

ULTRA POWER

UP6+

Multi Charger
Built-in Power Supply

INSTRUCTION MANUAL



2x300W
2x16A

www.ultrapower.hk

INTRODUCTION

Thank you for your purchasing of Ultra Power's UP6+ Dual Channel AC/DC Smart Balance Charger. This product is a rapid charger with a high performance microprocessor and specialized operating software. Please read this entire instruction manual completely and attentively before using this product, as it covers a wide range of information on operation and safety.

For more details, please visit: www.ultrapower.hk



CONTENTS

Warnings and Safety Notes -----	02
Product Parameters and Characteristics -----	04
Standard Battery Parameters -----	06
Confirming Charge Current -----	07
Task Settings -----	08
Working Parameters Display -----	10
System Settings Menu -----	11
External Discharge Function -----	13
Motor/Servo Testing Function -----	14
Wireless Charging Function-----	15
Warnings and Error Message-----	16
Conformity Declaration -----	17

WARNINGS AND SAFETY NOTES

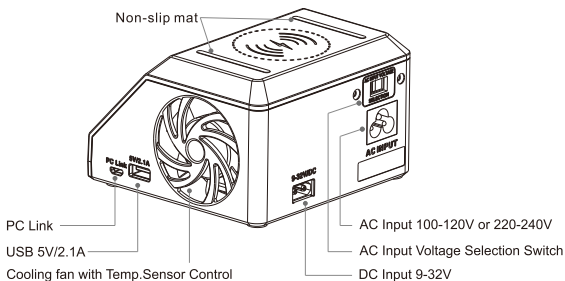
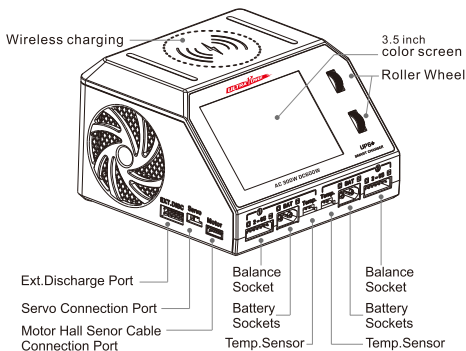
The following warnings and safety notes are for your protection, please refer to all aspects of this instruction manual to ensure proper operation. FAILURE TO FOLLOW THESE SAFETY PRECAUTIONS MAY CAUSE FIRE, PROPERTY DAMAGE AND/OR PERSONAL INJURY!

- NEVER leave the battery or charger unattended while in use. In case of any malfunction, immediately discontinue use and refer to this manual for troubleshooting ideas.
- ALWAYS keep your charger away from dust, dirt, moisture, rain, and high temperature. Avoid leaving your charger or battery in direct sunlight or exposing them to intense vibration or shock.
- ALWAYS make certain to observe proper input and output polarity. The UP6+ operates safely with input voltage between AC 100-120V or 220-240V, DC 9-32V.
- ALWAYS place the charger on a heat-resistant, non-flammable surface when in use. Keep flammable materials away from charger when in use.
- NEVER use the charger while placed on automobile seats, carpeting, or other flammable materials.
- ALWAYS make sure that the vent holes on the bottom of the charger are unobstructed and the cooling fan in operation.

WARNINGS AND SAFETY NOTES

- ALWAYS fully read all warnings and instructions on both charger and battery prior to use. Be aware of battery safety warnings. Make sure that all charging parameters are correctly setup prior to charging any battery. **INCORRECT SETTINGS MAY CAUSE FIRE, PROPERTY DAMAGE AND/OR PERSONAL INJURY!**
- ALWAYS press the roller wheel to terminate charge completely when battery is fully charged, and return to the standby screen on the LCD display.

