ULTRA POWER

UP300AC Touch

Multi Charger
Built in Power Supply

INSTRUCTION MANUAL



300W
20A

Touch

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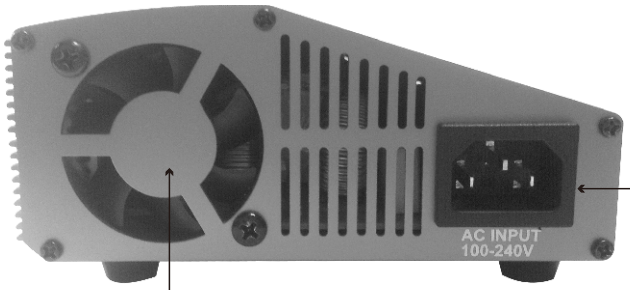
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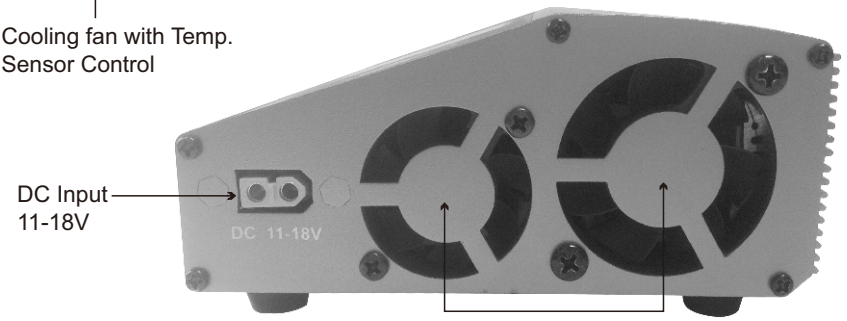
INTRODUCTION

Thank you for purchasing UP300AC Touch charger by Ultra Power. 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.

UP300AC Touch Specification	
Input voltage	AC 100-240V, DC 11.0-18.0V
Charge Power	Max. 300W
Discharge Power	Max. 25W
Charge Current	0.1-20.0A
Discharge Current	0.1-5.0A
Balance Current	500mA/cell
LiIo/LiPo/LiFe cell count	1-6 series
NiCd/NiMH battery cell count	1-15cells
Pb battery voltage	2-20V (1-10cells)
Battery data memory	6 profiles
Weight	1.2kg
Dimension	180*139*60mm


Color LCD Touch Screen
UP300AC Touch
Multi Charger
Built in Power Supply
Power Max. 300W
Charge 0.1-20A
Discharge 0.1-5A
LiIo/LiPo/LiFe 1-6S
NiMH/NiCd 1-15S
Lead Acid 2-20V
Balance Current 500mA/cell
Temp.
Balance Socket
PC Link
5V / 2.1A
Temp. Sensor
Balance Socket
Battery Sockets
PC Link
DC Output
5V, 2.1A


AC INPUT
100-240V
AC Input
100-240V AC
Cooling fan with Temp.
Sensor Control


DC 11-18V
DC Input
11-18V
Cooling fan with Temp.
Sensor Control

Optimized Operating Software

UP300AC Touch features the AUTO function that set the feeding current during the process of charging or discharging. Especially for lithium batteries, it can prevent the overcharging which may lead to an explosion. It can disconnect the circuit automatically and alarm once detecting any malfunction. All the programs of this product were controlled through linkage and communication, to achieve the maximum safety and minimize the trouble. All the settings can be configured by users!

Balancing Individual Cells For Battery Discharging

During the process of discharging, UP300AC Touch can monitor and balance each cell of the battery individually. Error message will be indicated and the process will be ended automatically if the voltage of any single one cell is abnormal.

Adaptable to Various Type of Lithium Battery

UP300AC Touch is adaptable to various types of lithium batteries, such as LiPo, LiIon and the new LiFe series of batteries.

Fast and Storage Mode of Lithium Battery

Purposes to charge lithium battery varies, 'fast' charge reduce the duration of charging, whereas 'store' state can control the final voltage of your battery, so as to store for a long time and protect useful time of the battery.

