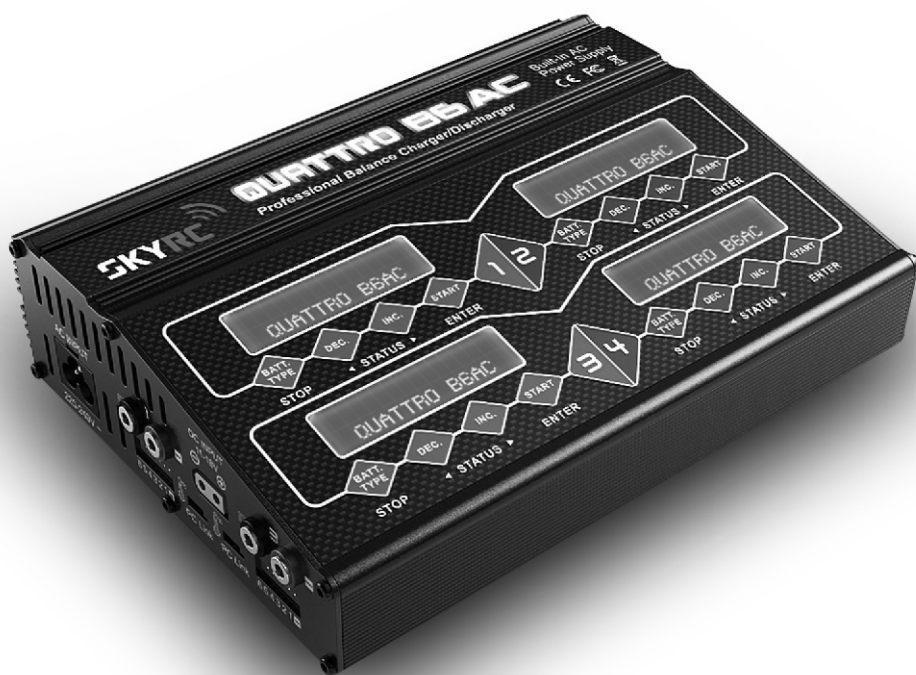# INSTRUCTION MANUAL

QUATTRO B6AC
Built-In AC Power Supply
Professional Balance Charger/Discharger

SKYRC

TABLE OF CONTENTS

INTRODUCTION

Congratulations on your choice of the SKYRC QUATTRO B6AC digital intelligent charger from SKYRC Technology Co., Ltd. You are now the owner of a compact charger with battery management and integral balancer.

The unit is simple to use, but the operation of a sophisticated automatic charger such as the SKYRC QUATTRO B6AC 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 automatic charger for the first time. We hope you have many years of pleasure and success with your new battery charger.

SKYRC QUATTRO B6AC is a high-performance, micro processor control charge/discharge station with battery management suitable for use with all current battery types. With integral equalizer for six-cell Lithium-Ion (LiIon), Lithium-Polymer (LiPo) and Lithium-Ferrum (LiFe) batteries.

Maximum 6A charge current; can be powered by a 12 Volt car battery or from the 110V AC(US Version) or 220V AC(EU Version) via the built in switch-mode power supply.

And the circuit features four totally independent identical power outputs which are powered 50 watts each. Total powers are 200 watts. As a result , it can charge or discharge up to 4 x 15 cells of NiCd/NiMH or 4 x 6 series of Lithium batteries simultaneously. Quattro B6AC has four individual cell voltage balancer at each outputs, so it does not required any balancer separately when charging Lithium Battery (LiPo/LiIon/LiFe) for voltage balancing.

When a Nickel battery is fully charged, the unit terminates the process using the Delta-Peak method. Lithium and lead (Pb) batteries are charged using the CC-CV method.

The fan cooling system is so smart and efficient. The fan speed is controlled by internal temperature sensor.

Following instructions only apply to one of the four chargers, as all of them operate according to same principle.

Please BE SURE to read these instructions and Warning and Safety Notes before you use the charger for the first time.
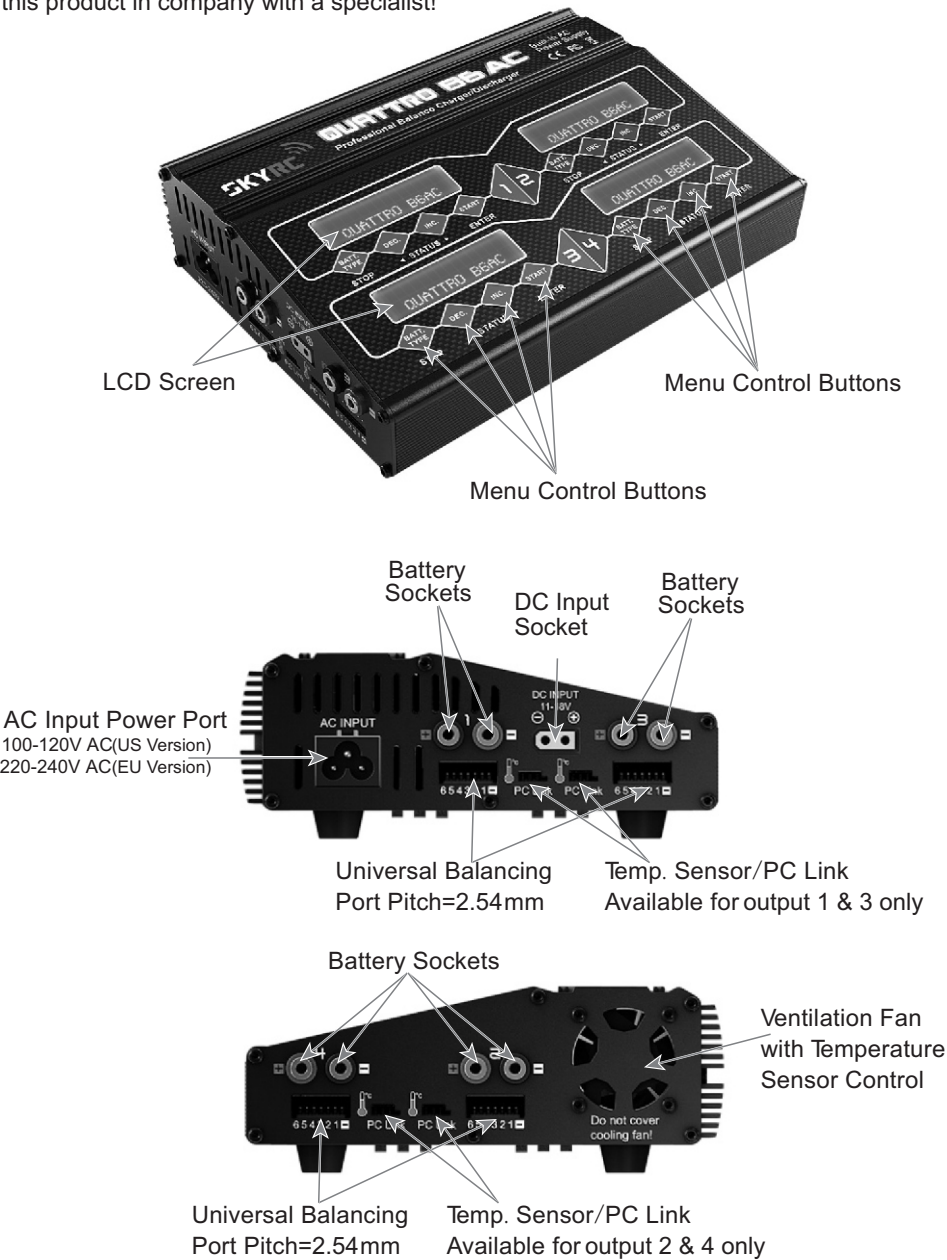
It can be dangerous to mis-handle batteries and battery chargers, as there is always a risk of batteries catching fire and exploding.

