I6AC+ 80W

Professional Balance Charger/Discharger

More Languages

Cell Meter

Battery Capacity

Measure Internal Resistance

Battery Balancer

Digital Power

Brushed Motor Driver

Foam Cutter Driver

ESC Tester

BL Motor RPM Tester

Servo Tester

Thrust Calculator

Thermometer

Voltage Meter

RX / TX PPM Tester

USER'S MANUAL

CONTENTS

What's New In I6AC+

♦ Max charge current reach to 8A instead of 6A, that means it can speed up your charge by increasing the charge current.

♦ Max balance current increase to 460mA from 300mA, that means it can speed up your balance charge of your lithium batteries.

♦ 15 extra functions provide more convenience for your hobby time.

1>LANGUAGES:There are two languages which you can select (English and Deutsch).

2>CELL METER:The charger can test the voltage of each cell of your batteries.

3>CAPACITY:Check the capacity of the battery.

4>IRThe battery pack measure internal resistance.

5>BALANCER:The charger can balance the voltage of each cell to preserve the performance your batteries.

6>DIGITAL POWER:Using the charger's output as a DC power supply.

7>BRUSH MOTOR:You can easily break-in new bushed electric motor using a variable voltage and running time.

8>FOAM HOT CUTTER:The charger acts as a convenient power supply for a hot wire foam cutter.

9>MOTOR/ESC/SERVO:The charger can output the PPM singal instead of your TX for your MOTOR/ESC/SERVO, you can see the it's working status.

10>BRUSHLESS MOTOR:The charger can drive an inductance brushless motor.

11>SERVO TEST:The charger can test the servo.

12>THRUST CALCULATOR:You can easily calculate the thrust of a propeller.

13>TEMP.:The charger can measure the external temperature by using a temperature sensor.

14>VOLTAGE METER:The charger can measure the DC voltage of an object.

15>PPM TEST:The charger can test the PPM signal from TX, so that you can check out some problem bettween your TX and RX.

FOREWORD

Thank you purchasing the I6AC+ 80W Balance charger.This product is a rapid charger with a high performance microprocessor and specialized operating software. 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!

Specifications

Operating voltage range:	DC11.0~18.0 Volt
	AC to DC adaptor(DC11.0~18.0V)
Circuit power:	Max.charge power 80W［DC Input］
	80W［AC Input］
	Max.discharge power 10W
Charge current range:	0.1~8.0A
Discharge current range:	0.1~2.0A
Current drain for balancing Li-po:	460mAh/cell
NiCd/NiMH battery cell count:	1~15 cell
Li-ion/Polymer cell count:	1~6 series
Pb battery voltage:	2V~20V
Weight:	590g(Net Weight)
Dimensions:	135X145X43mm

SPECIAL FEATURES

Optimized operating software
I6AC+ 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 minimized the trouble. All the settings can be configured by users!

Internal independent lithium battery balancer
I6AC+ 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,I6AC+ 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
I6AC+ is adaptable to various types of Lithium batteries,such as Li-ion,LiPo and the new LiFe series of batteries.

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

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 our package.

Processing time limit:

You can also limit the maximum process time to avoid any possible defect.

Input power monitoring

To portect the car battery used as DC input power from being damaged,its voltage keeps being monitored.If it drops below the lower limit,the process will be ended automatically.

Data store/load

The maximum five batteryies'data can be stored for users'convenience.You can keep the data pertaining to program setting of the battery of continuous charging or discharging. Users can call out these data at any time without any special program setting.

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.

