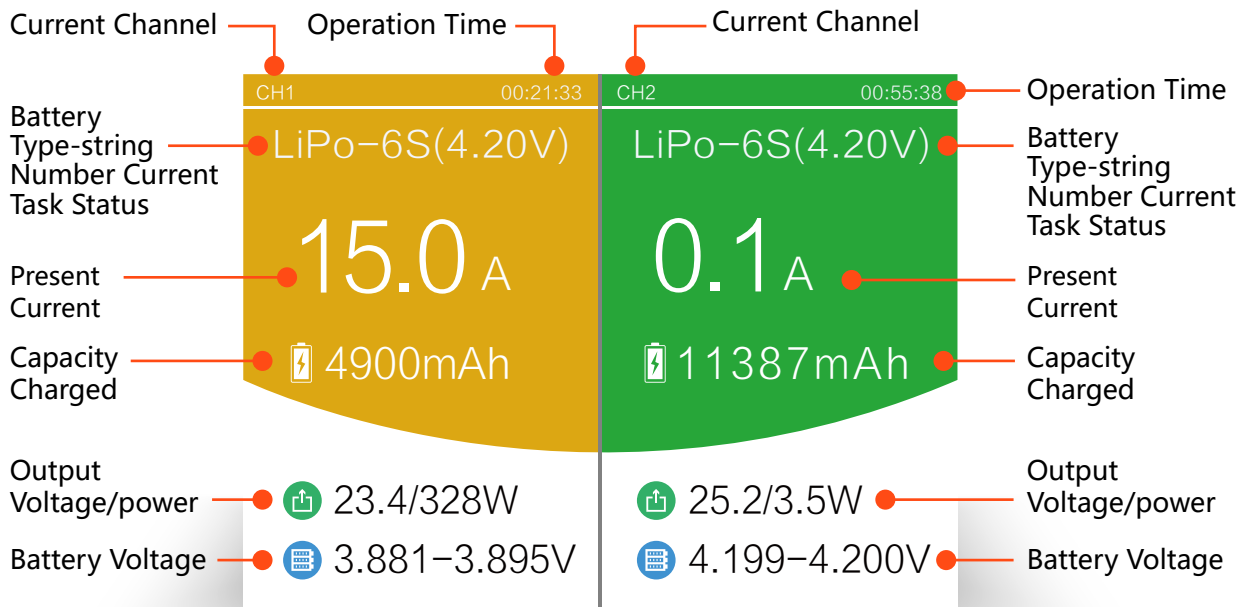
Due to the difference in the ways of measuring the internal resistance, the test accuracy of internal resistance like those attained on professional measuring instruments cannot be achieved. Therefore, the internal resistance value is only suitable for horizontal comparison reference, such as judging the consistency of cell performance or comparing the performance parameters of different batteries. The magnitude of the charging current has a certain influence on the accuracy of the internal resistance measurement. A battery with a large capacity and low internal resistance requires a large charging current to accurately measure the internal resistance.

Battery Activation And Repair

After the charging task starts, if it is detected that the cell voltage is lower than the pre-charging voltage, the cell will be activated and repaired using one tenth of the task setting current. After the voltage becomes higher than the pre-charging voltage, the voltage will be adjusted to the set voltage for charging. Such design can protect the over-discharged battery, activate and repair it.

