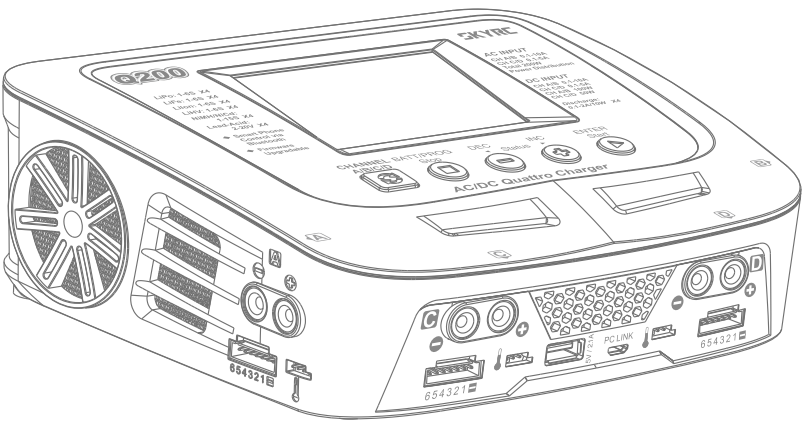
Q200

AC/DC Quattro Charger

Instruction Manual

[Version 1.0]



SKYRC

Table of Contents

Introduction..... 01

Special Features..... 03

Warning and Safety Notes..... 07

Program Flow Chart..... 10

Explanation of Buttons..... 11

Power and Battery Connection..... 12

Power Distribution..... 14

Lithium Battery Program *(LiPo/LiFe/LiIon/LiHV)*..... 15

NiMH/NiCd Battery Program..... 18

Pb Lead-Acid Battery Program..... 22

Battery Memory Set and Call Out..... 24

System Setting..... 26

Battery Voltage Meter..... 28

Battery Resistance Meter..... 29

Warning and Error Message..... 30

Using The Charge Control Software “Charge Master”..... 31

Set Contains..... 31

Apps for Q200..... 32

Specifications..... 34

Conformity Declaration..... 35

Commonly Used Terms..... 36

Warranty And Service..... 37

Congratulations on your choice of SKYRC Q200 AC/DC Quattro Charger. This unit is simple to use, but the operation of a sophisticated automatic charger such as SKYRC Q200 does require some knowledge on the part of the user. These operating instructions are designed to ensure that you quickly become familiar with its functions. It is therefore important that you read right through the Operating Instructions, Warning and Safety Notes before you attempt to use your new charger for the first time. We hope you have many years of pleasure and success with your new battery charger.

SKYRC Q200 is a four-channel charger with four independent circuits, which can charge four different kinds of batteries simultaneously, and is equipped with a 480*320 color LCD display. The two dual channels support power distribution in AC power mode to make full use of the power when charging a small battery in one channel and allocating all remaining power to charge another big battery pack in the second channel. What's more, users could connect the charger to PC for PC control and firmware upgrade. Besides that, users could also use it as Lithium Battery Voltage Meter and Battery Internal Resistance Meter.

There are safety settings such as Automatic Charge Current Limit, Capacity Limit, Temperature Threshold and Processing Time Limit which make the charger safe to use.

Finally, your charger gets its own apps. Bluetooth Module is inside of the charger and you could control your charger by your smart phone via Bluetooth 4.0

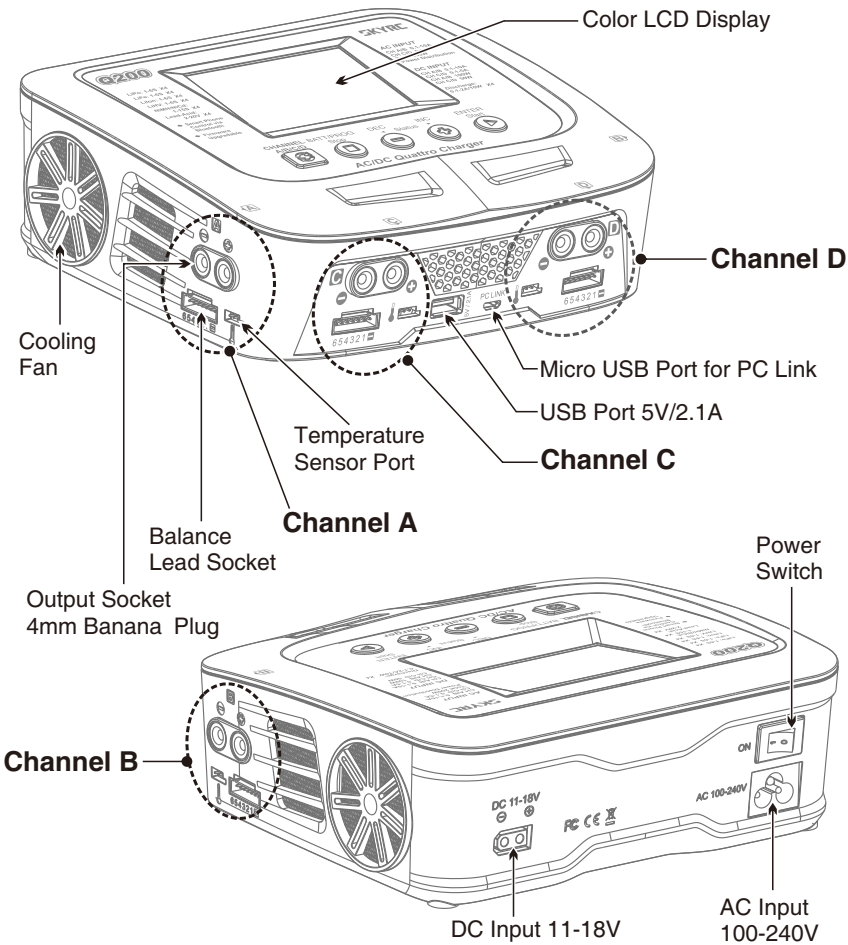
SKYRC Q200 is a high-performance, microprocessor-controlled charge/discharge station with battery management suitable for use with all current battery types, with an integrated balancer for 6-cell Lithium-Polymer (LiPo), Lithium Iron Phosphate (LiFe) and Lithium-Ion (LiIon) batteries; the additional LiHV mode is able to charge the new generation of LiPo batteries with a 4.35V end of charge voltage.

Please BE SURE to read these INSTRUCTIONS, WARNING and SAFETY NOTES before you use the charger for the first time.

It can be dangerous to mishandle batteries and battery chargers, as there is always a risk of batteries catching fire and exploding.

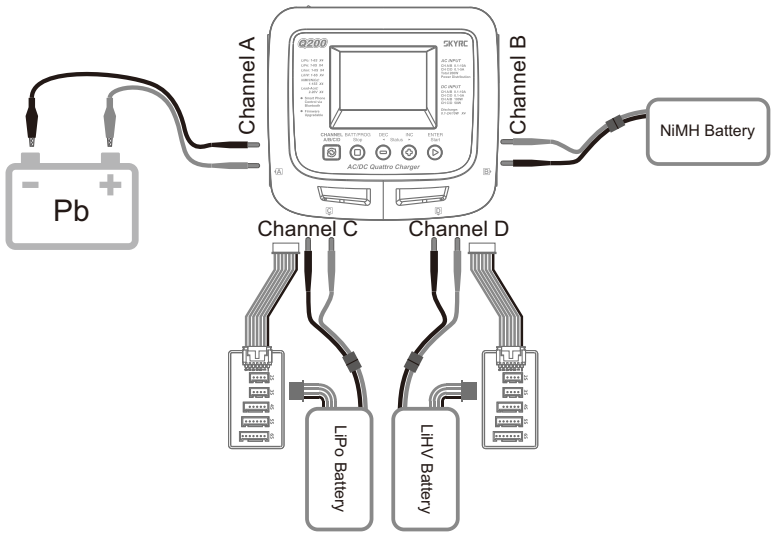
Introduction

Please read this entire operating manual completely and attentively before using this product, as it covers a wide range of information on operating and safety. Or please do use this product in company with a specialist!



Four-channel Charger

SKYRC Q200 allows you to connect 4 batteries to one charger simultaneously, the charger will intelligently and automatically charge 4 batteries at once to their maximum capacities. And the batteries being charged do not even need to have the same cell configuration or same battery chemistry. You can connect different chemistry (NiMH/NiCd/LiPo/LiFe/LiIon/LiHV/Pb) batteries to any of the charging channels.