Input power cable
11~18V DC

Output charge lead
4mm banana plug

LCD screen

Balance lead sockets
JST-XH ports

.Scroll through the Main Menu
.Stop any charge processes

Alter values
See the status of individual
cell in balance charge mode

.Resume or start charge processes
.Confirm an action
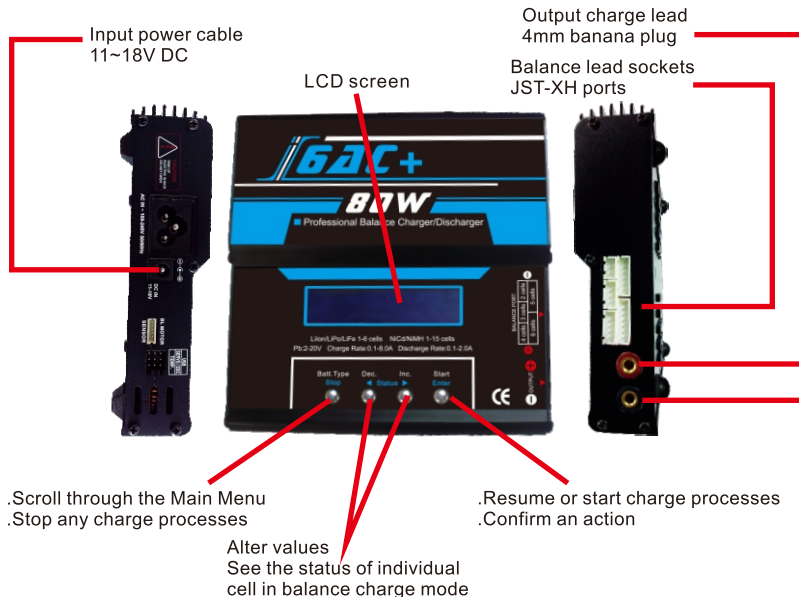
LITHIUM POLYMER BALANCE CHARGE PROGRAM
CONNECTION DIAGRAM

This diagram shows the correct way to connect your battery to the I6AC+ charger while charging in the balance charge program mode only.

⚠ WARNING:

Failure to connect as shown in this diagram will damage this charger.

The main battery leads must be connected along with the balance lead connector as shown before charging your battery.

⚠ If using crocodile clips as shown in above diagram,make sure they are unable to touch together!

⚠ 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 damagedor 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 input voltage is 11-18V DC

⚠ 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 similar. Keep all the inflammable volatile materials away from 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 over charging. 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.

NiCd/NiMH

Voltage level:1.2V/cell
Allowable fast charge current:1C-2C(depends on the   performance of cell)
Discharge voltage cut off level:0.85V/cell(NiCd),1.0V/cell(NiMH)

Li-ion Voltage level:3.6V/cell

Max.charge voltage:4.1V/cell
Allowable fast charge current:1C or less
Min.discharge voltage cut off level:2.5V/cell or higher

LiPo Voltage level:3.7V/cell

Max.charge voltage:4.2V/cell
Allowable fast charge current:1C or less
Discharge voltage cut off level:3.0V/cell or higher

LiFe Voltage level:3.3V/cell

Max.charge voltage:3.6V/cell
Allowable fast charge current:4C or less
Discharge voltage cut off level:2.0V/cell or higher

Pb Voltage level:2.0V/cell

(Lead-acid)Max.charge voltage:2.46V/cell
Allowable fast charge current:0.4C or less
Discharge voltage cut off level:1.75V/cell or higher

! **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 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.

⚠ To avoid short circuit between the charge lead always connect the charge cable to the charger first, then connect the battery.Reverse the sequence when disconnecting.

⚠ Do not connect more than one battery pack to this charger at any one time.

⚠ 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 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, recommended charging current and charging time.Especially,the Lithium battery should be charged according the charging instruction provided by the manufacturer strictly.

Attention should be paid to the connection of Lithium battery especially.

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 battery's capacity by the number of cells with total voltage stay the same.The voltage's imbalance may cause fire or explosion.Lithium battery is recommended to charge in series.