Liability Exclusion

This charger is designed and approved exclusively for use with the types of battery stated in these Instruction Manual. SKYRC accepts no liablility 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.

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!

LCD Screen

Menu Control Buttons

Menu Control Buttons

Battery Sockets

DC Input Socket

Battery Sockets

AC Input Power Port
100-120V AC(US Version)
220-240V AC(EU Version)

Universal Balancing Port Pitch=2.54mm

Temp. Sensor/PC Link Available for output 1 & 3 only

Battery Sockets

Ventilation Fan with Temperature Sensor Control

Universal Balancing Port Pitch=2.54mm

Temp. Sensor/PC Link Available for output 2 & 4 only

SPECIAL FEATURES

SKYRC QUATTRO B6AC allows you to plug 4 batteries into one charger simultaneously, and it will intelligently and automatically charge all 4 of them at once to their maximum capacity. To top of it, the batteries being charged do not even need to have the same configuration. You can connect different chemistry（Ni-MH/Ni-CD/LiPo/LiFe）batteries into any of the charging ports. No more staying up late for charging batteries.

Optimized operating software

SKYRC QUATTRO B6AC features the so-called 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 due to the user's fault. It can disconnect the circuit automatically and alarm once detecting any malfunction. All the programs of this product were controlled through two way linkage and communication, to achieve the maximum safety and minimize the trouble. All the settings can be configured by users!

Internal independent lithium battery balancer

SKYRC QUATTRO B6AC employs an individual-cell-voltage balancer. It isn't necessary to connect an external balancer for balance charging.

Balancing individual cells battery discharging

During the process of discharging, SKYRC QUATTRO B6AC 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

SKYRC QUATTRO B6AC is adaptable to various types of Lithium batteries, such as Li-ion, LiPo and the new LiFe series of batteries.

SPECIAL FEATURES

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.

Maximum safety
Delta-peak sensitivity: 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 NiCd or NiMH 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.

Data store/load
The maximum five batteries' data can be stored for each output(4×5SET). 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.

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.

PC based analysis uing USB Communication*
SKYRC QUATTRO B6AC offer PC based program can analysis the characteristic of the battery via USB port. It shows a graph of voltage, current, capacity curves. It also shows the individual voltage of each cell in the Lithium battery pack.
*PC-LINK USB adaptor can be purchased separately.

WARNING AND SAFETY NOTES

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.

❗ 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, 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 100-120V AC(US Version) or 220-240V AC(EU Version).

❗ 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)
- Batteries that require a different charge technique from NiCd, NiMh, LiPo or gel cell
  (Pb, lead-acid battery)
- 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

WARNING AND SAFETY NOTES

❗ 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.

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	≧3.0V/cell	≧2.5V/cell	≧2.0V/cell	≧0.85V/cell	≧1.0V/cell	≧1.75V/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 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 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 gold-plated 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.

WARNING AND SAFETY NOTES

❶ 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 NiCd and NiMH 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.