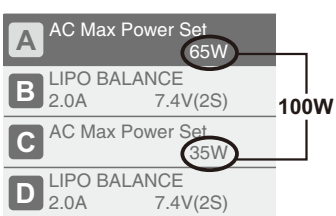
Color LCD Display

The charger is equipped with a 480*320 3.5" color LCD display. The user interface looks clean and intuitive.

Dual Input and Power Distribution

The SkyRC Q200 has a AC/DC input comprised of AC 100-240V and DC 11-18V.

In AC mode, it supports power distribution. For example, the output power of Channel A + Channel C is 100W, if Channel A is 65W and Channel C is 35W.



Special Features

Optimized Operating Software

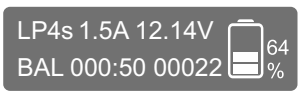
SKYRC Q200 features the so-called AUTO function that sets the feeding current during the process of charging or discharging. Especially for lithium batteries, it can prevent the overcharging which may lead to battery explosion due to the user's fault. It can disconnect the circuit automatically and alarm when detecting some malfunction. All the programs of this charger are controlled through two way linkage and communication to achieve maximum safety and minimize trouble. All settings can be configured by the user.

Battery Memory (Data Store/Load)

The charger can store up to 10 unique charge/discharge profiles for each channel and lets you recall the program settings of each program at any time.

Charge/Discharge Indication

When the charger is active, a clear icon on the display indicates the charge or discharge status and the present capacity percentage. (The percentage display is for Lithium batteries only.)



Terminal Voltage Control (TVC)

The charger allows the user to change the end voltage. (for expert user only)

PC Control Software "Charge Master"

The free "Charge Master" software gives you unparalleled ability to operate the charger through the computer. You can monitor pack voltage, cell voltage and other data during the charging, and follow the details in real-time graphs. You can start and control the charging, and also update the firmware from "Charge Master".

Smart Phone Control via Bluetooth (both iOS and Android)

Finally, your charger gets its own apps. Bluetooth Module is inside of the charger and you could control your charger by your smartphone via Bluetooth 4.0

Bluetooth® SMART

Search for 'SKYRC Q200' on the App Store or on Google Play and install the app on your smart mobile device.

SKYRC Q200 supports iOS 8.0 (or later) and Android 4.1.2 (or later).

Q200

Scan with your Smartphone to download.

Internal Independent Lithium Battery Balancer

SKYRC Q200 employs an individual-cell-voltage balancer. It isn't necessary to connect an external balancer for balance charging.

Supports Various Types of Lithium Batteries

SKYRC Q200 supports various types of lithium batteries, such as LiPo, LiIon and the new LiFe series of batteries.

LiHV Mode Available

The additional LiHV mode is able to charge the new generation of LiPo and LiIon batteries with a higher end of charge voltage (4.35V).

Fast Charge Mode and Storage Mode of Lithium Battery

Special modes for specific needs. Fast Charge reduces the duration of charging. Storage Mode lets you control the final voltage of your battery as preparation for long time storage in order to prolong the usable lifetime of the battery.

Re-Peak Mode of NiMH/NiCd Battery

In re-peak charge mode, the charger can peak-charge the battery once, twice or thrice in a row automatically. This is good for making certain the battery stays fully charged.

Delta-peak Sensitivity for NiMH/NiCd

Delta-peak sensitivity for NiMH/NiCd battery: The automatic charge termination algorithm based on the principle of the Delta-peak voltage detection. When the battery voltage exceeds the threshold, the charger terminates the charge process automatically.

Cyclic Charging/Discharging

A continuous process of up to 5 cyclic Charge>Discharge or Discharge>Charge for refreshing or balancing batteries to simulate real life battery performance.

Automatic Charging Current Limit

You can set the upper limit of the charging current when charging your NiMH or NiCd battery. The 'AUTO' charging mode, however, is recommended when charging NiMH batteries with low impedance and capacity.

LiPo Battery Voltage Meter

The user can check battery pack total voltage, the highest cell voltage, the lowest cell voltage and all other cell voltages.

Battery Internal Resistance Meter

The user can check battery's total internal resistance and each cell's internal resistance.

Special Features

Capacity Limit

The charging capacity is always calculated as the charging current multiplied by time. When you set the maximum value and the charging capacity exceeds that limit, the charge process will be terminated automatically.

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 automatically.

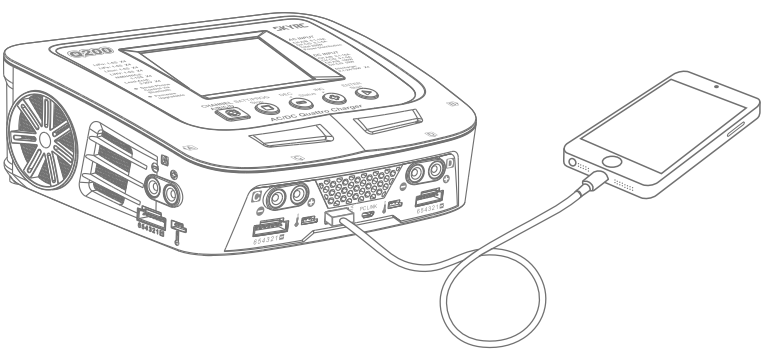
** This function is available by connecting optional temperature probe, which is not included in the package.*

Processing Time Limit:

You can also limit the maximum process time to avoid unforeseeable problems.

USB Power 5V/2.1A

You can charge your phone and tablet using the built-in USB power output port.



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 catch fire.

⚠ Never leave the charger unattended when it is connected to its power supply. If any malfunction is found, TERMINATE THE PROCESS AT ONCE and refer to the operation manual.

⚠ Keep the charger well away from dust, moist, 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, noninflammable and nonconductive surface. Never place them on a car seat, carpet or the like. Keep all the inflammable and 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. It can cause fire or explosion due to overcharging.

Standard Battery Parameters

	LiPo	LiIon	LiFe	LiHV	NiCd	MiMH	Pb
Nominal Voltage	3.7V/cell	3.6V/cell	3.3V/cell	3.7V/cell	1.2V/cell	1.2V/cell	2.0V/cell
Max Charge Voltage	4.2V/cell	4.1V/cell	3.6V/cell	4.35V/cell	1.5V/cell	1.5V/cell	2.46V/cell
Storage Voltage	3.8V/cell	3.7V/cell	3.3V/cell	3.85V/cell	n/a	n/a	n/a
Allowable Fast Charge	≦1C	≦1C	≦4C	≦1C	1C-2C	1C-2C	≦0.4C
Min. Discharge Voltage	3.0-3.3V/cell	2.9-3.2V/cell	2.6-2.9V/cell	3.1-3.4V/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 batteries, or otherwise you may cause damage to the batteries. Incorrect settings could cause the cells to catch fire or explode.

Warning and Safety Notes

⚠ 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 (Explosion hazard).
Batteries that require a different charge technique from NiCd, NiMh, LiPo or Gel cell (Pb, Lead acid).
A faulty or damaged battery.
A battery fitted with an integral charge circuit or a protection circuit.
Batteries installed in a device or 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 adequate 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.

⚠ Charging

During charge process, a specific quantity of electrical energy is fed into the battery. The charge capacity 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 quick-charge 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 cannot 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 that high quality connectors which are normally gold-plated should be fitted to both ends.

Always refer to the manual by the battery manufacturer about charging methods, recommended charging current and charging time. Especially, the lithium battery should be charged strictly according to the charging instruction provided by the manufacturer.

Special attention should be paid to the connection of lithium battery.

Do not attempt to disassemble the battery pack arbitrarily.

Be aware that lithium battery packs can be wired in parallel or in series. When the battery is connected in parallel, its capacity is calculated by multiplying the single battery capacity by the number of cells with the total voltage staying the same. Voltage imbalance may cause fire or explosion. Lithium battery is recommended for charging in series.

⚠ Discharging

The main purpose of discharging is to clear residual capacity of the battery or to reduce the battery voltage to a defined level. Careful attention should be paid to both the discharging and the charging process. The final discharge voltage should be set correctly to avoid over-discharging. Lithium batteries must not be discharged to lower than the minimum allowable voltage, or it will cause rapid loss of capacity or total failure. In general, lithium batteries do not need to be discharged. Please pay attention to the minimum voltage of lithium battery so as to protect the battery.

