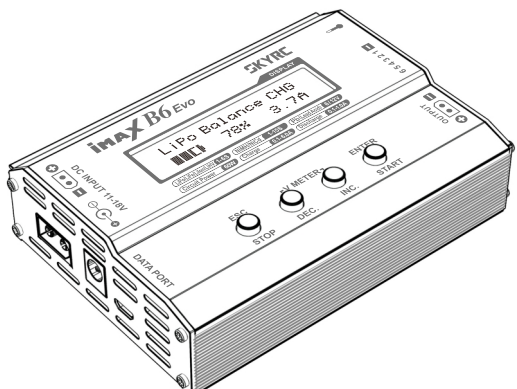
iMAX B6 Evo

Professional Balance Charger / Discharger

Instruction Manual

[Version 1.10]



The manual is subject to change without notice; please refer to our website for the latest version!

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.com

All Rights Reserved.

Printed in China ©2022.09 7504-1339-02

SKYRC

Introduction 01
Buttons 03
Specifications 03
Warning and Safety Precautions 04
Program Flow Chart 06
Power and Battery Connection 08
Glossary 10
Program Descriptions 11
Program 1-8 12
Quick Start Guide 13
Lithium Battery Program *(LiPo/LiFe/LiIon/LiHV)* 13
NiMH/NiCd Battery Program 15
Pb Lead-acid Battery Program 17
DC / DC Converter 18
User Calibration 20
Battery Voltage Meter 21
System Setting 22
Warning and Error Message 23
FAQ 24
The Set Contains 25
Conformity Declaration 26
Regulatory Information 27
Commonly Used Terms 28
Warranty and Service 29

⚠ WARNING:

- Never leave the charger unattended when charging the battery.
- LiPo batteries pose a severe risk of fire if not properly handled.

Welcome:

To enjoy your RC activities, you really need a good helper to charge your batteries well, while SKYRC endeavors to be the one you can rely on. Hard work pays off: SkyRC iMAX B6 Evo charger is finally available.

With brand new but simple intelligent firmware in the same classic design, we hope that this charger will be the right one to help you have better performance in the RC field.

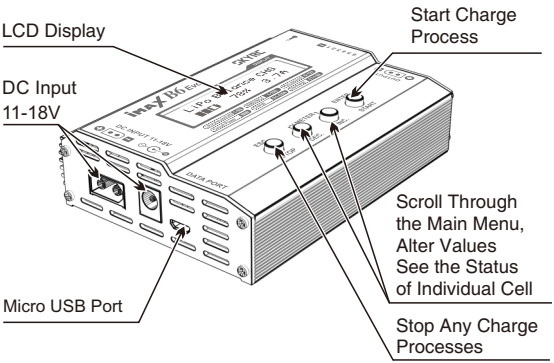
Features:

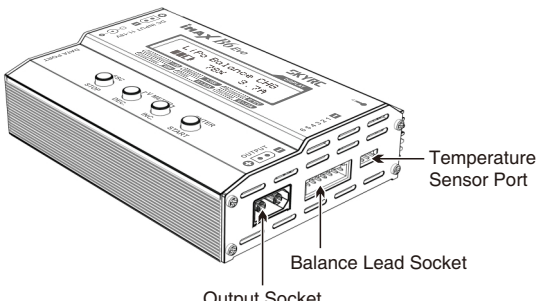
The charger supports multi-chemistry batteries, such as LiPo, LiFe, LiHV, LiIon, NiMH, NiCd and Pb (Including Pb AGM battery).

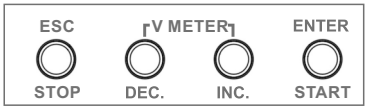
The charger's interface is simple: only ten program and system settings; users can look through the menu quickly within seconds. Eight of the ten programs are preset for practical applications. Besides, it can perform as a power supply for other DC equipment. RC gurus can calibrate their battery voltage as per their experience or multimeter, maximize their battery performance.

Pleasure be sure to read the INSTRUCTIONS, WARNINGS and SAFETY PRECAUTIONS before the first use. Always bear in mind not to mishandle the batteries or battery chargers to avoid explosion or fire.