PRODUCT PARAMETERS AND CHARACTERISTICS



- **Channel 1 Roller Wheel**
Short press: Enter Channel 1 task settings/confirm current settings
Long press: Enter System setting/terminate current task
Scroll up and down: Select the corresponding menu
- **Channel 2 Roller Wheel**
Short press: Enter Channel 2 task settings/confirm current settings
Long press: Enter Motor/Servo testing setting.
Scroll up and down: Select the corresponding menu

PRODUCT PARAMETERS AND CHARACTERISTIC

Specification :

Input voltage: AC 100-120V or 220-240V, DC 9.0-32.0V

Output voltage: 0.1-30V

Charge current: 0.1-16.0A x 2

Discharge current: CH1: 0.1-3.0A/0.1-15.0A(External discharge mode)
CH2: 0.1-3.0A

Charge power: DC Input: 2x300W

AC Input: Max.300W (CH1+CH2=300W)

Support power distribution

Discharge power: CH1: 8W/200W(External discharge mode)
CH2:8W

Support Battery Types: LiPo/LiHV/LiFe/Lilon(1-6S)
NiMH/NiCd(1-16S)
Lead Acid 2V-24V(1-12S)

Wireless charge power: Max.10W

Balance current: Max.1000mA/cell

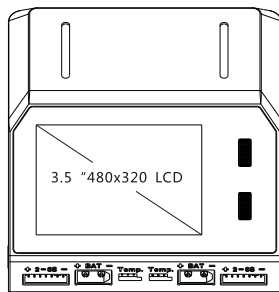
LCD Screen type: 3.5" 480x320 LCD

Use Temperature: 0-40°C

Storage Temperature: -20-60°C

Weight: 810g

Dimensions: 120x115x75mm



STANDARD BATTERY PARAMETERS

	NiCd/NiMH	Pb	LiFe	Lilon	LiPo	LiHV
Rated Voltage	1.20V	2.00V	3.20V	3.60V	3.70V	3.80V
Full Charge Voltage	1.40V	2.40V	3.60V	4.10V	4.20V	4.35V
Storage Voltage	Not supported	Not supported	3.30V	3.70V	3.80V	3.90V
Discharge Voltage	0.5-1.10V	1.80-2.00V	2.60-2.90V	2.90-3.20V	3.00-3.30V	3.10-3.40V
Pre-charge Voltage	/	2.00V	2.90V	3.10V	3.20V	3.20V
Balance Charge	Not supported	Not supported	supported	supported	supported	supported
Unbalanced Charge	supported	supported	supported	supported	supported	supported
Support Cells	1-16S	1-12S	1-6S	1-6S	1-6S	1-6S
Max Charge Current	16.0A	16.0A	16.0A	16.0A	16.0A	16.0A

Be EXTREMELY careful to choose the correct voltage settings based on the cells and chemistry of the battery being charged. Failure to do so may result in battery damage, explosion, or fire!

CONFIRMING CHARGE CURRENT

It is critically important to understand the maximum charging current for the battery pack to be charged. Excessive charge current can significantly reduce the life of a battery, or in severe cases a fire or explosion.

The charge and discharge current of a lithium battery is determined by its “C” rating. Most batteries indicate the C rating of the pack on the main label. Multiply the C rating of the battery pack by the capacity to determine the safe and proper charge current. For example, a 1000mAh battery with a 5C rating means that the maximum charge rate should be $1000 \text{ (capacity in milliamps)} \times 5 \text{ (C rating)} = 5,000\text{mAh}$. Therefore, the maximum charge rate for a 1000mAh 5C lithium battery should be 5A (5,000mAh).

If it is not possible to determine the C rating, please assume that the pack is 1C and use that value to calculate a safe charge rate. Keep in mind that batteries vary, and therefore charging times will vary.

TASK SETTINGS

Power on the charger and connect a battery, the charger will enter into the standby page, then short press the roller wheel to activate the program setting menu. The items in the menu are as follows:

Battery	Select battery chemistry
Cells	Select number of battery pack cells
Mode	Work mode: Charge / Discharge / Storage / Ext.DISC
Current	Select desired charge current (0.1-16.0A) , discharge current (0.1-3.0A)/Ext.discharge(0.1-15.0A)
TVC	Terminal voltage control
Start	Begin process
Back	Return to previous screen or function

The default mode of the UP6+ is series charging, therefore you must connect the output wires to the battery pack that you wish to charge. For lithium packs, it is highly recommended to ALWAYS connect the balance leads and utilize balance charging. Although the UP6+ will charge without the balance function, a warning tone will sound to alert you that the balance connector is not in use.