! Discharging

The main purpose of discharging is to clean 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 charging.The final discharge voltage should be set up correctly to avoid deep-dischargeing. Lithium battery can not be discharged to lower than the minimum voltage,or it will cause a rapid loss of capacity or a total failure.Generally,Lithium battery doesn't need to be discharged. Please pay attention to the minimum voltage of Lithium battery 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 are suffering from memory effect.NiCd has more memory effect than NiMH.
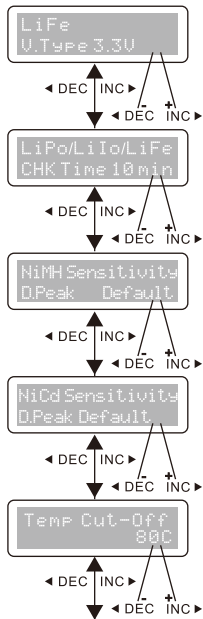
Lithium batteries are recommended to be discharged partially rather than fully discharged. Frequent full discharging should be avoided if possible.Instead,charge the battery more often or use a battery of larger capacity.Full capacity cannot be used until it has been subjected to 10 or more charge cycles.The cyclic process or charge and discharge will optimize the capacity of battery pack.

⚠ **Program flow chart**
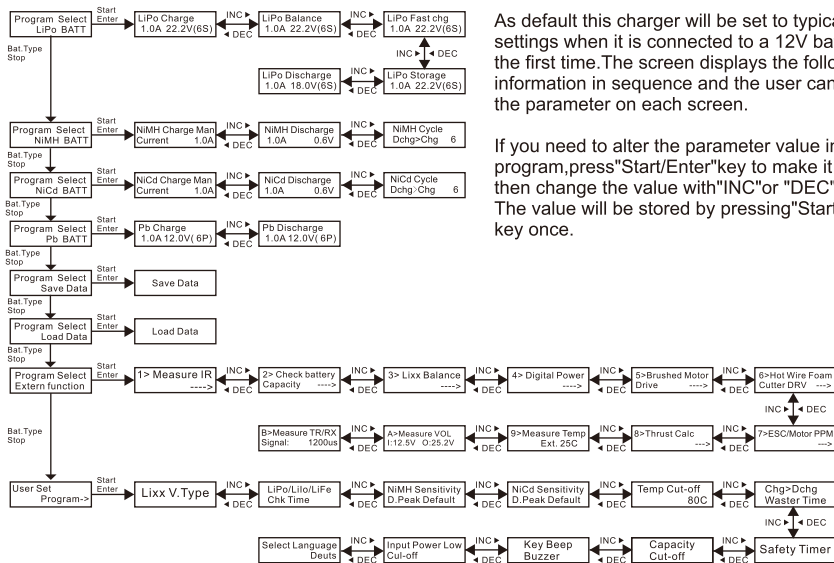
As default this charger will be set to typical user settings when it is connected to a 12V battery for the first time.The screen displays the following information in sequence and the user can change the parameter on each screen.

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.

Program flow diagram content:

Program Select LiPo BATT → LiPo Charge 1.0A 22.2V(6S) → LiPo Balance 1.0A 22.2V(6S) → LiPo Fast chg 1.0A 22.2V(6S) → LiPo Storage 1.0A 22.2V(6S) → LiPo Discharge 1.0A 18.0V(6S)

Program Select NiMH BATT → NiMH Charge Man Current 1.0A → NiMH Discharge 1.0A 0.6V → NiMH Cycle Dchg>Chg 6

Program Select NiCd BATT → NiCd Charge Man Current 1.0A → NiCd Discharge 1.0A 0.6V → NiCd Cycle Dchg>Chg 6

Program Select Pb BATT → Pb Charge 1.0A 12.0V(6P) → Pb Discharge 1.0A 12.0V(6P)

Program Select Save Data → Save Data

Program Select Load Data → Load Data

Program Select Extern function → 1> Measure IR ---> → 2> Check battery Capacity ---> → 3> Lixx Balance ---> → 4> Digital Power ---> → 5>Brushed Motor Drive ---> → 6>Hot Wire Foam Cutter DRV ---> → 7>ESC/Motor PPM → 8>Thrust Calc → 9>Measure Temp Ext. 25C → A>Measure VOL I:12.5V O:25.2V → B>Measure TR/RX Signal: 1200us