Cyclic Charging/Discharging

1 to 5 cyclic and continuous process of charge>discharge or discharge > charge is operable for battery refreshing and balancing to stimulate the battery's activity.

Re-Peak Mode of NiMH/NiCD Battery

In re-peak charge mode, the charger can peak charge the battery once, twice or three times in a row automatically. This is good for making certain the battery is fully charged, and for checking how well the battery receives fast charges.

Data Store/Load
The charger can store up to 6 different charge/discharge profiles for your convenience. You can keep the data pertaining to program setting of the battery of continuous charging or discharging. Users can call out these data at any time without any special program setting.

Terminal Voltage Control(TVC)
The charger allows user to change the end voltage.

LiPo Battery Meter
The user can check battery's total voltage, the highest voltage, the lowest voltage and each cell's voltage.

Maximum Safety
Delta-peak sensitivity for NiMH/NiCd battery: The automatic charge termination program based on the principle of the Delta-peak voltage detection. When the battery's voltage exceeds the threshold, the process will be terminated automatically.

Automatic Charging Current Limit
You can set up the upper limit of the charging current when charging your NiMH or NiCd battery, it is useful for the NiMH battery of low impedance and capacity in the 'AUTO' charging mode.

Capacity Limit
The charging capacity is always calculated as the charging current multiplied by time. If the charging capacity exceeds the limit, the process will be terminated automatically when you set the maximum value.

Temperature Threshold*
The battery's internal chemical reaction will cause the temperature of the battery to rise. If the temperature limit is reached, the process will be terminated.
**This function is available by connecting optional temperature probe, which is not included in the package.*

Processing Time Limit:
You can also limit the maximum process time to avoid any possible defect.

WARNING AND SAFTEY NOTE

These warnings and safety notes are particularly important. Please follow the instructions for maximum safety; otherwise the charger and the battery can be damaged or at worst it can cause a fire. Also read the chapter before you begin.

- Never leave the charger unsupervised when it is connected to its power supply. If any malfunction is found, TERMINATE THE PROCESS IMMEDIATELY and refer to the operation manual.
- Keep the charger well away from dust, damp, rain, heat, direct sunshine and vibration. Never drop it.
- The allowable DC input voltage is 11-18V DC.
- The allowable AC input voltage is 100-240V AC.
- This charger and the battery should be put on a heat-resistant, non-flammable and non-conductive surface. Never place them on a car seat, carpet or similar surface. Keep all flammable volatile materials away from the operating area.
- Make sure you know the specifications of the battery to be charged or discharged to ensure it meets the requirements of this charger. If the program is set up incorrectly, the battery and charger may be damaged. Fire or explosion can occur due to overcharging. This warranty is not valid for any damage or subsequent damage arising as a result of a misuse or failure to observe the procedures outlined in this manual.
- To avoid short circuiting between the charge lead, always connect the charge cable to the charger first, then connect the battery. Reverse the sequence when disconnecting.
- Never attempt to charge or discharge the following types of batteries:
  - A battery pack which consists of different types of cells (including different manufacturers)
  - A battery that is already fully charged or just slightly discharged
  - Non-rechargeable batteries (pose an explosion hazard)
  - A faulty or damaged battery
  - A battery fitted with an integral charge circuit or a protection circuit.

- Batteries installed in a device or which are electrically linked to other components
- Batteries that are not expressly stated by the manufacturer to be suitable for the currents the charger delivers during the charge process

Please bear in mind the following points before commencing charging:

- Did you select the appropriate program suitable for the type of battery you are charging?
- Did you set up appropriate current for charging or discharging?
- Have you checked the battery voltage? Lithium battery packs can be wired in parallel and in series, i.e. a 2-cell pack can be 3.7V (in parallel) or 7.4V (in series).
- Have you checked that all connections are firm and secure? Make sure there are no intermittent contacts at any point in the circuit.