- **Storage**

When selecting the storage function, the UP6+ will automatically begin charging if the battery pack voltage is below the ideal storage voltage. Likewise, the UP6+ will automatically enter the discharge mode if the battery pack voltage is higher than the ideal storage voltage.

- **Restoring an excessively discharged lithium battery pack**

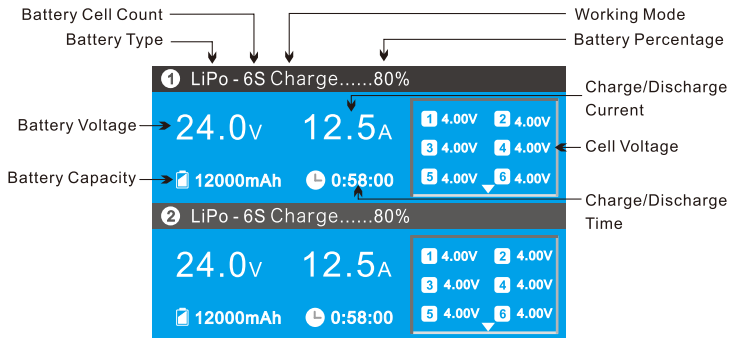
If the UP6+ detects internal cell voltages that are too low to safely begin the charging process, it will automatically default to a 0.1A charge rate until the voltage has risen to a level that allows it to safely accept a fast charge rate.

- **Measuring Internal Resistance**

The UP6+ features the ability to monitor the internal resistance of each cell in a lithium battery pack. This feature is only operational when in the balance charging mode. Internal resistance can be useful to determine the overall “health” and performance of a lithium battery, the closer the IR values are between the cells in the battery pack, the better that the battery will deliver its energy.

NOTE: The process of charging a lithium battery is dynamic, therefore you will notice fluctuations in both charge current and IR during the charging process.

WORKING PARAMETERS DISPLAY



Rotating the roller wheel up or down during charging will switch the information displayed on the lower half of the LCD screen between cell voltage, cell IR and working parameters. Cell voltage and IR can only be displayed during the balance charging process.

SYSTEM SETTINGS MENU

Long press the CH1 roller wheel to activate the system default menu.

Language	English, French, Simplified Chinese, Traditional Chinese
MAX Input Power	Adjustable from 100W-700W (if use DC input source)
MIN Input Voltage	Adjustable from 9V-24V (if use DC input source)
Power Distribution	Support power distribution
Capacity Cut	Terminates charge process when reach this value Maximum capacity can be adjusted by user
Time Cut	Terminates charge process when exceeding time set by user
Temperature Cut	Battery temperature protection (external temperature cable is required)
Backlight	Three options-High, Medium, Low
Volume	Four options- High, Medium, Low and Off
Servo Pulse Period	Servo PWM signal period
Servo Pulse Step	Servo PWM signal pulse width increment
About	Software version and information
Factory Reset	Returns all settings to factory default values
Back	Return to last program or menu

Max Input Power: When the input power can not reach the charger's maximum working power requirement(700W), to ensure stable and safe operation of the UP6+, this value should be adjusted according to the input power source used for the charger. For example, when using a 20V/20A DC power supply, this value should be set to 400W ($P=U \times I$).

SYSTEM SETTINGS MENU

Min Input Power: When the user take a battery as a input power source, this setting can protect the battery not over-discharged. When the charger detect the input voltage lower than the setting value, then the charger will stop the current task and remind the user with showing "DC IN TOO LOW". For example, when using a 6S LiPo as a power source, we can set this value at 21.0V to protect the battery not over-discharged.

Volume: When setting the buzzer volume to OFF, the operation sound will be shielded, but the error sound will not be shielded.