PROGRAM FLOW CHART

```
                              ┌─ LiPo
                              │  V.Type 3.7V
                              │  DEC│INC
                              │  Enter         INC        Input Power Low   INC   Key Beep  ON    INC   Capacity  Cut off
USER SET   Start             LiIo           ◄──────       Cut-Off  10.0V   ◄───   Buzzer    ON   ◄───   ON      5000mAH
PROGRAM    Enter             V.Type 3.6V     DEC                             DEC                   DEC
                              │  Enter                                                                    DEC│INC
                              │  DEC│INC                                                              Safety Time
                              │  LiFe                                                                 ON      180min
                              └─ V.Type 3.3V
                                                                                                          DEC│INC
                              INC│DEC
LiPo/LiIo/LiFe   INC   NiMH Sensitivity   INC   NiCd Sensitivity   INC   USB/Temp SELECT   INC   Waste Time
CHK Time  10min  ◄───  D.Peak Default     ◄───  D.Peak Default     ◄───  TEMP CUT-OFF 80C  ◄───  CHG>DCHG 1min
                 DEC                       DEC                       DEC                     DEC

PROGRAM SELECT  Start  LiPo CHARGE    INC   LiPo BALANCE   INC   LiPo FAST CHG   INC   LiPo STORAGE   INC   LiPo DISCHARGE
LiPo BATT       Enter  0.1A 3.7V(1S)  ◄──   0.1A 7.4V(2S)  ◄──   0.1A   3.7V(1S) ◄──   0.1A 3.7V(1S) ◄──   0.1A   3.0V(1S)
                                      DEC                  DEC                   DEC                  DEC

PROGRAM SELECT  Start  LiIo CHARGE    INC   LiIo BALANCE   INC   LiIo FAST CHG   INC   LiIo STORAGE   INC   LiIo DISCHARGE
LiIo BATT       Enter  0.1A 3.6V(1S)  ◄──   0.1A 7.2V(2S)  ◄──   0.1A   3.6V(1S) ◄──   0.1A 3.6V(1S) ◄──   0.1A   3.0V(1S)
                                      DEC                  DEC                   DEC                  DEC

PROGRAM SELECT  Start  LiFe CHARGE    INC   LiFe BALANCE   INC   LiFe FAST CHG   INC   LiFe STORAGE   INC   LiFe DISCHARGE
LiFe BATT       Enter  0.1A 3.3V(1S)  ◄──   0.1A 6.6V(2S)  ◄──   0.1A   3.3(1S)  ◄──   0.1A 3.3(1S)  ◄──   0.1A   2.0V(1S)
                                      DEC                  DEC                   DEC                  DEC

                              NiMH CHARGE Man.
                              CURRENT    0.1A
PROGRAM SELECT  Start         Start/Enter   INC+DEC    INC   NiMH DISCHARGE   INC   NiMH CYCLE
NiMH BATT       Enter         INC+DEC   Start/Enter    ◄──   0.2A      0.1V   ◄──   DCHG>CHG  1
                              NiMH CHARGE Aut.         DEC                    DEC
                              CUR LIMIT  0.6A

                              NiCd CHARGE Man.
                              CURRENT    0.1A
PROGRAM SELECT  Start         Start/Enter   INC+DEC    INC   NiCd DISCHARGE   INC   NiCd CYCLE
NiCd BATT       Enter         INC+DEC   Start/Enter    ◄──   0.2A      0.1V   ◄──   DCHG>CHG  1
                              NiCd CHARGE Aut.         DEC                    DEC
                              CUR LIMIT  0.1A

PROGRAM SELECT  Start  LOAD [01] LiPo   Start 2 Sec.   LOAD...    ──► OK
LOAD DATA       Enter  1.0V   5000mAH   ◄────────
                                        Enter

PROGRAM SELECT  Start  SAVE [ 1 ] LiPo   Start 2 Sec.  LiPo CHARGE *    Start 2 Sec.   SAVE...   ──► OK
SAVE DATA       Enter  3.7V   5000mAH   ◄────────      0.1A 3.7V(1S)  ◄────────
                                        Enter                          Enter

PROGRAM SELECT  Start  PB CHARGE      INC   PB DISCHARGE
Pb BATT         Enter  0.1A  2.0V(1P) ◄──   0.1A  2.0V(1P)
                                      DEC
```

Batt.Type DEC

LITHIUM POLYMER BALANCE CHARGE PROGRAM
CONNECTION DIAGRAM

CONNECTING THE CHARGER

SKYRC QUATTRO B6AC comes with the built in switching power supply. You can connect the AC power cord directly to the main AC socket. (100-120V AC US Version or 220-240V AC EU Version) For attaching directly to 12V car batteries. It is critically important that you use a fully charged 13.8V car battery
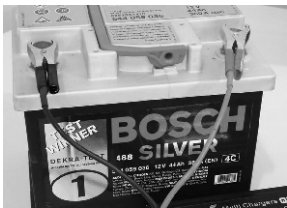
Using terminal
clip attaching
to car battery

CONNECTING THE BATTERY

Important!!! Before connecting a battery it is absolutely essential to check one last time that you have set the parameters correctly. If the settings are incorrect, the battery may be damaged, and could even burst into flames or explode. To avoid short circuits between the banana plugs, always connect the charge leads to the charger first, and only then to the battery. Reverse the sequence when disconnecting the pack.

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 below.)

This diagram shows the correct way to connect your battery to the SKYRC QUATTRO B6AC while charging in the balance charge program mode only.
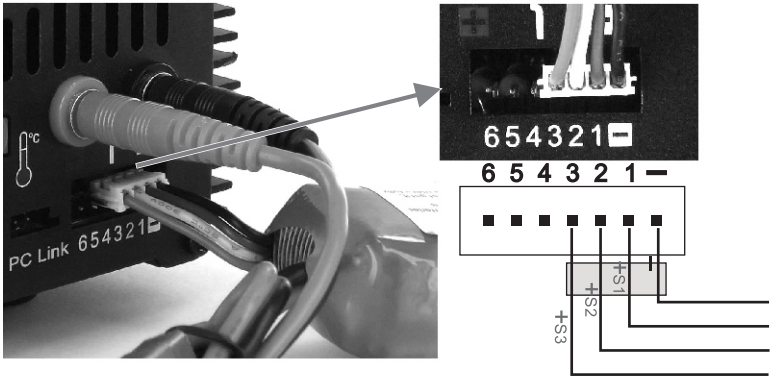
WARNING:
⚠ Failure to connect as shown in this diagram will damage this charger.

INITIAL PARAMETER SETUP (**USERS SET UP**)

By default, this charger will be set to typical user settings when it is connected to DC 11~18V for the first time. The screen displays the following information in sequence and the user can change the parameter on each screen.

If you need to alter the parameter value in the program, press "Start/Enter" key to make it blink then change the value with "INC" or "DEC" key. The value will be stored by pressing "Start/Enter" key once.

```
USER SET
  PROGRAM->
```

INC▶

User setup starting screen.

```
LiFe
V.Type  3.3V
```

◀DEC INC▶ (– +)

The screen displays the nominal voltage of Lithium battery. There are three kinds of Lithium battery: LiFe(3.3V), Lilo(3.6V) or LiPo(3.7V). This is very important so you have to check the battery carefully and set it up correctly. If it is different from correct value the battery may be exploded during charge process.