WARNING! By setting the TVC to any POSITIVE SETTING above default value, you ACCEPT ALL RESPONSIBILITY for DAMAGE to your battery, FIRE, INJURY, and any other loss which may result. If you do not agree to accept all risk, DO NOT OPERATE YOUR CHARGER UNLESS ALL TVC POSITIONS ARE SET TO DEFAULT VALUE!

Standard Battery Parameters

	LiPo	LiIon	LiFe	NiCD	MiMH	Pb
Nominal Voltage	3.7V/cell	3.6V/cell	3.3V/cell	1.2V/cell	1.2V/cell	2.0V/cell
Max Charge Voltage	4.2V/cell	4.1V/cell	3.6V/cell	1.5V/cell	1.5V/cell	2.46V/cell
Storage Voltage	3.8V/cell	3.7V/cell	3.3V/cell	n/a	n/a	n/a
Allowable Fast Charge	≦1C	≦1C	≦4C	1C-2C	1C-2C	≦0.4C
Min. Discharge Voltage	3.0-3.3V/cell	2.9-3.2V/cell	2.6-2.9V/cell	0.1-1.1V/cell	0.1-1.1V/cell	1.8V/cell

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 fire or explode.

Charging

During charge process, a specific quantity of electrical energy is fed into the battery. The charge quantity is calculated by multiplying charge current by charge time. The maximum permissible charge current varies depending on the battery type or its performance, and can be found in the information by the battery manufacturer. Only batteries that are expressly stated to be capable of quickcharge are allowed to be charged at rates higher than the standard charge current.

Connect the battery to the terminal of the charger: red is positive and black is negative. Due to the difference between resistance of cable and connector, the charger can not detect resistance of the battery pack. The essential requirement for the charger to work properly is that the charge lead should be of adequate conductor cross-section, and high quality connectors which are normally goldplated should be fitted to both ends.

Always refer to the manual by the battery manufacturer pertaining to charging methods. Operate according to their recommended charging current and charging time. lithium batteries, in particular, should be charged strictly according to the manufacturer's instruction.

Close attention should be paid to the connection of lithium batteries.

Do not attempt to disassemble the battery pack arbitrarily.
Please get highlighted that lithium battery packs can be wired in parallel and in series. In the parallel connection, the battery's capacity is calculated by multiplying single the battery's capacity by the number of cells, bearing in mind that total voltage stays the same. If the voltage is imbalanced, it may cause a fire or explosion. Lithium batteries are recommended to charge in series.

Discharging

The main purpose of discharging is to clean the residual capacity of the battery, or to reduce the battery' voltage to a defined level. The same attention should be paid to the discharging process as the charging process. The final discharge voltage should be set up correctly to avoid deep discharging. Lithium batteries cannot be discharged to lower than the minimum voltage, or it will cause a rapid loss of capacity or a total failure. Generally, lithium batteries don't need to be discharged. Please pay attention to the minimum voltage of lithium batteries to protect them.

Some rechargeable batteries have a memory effect. If they are partly used and recharged before the whole charge is accomplished, they remember this and will only use that part of their capacity next time. This is a 'memory effect' It is said that NiMH and NiCD batteries are suffering from memory effect. NiCD has more memory effect than NiMH.

Lithium batteries are recommended to be discharged partially rather than fully. Frequent full discharging should be avoided if possible. Instead, charge the battery more often or use a battery of larger capacity. Full capacity cannot be reached until it has been subjected to 10 or more charge cycles. The cyclic process of charge and discharge will optimize the capacity of battery pack.

UP300AC Touch charger come with the built in switch mode power supplies. You can connect the AC power cord directly to the main AC socket (100-240V AC), or you can connect an external power supply (11-18V) or 12V car battery to the DC input socket.

PLEASE NOTE: The charger MUST be powered before you connect a battery to the charger, failure to have the charger powered up before connecting a battery can cause charger failure if any connections are incorrect. The charger must to be powered in order for it to recognize an incorrect connection and warn you of this before you can go too far and cause damage. If you get the warning "Reverse Polarity" you MUST disconnect the battery immediately! Never remove power from the charger first.