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 NiCd and NiMH batteries suffer from memory effect. NiCd has a stronger memory effect than NiMH.

⚠ The socket-outlet should be installed near the equipment and easily accessible.

FCC Caution:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

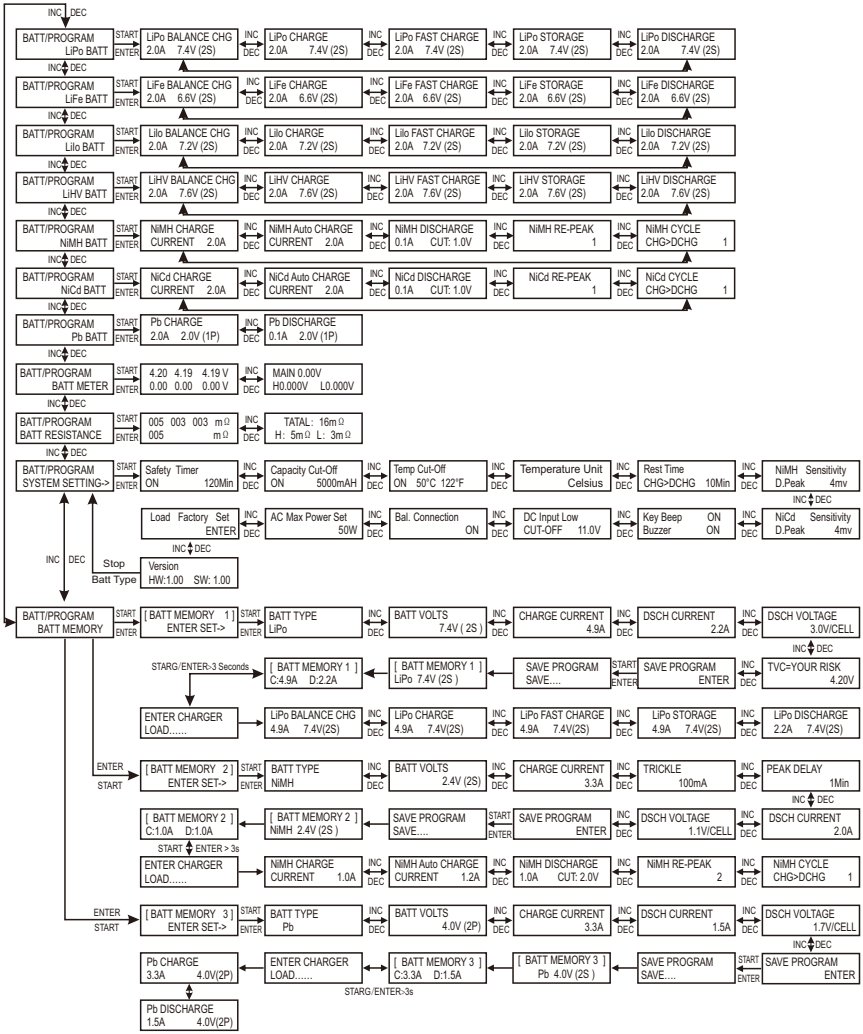
Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

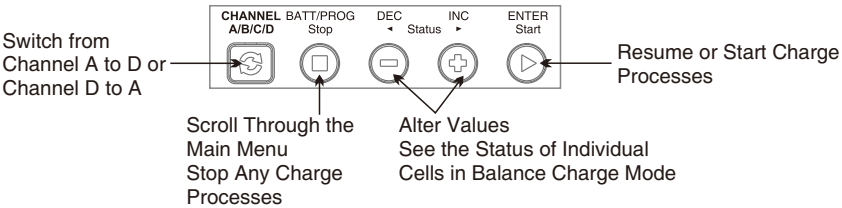
This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Program Flow Chart

Note: The flow chart is taking one channel for example as the flow chart for the other channels (Channel A, B, C and Channel D) are identical.





CHANNEL A/B/C/D

It is used to switch among channels.

BATT PROG / STOP Button:

It is used to stop the process or go back to the previous step/screen.

DEC Button:

It is used to go through the menus and decrease the parameter value.

INC Button:

It is used to go through the menus and increase the parameter value.

ENTER / START Button:

It is used to enter parameter or store parameter on screen.

When you want to alter the parameter value in the program, press the START/ENTER button to make it blink and then change the value by pressing DEC and INC button. The value will be stored by re-pressing the START/ENTER button. If there is another parameter which can be altered in the same screen, on confirming the first parameter value, the next parameter value will start to blink and you can set it.

When you are ready to start the program, press and hold the START/ENTER button for 3 seconds.

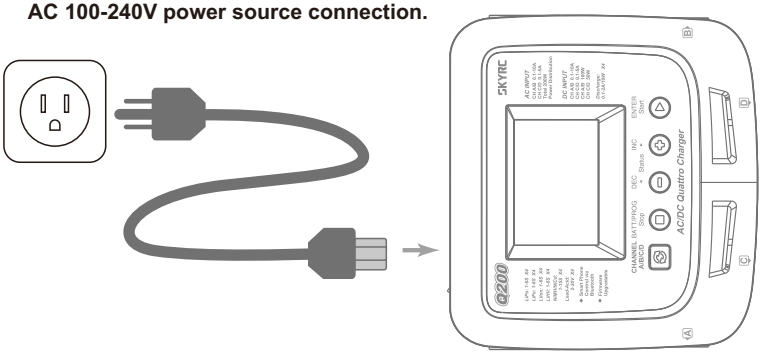
When you want to stop the program or go back to the previous step/screen, press the BATT PROG/STOP button once.

Power and Battery Connection

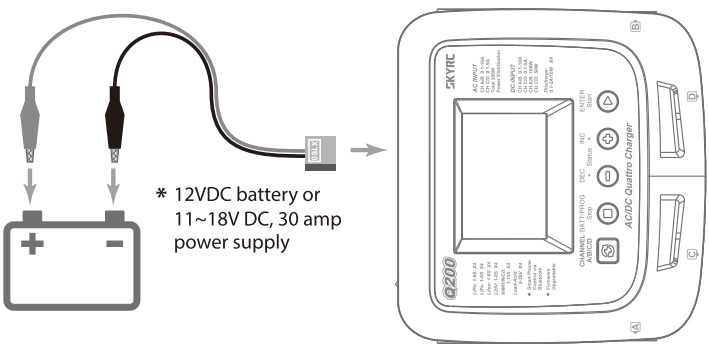
1. **Connecting to power source**

There are two kinds of inputs for SKYRC Q200, DC 11-18V and AC 100-240V.

AC 100-240V power source connection.



12V DC Battery / DC power supply connection.



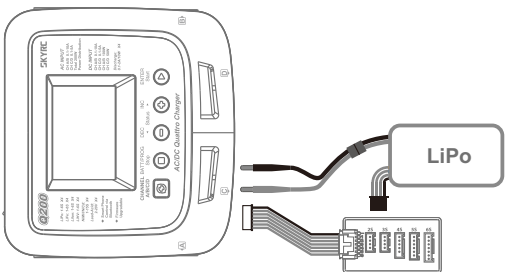
Note: We will explain the operating procedure of one channel as the procedure for channel A, B, C and D is identical.

2. Connecting the battery

WARNING!

TO AVOID SHORT CIRCUITS, ALWAYS CONNECT THE CHARGE LEADS TO THE CHARGER FIRST, AND THEN TO THE BATTERY. REVERSE THE SEQUENCE WHEN DISCONNECTING THE PACK.

1) LiPo Battery Connection with Balance Adapter

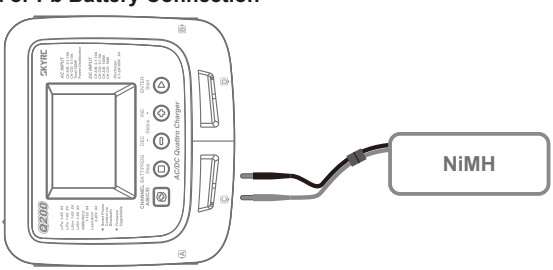


Balance Socket

For safety reasons, the default setting for charging Lithium (LiPo, Lilo, LiFe and LiHV) battery is using balance adaptor to connect battery and charger in Charge, Fast Charge, Balance Charge and Storage modes. But if the battery comes with no balance wire, you could disable this function in the system settings as follows,

The balance wire attached to the battery must be connected to the charger with the black wire aligned with the negative marking. Ensure correct polarity!