◀DEC INC▶

```
LiPo/LiIo/LiFe
CHK Time 10min
```

SKYRC QUATTRO B6 recognize the cell count of Lithium battery automatically at the beginning of charge or discharge process to avoid from erroneous setting by user. But deeply discharged battery can be perceived incorrectly. To prevent the error, you can set the time term to verify the cell count by the processor. Normally, 10 minutes are enough to perceive the cell count correctly. For the battery of larger capacity, you may extend the time term. But if you set the time term to long for the battery of smaller capacity, the charge or discharge process can be finished within the time term with the erroneous cell count. This may cause the fatal result. If the processor recognizes the cell count incorrectly at the beginning of charge or discharge process, you may extend the time. Otherwise, you had better use with the default value.

INITIAL PARAMETER SETUP (**USERS SET UP**)

◄DEC | INC►

```
NIMH Sensitivity
D.Peak Default
```

◄DEC INC►
  − +

This shows the trigger voltage for automatic charge termination of NiMH and NiCd battery. The effective value ranges from 5 to 20mV per cell. If the trigger voltage is set higher, there is a danger of overcharging the battery; if it is set lower, there is a possibility of premature termination. Please refer the technical specification of the battery. (NiCd default: 12mV, NiMH default: 7mV)

◄DEC | INC►

```
NICD Sensitivity
D.Peak Default
```

◄DEC INC►
  − +

◄DEC | INC►

```
Temp. Cut-off
ON   80C
```

◄DEC INC► ◄DEC INC►
  − +   − +

An optional feature using temperature probe contacting the surface of battery, the temperature cut-off can be on or off. If it is on, set the maximum temperature at which the charger should allow battery to reach during charge. Once a battery reaches this temperature during charge, the process will be terminated to protect the battery.

◄DEC | INC►

```
Waste time
CHG/DCHG 5min
```

◄DEC INC► ◄DEC INC►
  − +   − +

The battery becomes warm after cycles of charge/discharge process. The program will insert a time delay after each charge/ discharge process to allow the battery enough time to cool down before beginning next cycle of charge/discharge process. The valid value ranges from 0 to 60 minutes.

◄DEC | INC►

```
Safety time
ON   120min
```

◄DEC INC► ◄DEC INC►
  − +   − +

When the charge process starts, the integrated safety timer starts to run simultaneously. If an error is detected or the termination circuit cannot detect whether the battery is fully charged or not, the unit is programmed to prevent overcharging. Please refer to the below statement to calculate the safe timer to be set.

Safe Timer Calculation

When charging NiCd or NiMH batteries, divide the capacity by current, then divide the result by 11.9, set this number of minutes as the value for safety timer setting. If the charger stopped at this time threshold, about 140% of the capacity will have been fed into the battery.

For example:

Capacity	Current	Safety Time
2000mAh	2.0A	(2000/2.0=1000)/11.9=84 minutes
3300mAh	3.0A	(3300/3.0=1100)/11.9=92 minutes
1000mAh	1.2A	(1000/1.2=833)/11.9=70 minutes

◄DEC ↕ INC►

```
┌─────────────────────┐
│ Capacity Cut-Off    │
│ ON          5000 mAh│
└─────────────────────┘
```

◄DEC INC► ◄DEC INC►

◄DEC ↕ INC►

```
┌─────────────────────┐
│ Key Beep  ON        │
│ Buzzer    ON        │
└─────────────────────┘
```

◄DEC INC►

◄DEC INC►

```
┌─────────────────────┐
│ Input Power Low     │
│ Cut-Off     10.0V   │
└─────────────────────┘
```
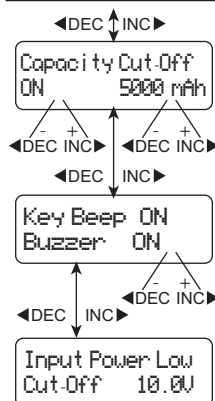
The program provides maximum capacity protection function. If the delta-peak voltage cannot be detected or the safe timer times out, the charge process will stop automatically when the battery reaches the maximum charge capacity set by the user.

A beep to confirm users' operation sounds every time a button is pressed. A beep or melody sounds at various times during operation to confirm different mode changes.

These functions can be switched on or off. This function monitors the voltage of the input battery used to power this charger. If the voltage is lower than the value set by the user, the program will end to protect the input battery.

LITHIUM (LIPO/LILON/LIFE) PROGRAM

Lithium battery (LiIon/LiPo/LiFe) program

These programs are only suitable for charging and discharging Lithium batteries with a nominal voltage of 3.3V, 3.6V and 3.7V per cell. These batteries need to adopt different charge technique that is termed constant current (CC) and a constant voltage (CV) method. The charge current varies according to the battery capacity and performance.

The Lithium battery is charged at a constant current until it reaches the final charge voltage of 4.2 V per cell (B). After this point the voltage is kept at a constant level, and the residual charge takes the form of a declining current curve (C) until the cut-off point (D) is reached. Charge current = C/10. At this point the battery can be disconnected from the charger, and is ready for use.
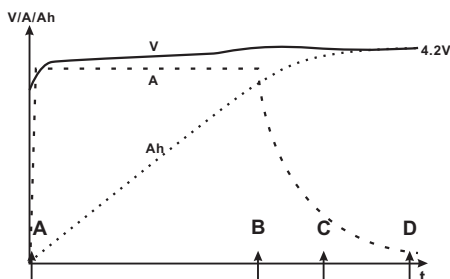
The final voltage of charge process is also very important; it should be precisely matched with the charged voltage of the battery. They are 4.2V for LiPo, 4.1V for Lilo, and 3.6V for LiFe. The charge current and nominal voltage as for cell count set on the charge program must always be correct for the battery to be charged. When you are willing to alter the parameter value in the program, press start/enter key to make it blink then change the value with Inc> or <Dec key. The value will be stored by pressing start/enter key once.
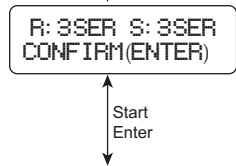
CHARGING LITHIUM BATTERY IN THE CHARGE MODE

This charging mode is for charging Li-Po/Ion/Fe battery without balance lead.