Mishandling batteries and battery chargers are extremely dangerous, which may cause fire and explosion.







ESC/STOP Button:

Stop current process or go back to previous step/screen.

DEC Button:

Go through the menu or decrease the parameter value.

INC Button:

Go through the menu or increase the parameter value.

ENTER/START Button:

Confirm the setting or start the process.

DEC+INC Button:

Check the battery voltage.

ESC+DEC Button:

Enter into user calibration interface.

Specifications

Input Voltage	DC 11-18V	
Charge Wattage	60W	
Battery Types/Cells	LiPo/LiHV/LiFe/LiIon	1-6cells
	NiMH/NiCd	1-15cells
	Pb	6V/12V
Charge Current:	0.1A-6.0A	
Discharge Wattage	5W	
Discharge Current	0.1A-1.0A	
Balance Current	Max 300mA/cell	
Case Size	115x84x31mm	
Weight	238g	

- Never leave the charger unattended when it is connected to power. If any malfunction, terminate the process at once and refer to the operation manual.
- Please make sure the correct program and settings are chosen and set. Incorrect program or setting may damage the charger or cause fire or explosion.
- Never charge or discharge any battery having evidence of leakage, expansion/swelling, damaged outer wrapper or case, color-change or distortion.
- Use the original adapter and cord for power supply. To reduce the risk of damage to the power cord, always pull by connector rather than the cord. The allowable DC input voltage is 12-18V DC.
- Do not operate the device if it appears damaged in any way.
- Do not expose the device to direct sunlight, heating devices, open flames; Avoid extreme high or extreme low ambient temperature and sudden temperature changes.
- Do not expose the device to rain, water, moisture, high humidity, or dust due to risk of fire and corrosion. The device should only be used at normal indoor room conditions.
- Operate on a hard flat, heat-resistant, noninflammable, and nonconductive surface in a well-ventilated area.

  Never place the device on a carpet, car seat, or similar. Keep all the inflammable, volatile substances away from the operating area.
- Avoid mechanical vibration or shock as these may cause damage to the device.
- Do not short circuit the components or the device. Do not allow metal wires or other conductive material into the charger.
- Do not touch hot surfaces. The rechargeable batteries or the charger may become hot at full load or high power charging/discharging.