2) NiMH/NiCd or Pb Battery Connection

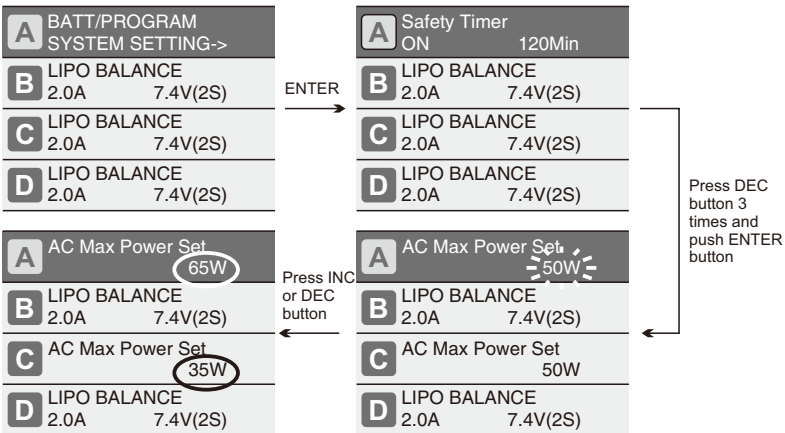


Power Distribution

1) Operating in AC mode

SKYRC Q200 comes with a built-in switching power supply. You can connect the AC power cord directly to the AC mains socket. (100-240V AC).

In AC mode, it supports Power Distribution. You could set the AC Max Power for one channel (Take Channel A for example) as follows,



And the other channel (Channel C) will take the remaining power automatically (For example, if you set Channel A as 65W, the Channel C will be 35W).

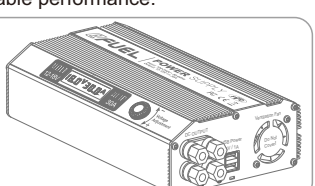
* 1: If Channel A and Channel C are both charging, you can't change the power distribution.
* 2: If Channel A is charging, you can change AC power of Channel C and Channel A will take the remaining power automatically.

2) Operating in DC mode

Please connect SKYRC Q200 to AC/DC power supply with the supplied DC input cable. You could also use terminal clips with DC connectors and attach them directly to 12V car batteries. It is critically important that you use either a fully charged 13.8V car battery or a high quality AC/DC power supply in the range of 11-18V DC output with minimum power 400W or higher to ensure reliable performance.

Important Notice

Low quality DC power source may damage your Q200 charger. We recommend using EFUEL 30A/540W Power Supply (SK-200013).

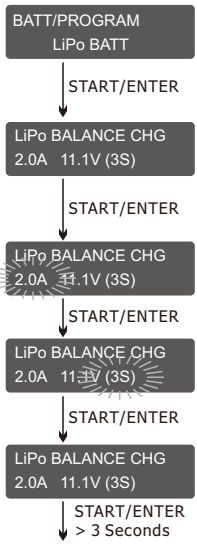


Lithium Battery Program *(LiPo/LiFe/LiIon/LiHV)*

The following flowcharts show the entire programming menu. It is highly recommended to keep these flowcharts handy while you learn how to operate this charger.
There are two main ways to program the charger.

(1) A memory profile is available for setting and storing pertinent information for up to 40 different program sets; each channel can store 10 sets. Once a battery program is stored into memory, it will be retained until changed again manually. Recalling a program memory number makes the charger instantly ready to go!
(2) If you do not wish to use the battery program memories, this charger can be manually set before each use.

The following flowchart shows how the program is set manually:



BATT/PROGRAM Select

Press INC and DEC to go through all the programs and press START/ENTER to enter LiPo BATT Program.

Mode Select

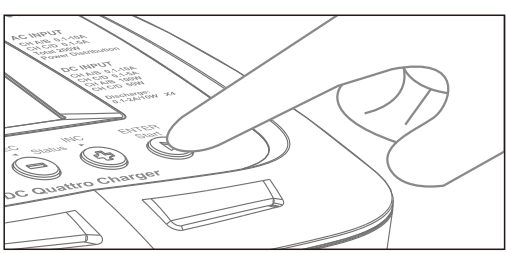
Press INC and DEC to go through all the modes and press START/ENTER to enter LiPo Balance Charge Mode.

Battery Setting

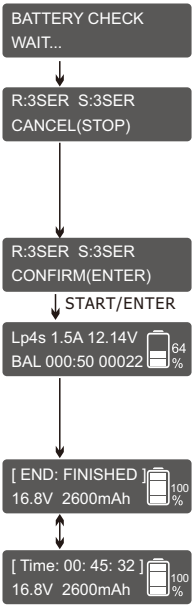
Press START/ENTER, the present value will start to blink. Press INC and DEC to change the value and press START/ENTER to confirm your setting.
At the same time, the battery pack's cell count will start to blink, press INC and DEC to change the value and press START/ENTER to confirm your setting.

Program Start

Press and hold START/ENTER for 3 seconds to start the program.



Lithium Battery Program*(LiPo/LiFe/LiIon/LiHV)*



The charger is detecting the battery cell.

R shows the number of cells detected by the charger and S is the number of cells set by you on the previous screen. If the two numbers are not identical, press STOP to go back to the previous screen to recheck the number of cells of the battery pack that you set before going ahead.

R shows the number of cells detected by the charger and S is the number of cells set by you on the previous screen. If the two numbers are identical, press START/ENTER to start the charging process.

Charging Status Monitor

During charge process, real-time status will be shown as seen on the left.

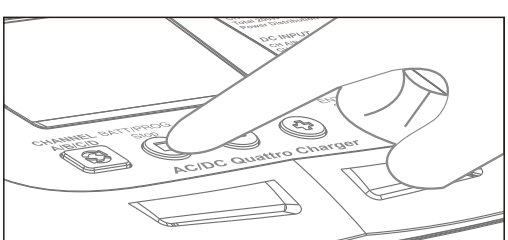
NOTE: The battery icon indicates the charge/discharge status and finished capacity percentage.
Green—charge Red—discharge

Program Complete

Once the battery is fully charged, the screen will read “END: FINISHED” and the charger will emit a ringing sound. The charger also displays battery voltage, charging capacity and elapsed time.

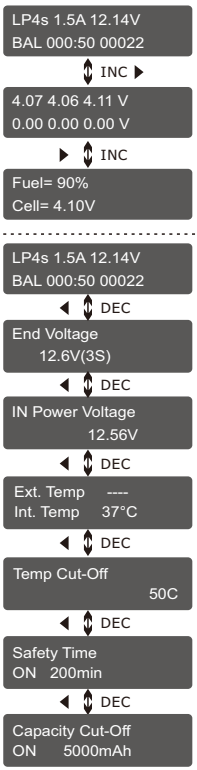
Program Stop

During the charging process, press STOP to stop the charging process.



VARIOUS INFORMATION DURING THE PROCESS

Press INC or DEC during the charging or discharging process to view further pertinent information on the LCD screen.



Real-time status: battery type, battery cell count, charge current, battery pack total voltage, elapsed time and charge capacity.

Voltage of each cell in the battery pack when the battery is connected with balance lead.

Charged capacity percentage and average cell voltage of the battery pack.

Final voltage when the program ends.

Input voltage.

Internal temperature.
Temperature probe needs to be connected to show external temperature.

Cut off temperature.

Safety timer ON and duration of time in minutes.

Capacity cut-off ON and value of the set capacity limit.

NiMH/NiCd Battery Program

NiMH/NiCd:

This program is only suitable for charging/discharging NiMH/NiCd batteries. The Q200 offers the following NiMH/NiCd charge modes: Charge, Auto Charge, Discharge, Re-Peak and Cycle.

Selecting the Battery Type:

After powering on the Q200, press the INC or DEC button repeatedly until you reach the appropriate program for the battery type you wish to charge. For this example we have chosen the “NiMH BATT“ or “NiCd BATT” program. Now press the ENTER button to enter the desired program.

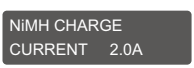
WARNING!