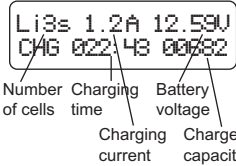## CHARGING OF LITHIUM BATTERY

```
LiPo CHARGE
2.0A 11.1V(3S)
```
◄DEC INC► ◄DEC INC►

Batt type Start
Stop   Enter   '>3 seconds'

```
R:3SER S:3SER
CONFIRM(ENTER)
```

Start
Enter

```
Li3s 1.2A 12.59V
CHG 022:43 00682
```

Number   Charging   Battery
of cells time   voltage

Charging   Charged
current   capacity

The left side of the first line shows the type of battery you choose. The value on the left of the second line of the charger is current user set, After setting the current and voltage, press START/ENTER key for more than 3 seconds to start the process.(charge current: 0.1-6.0A, voltage: 3.7-22.2V).

This displays the number of cells you set up and the processor detects. "R" shows the number of cells detected by the charger and "S" is the number of cells set by you at the previous screen. If both numbers are identical, you can start charging by press START/ENTER button. If not, press BATT TYPE/STOP button to go back to previous screen to carefully check the number of cells of the battery pack before going ahead.
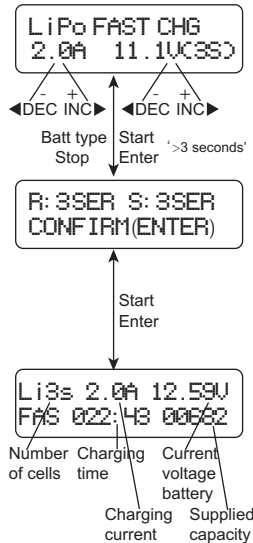
This screen shows the real-time status during charge process. Press BATT TYPE/STOP key once to stop the charge process.

CHARGING LITHIUM BATTERY IN THE BALANCE MODE

This function is for balancing the voltage of Lithium-polymer battery cells while charging. In the balance mode, the battery needs to have a balance lead to connect to the individual balance port at the right side of the charger. And you need to connect the battery's power lead to the output of charger. Charging in this mode is different from the normal mode. The built-in processor monitors the voltage of individual cells and controls the input current fed into each cell to equalized voltage.

BALANCE OF LITHIUM BATTERY

```
LiPo BALANCE
2.0A 11.1V(3S)
```
- +   - +
◀DEC INC▶ ◀DEC INC▶

Batt type | Start
Stop | Enter   '>3 seconds'

```
R:3SER S:3SER
CONFIRM(ENTER)
```

Start
Enter

```
Li3s 1.2A 12.59V
CHG 022:43 00662
```

Number | Charging | Battery
of cells | time | voltage

Charging | Charged
current | capacity

The left side of the first line shows the type of battery you choose. The value on the left of the second line of the charger is current user set, After setting the current and voltage, press START/ENTER key for more than 3 seconds to start the process.(charge current: 0.1-6.0A, voltage: 3.7-22.2V).
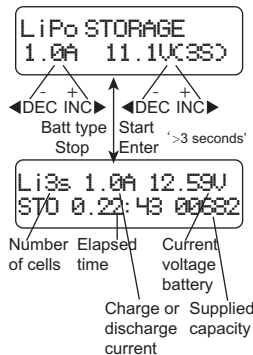
This displays the number of cells you set up and the processor detects. "R" shows the number of cells detected by the charger and "S" is the number of cells set by you at the previous screen.If both numbers are identical you can start charging by press START/ENTER button. If not, press BATT TYPE/STOP button to go back to previous screen to carefully check the number of cells of the battery pack before going ahead.

This screen shows the real-time status during charge process. Press BATT TYPE/STOP key once to stop the charge process.

FAST CHARGING OF LITHIUM BATTERY

CHARGING LITHIUM BATTERY IN THE FAST CHARGE MODE

Charging current will become lower when it progress to the end of charging. A specific CV process will be reduced to end the charging process earlier. In fact, the charging current will goes to 1/5 when the charging process comes to 1/10. Charging capacity will be little smaller than normal charging, but charging time will be shortened accordingly.

FAST CHARGING OF LITHIUM BATTERY

```
LiPo FAST CHG
2.0A  11.1V(3S)
```
◄DEC INC► ◄DEC INC►
Batt type Start
Stop Enter '>3 seconds'

```
R:3SER S:3SER
CONFIRM(ENTER)
```
Start
Enter

```
Li3s 2.0A 12.59V
FAS 022:43 00682
```
Number of cells | Charging time | Current voltage battery
Charging current | Supplied capacity

The value on the left side of the second lines sets the charge current. The value on the right side of the second lines sets the battery pack's voltage. After setting current and voltage, press STAR/ENTER for more than 3 seconds to start the process.

This displays the number of cells you set up and the processor detects. 'R' shows the number of cells detected by the charger and 'S' is the number of cells set by you at the previous screen. If both numbers are identical, you can start charging by press START/ENTER button. If not, press BATT TYPE/STOP button to go back to previous screen to carefully check the number of cells of the battery pack before going ahead.

This screen shows the real-time status during charge process. Press BATT TYPE/STOP key once to stop the charge process.

CHARGING LITHIUM BATTERY IN THE STORAGE MODE

This function is for charging/discharging batteries which are not used at once. This program is designed for charging or discharging of batteries of specific original state. They are classified by types:3.75V Lilo, 3.85V LiPo and 3.3V LiFe. The program will begin to discharge if the original state of the battery exceeds the voltage level of storage.

STORAGE CONTROL OF LITHIUM BATTERY

```
LiPo STORAGE
1.0A  11.1V(3S)
```
◄DEC INC► ◄DEC INC►
Batt type Start
Stop Enter '>3 seconds'

```
Li3s 1.0A 12.59V
STO 0.22:43 00682
```
Number of cells | Elapsed time | Current voltage battery
Charge or discharge current | Supplied capacity

At this screen, you can set up the current and voltage of the battery pack. Charging and discharging will make the batteries come to the voltage level of 'storage' state.