User Set Program-> → Lixx V.Type → LiPo/Lilo/LiFe Chk Time → NiMH Sensitivity D.Peak Default → NiCd Sensitivity D.Peak Default → Temp Cut-off 80C → Chg>Dchg Waster Time → Safety Timer → Capacity Cut-off → Key Beep Buzzer → Input Power Low Cul-off → Select Language Deuts

(Bat.Type Stop / Start Enter labels appear on each program select row; INC ▶ / ◀ DEC labels between screens)

LiFe
V.Type 3.3V

◄ DEC │ INC ►
◄ DEC │ INC ►

The screen shows the nominal voltage of Lithium battery.There are three kinds of Lithium battery:LiFe(3.3V),LiIo(3.6V)or LiPo(3.7V).This information is of critical importance that you have to check the battery carefully to make sure it is set up correctly.If it is different from correct value,explosion can occur during charge process.

LiPo/LiIo/LiFe
CHK Time 10 min

◄ DEC │ INC ►
◄ DEC │ INC ►

To avoid from erroneous setting by users,I6AC+ detects the cell count of Lithium battery automatically at the beginning of charge or discharge process. But battery that is deep-discharged can't be detected correctly.To avoid this error,the time term can be set to verify the cell count by the processor. Normaly,15 seconds are enough to detect the cell count correctly.You need to extend the time term limit for the battery of large capacity.But the charge or discharge process may come to an end within the time term because of the time limit decided by the wrong count if you set too long time limit for the battery of small capacity.This may cause fatal error.You have to extend the time term if the processor detect the cell count incorrectly at the beginning of charge or discharge process.Otherwise,default value is recommended to use.

NiMH Sensitivity
D.Peak   Default

◄ DEC │ INC ►
◄ DEC │ INC ►

NiCd Sensitivity
D.Peak Default

◄ DEC │ INC ►
◄ DEC │ INC ►

Temp Cut-Off
80C

◄ DEC │ INC ►
◄ DEC │ INC ►

The screen shows the cut-off temperature of Lithium battery.you can press "DEC"or"INC"to select the cut-off temperature(Temp.Rang:20~80℃).The maximum temperature of the battery can be set during the charge process. The process will be terminated automatically to protect battery once the temperature of battery reaches this value.This feature is accomplished through temperature probe(optional).

Waste time
CHG/DCHG 5min

◄ DEC INC ►   ◄ DEC INC ►
◄ DEC INC ►
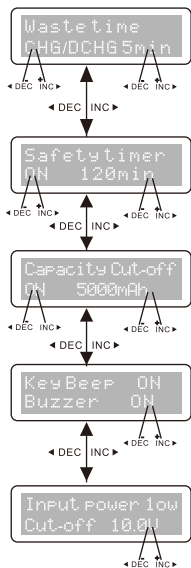
The battery becomes warm after cycles of charge/discharge process.The program will insert a time delay after each charge/discharge process to allow the battery enough time to cool down before beginning next cycle of charge/discharge process.The valid value ranges from 1 to 60 minutes.

Safety timer
ON   120min

◄ DEC INC ►   ◄ DEC INC ►
◄ DEC INC ►

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

Capacity Cut-off
ON   5000mAh

◄ DEC INC ►   ◄ DEC INC ►
◄ DEC INC ►

The program provides maximum capacity protection function.If the Delta-peak voltage can not be detected or the safety timer times out,the charge process will stop automatically,when the battery reaches the user-set maximum charge capacity.

Key Beep   ON
Buzzer   ON

◄ DEC INC ►   ◄ DEC INC ►
◄ DEC INC ►

The beep to confirm users'operation sounds every time a button is pressed. The beep or melody sounds at various times during operation to confirm different mode change.These functions can be switched on or off.