BEFORE YOU BEGIN CHARGING YOUR BATTERY, MAKE SURE YOU ARE CHARGING NIMH/NICD BATTERIES. CHARGING LIPO BATTERY UNDER NIMH/NICD BATTERY PROGRAM WILL CAUSE FIRE.

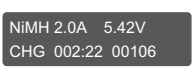
NiMH/NiCd Charge Mode:

BEFORE YOU BEGIN CHARGING YOUR BATTERY, MAKE SURE YOU HAVE READ AND UNDERSTOOD ALL OF THE WARNINGS AND SAFETY INFORMATION CONTAINED ON PAGES 07-09.

After selecting the correct battery type, if the screen does not read “CHARGE”, use the DEC or INC buttons to change it to the “CHARGE” mode.



Press the ENTER button and the amp rate value will begin blinking. Use the DEC or INC button to adjust the value to the desired rate. Follow the instructions provided on your battery when setting the charge current.
Press and hold the ENTER button for 3 seconds to start charging.



Once charging has commenced, the charger will display the following real-time information: battery type, charging current, battery voltage, charging time and charged capacity. Once the battery is fully charged, the screen will read "END: FINISHED" and the charger will emit a ringing sound. You can press the STOP button at any time during the charging process to stop charging.

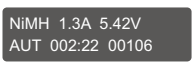
NiMH/NiCd Auto Charge Mode:

In this mode, the charger automatically detects the connected NiMH or NiCD battery and determines the proper full charge and cut-off thresholds. Setting the upper charge current limit for safe levels based on your battery specifications will ensure safe charging of your specific battery. If you are unsure of the maximum allowable charge rates, set the charger to a maximum of 1C (battery mAh/1000, e.g. 3200mAh = 3.2A).

After selecting the correct battery type, use the INC or DEC button to change the charge mode to the “Auto CHARGE” setting.

Press the START button and the amp rate value will begin flashing. Use the INC or DEC button to adjust the value to the desired rate. Follow the instructions provided on your battery when setting the upper charge amperage rate.

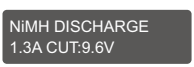
Press and hold the START button for 3 seconds to start charging.



Once charging has commenced, the charger will display the following real-time information: battery type, charging current, battery voltage, charging time and charged capacity.

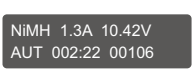
Once the battery is fully charged, the screen will read “END: FINISHED” and the charger will emit a ringing sound. You can press the STOP button at any time during the charging process to stop charging.

NiMH/NiCd Discharge Mode:

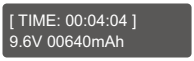


After selecting the correct battery type, use the INC or DEC button to select the “DISCHARGE” mode. Press the START button and the amp rate value will begin flashing. Use the INC or DEC buttons to adjust the value to the desired discharge rate. Press the START button again and the voltage cut-off will begin to flash. Use the INC or DEC button to adjust the value to the desired rate.

Follow the instructions provided on your battery when setting the voltage cut-off. The Q200 will stop discharging when the battery has reached the preset voltage cut-off.



Press and hold the START button for 3 seconds to start discharging. Once discharging has commenced, the charger will display the following real-time information: battery type, discharging current, battery voltage, discharging time and discharged capacity.

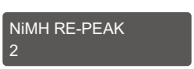


When discharging is complete, the screen will read “END: CUTOFF-VOL” and the charger will emit a ringing sound.
The charger will display the elapsed time, end voltage and the discharged capacity in mAh.
You can press the STOP button at any time during the discharging process to stop the discharge process.

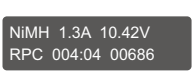
NiMH/NiCd Re-Peak Mode:

Applicable to NiMH and NiCD batteries only, in re-peak mode the charger can peak-charge the battery once, twice, or three times in a row automatically. This process is good for confirming that the battery is fully charged and for verifying how well the battery can accept a fast charge. A five-minute cool-down delay occurs after each re-peak charge.

IN RE-PEAK MODE, THE Q200 USES THE CHARGE AMPERAGE AND VOLTAGE SETTINGS ENTERED IN CHARGE MODE.



After selecting the correct battery type, use the INC or DEC button to select the “RE-PEAK” mode. Press the START button and the Re-peak cycle number 1 begins to flash on the screen. Use the INC or DEC button to scroll through the cycle count and set a number between 1 and 3.
Press and hold the START button for 3 seconds to start the re-peak process.



Once the Re-Peak process has begun, the charger will display the following real-time information: battery type, charging current, battery voltage, elapsed time and charged capacity.
Once the Re-Peak process has completed, the screen will read “END: RE-PEAK” and the charger will emit a ringing sound. The Q200 will display the charge/discharge capacity for each cycle. Using the + and - buttons, you can scroll through the history data of each cycle.

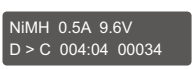
NiMH/NiCd Cycle Mode:

The Q200 makes cycling of NiMH/NiCd batteries easy. The process of discharging and recharging (cycling) can be performed automatically with one simple step and will improve the performance of NiMH/NiCd batteries. We strongly recommend cycling any battery that has been discharged and stored for a period of time. This will increase the remaining usable battery life and also improve the battery performance.

After selecting the correct battery type, use the INC or DEC button to select the “CYCLE” mode. The Cycle Mode gives you two cycling options: “DCHG>CHG” or “CHG>DCHG“. The “DCHG>CHG” option will first discharge the battery and then recharge the battery.

The “CHG>DCHG” option will first charge the battery and then discharge the battery. If this screen does not show your desired cycling option, press the START button once and this setting will begin flashing. Use the INC or DEC button to change this setting.

Pressing the START button again will cause the cycle count to begin flashing. Use the INC or DEC button to change this to the number of cycles you want the Q200 to run. The Q200 can cycle the battery a maximum of 5 times consecutively.
Press and hold the START button for 3 seconds to start the Cycle Mode.



Once cycling has commenced, the charger will display the following real-time information: battery type, charging/ discharging current, battery voltage, elapsed time and charged/discharged capacity. You will also see “D>C“ or “C>D“. This will indicate which cycling order you have chosen.
Either “D“ or “C“ will be flashing. This flashing indicates which part of the cycle is currently being executed.

Once the cycling process is complete, the screen will read “END: CYCLE” and the charger will emit a ringing sound. The Q200 will display the charge/discharge capacity for each cycle. Using the + and - buttons, you can scroll through this data for each cycle.

Additional NiMH/NiCd Process Information:

During the NiMH/NiCd battery charging/discharging process the Q200 can display a variety of information. Using the INC or DEC buttons, you can also view the following information:

NiMH Sensitivity D.Peak 4mV/CELL	Delta Peak Voltage Sensitivity setting	In Power Voltage 12.56V	Input Voltage
Ext. Temp ---- Int. Temp 37 C	External*/ internal temperature	Temp Cut-off 50 C	Temperature cut-off
Safety Time ON 200min	Safety timer setting	Capacity Cut-Off ON 5000mAh	Capacity limit setting

Pb Lead-Acid Battery Program

Pb (Lead-Acid):

BATT/PROGRAM
Pb BATT

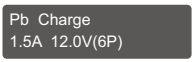
This program is only suitable for charging Pb (lead-acid) batteries with nominal voltage ranging from 2 to 20V. Pb (lead-acid) batteries are significantly different from NiMH/NiCd batteries. Pb batteries can only deliver a low current in relation to their capacity. The same restriction applies to the charging process. Consequently, the optimum charge current can only be 1/10th of the capacity. A Pb battery cannot be used for fast charging. Please follow the instructions provided by the battery manufacturer.

The Q200 offers the following Pb charge modes: Charge and Discharge.

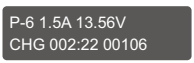
Pb Charge Mode:

After selecting the correct battery type, use the INC or DEC button to change it to the “CHARGE“ mode.

Press the START button and the amp rate value will begin flashing. Use the INC or DEC buttons to adjust the value to the desired charge rate. The amp rate should be set to 1/10th of capacity. For example, if you are charging a 20Ah battery the charge rate should be set to 2A. Follow the instructions provided on your battery when setting the amp rate.



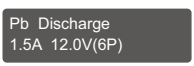
Press the START button again and the nominal battery pack voltage will begin flashing. Use the INC or DEC button to set the voltage and the number of cells.
Press and hold the START button for 3 seconds to start charging.