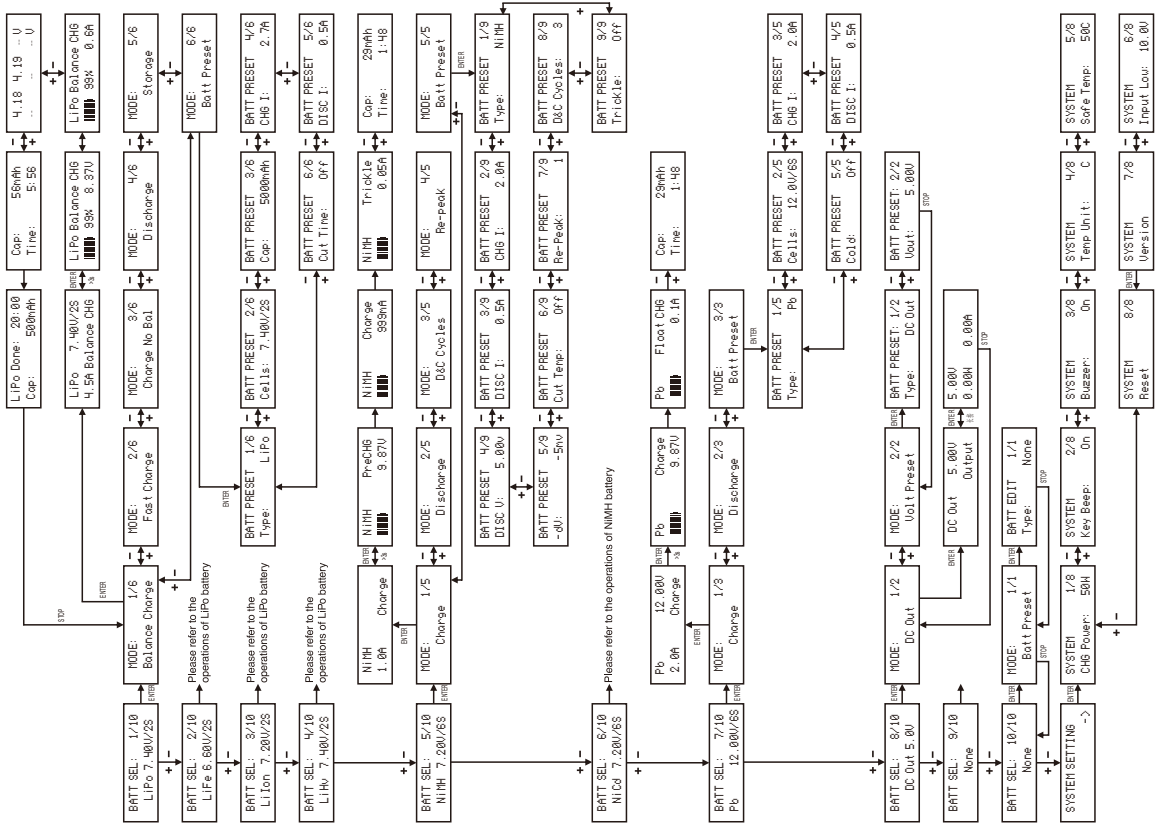
Warning and Safety Precautions

- Make sure you know the specifications of the battery to charge or discharge to ensure it meets the requirements of this charger. Incorrect program settings may damage the battery and charger, or even worse, cause fire and explosion.

Standard Battery Parameters

	LiPo	LiIon	LiFe	LiHV	NiCd	NiMH	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

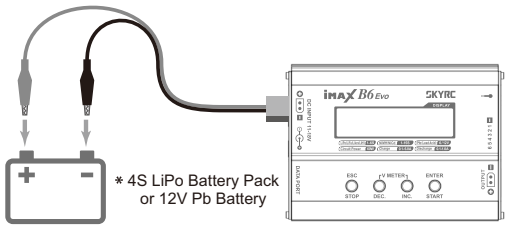
Program Flow Chart

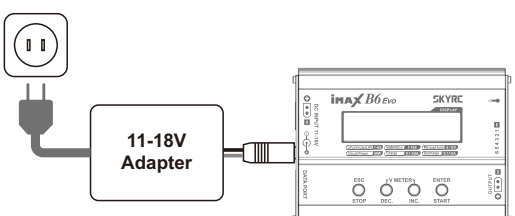


Power and Battery Connection

1. Connecting to power source

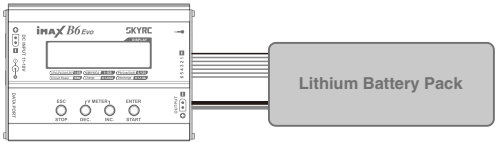
12V DC Battery / Power Adapter Output DC 11-18V





2. Connecting the battery

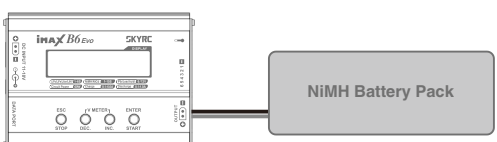
1) Lithium Battery Connection



Always remember to connect in the correct polarity. And it is highly recommended to charge your Lithium battery in balance mode for better performance and safety reasons.

Please refer to the above wiring diagram, which shows the correct way for Lithium battery connection in the balance charge mode.

2) NiMH/NiCd or Pb Battery Connection



B6 Evo

CHG Power = battery charging power, default charging power is 50W.

Temp Unit = temperature unit, Celsius or Fahrenheit is selectable.

Safe Temp = safe temperature.

Input Low = input voltage is low.

CHG I = battery charging current.

DISC I = battery discharging current.

Cap = capacity or cutoff protection capacity.

Cut Temp = cutoff temperature.

D&C cycles = discharge/charge cycles or charge/discharge cycles.

DISC V = discharge voltage.

-dV = delta voltage for NiMH/NiCd battery.

Batt Preset = battery information setting, such as battery type, cells, current etc.

Cut Time = protection cutoff time.