Before connecting any battery it is absolutely essential to check one last time that you have set the charging parameters correctly. If the settings are incorrect, the battery may be damaged, and could even burst into flames or explode. Check that your wiring is correct polarity from the charger to your battery, double check to be safe.

To avoid short circuiting a battery you must always connect the charge leads to the charger first, and only then to the battery. Always unplug the battery from the charge leads when disconnecting the pack, never remove the leads from the charger when a battery is connected to them.

BALANCE SOCKET:
The balance wire attached to the battery must be connected to the charger with the black wire aligned with the negative marking. Take care to maintain correct polarity! (See the wiring diagram on the next page.)

CONNECTING THE BATTERY
To connect a lithium battery with a balance plug please follow these procedures.

LITHIUM BATTERY CONNECTION DIAGRAM

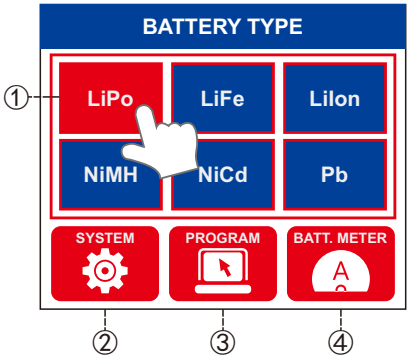
1. Connect charge leads to the charger, making sure polarity of all leads is correct.
2. Turn the charger on and check your settings that they match the battery pack you intend to charge.
3. Connect the main leads of the battery to the main leads of the charger.
4. Connect the balance lead of the battery to the correct balance port on the multi balance board. If in doubt as to which socket to use please ask your dealer for clarification.
5. Start the charge cycle, wait and watch that the charger starts to charge and shows correct readings on the screen.
6. When charging is finished disconnect the balance lead from the board, then disconnect the battery main leads from the charging lead.

This diagram shows the correct way to connect your battery to the UP300AC Touch while charging in the balance charge program mode only.



WARNING:

⚠ Failure to connect will damage this charger.



① Battery Type selection buttons - Select which battery type you want charge

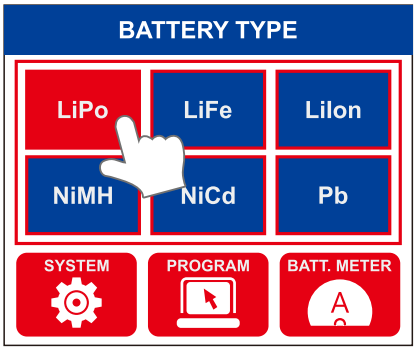
② SYSTEM - System setting, safety protection and charger parameter settings are here.

③ PROGRAM - You can store up to 6 different charge/discharge profiles here.

④ Battery Meter - You can check lithium battery's total voltage, the highest voltage, the lowest voltage and each cell's voltage; and can check Nickel and Pb battery's total voltage.

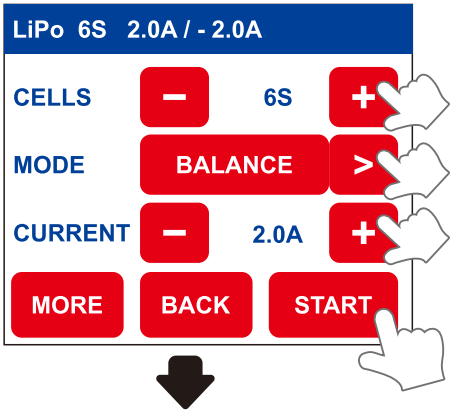
Here are the detailed procedures to make the charger work. All the screens and operations will take Channel 1 and LiPo battery as example.

1. Battery type



There are 3 Li-xx battery types in battery type area. Find the right battery type and the selected one will be highlighted with colour.