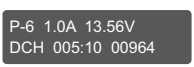
Once charging has commenced, the charger will display the following real-time information: battery type, charging current, battery voltage, charging time and charged capacity.
When charging is complete, the screen will read “FINISHED” and the charger will emit a ringing sound.

Pb Discharge Mode:

After selecting the correct battery type, use the INC or DEC buttons to change it to the “DISCHARGE“ mode.
Press the START button and the amp rate value will begin flashing. Use the INC or DEC buttons to adjust the value to the desired discharge rate. Follow the instructions provided with your battery when setting the amp rate.



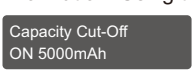
Press the START button again and the nominal battery pack voltage will begin flashing. Use the INC or DEC buttons to set the voltage and the number of cells.
Press and hold the START button and discharging will begin.



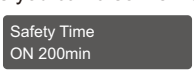
Once discharging has commenced, the charger will display the following real-time information: battery type, discharging current, battery voltage, discharging time and discharged capacity.
When discharging is complete, the screen will read “FINISHED” and the charger will emit a ringing sound.

Additional Pb Process Information:

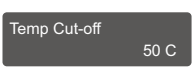
During the Pb battery charging/discharging process the Q200 can display a variety of information. Using the INC or DEC buttons you can also view the following information:



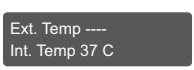
Capacity cut-off setting



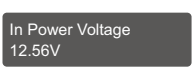
Safety timer setting



Temperature cut-off



External*/ internal temperature

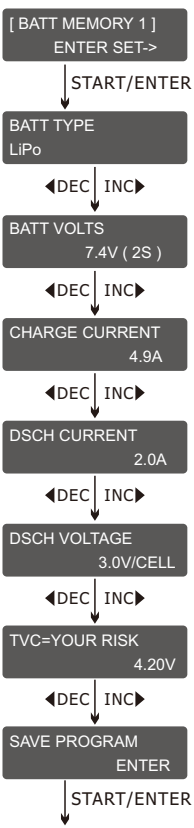


Input voltage

Battery Memory Set and Call Out

The charger can store up to 40 different charge/discharge profiles (each channel 10 sets) for your convenience, and the stored profiles can be recalled quickly without having to go through the setup process.
When you want to alter the parameter value in the program, press START/ENTER to make it blink and then change the value with INC or DEC. The value will be stored by pressing START/ENTER once.
Note: All following screens take 2S(7.4V) LiPo battery for example.

1. Battery Memory Set



Enter the battery memory program.
(10 different charge/discharge profiles can be stored in each channel).

Set the battery type (LiPo/LiFe/LiIon/LiHV/NiMH/NiCd/Pb).

Set the voltage and the number of cells (1S-6S).

Set the charge current (CH A/B:0.1-10.0A; CH C/D:0.1-5.0A).

Set the discharge current (0.1-2.0A).

Set the discharge cut-off voltage (3.0-3.3V/Cell).

Set the terminal charge voltage (4.18-4.25V).

Press ENTER to save the program.

Saving

Indicates the battery type and battery cell of the saved profile.

Indicates the charge and discharge current of the saved profile.

2. Battery Memory Recall

From the BATT/PROGRAM menu use the INC or DEC buttons to scroll to the BATT MEMORY program and press START button to enter the battery memory program.

Use the INC or DEC buttons to scroll through the memories and select the desired program memory. Press the START button to confirm the selection.
Press the START button again and hold it to recall the selected memory.

Press and hold the START button for 3 seconds to start the program.

System Setting

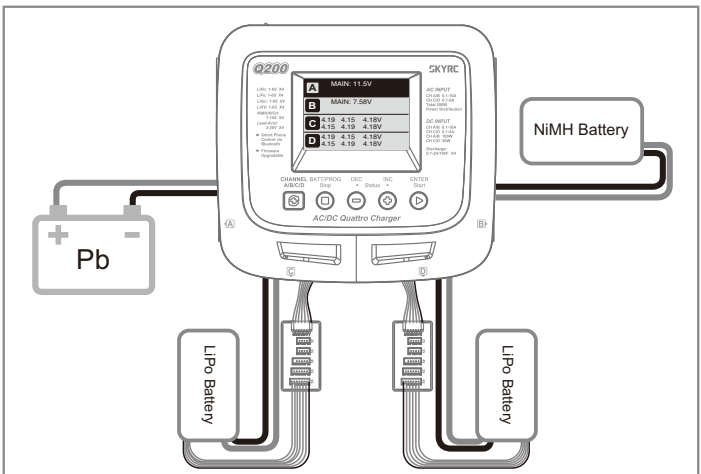
The charger will operate with default values for the essential user settings when it is powered on for the first time. The screen displays the following system settings in sequence and the user can change the parameter value on each screen.
When you want to change the parameter value, press START/ENTER to make it blink, then change the value with INC or DEC. The value will be stored by pressing START/ENTER once.

ITEM (Preset Value)	**SELECTION**	**DESCRIPTION**
Safety Timer ON 120Min	OFF/ ON (1-720 Min)	When you start a charge process, the internal safety timer automatically starts running at the same time. It is programmed to prevent overcharging, if the battery proves to be faulty or if the termination circuit cannot detect the full battery. The value of the safety timer should be generous enough to allow full charging of the battery.
Capacity Cut-Off ON 8000mAH	OFF/ ON (100-50000 mAh)	This sets the maximum charge capacity that will be supplied to the battery during charge. If the delta peak voltage is not detected for any reason or the safety timer has not expired, this feature will automatically stop the process at the selected capacity value.
Temp Cut-Off ON 50°C 122°F	OFF/ ON (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.
Temperature Unit Celsius	Celsius Fahrenheit	You can choose the temperature to be displayed in Celsius or Fahrenheit.
Rest Time CHG>DCHG 10Min	1-60Min	Rest time allows the battery to cool down between charging/discharging cycle.

ITEM	SELECTION	DESCRIPTION
NiMH Sensitivity D.Peak Default	Default: 4mV/Cell 5-15mV/Cell	This setting is for NiMH/NiCd battery only. When the charger detects that the delta peak value you set has been reached, the charger will say the battery is fully charged.
NiCd Sensitivity D.Peak Default		
Key Beep ON Buzzer ON	OFF/ON	Key Beep sounds every time you press a button. Buzzer beep or melody sounds at various instances during operation to alert certain process events.
DC Input. Low Cut-Off 11.0V	10.0-11.0V	This setting controls the DC input voltage. If the voltage drops below the value you set the charging operation will be terminated to protect the input channel.
BAL.Connection ON	OFF/ON	The default setting for charging Lithium batteries is the use of a balance adaptor to connect the battery and charger in Charge, Fast Charge, Balance Charge and Storage modes. This function could be disabled here.
AC Max Power Set 100W	0-100W	It is to set the max AC power of the present channel. Once you set it, the other channel will take the remaining power. Max Charge Power for CH A/CH B 100W Max Charge Power for CH C/CH D 50W
Load Factory Set Enter		Press ENTER to load factory default settings.
Version HW:1.00 SW: 1.00		It indicates the hardware and firmware version.

Battery Voltage Meter

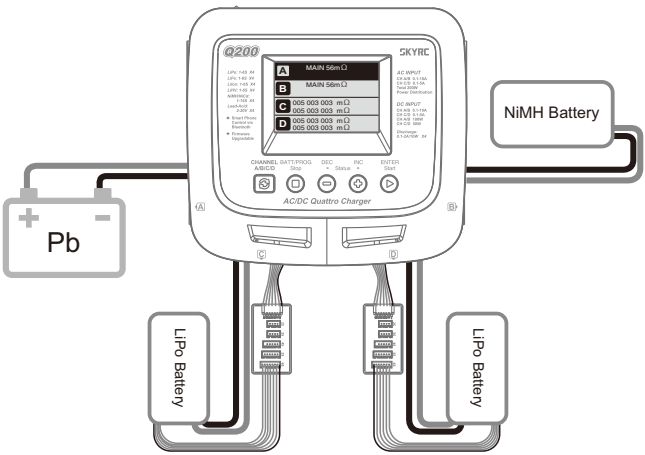
The user can check battery's total voltage, the highest voltage, the lowest voltage and each cell's voltage.
Please connect the charger main lead to the charger socket first, then the battery with the charger main lead, and finally the battery balance wires to the charger balance socket.