Charging Program

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

Batt Type	Operation Program	Description
LiPo LiHV Lilon LiFe	Balance Charge	Charge the battery and balance the battery cell voltage during charging
	Fast Charge	Charge the battery and speed up on balancing.
	Charge Non Bal	Charge the battery without the balance lead connected
	Discharge	Discharge the battery to certain voltage level
	Storage	Charge or discharge the battery to a certain voltage level for storage
NiMH NiCd	Charge	Charge the battery to the expected voltage
	Discharge	Discharge the battery to a certain voltage level
	D&C Cycle	Discharge -> Charge
	Re-Peak (NiMH only)	Peak charge the battery once, twice or three times in cycle automatically.
Pb/ Pb AGM	Charge	Charge the battery to the expected voltage
	Discharge	Discharge the battery to the expected voltage

B6 Evo charger minimizes program and system settings to 10 only, eight of which are preset for practical applications:

Battery No.: 1/10 LiPo 7.4V/2S	2S LiPo for RC car/boat
Battery No.: 2/10 LiPo 11.1V/3S	3S LiPo for fixed wing/multirotor
Battery No.: 3/10 LiPo 14.8V/4S	4S LiPo for fixed wing/multirotor
Battery No.: 4/10 LiPo 22.2V/6S	6S LiPo for EDF/fixed wing
Battery No.: 5/10 LiHV 14.8V/4S	4S LiHV for racing drone
Battery No.: 6/10 LiFe 6.6V/2S	2S LiFe for radio and receiver
Battery No.: 7/10 NiMH AUTO	Commonly used program for any NiMH battery
Battery No.: 8/10 Pb 12.0V/6S	Commonly used program for Pb battery

Video Tutorial

Please scan and watch the tutorial video for operational instructions.

- Do not overcharge nor over-discharge batteries.
- Remove the battery and unplug the charging unit from the power source when not in use.
- Opening, disassembling, modifying, tampering with the unit may invalidate its guarantee, check warranty terms.
- Do not misuse in any way! Use for intended purpose and function only.
- Before charging, always connect the charging leads to the charger first, then connect to the battery. After charging finishes, remove the battery first.
- As the first 8 programs are occupied and preset, below operation instructions will be based on empty program, for example, program 9 or 10.

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

Battery No.: 9/10
None

Click INC/DEC to select one empty program.

START/ENTER

MODE: 1/1
Batt Preset

START/ENTER

BATT PRESET: 1/1
Type: None

ENTER to get the value flash.

BATT PRESET: 1/6
Type: LiPo

Click INC/DEC to select desired Lithium battery type, for example, LiPo.

INC

BATT PRESET: 2/6
Cells: 22.2V/6S

ENTER to get the value flash, then click INC/DEC to select correct Lithium battery cells. ENTER to confirm.

INC

BATT PRESET: 3/6
Cap: Off

ENTER to get the value flash, then click INC/DEC to set Capacity protection values or off. ENTER to confirm.

INC

BATT PRESET: 4/6
CHG I: 4.0A

ENTER to get the value flash, then click INC/DEC to set the charge current. ENTER to confirm.

INC

BATT PRESET: 5/6
DISC I: 0.4A

Set the discharge current.

INC

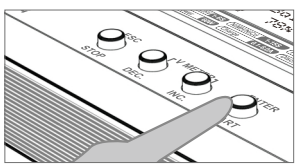
BATT PRESET: 6/6
Cut Time: Off

Set the protection cut time or off.

ESC

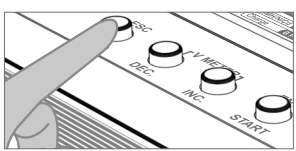
MODE: 1/6
Balance Charge

After setting, click ESC to step out of the current interface, and select the desired charge/ discharge mode.



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

Press ESC/STOP to terminate the current process when anything unexpected occurs.



If you would like to modify the setting, go back to Batt Preset and refresh the setting manually.

Battery No.: 9/10
None

Click INC/DEC to select one empty program.

START/ENTER

MODE: 1/1
Batt Preset

START/ENTER

BATT PRESET: 1/1
Type: None

ENTER to get the value flash.

BATT PRESET: 1/9
Type: NiMH

Click INC/DEC to select NiMH or NiCd Battery Type.