This screen shows the real-time status charging. Press BATT TYPE/STOP key once to stop the charge process.

### VOLTAGE BALANCING AND MONITORING IN THE DISCHARGE PROCESS

The processor monitors voltage of each cell when the battery packs are during its 'storage' and 'discharging' process. If voltage of any cell is abnormal, SKYRC QUATTRO B6AC will show error message and terminate the program forcibly. So if there is battery damage or disconnection, you can see the error message and press INC to know which cell is damaged.

DISCHARGING OF LITHIUM BATTERY

```
LiPo DISCHARGE
1.0A 11.1V(3S)
```
◀DEC INC▶   ◀DEC INC▶
Batt type Start '>3 seconds'
Stop   ▼Enter
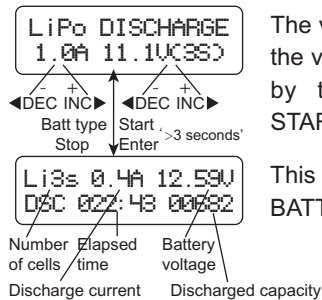
The value of discharge current on the left can not exceed 1C, and the value on the right can not be under the voltage recommended by the manufacturer to avoid deep discharging. Press START/ENTER for more than 3 seconds to start discharging.

```
Li3s 0.4A 12.59V
DSC 022:43 00682
```
Number Elapsed   Battery
of cells /time   voltage
Discharge current   Discharged capacity

This shows the real-time status of discharging, you can press BATT TYPE/STOP key to stop discharging.

```
BATTERY VOL ERR
  CELL LOW VOL
```
↕INC▶
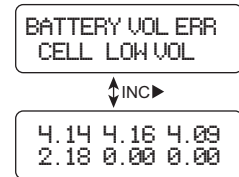
The processor detects voltage of one cell is too low.

```
4.14 4.16 4.09
2.18 0.00 0.00
```

The 4th cell was damaged. The value of voltage may be zero if disconnection occurs.

CHARGING NICD/NIMH BATTERY IN THE CHARGE MODE

This program charge the battery using the current you set up. In the 'auto' state, 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 in the 'auto' charging mode. But in the manual mode, it will charge with the current you set. You can make it blink in the current field and press INC and DEC simultaneously to swap between Auto and Manual Mode. NOTE: Allowable fast charge current: 1C-2C.

CHARGING OF NICD/NIMH BATTERY

```
NIMH CHARGE Aut
CUR LIMIT 5.0A
```
◀DEC INC▶   ◀DEC INC▶
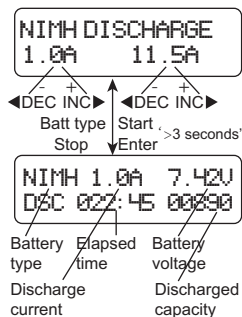Batt type Start '>3 seconds'
Stop   ▼Enter
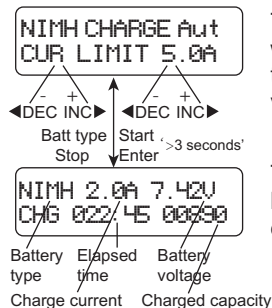
This program is for charging of NiCd/NiMH batteries associated with R/C models applications. You can press START/ENTER key to make it blink and then INC or DEC to change the parameter value. Press START/ENTER key to store the value.

```
NIMH 2.0A 7.42V
CHG 022:45 00690
```
Battery Elapsed Battery
type   time   voltage
Charge current   Charged capacity

The screen shows the real-time status. Press BATT TYPE/STOP key to end the program. The sound will emitted to indicates the end of program.
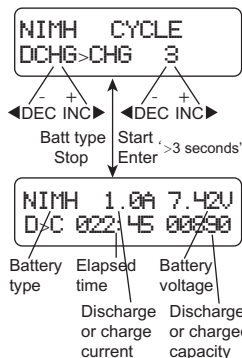
DISCHARGE OF NICD/NIMH BATTERY

```
NIMH DISCHARGE
1.0A    11.5A
```
◄DEC INC► ◄DEC INC►
Batt type | Start
Stop | Enter '>3 seconds'

```
NIMH 1.0A 7.42V
DSC 022:45 00290
```
Battery Elapsed Battery
type   time   voltage
Discharge   Discharged
current   capacity

Set charge current on the left and the final voltage on the right. Range of the charge current is 0.1-1.0A; range of final voltage is 0.1-25.0V. Press START/ENTER key for more than 3 seconds to start the program.

The screen indicates the discharging state. You can press START/ENTER key to alter discharge current. Press START/ENTER again to store the value. Press BATT TYPE/STOP key to stop discharging. The emitted sound alerts the end of discharging.

CHARGE/DISCHARGE AND DISCHARGE/CHARGE CYCLE OF NICD/NIMH BATTERY

```
NIMH   CYCLE
DCHG>CHG   3
```
◄DEC INC► ◄DEC INC►
Batt type | Start
Stop | Enter '>3 seconds'

```
NIMH  1.0A 7.42V
D/C 022:45 00290
```
Battery Elapsed Battery
type   time   voltage
        Discharge Discharged
        or charge or charged
        current   capacity

```
DCHG 1 1314mAh
CHG  1 1430mAh
```

You can set up the sequence on the left and the number of cycles on the right. The range of the cycle number is 1-5.

Press BATT TYPE/STOP key to stop program, you can press START/ENTER key to alter charge current. The sound indicates the end of program.

When it approaches to the end, you can see the capacity of the battery being charged or discharged. You can press INC or DEC key to display result of each cycle.

– 19 –

CHARGING PB (LEAD-ACID) BATTERY IN THE CHARGE MODE

This program is only suitable for charging Pb (lead-acid) battery with nominal voltage from 2 to 20V. Pb (lead-acid) battery is completely different from NiCd/NiMH battery. These batteries can only deliver current lower in comparison to their capacity. The same restriction applies to the charging process. Consequently, the optimum charge current can only be 1/10 of the capacity. Pb battery can not be used for fast-charging, please follow the instructions provided by the battery manufacturer.