This diagram shows the correct way to connect your battery to check the voltage.

BATT/PROGRAM BATT METER	Press the START/ENTER to enter the Battery Meter program.
START ENTER	
4.20 4.19 4.19 V 4.18 4.18 4.19 V	The screen indicates each cell's voltage.
INC ⇕ DEC	
MAIN 25.13V H4.200V L4.182V	The screen indicates the total voltage, the highest cell voltage and the lowest cell voltage.

The user can check battery's total resistance, the highest resistance, the lowest resistance and each cell's resistance.
Please connect the charger main lead to the charger socket first, then the battery with the charger main lead, and finally the battery balance wires to the charger balance socket.



This diagram shows the correct way to connect your battery to check the resistance.

BATT/PROGRAM
BATT RESISTANCE

Press the START/ENTER to enter the Battery Resistance program.

Start
Enter

012 005 005 mΩ
006 mΩ

The screen indicates each cell's resistance.

INC DEC

TATAL: 28mΩ
H: 12mΩ L: 5mΩ

The screen indicates the total resistance, the highest resistance and the lowest resistance.

Warning and Error Message

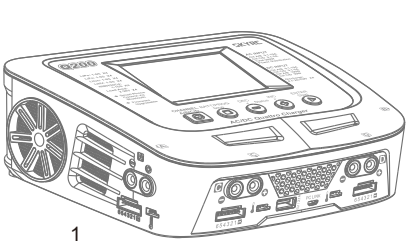
In case of an error the screen will display the cause of error and emit an audible sound.

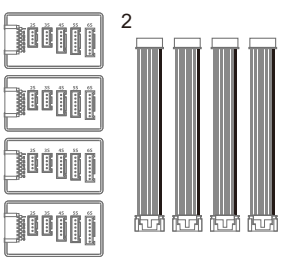
REVERSE POLARITY	Incorrect polarity connected.
NO BATT DETECTED	The battery is not connected to charger, or interrupted.
CONNECT ERROR CHECK MAIN PORT	The battery main connection is wrong.
BALANCE CONNECT ERROR	The battery balance connection is wrong.
DC IN TOO LOW	Input voltage less than 11V.
DC IN TOO HIGH	Input voltage higher than 18V.
CELL ERROR LOW VOLTAGE	Voltage of one cell in the battery pack is too low.
CELL ERROR HIGH VOLTAGE	Voltage of one cell in the battery pack is too high.
CELL ERROR VOLTAGE-INVALID	Voltage of one cell in the battery pack is invalid.
CELL NUMBER INCORRECT	The number of cells is wrong.
INT.TEMP.TOO HI	The internal temperature of the charger went too high.
EXT.TEMP.TOO HI	The battery temperature went too high.
OVER CHARGE CAPACITY LIMIT	The battery capacity has exceeded the maximum capacity which the user has set.
OVER TIME LIMIT	The charging time is longer than the maximum charging time which the user has set.
BATTERY WAS FULL	The battery voltage is higher than the maximum voltage which the user has set when charging in balance mode.

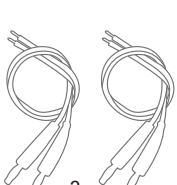
The free “Charge Master” software gives you unparalleled ability to operate the charger through the computer. You can monitor pack voltage, cell voltage and other data during the charging, view charge data in real-time graphs. And you can start and control charging and update the firmware from “Charge Master”.
In order to connect the charger to the computer and use the “Charge Master”, you are required to use a USB cable which is not included in this package. The cable must be terminated on one end with “A” plug and the opposite end with “micro-B” plug which directly connects to the charger.
You can control, monitor, operate and upgrade the charger via computer.
The “Charge Master” can be downloaded from www.skyrc.com.

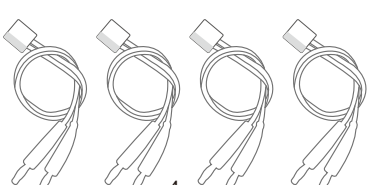
The Set Contains

1. SKYRC Q200 Charger
2. XH Adaptor X 4
3. Charging Cable X 2
4. Banana Connectors with XT60 Connector Charging Cable X 4
5. Power Cord









Apps for Q200

The Bluetooth 4.0 connectivity allows the user to remote control and monitor the Q200 comfortably through an app on a portable device such as smartphone, iPad, or iPhone. The iOS app can be downloaded from iTunes Store, the Android app from Google Play Store. Operation of the app is self-explanatory and the same on iOS and on Android. Explicit pairing is not required; after download and installation just activate Bluetooth on your mobile device and launch the app. Q200 and your device will establish Bluetooth connection automatically.

Scan with
your **Smartphone**
to download.

Operation

1. Connect the power cord to Q200, then turn on the power switch.
2. Connect the batteries to the corresponding channels.

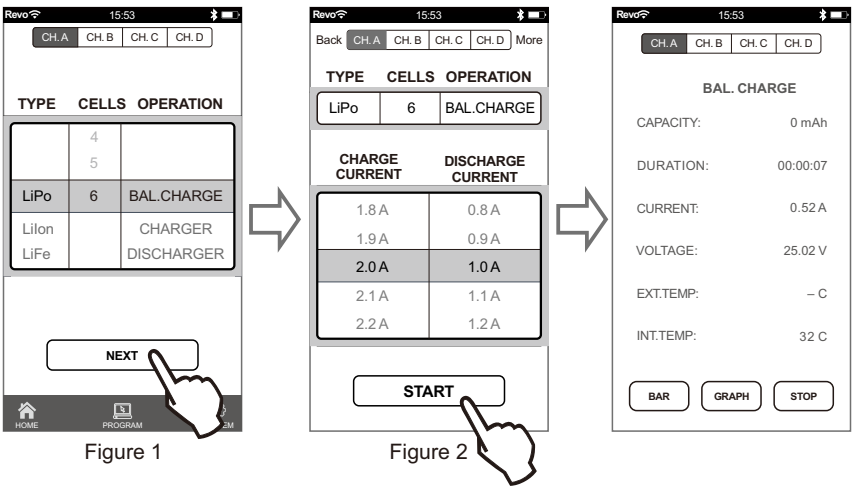
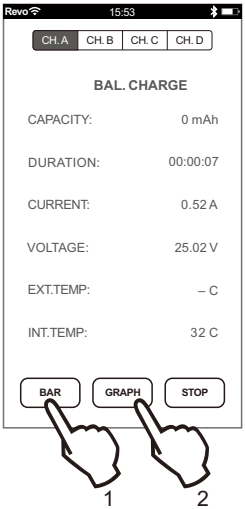
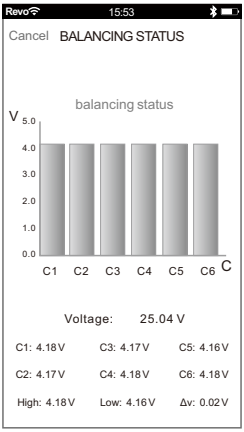


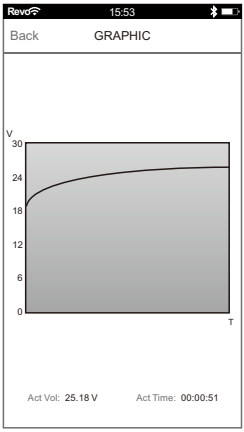
Figure 1 Figure 2

3. Select battery type, cells and charging methods. (Figure 1)
4. Select charging current and discharging current and push START. (Figure 2)



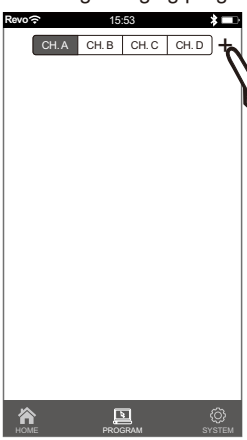


1. Graphic Bars

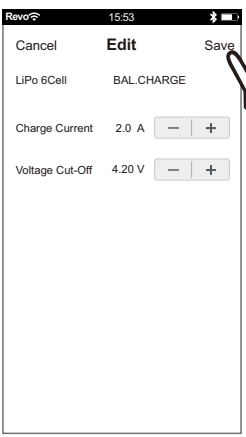


2. Lines

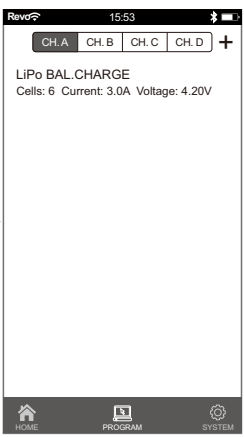
5. Adding charging program



Press “+” to add program



Select battery type, cells, charging methods and charging current.