▶▶ Operation and Setup

Working Parameters Display



Split-Screen Display

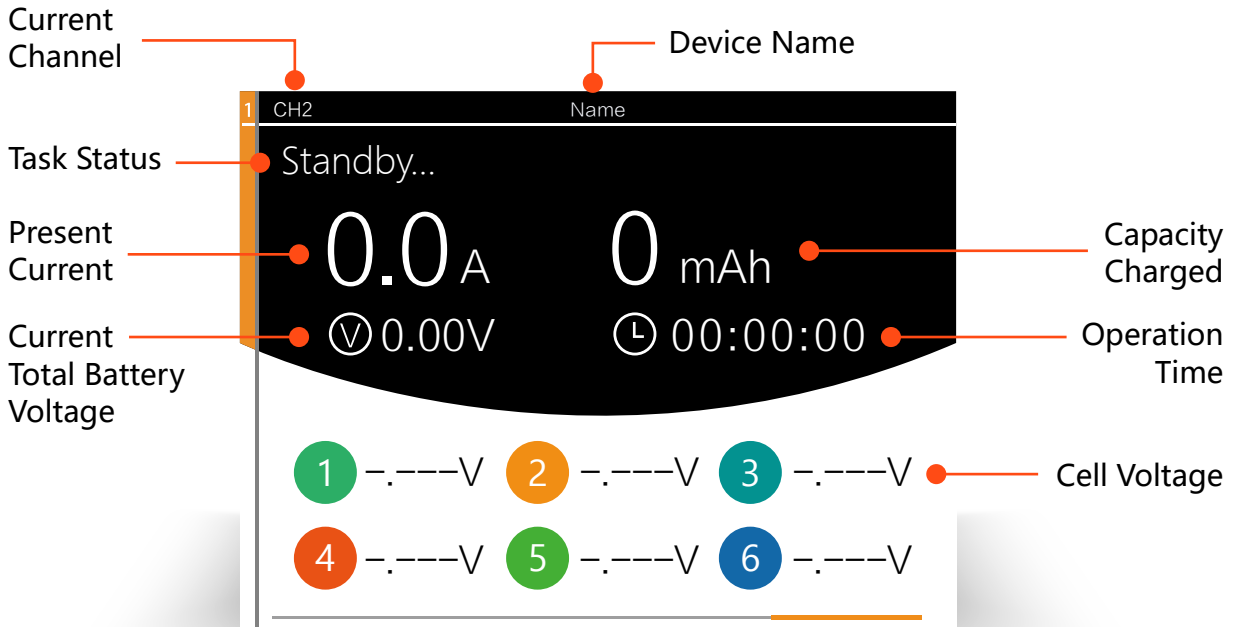
■ CH1: Charging ■ CH2: Fast Charging Done

Split-Screen Display Simple Operation

1. Boot into the split-screen display – free state;
2. Long press the speed shuttle key to enter “Charger Settings” menu in the standby state;
3. Short press CH key display the channel you choose;
4. Long press the CH key to stop the current task.