Input power low
Cut-off 10.0V

◄ DEC INC ►

This function monitors the voltage of the input battery used to power this charger.If the voltage is lower than user-set value,the program will end forcibly to protect the input battery.
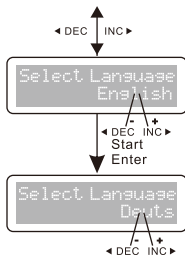
In this program, here provide you two languages(English and Deutsch). Press"Start/Enter" button again, and a beep will be sound, you can see the "English" is flashing, at this moment, please press"◄ DEC"or "Inc ►"to select language.

The screen shows the language (Deutsch).

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:

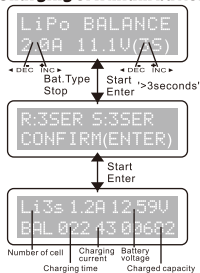| Capacity	Current	Safety Time
2000mAh	2.0A	(2000/2.0=1000)/11.9=84 minutes
3300mAh	3.0A	(3300/3.0=1000)/11.9=92 minutes
1000mAh	1.2A	(1000/1.2=833)/11.9=70 minutes

Lithium (LiIo/LiPo/LiFe) program

The program is only suitable for charging/discharging Lithium-polymer batteries with a nominal voltage of 3.3/3.6/3.7V / cell. Different batteries have different charge technique. There are two methods termed as constant voltage and constant current. The charge current varies according to battery capacity and specification. The final voltage is very important;it should precisely match the voltage of the battery:LiPo is 3.6V,LiIo is 4.1V,LiFe is 3.6V.The current and voltage of the battery should be correctly set.

When you want to change the values of parameters,please press "Start/Enter" key to make it blink and then use DEC or INC to change the value.Then press "Start/Enter" key again to store the value.

Charging of lithium battery

```
LiPo BALANCE
2.0A 11.1V(7S)
```
◄ DEC INC ►   ◄ DEC INC ►
 Bat.Type   Start   '>3seconds'
  Stop   Enter

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:0.1-8.0A,voltage:1-5V)

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

This displays the number of cells you set up and the processsor 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./stop" button to go back to previous screen to carefully check the number of cells of the battery pack before going ahead.

```
Li3s 1.2A 12.59V
BAL 022 43 00682
```
Number of cell Charging Battery
                current   voltage
         Charging time   Charged capacity

This screen shows the real-time status during charge process. Press "Batt./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 port at the right side of the charger.And you need to connect the battery's output plug to the output of charger.
Charging in this mode is different from the normal modes,because the built-in processor monitors voltage of individual cell and control input current fed into each cell to normalize the voltage.

```
LiPo FASTCHG
2.0A 11.1V(7S)
```
◄ DEC INC ►   ◄ DEC INC ►
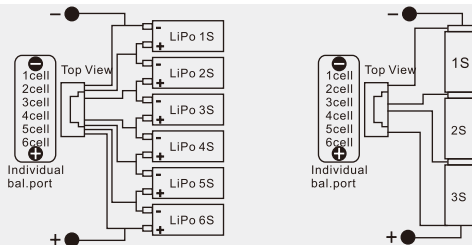 Bat.Type   Start   '>3seconds'
  Stop   Enter
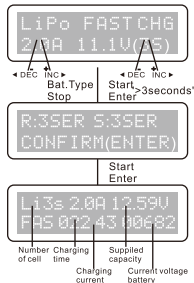
The value on the left side of the second lines sets the charge current. The value on the right side of the second lines sets the battery pack's voltage.After setting current and voltage,press"Start/Enter" for more than 3 seconds to start the process.
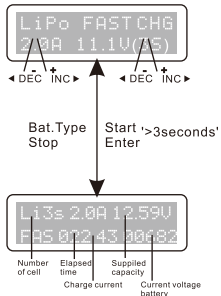
```
R:3SER S:3SER
CONFIRM(ENTER)
```
Start
Enter

This displays the number of cells you set up and the processsor 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./Stop" button to go back to previous screen to carefully check the number of cells of the battery pack before going ahead.

```
Li3s 2.0A 12.59V
FAS 012 43 00682
```
Number Charging Supplied
of cell time   capacity
      Charging   Current voltage
      current   battery

This screen shows the real-time status during charge process.Press"Batt./Stop"key once to stop the charge process.