INC

BATT PRESET: 2/9
CHG I: 2.0A

ENTER to get the value flash.
Click INC/DEC to set the Charge Current.
ENTER to confirm.

INC

BATT PRESET: 3/9
DISC I: 0.1A

Set the Discharge Current.

INC

BATT PRESET: 4/9
DISC V: 0.8V

Set the Discharge Voltage.

INC

BATT PRESET: 5/9
-dV: -5mV

Set the Delta Voltage, which ranges from -15mV to -3mV.

INC

BATT PRESET: 6/9
Cut Temp: Off

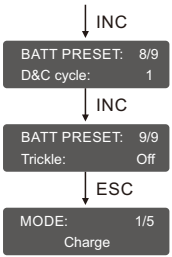
Set the Protection Cut-off Temperature.

INC

BATT PRESET: 7/9
Re-Peak: 1

Set the Re-peak Cycles.

NiMH/NiCd Battery Program

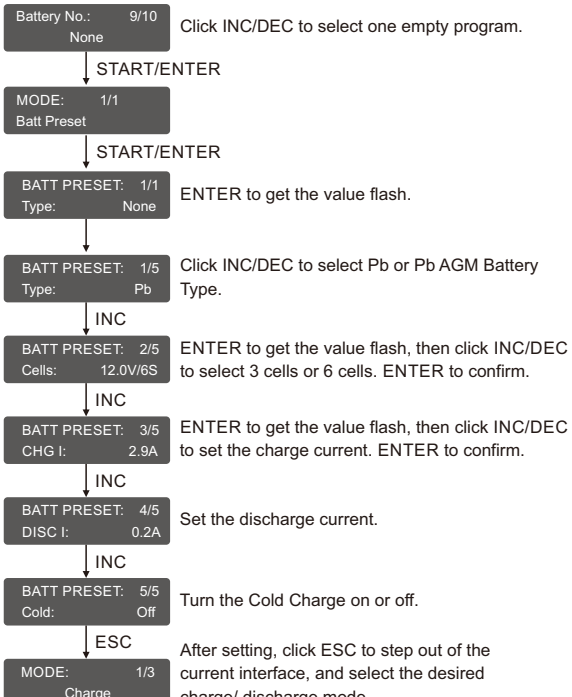


Press and hold START/ENTER for seconds to start the program.

Press ESC/STOP to terminate the current process when anything unexpected occurs.

If you would like to modify the setting, go back to Batt Preset and refresh the setting manually.

Pb Lead-acid Battery Program



Press and hold START/ENTER for seconds to start the program.
Press ESC/STOP to terminate the current process when anything unexpected occurs.
If you would like to modify the setting, go back to Batt Preset and refresh the setting manually.

Versatile With the Addition of AGM and Cold Modes

The juice box comes with the charging algorithm for the most common battery chemistries: LiPo, Li-Ion, LiHV, LiFe, NiMH, NiCD, and Pb (lead acid).

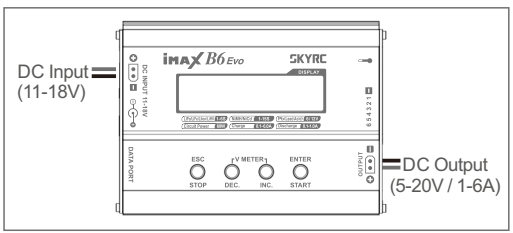
When it comes to the reliable, lighter and maintenance-free AGM(Absorbent Glass Mat) battery, you will take the risk of charging it with a regular charger in the normal Pb mode.

B6 Evo address the AGM battery characteristics with the tailored algorithm to charge in an optimized way!

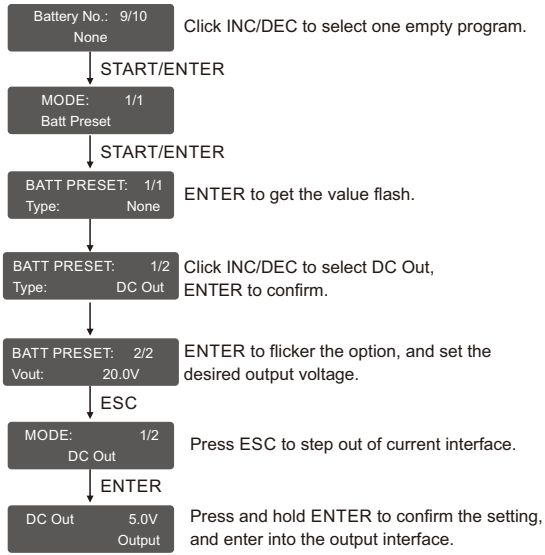
Cold weather mode: Use for charging at low temperatures(<-32°F/0°C). Cold weather mode increases charging voltage.