▶▶ Operation and Setup

Working Parameters Display



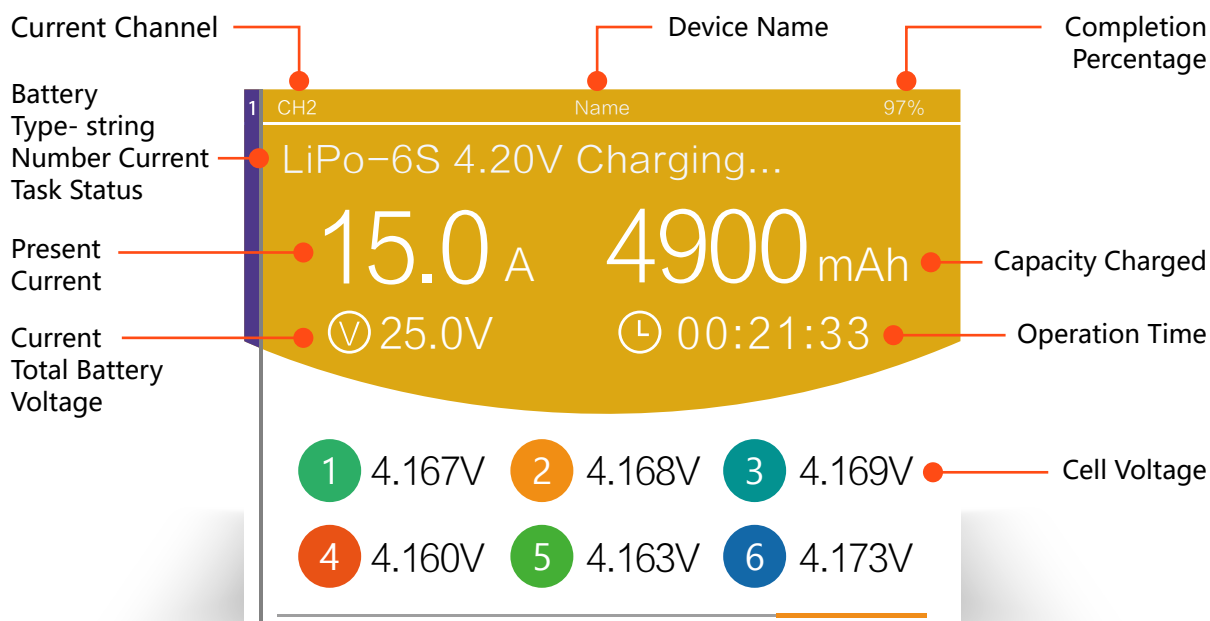
Standby

Standby State Simple Operation

1. Connect power supply to the AC or DC port of the charger, wait for the system to complete the self-checking. connect the battery to the charger in the standby interface;
2. The black display in the standby state, at this time the output current, output power, capacity charged and run time are all zero;
Scroll the speed shuttle key during operation can switch the display information in the lower half of the screen, which are cell voltage and run data.
3. After select the corresponding channel, Short press the speed shuttle key to pop up the "Task Settings" menu.
4. Short press CH key display the channel you choose;
5. Long press the speed shuttle key to enter the "Charger Settings" menu.

▶▶ Operation and Setup

Working Parameters Display



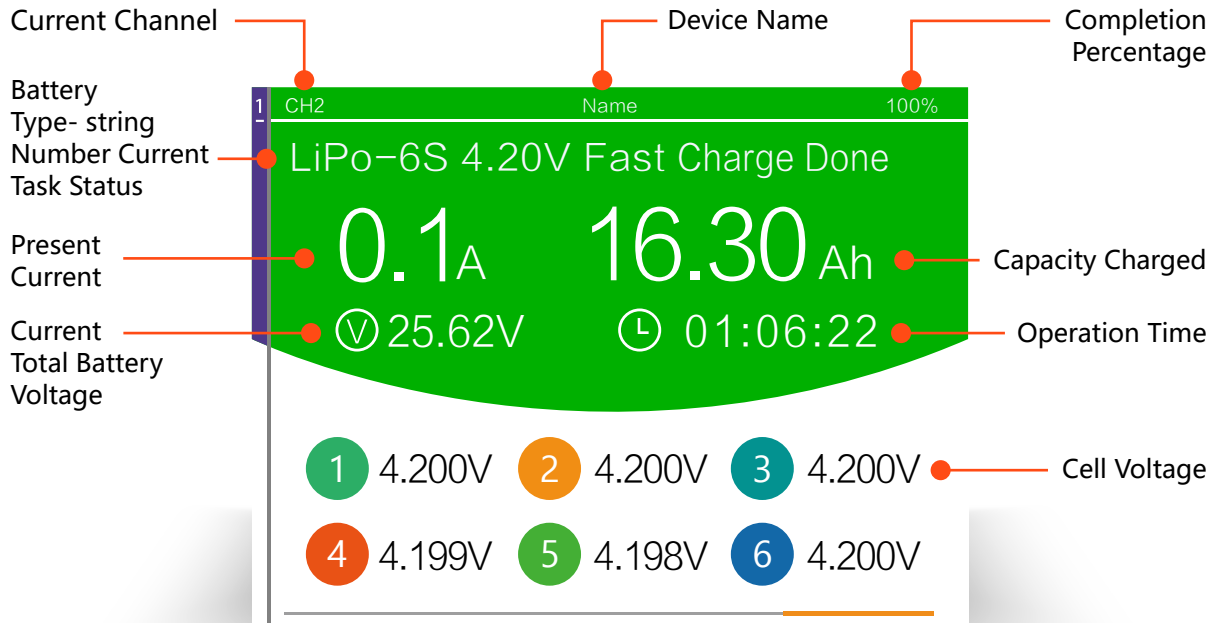
Charging

Charging Status Simple Operation

1. Connect power supply to the AC or DC port of the charger, wait for the system to complete the self-checking. connect the battery to the charger in the standby interface;
2. After select the corresponding channel, short press the speed shuttle key to pop up the "Task Settings" menu, set the task to "Charge" , adjust the task parameters, and short press the speed shuttle key to start the task;
Scroll the speed 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) .
3. When the charge task is executing, short press the speed shuttle key to pop up the "Adjust Task" menu, will adjust the charge current, long press the CH key can stop the current task;
4. Enjoy.