2. Cells, Current, Program Start



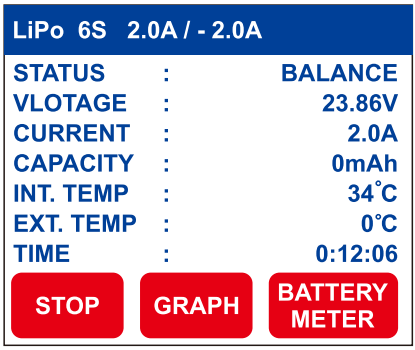
After you confirmed battery type please touch "+" and "-" to set how many cells of your battery to be connected to this charger.

Please touch ">" to select the operation program. Details please refer to tabel next page.

Please touch "+" and "-" to select current.

Touch "START" button for 3 seconds to start the program. And the charger will detects battery cells automatically. If the detecting result and your setting are identical, the charger will start to work automatically.

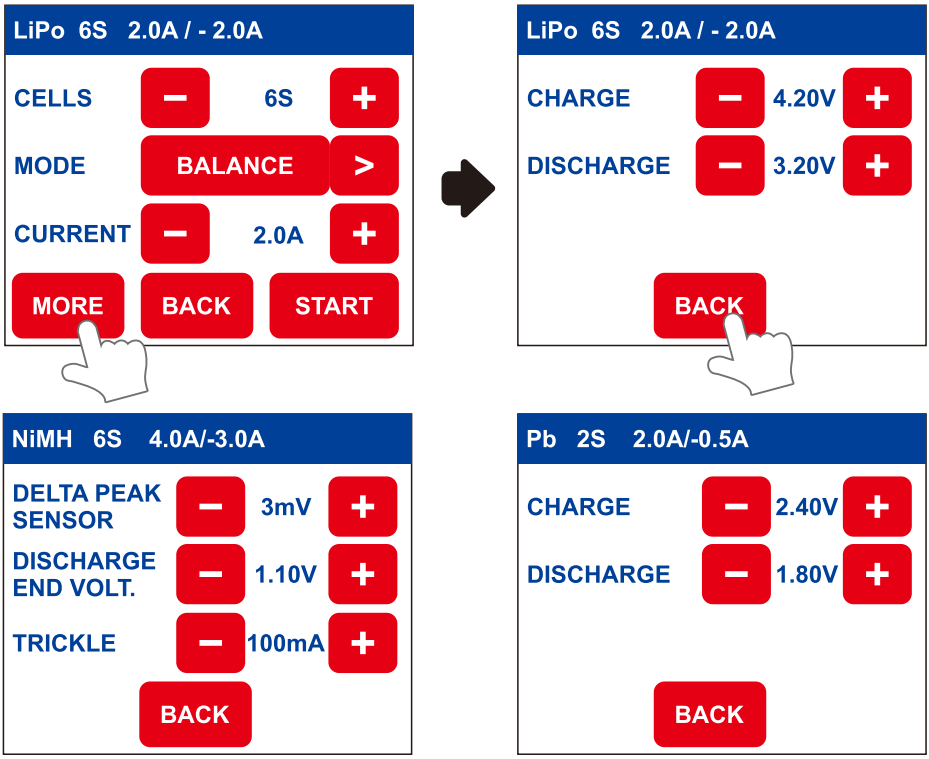
CHECK BATTERY



Charging Program

Depends on different battery type, the operation programs are different.