DC / DC Converter

B6 Evo charger is integrated with DC/DC Converter function. The function is helpful for those who need to power their DC gadget. Its DC output voltage ranges from 5.0V to 20.0V. Users are free to set the desired output voltage for their DC tools.



To activate and enjoy this function, follow below steps:

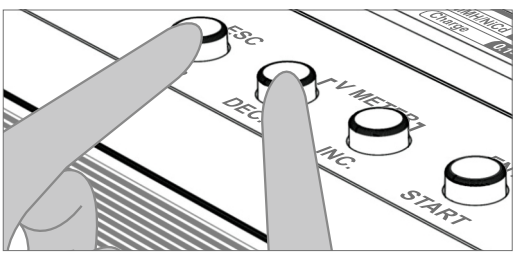


Warning: It is highly recommended NOT to do calibration unless necessary. SKYRC will not be liable for the consequences caused by calibration.

To maximize their battery performance in competition, RC gurus may like to calibrate the battery voltage according to their experience or multimeter.

Please follow the below steps for safe and smooth calibration with one 6S LiPo battery.

i. Press and hold ESC and DEC button at the same time, then connect to power source to power up.



ii. The screen will light up and notify you to connect a 6S battery.

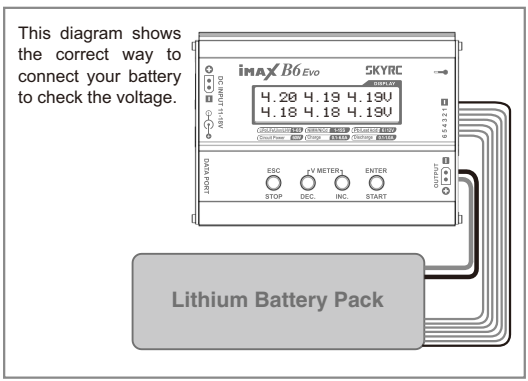
The higher the cell voltage, the better the calibration. One almost fully charged 6S LiPo battery is highly preferred.

iii. After connecting the battery, calibrate the cell voltage cell by cell.

If you would prefer factory calibration, you are free to reset and have the original calibration in this interface.

B6 Evo enables the user to check the overall battery voltage and each cell's voltage.

Please connect the battery to the charger with both the main socket and balance lead connected.
Reference connection as below:



After connection, press and hold DEC/INC button simultaneously for seconds, then release.

The screen will display the total battery voltage and single cell voltage in rotation automatically.
Any button clicking will take you to exit current battery voltage interface.

It will be operated with the default value of the essential user settings when it is powered on for the first time. The screen displays the following information in sequence, and the user can change the value of the parameter on each screen.
To alter the parameter value, press START/ENTER to make it flash to change the value with INC or DEC. The value will be stored by pressing START/ENTER once.

ITEM	SELECTION	DESCRIPTION
SYSTEM 1/8 CHG Power: 50W	50W / 60W	The default charge power is 50W, while full charge power is 60W, which is available to modify.
SYSTEM 2/8 KeyBeep: On	OFF/ON	Sound for button touching
SYSTEM 3/8 Buzzer: On	OFF / ON	Sound for alerts
SYSTEM 4/8 Temp Unit: C	℃ /℉	The temperature unit is selectable between Celsius and Fahrenheit
SYSTEM 5/8 Safe Temp: 50C	20℃ / 68℉ - 80℃ / 176℉	The battery's internal chemical reaction will cause the temperature to rise. If the temperature limit is reached, the process will be terminated.
SYSTEM 6/8 Input Low: 11.0V		Low input voltage value. An error message will prompt when DC input voltage is lower than the preset value.
SYSTEM 7/8 Version		Hardware and firmware version is displayed.
SYSTEM 8/8 Reset		Reset all setting, and load factory default setting.