▶▶ Operation and Setup

Working Parameters Display



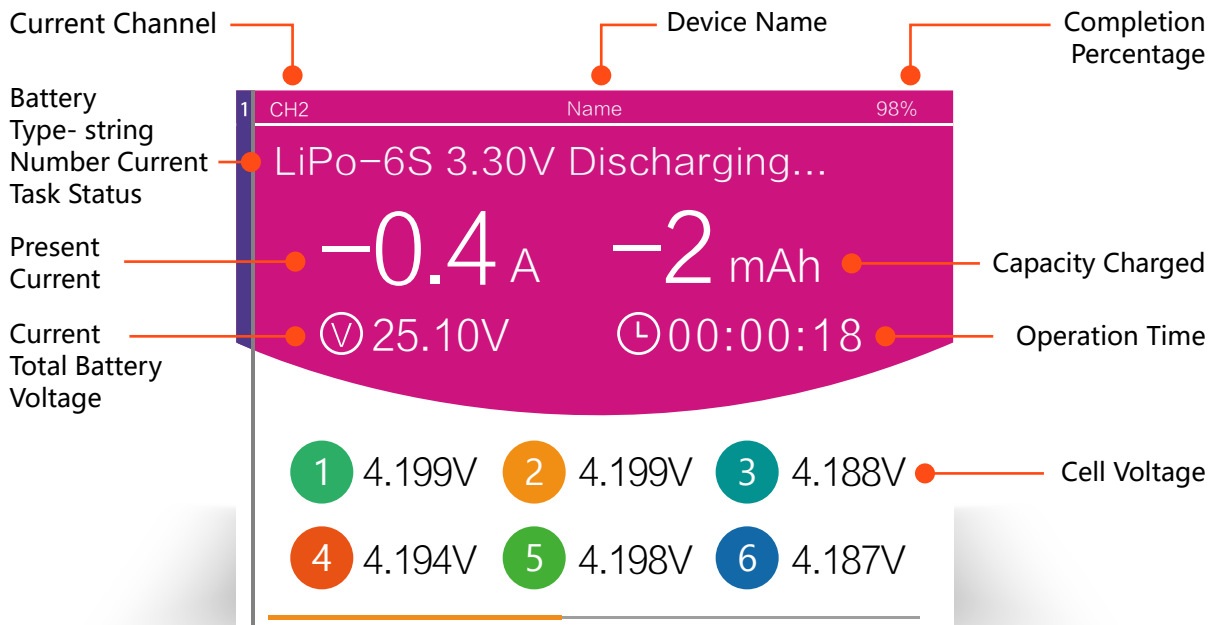
Fast Charge Done

Fast Charge Done Status Simple Operation

1. When charging is completed, the cell voltage difference is less than 20mV, displayed fast charge Done;
(press the speed shuttle key to stop the task before removing the battery)
2. Long press the CH key can stop the current task;
3. Short press the CH key display the channel you choose.