Batt Type	Operation Program	Description
LiPo Lilon LiFe	CHARGE	This charging mode is for charging LiPo/LiFe/LiIon battery in normal mode.
	DISCHARGE	This mode is for discharging LiPo/LiFe/LiIon battery.
	STORAGE	This program is for charging or discharging lithium battery which will not be used for long time.
	FAST CHG	The charging capacity may be a bit smaller than normal charging but the process time will be reduced.
	BAL CHARGE	This mode is for balancing the voltage of lithium-polymer battery cells while charging. **Note: We recommend charging lithium batteries with a balance wire in the balance mode only.**
	VOLT METER	The user can check lithium battery's total voltage, the highest voltage, the lowest voltage and each cell's voltage.
NiMH NiCd	CHARGE	The charger will charge NiMH and NiCd batteries using the charge current set by the user.
	AUTO CHG	In this program the charger detects the condition of the battery which is connected to the output and automatically charges the battery. **Note: you should set up the upper limit of the charge current to avoid damage by excessive feeding current. Some batteries of low resistance and capacity can lead to higher current.**
	DISCHARGE	This mode is for discharging NiMH/NiCd battery.
	RE-PEAK	In re-peak charge mode, the charger can peak charge the battery once, twice or three times in a row automatically. This is good for confirming the battery is fully charged, and for checking how well the battery receives fast charges.
	CYCLE	1 to 5 cyclic and continuous process of charge>discharge or discharge>charge is operable for battery refreshing and balancing to stimulate the battery's activity.
	VOLT METER	The user can check Nickel battery's total voltage.
Pb	CHARGE	This mode is for charging Pb battery.
	DISCHARGE	This mode is for discharging Pb battery.
	VOLT METER	The user can check Pb battery's total voltage.

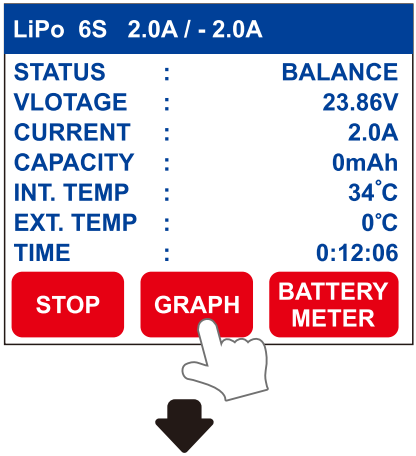


If you want change termination voltage level, please touch “MORE” to go to termination voltage level setting page.

ITEM	SELECTION	DESCRIPTION
TERMINAL VOLTAGE CONTROL (TVC)*	LiPo 4.18-4.3V/Cell	This is the voltage level that UP300AC Touch will stop charging the battery. Intended ONLY for expert users and racers, completely at their own risk, which allows LIPO and LIFE packs to be charged in excess of recommended cell terminal voltages.
	Lilon 4.08-4.2V/Cell	
	LiFe 3.58-3.7V/Cell	
END VOLT DISCHARGE	LiPo 3.0-3.3V/Cell	This is the voltage level that UP300AC Touch will stop discharging the battery, and is shown as volts PER CELL in the pack (not total pack voltage).
	Lilon 2.9-3.2V/Cell	
	LiFe 2.6-2.9V/Cell	
	NiMH 0.1-1.1V/Cell	
	NiCd 0.1-1.1V/Cell	
	Pb 1.8V/Cell	

*** WARNING! By setting the TVC to any POSITIVE SETTING above default value, you ACCEPT ALL RESPONSIBILITY for DAMAGE to your battery, FIRE, INJURY, and any other loss which may result. If you do not agree to accept all risk, DO NOT OPERATE YOUR CHARGER UNLESS ALL TVC POSITIONS ARE SET TO DEFAULT VALUE!**

3. Charging status monitor

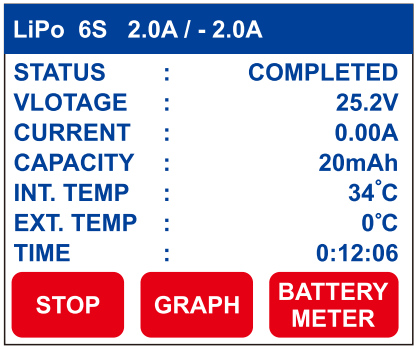


When the charger is working, the users could check the real time status of charging capacity, overall voltage and each cell voltage, charging time, external and internal temperature easily.

What's more, it can also display the voltage in a graphic which helps the user monitor the charging progress all the time.

Please touch “GRAPH” to check charging/ discharging curve.