Individual Cell Connection Diagram
[Pin-assignment of 8-pin]

Fast charging of Lithium battery


```
LiPo FASTCHG
2.0A 11.1V(3S)
```
◀ DEC INC ▶   ◀ DEC INC ▶

Bat.Type   Start '>3seconds'
Stop   Enter

```
Li3s 2.0A 12.59V
FAS 02:43:00682
```

Number   Elapsed   Supplied   Current voltage
of cell   time   capacity   battery
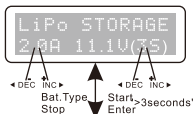   Charge current

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 a little smaller than normal charging, but charging time will be shortened accordingly.

You can set up the charging current and voltage of the battery pack. Press "Start/Enter" key to display voltage confirmation. Then press "Start/Enter" key again to confirm and begin to charge.
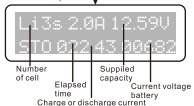
This screen shows the real-time status of"fast charging".Press "Batt.Type/ Stop" key once to stop the charge process.

Storage control of Lithium battery

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 LiIo, 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.

LiPo STORAGE
2.0A 11.1V(3S)

◄ DEC INC ►   ◄ DEC INC ►
Bat.Type   Start >3seconds'
Stop   Enter

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.
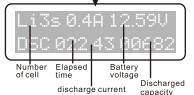
Li3s 2.0A 12.59V
STO 012:43:30682

Number
of cell   Supplied
   Elapsed   capacity
   time   Current voltage
Charge or discharge current   battery

This screen shows the real-time status charging.Press"Batt. type/Stop"key once to stop the charge process.

Discharging of Lithium battery

LiPoDISCHARG
10A 11.1V(3S)

◄ DEC INC ►   ◄ DEC INC ►
Bat.Type   Start >3seconds'
Stop   Enter
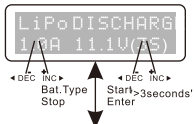
The value of discharge current on the left can not exceed 1C, and the value on the right can not be under the voltage recommended by the manufacturer to avoid deep discharging. Press " Start/Enter" for more than 3 seconds to start charging.

Li3s 0.4A 12.59V
DSC 012:43:30682

Number Elapsed Battery
of cell time   voltage
   discharge current   Discharged
                        capacity

This shows the real-time status of discharging,you can press"Batt.Type/Stop" key to stop discharging.

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. To achieve this feature, plug each battery to the charger individually. If voltage of any cell is abnormal,I6AC+ 80W 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.
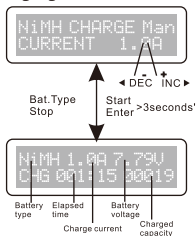
BATTERY VOL ERR
CELL LOW VOL

▼ INC ►
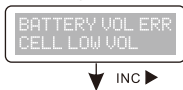
The processor detects voltage of one cell is too low.

```
4.14 4.16 4.09
2.18 0.00 0.00
```
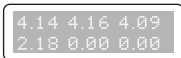
The 4th cell was damaged.The value of voltage may be zero if disconnection occurs.

Charging of NiCd/NiMH battery

```
NiMH CHARGE Man
CURRENT  1.0A
```
◄ DEC INC ►

Bat.Type Stop | Start Enter >3seconds'

This program is for charging and discharging 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 1.0A 7.79V
C-G 001:15 00019
```
Battery type Elapsed time Battery voltage
Charge current Charged capacity

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►"or"◄DEC" at the same time to switch mode.

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    11.5V
```
◄ DEC INC ►   ◄ DEC INC ►