▶▶ Operation and Setup

Working Parameters Display



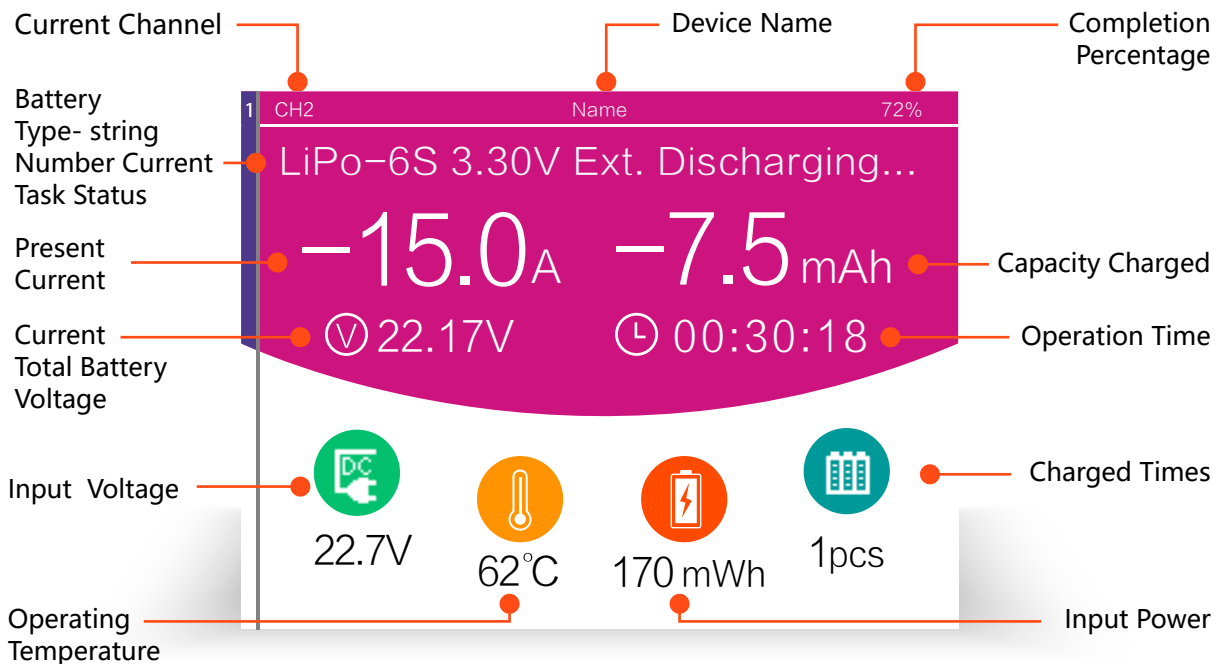
Discharging

Discharging Status Simple Operation

1. Connect power supply to the AC or DC port of the charger, wait for the system to complete the self-checking. connect the battery to the charger in the standby interface;
2. After select the corresponding channel, short press the speed shuttle key to pop up the "Task Settings" menu, set the task to "Discharge" , adjust the task parameters, and short press the speed shuttle key to start the task;
Scroll the speed 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.
3. When the discharge task is executing, short press the speed shuttle key to pop up the "Adjust Task" menu, will adjust the discharge current, long press the CH key can stop the current task;
4. Enjoy.