4. Program Complete

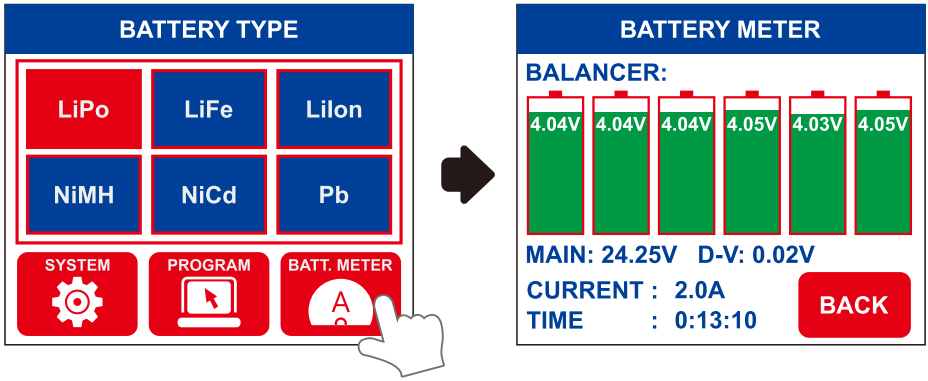


When the program progress is finished, the information will be displayed in the screen and an audible heard which indicates the end of the progress.

LITHIUM BATTERY METER

The user can check lithium battery's total voltage, the highest voltage, the lowest voltage and each cell's voltage; and can check Nickel and Pb battery's total voltage.

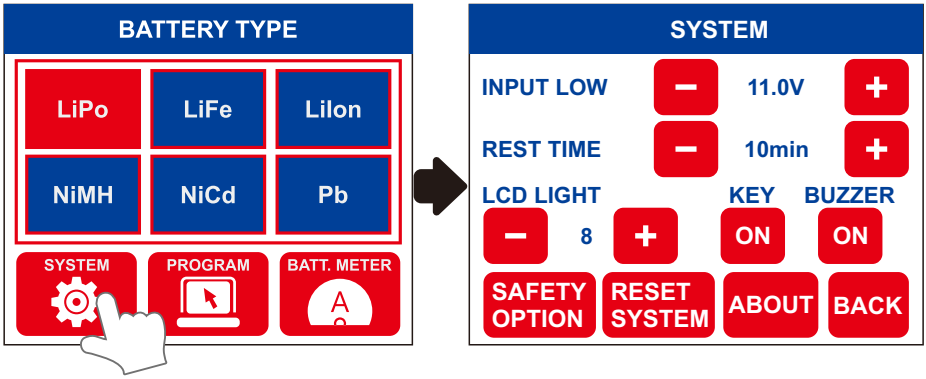
Touch “BATT. METER” to enter voltage meter program.



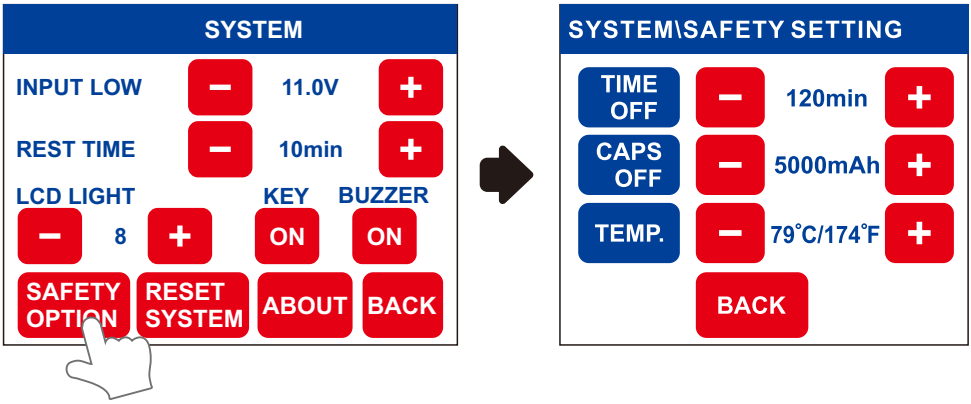
Concerning to Lithium battery, please connect the battery to the charger main battery lead to battery socket and balance wires to balance socket.