Bat.Type Stop | Start Enter >3seconds
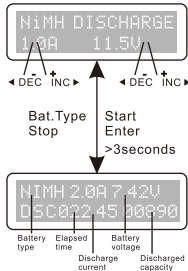
Set charge current on the left and the final voltage on the right.Range of the charge current is 0.1-2.0A;range of final voltage is 0.1-25.0V.Press"Start/Enter"key for more than 3 seconds to start the program.

```
NIMH 2.0A 7.42V
DSC 02:45 00890
```
Battery type Elapsed time Battery voltage
Discharge current Discharged capacity

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
```

◄ DEC INC ►   ◄ DEC INC ►

Bat.Type   Start
Stop   Enter
                >3seconds
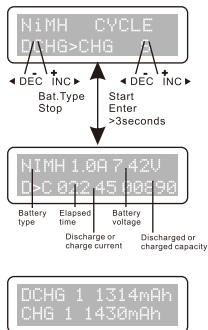
You can set up sequence on the left and the number of cycles on the right. You can balance, refresh and bread-in the battery with this function. You can set a temporary cool-off procedure in the use's setting.
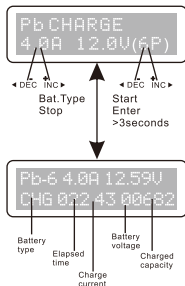
```
NIMH 1.0A 7.42V
D>C 0 2:45 00590
```

Battery   Elapsed   Battery
type   time   voltage
      Discharge or   Discharged or
      charge current charged capacity

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.

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

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.

Pb(lead-suiphuric acid)battery program

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. 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

```
Pb CHARGE
4.0A 12.0V(6P)
```

◄ DEC INC►   ◄ DEC INC►

Bat.Type   Start
Stop   Enter
                >3seconds

Set up the charge current on the left and nominal voltage on the right.Range of current is 0.1- 8.0A, the voltage should match the battery being charged. Press"Start/Enter" key for more than 3 seconds to start charging.

```
Pb-6 4.0A 12.59V
CHG 022:43 00682
```

Battery type
Elapsed time
Charge current
Battery voltage
Charged capacity

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

```
Pb DISCHARGE
1.0A 12.0V(6P)
```

◄ DEC INC►   ◄ DEC INC►

Bat.Type   Start '>3seconds'
Stop   Enter
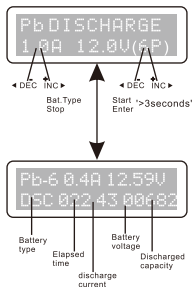
Set up the charge current on the left and nominal voltage on the right. Range of discharge current is 0.1 - 8.0A, the voltage should match the battery being charged.Press"Start/Enter" key for more than 3 seconds to start charging.