▶▶ Operation and Setup

Working Parameters Display



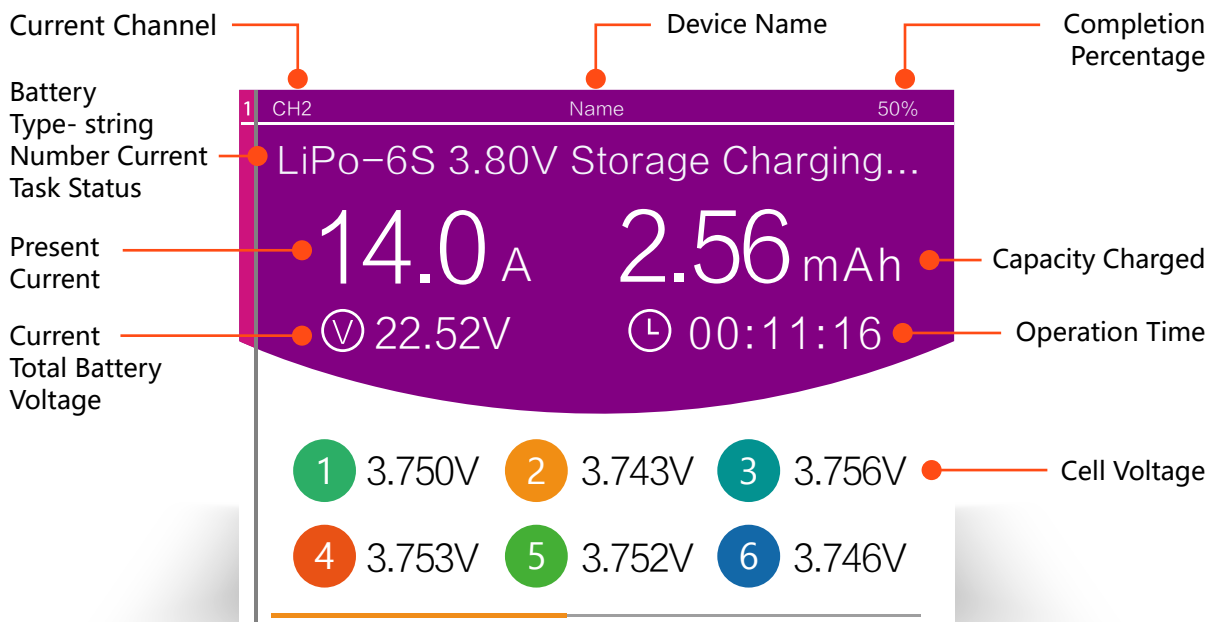
External Discharging

External Discharging status Simple Operation

1. Connect the battery, which is going to discharge ,to the input ends(DC port) of the charger, and wait for the system to complete its self-checking, then in the standby interface, connect the high power resistance load to the charger's output ends ;
2. After select the corresponding channel, short press the speed shuttle key to pop up the "Task Settings" menu, set the task to "Ext. discharge" , adjust the task parameters, and short press the speed shuttle key to start the task;
3. When the Ext. discharge task is executing, short press the speed shuttle key to pop up the "Adjust Task" menu, will adjust the Ext. discharge current, long press the CH key can stop the current task;
4. Enjoy.

▶▶ Operation and Setup

Working Parameters Display



Storage Charging

Storage Charging Status Simple Operation

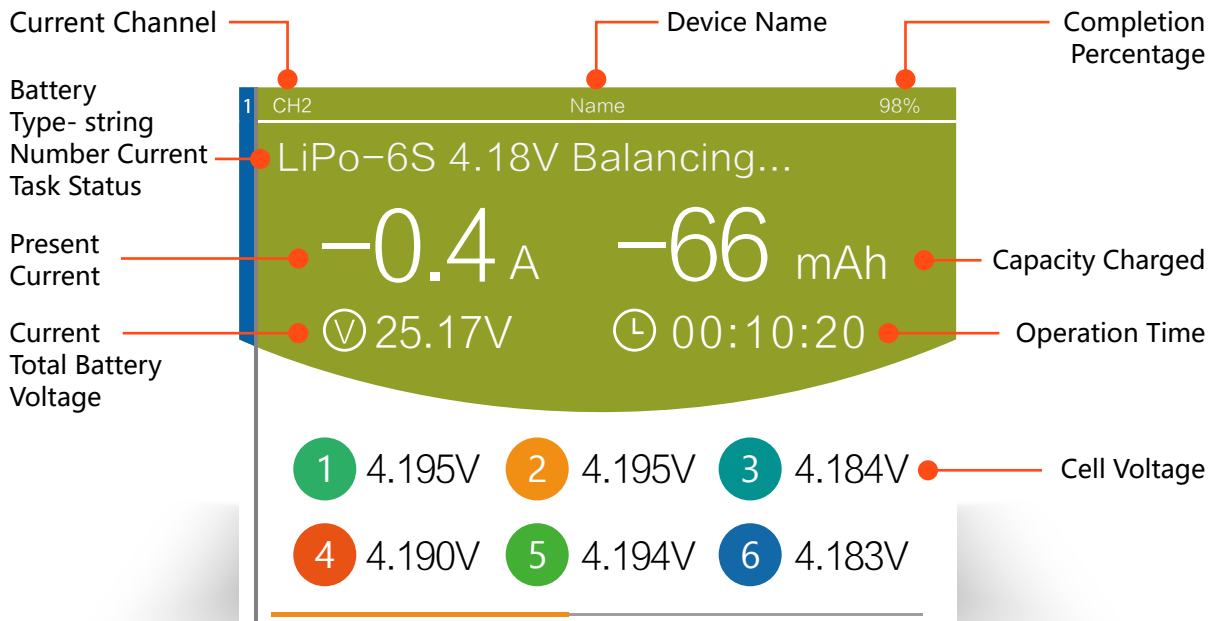
1. Connect power supply to the AC or DC port of the charger, wait for the system to complete the self-checking. connect the battery to the charger in the standby interface;
2. After select the corresponding channel, short press the speed shuttle key to pop up the "Task Settings" menu, set the task to "Storage" , adjust the task parameters, and short press the speed shuttle key to start the task;

Scroll the speed 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.

3. When the storage task is executing, short press the speed shuttle key to pop up the "Adjust Task" menu, will adjust the storage current, long press the CH key can stop the current task;
4. Enjoy.

▶▶ Operation and Setup

Working Parameters Display



Balancing

Balancing Status Simple Operation

1. Connect power supply to the AC or DC port of the charger, wait for the system to complete the self-checking. connect the battery to the charger in the standby interface;
2. After select the corresponding channel, short press the speed shuttle key to pop up the "Task Settings" menu, set the task to "Balance" , adjust the task parameters, and short press the speed shuttle key to start the task;
Scroll the speed 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.
3. When the balance task is executing, short press the speed shuttle key to pop up the "Adjust Task" menu, will adjust the balance current, long press the CH key can stop the current task;
4. Enjoy.