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

ERROR: CONNECTION BREAK	The battery connection is interrupted.
ERROR: REVERSE POLARITY	Incorrect polarity is connected.
OVER CHARGE CAPACITY LIMIT	The battery capacity charged is higher than the preset threshold.
ERROR: BLANCE BREAK	Connection of balance socket is interrupted.
ERROR: CELL NOT MATCH	The battery cell value differs from the cells detected.
OVER TIME LIMIT	The charging takes longer than the preset protection time.
SUPPLY VOLT TOO LOW	Input voltage is lower than 11V.
ERROR: VOLT ERROR	Wrong battery voltage.
ERROR: WRONG BATT TYPE	Battery type selected differs from the battery type detected.
SUPPLY VOLT TOO HIGH	Input voltage is higher than 18V.
INTERNAL TEMP TOO HIGH	Internal temperature goes higher than the preset threshold.
BATT TEMP TOO HIGH	Battery external temperature goes higher than the preset protection threshold.

- **The charge current cannot be set at 6A.**

  There may be 2 reasons:

  1) Default charge power is 50W, please visit system setting to change the power to 60W.

  2) When you charge Lithium battery, after selecting the battery type and cells, the charger will get you the highest current automatically.

- **How can I detect battery voltage?**

  When you are at any interface of the 10 battery program, press DEC/INC simultaneously to detect the battery voltage.

- **When charging NiMH batteries, battery cells is not selectable.**

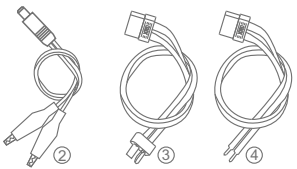
  The firmware is optimized to self-adapt for maximum safety. When charging NiMH batteries, there may be broken cells that you do not know. In this case, the charger may keep charging which may result in danger. While for B6 Evo, it will charge and detect the voltage over and over again to decide the battery cells.

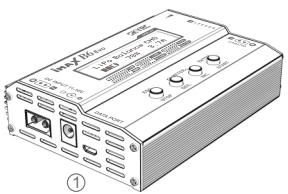
- **When charging NiMH batteries, charge current is set at 6A, but it goes lower and lower.**

  When charging NiMH batteries, you do not need to select the battery cells, and B6 Evo will charge and detect the voltage over and over again. Before deciding the battery cells, the current will decrease at 1/5 one round by one round.

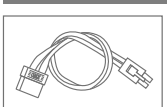
THE SET CONTAINS

1. SKYRC B6 Evo Charger
2. DC Input Cable
3. Dean Charging Cable
4. Bare charging cable
5. Instruction Manual

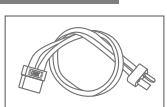




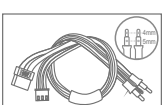
RECOMMENDED ACCESSORIES



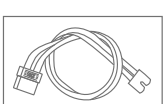
Tamiya Charging Cable
SK-600023-12



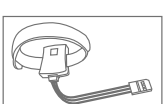
Dean Charging Cable
SK-600023-15



4mm/5mm Bullet
Charging Cable for 2S Battery
SK-600023-14



Ec3 Charging Cable
SK-600023-13



Temperature Sensor
SK-600040-01

SkyRC B6 Evo meets all relevant and mandatory EC directives and FCC Part 15 Subpart B.

Test Standards	Title	Result
EN 55014-1:2006 + A1:2009+A2:2011	Electromagnetic compatibility-Requirements for household appliances, electric tools and Similar apparatus – Part 1: Emission	Conform
EN 55014-2:1997+ A1:2001+ A2:2008	Electromagnetic compatibility-Requirements for household appliances, electric tools and Similar apparatus – Part 2: Immunity-Product family standard	Conform

Test Standards	Title	Result
FCC Part 15, Subpart B	Radiated Emission	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.

FCC Note:

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.

The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications or change to this equipment. Such modifications or change 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.

To maintain compliance with FCC's RF exposure guidelines, this equipment should be installed and operated with a minimum distance of 20cm between the radiator and your body.

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 terminal 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 energy. 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).
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.com