SYSTEM SET UP

You can change SYSTEM SETTING, SAFETY OPTION settings when you enter to setting program by touch "SYSTEM".



ITEM	SELECTION	DESCRIPTION
INPUT LOW	—	If this charger is powerd by vehicle battery, this setting is to protect the vehicle battery from over-discharged. UP300AC Touch will monitor input voltage during charging. When the input DC voltage is lower than the voltage level you set here, UP300AC Touch will stop charging and the beep will work to alert user.
REST TIME	1-120 min	The battery is on the cyclic process of charge and discharge can often become warm after charge or discharge period. The program can insert a time delay to occur after each charge and discharge process to allow the battery adequate time to cool down before being subjected to the next process.
LCD LIGHT	1-10	The brightness of the LCD can be adjusted basing on personal preference.
KEY BEEP	ON/OFF	The beep sounds at every time touching the screen to confirm your action. The beep or melody sounded at various times during operation to alert different mode changes.
BUZZER	ON/OFF	
RESET SYSTEM	—	When touching “RESET SYSTEM” the charger will restore factory default settings.
ABOUT	—	System information: model no., hardware version, software version.



ITEM	SELECTION	DESCRIPTION
CAPACITY CUT OFF	OFF 100-20000 mAh	This program sets the maximum charge capacity that will be supplied to the battery during charge. If the delta peak voltage is not detected nor the safety timer expired by any reason, this feature will automatically stop the process at the selected capacity value.
SAFETY TIME	OFF 1-720 Min	When you start a charge process, the integral safety timer automatically starts running at the same time. This is programmed to prevent overcharge the battery if it proves to be faulty, or if the termination circuit cannot detect the battery full. The value for the safety timer should be generous enough to allow a full charge of the battery.
TEMP CUT OFF	20℃/68℉ - 80℃/176℉	The battery's internal chemical reaction will cause the temperature of the battery to rise. If the temperature limit is reached, the process will be terminated.

Please touch “TIME OFF” and “CAPS OFF” screen to make the functions ON or OFF. And touch “+” and “-” to get the proper parameter.

NOTE: The TEMP CUT OFF function can not be OFF.

ERROR MESSAGE

It incorporates a variety of functions for the systems to verify processes and the state of the electronics. In case of an error the screen will display the cause of error and emit an audible sound.

ERROR MESSAGE	EXPLANATION
"INT. TEMP TOO HIGH"	The internal temperature of the unit goes too high.
"EXT. TEMP TOO HIGH"	The external temperature of the unit goes too high.
"DC IN TOO LOW"	Input voltage less than 11V.
"DC IN TOO HIGH"	Input voltage higher than 18V.
"OVER TIME LIMIT"	The charging time is longer than the maximum charging time which the user sets.
"OVER CAPACITY LIMIT"	The battery capacity is more than the maximum capacity which the user sets.
"REVERSE POLARITY"	Incorrect polarity connected.
"CONNECTION BREAK"	The battery is interrupted.
"CELL NUMBER ERROR"	The cell number is wrong.
"BALANCE CONNECTER ERROR"	The balance connect is wrong.
"NO BATTERY"	There is no battery connecting to the charger.
"CONNECTION ERROR"	The Battery connection is wrong.
"BATTERY WAS FULL"	The battery voltage is higher than the maximum voltage which the user sets when charging in balance mode.

Thank you for purchasing UP300AC Touch charger by Ultra Power. We guarantee this product to be free of manufacturing and assembly defects for a period of one year from the time of purchase. The warranty only applies to material or operational defects, which are present at the time of purchase. During that period, we will repair or replace free of service charge for products deemed defective due to those causes.

You will be required to produce proof of purchase (invoice or receipt). This warranty is not valid for any damage or subsequent damage arising as a result of misuse, modification or as a result of failure to observe the procedures outlined in this manual.

ULTRA POWER

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