Save

Specifications

- **DC Input Voltage:** 11-18V
- **AC Input Voltage:** 100-240V
- **Display Type:** 480x320 Color LCD
- **Display Backlight:** Cool White
- **Case Material:** Plastic
- **Controls:** Five Buttons
- **Case Size:** 197x182x71mm
- **Weight:** 1335g
- **PC Communications:** USB Port for PC Control & Firmware Upgrade
- **External Port:** 2-6S Balance Socket-XH, Temperature Probe Socket, Battery Socket, DC Input, Micro USB Port for PC, 5V/2.1A USB Port.
- **Delta Peak Detection for NiMH/NiCd:** 3-15mV/cell / Default: 4mV/cell
- **Charge Cutoff Temperature:** 20ºC/68ºF-80ºC/176ºF(adjustable)
- **Charge Voltage:** NiMH/NiCd: Delta peak detection
  LiPo: 4.18-4.25V/cell LiIon: 4.08-4.2V/cell
  LiFe: 3.58-3.7V/cell LiHV: 4.25-4.35V/cell
- **Balance Current:** 200mA/cell
- **Reading Voltage Range:** 0.1-26.1V/cell
- **Battery Types/Cells:** LiPo/LiIon/LiFe/LiHV: 1-6cells
  NiMH/NiCd: 1-15cells
  Pb: 2-20V
- **Battery Capacity Range:** NiMH/NiCd: 100-50000mAh
  LiPo/LiIon/LiFe/LiHV: 100-50000mAh
  Pb: 100-50000mAh
- **Charge Current:** Channel A/B: 0.1-10A; Channel C/D: 0.1-5A
- **Safety Timer:** 1-720minutes / Off
- **Charge Wattage:** AC CHA+CHC=100W CHB+CHD=100W
  (CHA/CHB: 50-100W CHC/CHD: 0-50W)
  DC CHA/CHB: 100W CHC/CHD: 50W
- **Discharge Current:** (0.1A-2.0A) x4
- **Discharge Cut-off Voltage:** NiMH/NiCd: 0.1-1.1V/cell
  LiPo: 3.0-3.3V/cell LiIon: 2.9-3.2V/cell
  LiFe: 2.6-2.9V/cell LiHV: 3.1-3.4V/cell
  Pb: 1.8V
- **Discharge Wattage:** 10Wx4
- **Balance Cells:** 2-6 cells
- **Memory:** 10x4 Different Charge/Discharge Profiles
- **Charge Method:** CC/CV for Lithium Types and Lead (Pb) Batteries
  Delta-peak Sensitivity for NiMH/NiCd.
- **Bluetooth Communication:** Bluetooth 4.0 (Bluetooth Low Energy)
- **Range:** 20 meters (65 Feet)

Q200 satisfy all relevant and mandatory CE directives and FCC Part 15 Subpart B: 2014.

For EC directives:

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

Test Standards	Title	Result
EN 300328	Electromagnetic compatibility and Radio spectrum Matters (ERM); Wideband transmission systems; Data transmission equipment operating in the 2.4 GHz ISM band and using wide band modulation techniques; Harmonized EN covering essential requirements under article 3.2 of the R&TTE Directive.	Conform
EN 301489-1 EN 301489-17	Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements. Part 17: Specific conditions for Broadband Data Transmission Systems.	Conform
EN 62479	Assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0 Hz - 300 Ghz).	Conform
EN 60950-1	Information Technology Equipment-Safety- Part 1: General Requirements	Conform
EN 55014-1	Electromagnetic Compatibility - Requirements for household appliances, electric tools and similar apparatus - Part 1: Emission.	Conform
EN 55014-2	Electromagnetic Compatibility - Requirements For Household Appliances, Electric Tools And Similar Apparatus - Part 2: Immunity Product Family Standard.	Conform
EN 61000-3-2:2014	Electromagnetic compatibility (EMC) - Part 3-2: Limits - Limits for harmonic current emissions (equipment input current <= 16 A per phase)	Conform
EN 61000-3-3:2013	Electromagnetic compatibility (EMC) - Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current <= 16 A per phase and not subject to conditional connection	Conform
FCC Part 15B	Title 47 Telecommunication PART 15—RADIO FREQUENCY DEVICES Subpart B—Unintentional Radiators	Conform

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.

Commonly used terms

Final charge voltage: the voltage at which the battery's charge limit (capacity limit) is reached. The charge process switches from a high current to a low maintenance rate (trickle charge) at this point. From this point on further high current charging would cause overheating and eventual permanent damage to the pack.

Final discharge voltage: the voltage at which the battery's discharge limit is reached. The chemical composition of the batteries determines the level of this voltage. Below this voltage the battery enters the deep discharge zone. Individual cells within the pack may become reverse polarized in this condition, and this can cause permanent damage.

A, mA: unit of measurement relating to charge or discharge current. 1000 mA = 1 A (A=Ampere, mA=Milliampere)

Ah, mAh: unit of measurement for the capacity of a battery (Amperes x time unit; h = hour). If a pack is charged for one hour at a current of 2 A, it has been fed 2 Ah of charge. It receives the same quantity of charge (2 Ah) if it is charged for 4 hours at 0.5 A, or 15 minutes (=1/4 h) at 8 A.

'C'-rating: Capacity is also referred to as the 'C' rating. Some battery suppliers recommend charge and discharge currents based on the battery 'C' rating. A battery's '1C' current is the same number as the battery's rated capacity number, but noted in mA or amps. A 600mAh battery has a 1C current value of 600mA, and a 3C current value of (3 x 600mA) 1800mA or 1.8A. The 1C current value for a 3200mAh battery would be 3200mA (3.2A).

Nominal voltage(V): The nominal voltage of the battery pack can be determined as follows;
-.NiCd or NiMH: multiply the total number of cells in the pack by 1.2. A 8-cell pack will have a nominal voltage of 9.6 volts (8x1.2).
-.LiPo: multiply the total number of cells in the pack by 3.7. A 3-cell LiPo wired in series will have a nominal voltage of 11.1 volts (3x3.7).
-.LiIo: multiply the total number of cells in the pack by 3.6. A 2-cell LiIo wired in series will have a nominal voltage of 7.2 volts (2x3.6).
-.LiFe: multiply the total number of cells in the pack by 3.3. A 4-cell LiIo wired in series will have a nominal voltage of 13.2 volts (4x3.3).
-.LiHV: multiply the total number of cells in the pack by 3.7V. A 4-cell LiHV wired in series will have a nominal voltage of 14.8 volts (4x3.7).
If the nominal voltage of the battery is not printed on the battery's label, consult your battery manufacturer or supplier. Do not guess the rated voltage of battery.

Liability exclusion

This charger is designed and approved exclusively for use with the types of battery stated in this Instruction Manual. SkyRC accepts no liability of any kind if the charger is used for any purpose other than that stated.
We are unable to ensure that you follow the instructions supplied with the charger, and we have no control over the methods you employ for using, operating and maintaining the device. For this reason we are obliged to deny all liability for loss, damage or costs which are incurred due to the incompetent or incorrect use and operation of our products, or which are connected with such operation in any way.Unless otherwise prescribed by law, our obligation to pay compensation, regardless of the legal argument employed, is limited to the invoice value of those SkyRC products which were immediately and directly involved in the event in which the damage occurred.

Warranty and service

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.

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.

Note:

1. The warranty service is valid in China only.
2. If you need warranty service overseas, please contact your dealer in the first instance, who is responsible for processing guarantee claims overseas. Due to high shipping cost, complicated custom clearance procedures to send back to China. Please understand SkyRC can't provide warranty service to overseas end user directly.
3. If you have any questions which are not mentioned in the manual, please feel free to send email to info@skyrc.cn

This content is subject to change.

Latest version can be downloaded from www.skyrc.com

If you have any question about this document, please contact SkyRC by sending a message to info@skyrc.cn

All specifications and figures are subject to change without notice.
Printed in China ©2016.05 7504-0755-01

FCC ID：REY-Q200