Due to the chemistry characteristic of Pb battery, the cut off point may be difficult to detect sometimes. We recommend user to use CAPACITY CUT OFF feature to protect the battery. You can press START/ENTER key to make it blink and alter the value of parameters using INC or DEC key, press START/ENTER key to store the value.

CHARGING OF THE PB BATTERY
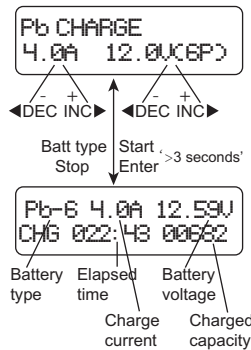
Set up the charge current on the left and nominal voltage on the right. Range of current is 0.1-6.0A, the voltage should match the battery being charged. Press START/ENTER key for more than 3 seconds to start charging.

The screen displays the real-time discharging status. Press START/ENTER key to alter discharge current. Press START/ENTER key again to store the parameter value you set. Press BATT TYPE/STOP key to end the program.

DISCHARGING OF THE PB BATTERY
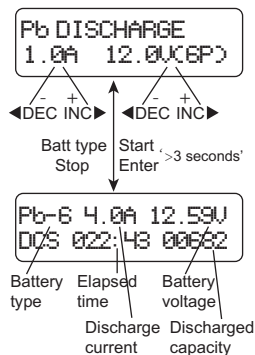
Set up the charge current on the left and nominal voltage on the right. Range of discharge current is 0.1-1.0A, the voltage should match the battery being charged. Press START/ENTER key for more than 3 seconds to start charging.

The screen displays the real-time discharging status. Press START/ENTER key to alter discharge current. Press START/ENTER key again to store the parameter value you set. Press BATT TYPE/STOP key to end the program.

STORAGE DATA PROGRAM

For your convenience, SKYRC QUATTRO B6AC has a data storage and load program. It can store five battery data representing the respective specifications of batteries. You can call back the data when charging or discharging without setting up the program again. Press START/ENTER key to make it blink, and use INC or DEC to set up the parameter.

```
PROGRAM SELECT
 SAVE DATA
```

↑ Start
  Enter

```
SAVE [01] NiMH
14.4V  3000mHh
```

Voltage | Data number | Capacity | Type of battery

Batt type Stop | Start Enter | '>3 seconds'
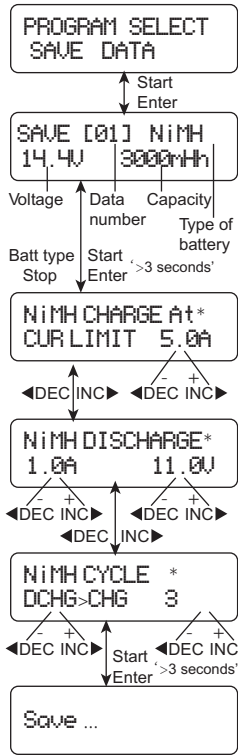
Setting of the parameter in the screen will not affect the charge and discharge process. They just present the specification of the battery. The example is NiMH battery pack, including 12 cells, the capacity is 3000m Ah.

```
NiMH CHARGE At*
CUR LIMIT 5.0A
```

◄DEC INC► ◄DEC INC►

Set up the charge current in the manual mode, or current limit in the auto mode. Press INC and DEC key simultaneously to make the current field blink to switch the charge mode.

```
NiMH DISCHARGE*
1.0A      11.0V
```

◄DEC INC► ◄DEC INC►
◄DEC INC►

Set up the discharge current and final voltage.

```
NiMH CYCLE  *
DCHG>CHG   3
```

◄DEC INC► Start Enter '>3 seconds' ◄DEC INC►

Set up the charge/ discharge sequence and cycle number.

```
Save ...
```

Saving the data.

LOAD DATA PROGRAM

This program is to load the data stored at the 'save data' program. Press START/ENTER key to make the data field blink and press INC or DEC for more than 3 seconds to load the data.

```
PROGRAM SELECT
  LOAD DATA
```

↑ Start
  Enter

```
LOAD [01] NiMH
14.4V 3000mHh
```

↑ Start
  Enter '>3 seconds'
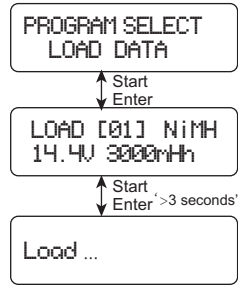
Choose the data number you want to call back. The data you want to call back will be displayed.

```
Load ...
```

Loading the data.

– 21 –

VARIOUS INFORMATION IN THE PROGRAM

You can inquire various information on the LCD screen during the charging and discharging process. Press DEC key, the charger will display users' setting. You can press INC key to monitor voltage of each cell while the battery is connected With each port of the charger.

```
End Voltage
12.6V (3S)
```
◄DEC⬍

It comes to the final voltage when the program ended.

```
Capacity Cut-Off
ON    5000 mAh
```
◄DEC⬍

Displayed capacity cut-off function is turn on and the setting value of capacity.

```
Safety  Timer
ON      200 min
```
◄DEC⬍

Displayed safety timer is turn on and duration of time in minutes.

```
Temp. Cut-Off
ON   80C  176F
```
◄DEC⬍

Displayed temperature cut-off function is turn on.

```
Ext.Temp 26C
```
◄DEC⬍

The external temperature is displayed when the temperature probe is used.

```
IN Power Voltage
12.56V
```
◄DEC⬍

Present input voltage.

```
4.14 4.16 4.09
0.00 0.00 0.00
```

The battery is connected with each port through cable. You can check voltage of each cell in the battery pack. When the cable is connected with the ports on the charger, the program will display voltage of up to 6 batteries.

WARNING AND ERROR MESSAGE

WARNING AND ERROR MESSAGE

SKYRC QUATTRO B6AC 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.