Power distribution: The total AC input power is 300W, the default power for each channel is 150W. The user can adjust the power for CH1 and CH2, the total power $CH1+CH2=300W$.

EXTERNAL DISCHARGE FUNCTION



UP6+ increases the function of external discharge to meet the users' demand for high-power discharge of batteries, UP6+ connect a external discharger UP-D200 can achieve 200W discharge power, greatly improving the battery discharge speed and saving time. Meanwhile, compared with the traditional discharger, the UP6+ has a balancing discharge function, which can effectively avoid single cell over discharge, which will be more safely and reliable.

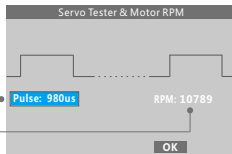
MOTOR/SERVO TESTING FUNCTION

Motor Testing: Adjust the pulse width value of the ESC control signal, in order to adjust the motor's RPM value. According to RPM value and KV value to detect if the motor works well.

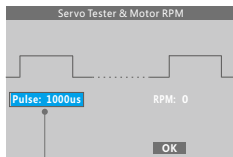


Pulse width value

RPM Value



Servo testing: By adjusting and changing the pulse width, it can be detected if the servo's direction and angle are normal.



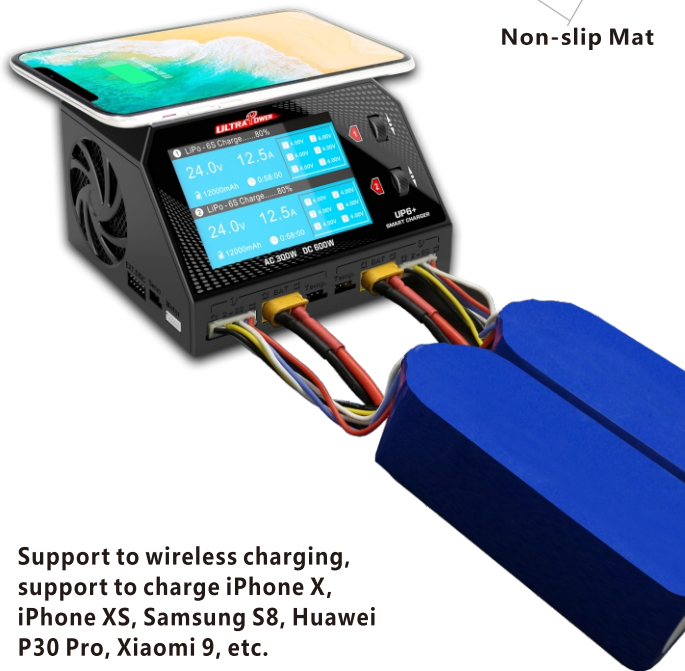
Pulse width value

WIRELESS CHARGING FUNCTION

Wireless charging power 10W



Non-slip Mat



Support to wireless charging,
support to charge iPhone X,
iPhone XS, Samsung S8, Huawei
P30 Pro, Xiaomi 9, etc.

WARNINGS AND ERROR MESSAGES

- **Error Message for Abnormal Battery Connection**

Unplug and re-connect all plugs to ensure proper connection and polarity. Check to make sure that all connectors are free of dirt, grease, or oxidation.

- **Error Message for Unstable Input Voltage**

Make certain that the battery socket is free from dirt or oxidation.

Make sure that the Max Input Voltage is set correctly in the System menu

CONFORMITY DECLARATION

The UP6+ satisfy all relevant and mandatory CE directives and FCC Part 15 Subpart B: 2017.

For EC directive:

The product has been tested to meet the following technical standards:

Testing standards	Result
EN 55014-1: 2006+A1:2009+A2:2011	YES
EN 55014-2: 2015	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 centre. This applies to all countries of the European Union, and to other European countries with a separate waste collection system.

ULTRA POWER



Manufactured by
Ultra Power Technology Limited
www.ultrapower.hk
E-mail: info@ultrapower.hk