►► Product Qualification Declaration

- D6 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

▶▶ Troubleshooting

- Error processing during “System self-checking” : when the charger is performing the System self-checking, if the output port is connected to the battery, it will cause a self-checking error, at this time, the battery should be removed and wait 5 seconds before retrying. Do not insert the DC port battery during the System self-checking. Wait for the self-checking to complete before performing other operations.
- Battery connection error handling: Re-plug the battery and ensure that all connections are in reliable contact. If the error message is repeated, check the battery interface metal parts for oxidative or burning that affects good contact .

▶▶ Warranty and Service

- We provide one-year warranty for this charger from the date of purchase. Within one year, our company will repair the product for you free of charge. We will not provide free repair service if it is caused by improper use or modification by customers. If there is a problem with your product and it is covered by the warranty, please contact us at the first time, we will assist you with the relevant maintenance.
- If it is necessary to replace parts out of the warranty time, we will charge you some component fee and maintenance fee .

During the warranty period, repairs are not free of charge if:

- 1) Failure or damage caused by improper use or disassembly, attachment or modification as specified in the Instructions.
- 2) Failure or damage caused by natural disasters, falls, collisions, and improper voltage.

▶▶ Safety Tips

Do not charge/storage the following types of batteries:

- Batteries of different manufacturers, different models, different types or different capacity
- Non-rechargeable battery (may cause an explosion)
- Battery of unrecognized type or unknown parameter
- Battery with special requirements for charging technology
- Battery that is damaged or defective
- Battery with built-in combined circuit or protection circuit
- A battery installed in another device or connected to other components
- Rechargeable battery suitable for carrying current of this charger without confirmation from the manufacturer



The electronic products with this mark in the Instructions must be disposed of separately from household waste when handling scrapped products. Take it to the garbage collection center for classification.

Statement

- The D6 Pro AC/DC Dual Channel Smart Charger is designed for the battery types listed in this Instructions. The company does not assume any responsibility if the user uses the charger for purposes other than those listed in the Instructions. We are not sure if you have read the instructions carefully before using them, nor can you control how you use and store the product.

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

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▶▶ Safety Notes

Before using the charger for the first time, please read the details in the "Safety Notes". Make sure you use this charger safely and correctly.



WARNING!

FIRE HAZARD!

NEVER USE CHARGER UNSUPERVISED!

- Please read the complete Instructions carefully before using the charger;
- Make sure that the charger is kept away from heat and humid environment during use, pay attention to ventilation and heat dissipation, pit it away from flammable materials;
- Do not let the child operate the charger. Do not let the charger work not under your attention;
- Correctly set the battery charging and discharging parameters, wrong settings may lead to accidents;
- Failure to follow safety procedures may result in property damage or personal injury;
- If the operation is not proper, the charger and battery will have a serious fire risk;
- After use, disconnect the input power and remove the battery as soon as possible;
- In the case of AC connection, the DC input port is prohibited from linking to any equipment such as batteries.

In power mode while operating, it is forbidden to connect to the battery.

- Do not modify or disassemble the charger.
- Do not place the charger or battery near flammable objects during use. Do not charge or discharge on the carpet, paper, plastic products, vinyl, leather, wood, or charge or discharge inside the aircraft model or inside the car.
- Do not place the charger within reach of children.
- Do not drop wires or other conductive objects into the charger.
- Ensure that the battery type and parameters are selected correctly. If you choose the wrong one, it may not only damage the battery, but it may also be dangerous (the lithium battery cannot be overcharged, it will cause a fire).
- Do not mix batteries of different types, capacities, or manufacturers to use.
- Do not attempt to charge a dry battery that cannot be recharged.
- Do not charge or discharge if the battery leaks, swells, peels, changes in color, or deformed.
- Do not exceed the maximum charge limit specified by the battery manufacturer.
- Carefully follow the battery manufacturer's instructions and safety advice.
- Please do not cover the fan outlet on the charger. Do not use it in direct sunlight, confined space or high temperature environment. In these cases, the temperature protection mechanism inside the charger may activate so that charging and discharge cannot be performed normally.



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