REVERSE POLARITY	Incorrect polarity connected.
CONNECTION BREAK	Battery connection is interrupted.
SHORT ERR	Short-circuit of the output termination.
INPUT VOL ERR	Input voltage wrong.
VOL SELECT ERR	The voltage of the battery pack has been selected incorrectly!
BREAK DOWN	The charger has malfunctioned for some reason. Seek professional advice.
BATTERY CHECK LOW VOLTAGE	The voltage is lower than which is set. Please check the number of cells in the battery pack.
BATTERY CHECK HIGH VOLTAGE	The voltage is higher than which is set. Please check the number of cells in the battery pack.
BATTERY VOLTAGE CELL LOW VOL	Voltage of one cell in the battery pack is too low, please check the voltage of each cell.
BATTERY VOLTAGE CELL HIGH VOL	Voltage of one cell in the battery pack is too high; please check the voltage of each cell.
BATTERY VOL ERR CELL CONNECT	Wrong connection of the connector detected; please check the connector and cable.
TEMP OVER ERR	The internal temperature is too high, please cool it down.
CONTROL FAILURE	The processor cannot control the feeding current, please repair it.

SPECIFICATION

AC Input (US Version)	100-120V(380-330W)
(EU/UK/AU/CHN Version)	220-240V(380-330W)
DC Input	11-18Volt
Charger circuit power	4 x 50W(200W)
Charge current range	0.1-6.0A
Discharge current range	0.1-1.0A
Current drain for balancing port	300mA/cell
NiCd/NiMH battery cell count	1-15Cells
LiPo/LiFe/LiIon cell count	1-6Cells
Pb battery voltage	2-20V
Net weight	1.57kg
Dimension	225x170x66mm

(stated values refer to one charger except built-in power supply, dimension & weight)

THE SET CONTAINS

6. Tamiya charging cable

1. AC Power Cord
2. DC Power Input Cable
3. SKYRC QUATTRO B6AC
4. Plug-in battery clamps
5. Crocodile clip charging cable

7. Futaba RX charging cable
8. JST/BEC charging cable
9. 18AWG wire charging cable
10. TP/FP Adaptor
11. XH Adaptor
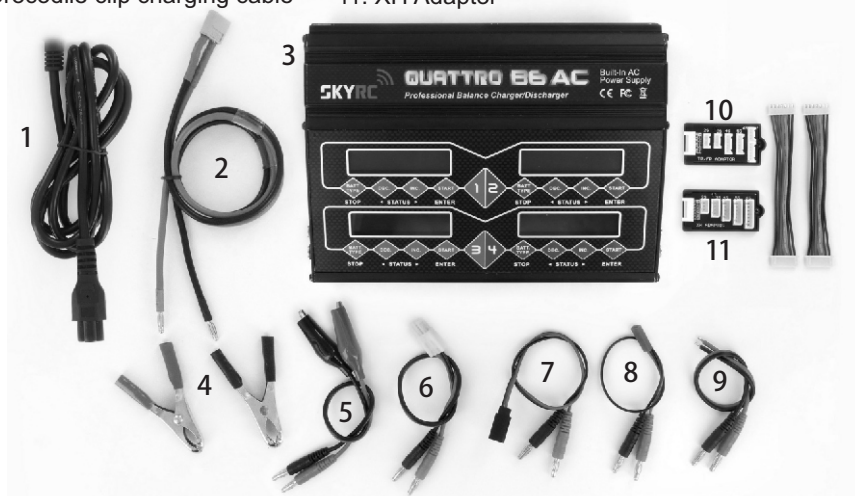
RECOMMENDED ACCESSORIES

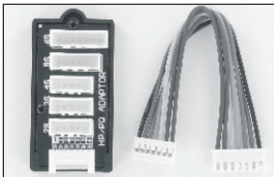Software Kit

Temperature
Sensor Cable
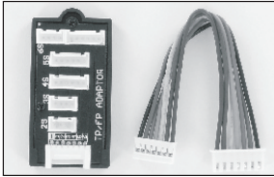
TP/FP Adaptor
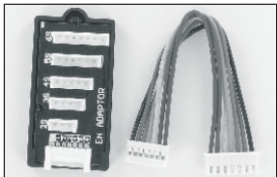
EH Adaptor
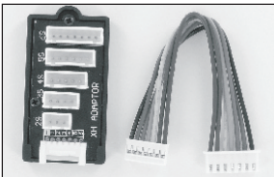
XH Adaptor

HP/PQ Adaptor
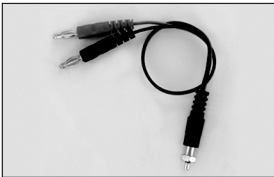
18AWG charging cable

Dean charging cable

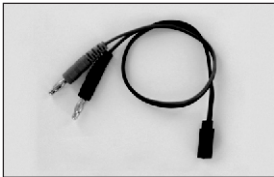Tamiya charging cable

TRAXXAS charging cable

Glow charging cable

Bullet charging cable

Ec3 charging cable

Crocodile   clip
charging   cable

Futaba   RX
charging   cable

CONFORMITY DECLARATION

SKYRC QUATTRO B6AC satisfy all relevant and mandatory EC directives and FCC Part 15 Subpart B: 2008.

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

	Test Standards	Title	Result
CE-LVD	EN60335	For safety of household and similar electrical appliances.	Conform
CE-EMC	EN 55014-1:2006	Electromagnetic compatibility-Requirements for household appliances,electric tools and Similar apparaturs - Part 1: Emission	Conform
	EN55014-2:1997 +A1:2001	Electromagnetic compatibility-Requirements for household appliances,electric tools and Similar apparaturs - Part 2: Immunity-Product family standard	Conform
	EN61000-6-1(2007)	Electromagnetic compatibility (EMC) -- Part 6-1: Generic standards - Immunity for residential, commercial and light-industrial environments.	Conform
	EN61000-6-3(2007)	Electromagnetic compatibility (EMC) -- Part 6-3: Genericstandards - Emission standard for residential, commercial andlight-industrial environments.	Conform
FCC-VOC	FCC Part 15B	Electromagnetic compatibility (EMC), Conduction Emission & Radiation Emission.	Conform

This symbol means that you must dispose of electrical devices 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.

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 t he 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.