```
Pb-6 0.4A 12.59V
DSC 022:43 00682
```

Battery type
Elapsed time
discharge current
Battery voltage
Discharged capacity

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.

Data storage program

For your convenience,I6AC+ 80W 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.
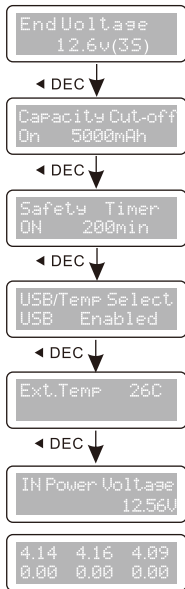
PROGRAM SELECT
SAVE DATA

Start
Enter
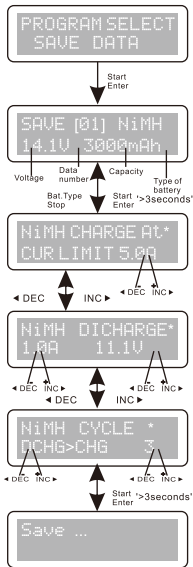
Setting of the parameter in the screen will not affect the charge and discharge process.They just present the specification of the battery.The example is NiMH battery pack,including 12 cells,the capacity is 3000mAh.

SAVE [01] NiMH
14.1V 3000mAh.

Voltage   Data   Capacity   Type of
          number   battery

Bat.Type   Start   '>3seconds'
Stop   Enter

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

NiMH CHARGE At*
CUR LIMIT 5.0A

◄ DEC   INC ►   ◄ DEC INC ►

NiMH DICHARGE*
1.0A   11.1V

◄ DEC INC ►   ◄ DEC INC ►
        ◄ DEC   INC ►

Set up the discharge current and final voltage.

NiMH CYCLE *
DCHG>CHG   3

◄ DEC INC ►   ◄ DEC INC ►

Set up the charge/discharge sequence and cycle number.

Start   '>3seconds'
Enter

Save ...

Saving the data

| End Voltage | It comes to the final voltage when the program ended. |
| 12.6v(3S) | |

◄ DEC ▼

| Capacity Cut-off | 3-pin connector is selected to be the USB port. |
| On   5000mAh | |

◄ DEC ▼

| Safety Timer | The external temperature is displayed when the temperature probe is used. |
| ON   200min | |

◄ DEC ▼

| USB/Temp Select | Present input voltage. |
| USB Enabled | |

◄ DEC ▼

| Ext.Temp   26C | The battery is connected with each port through cable;you can checkvoltage of each cell in the battery pack. When the cable is connected with the ports on the right of the charger, the program will display voltage of up to 6 batteries. The battery pack needs an output connector connected with each cell. |

◄ DEC ▼

| IN Power Voltage |
| 12.56V |

| 4.14 4.16 4.09 |
| 0.00 0.00 0.00 |

Select Extern Function Program

In this program,you can select extern function of battery.

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 3000mAh
```

Choose the data number you want to call back.The data you want to call back will be displayed.

↕ Start
Enter
>3seconds

```
LOAD ...
```

Loading the data.

Various information in the program

you can inquire variors information on the LCD screen during the charging and discharging process.Press "DEC▶"key,the charger will display user's setting.You can press"◀INC"key to monitor voltage of each cell while the battery is connected with each port of the charger.

1>Measure Internal Resistance Program

In this program,the charger can ont only measure the internal resistance of the battery pack,and also can measure the per-cell internal resistance(only available for lithium battery)

| 1 > Measure IR ----> | The battery pack start to measure internal resistance . |

Start
Enter

| C1:15 16 14mΩ C4:16 16 14mΩ | The two lines shows the first to the sixth cell's internal resistance,which is only available for the lithium battery. Press "DEC" or "Inc" to dispaly more imformation. |

◄DEC INC►

| Battery Pack IR 91 mΩ | This screen dispalys the battery pack internal resistance.Press "DEC► "or"◄ Inc" to dispaly the status information. |

2>Check Capacity of battery

| 2>Check Battery Capacity -----> | Start to check the capacity of lithium battery. |

Start
Enter

| Select battery LiPo | Press"Start/Enter"button again,and then press"DEC► "or"◄Inc",you can select battery type(LiPo/LiFe/LiIo). |

Start
Enter
>3seconds
◄DEC INC►

| LiPo-6S 19.878V 2% C_____ | Please press"Start/Enter"button(>3 seconds),it display the stauts information of the lithium battery.It indication of capacity is balancing of each cell in your battery pack. |

◄DEC INC►

| 3.31 3.31V 3.31V 3.31 3.31V 3.31V | Press "DEC► "or"◄Inc" button,it dispaly the capacity of your battery pack is balanced. |

3>Lixx balance of battery

In this program,you can simply balance your 2-6S Lixx batteries using the integrated balancer.It indicates voltage for each cell in your battery pack.

```
3>Lixx Balance
    ---->
```

Start
Enter

```
Select battery
           LiPo
```

◄ DEC   INC ►

Press "Start/Enter" button again,then press"DEC►"or"◄Inc" button,you can select your battery type(LiPo/LiFe/LiIo).

Start
Enter   >3seconds

```
LiPo-6S 19.880V
     Balancing
```

◄ DEC   INC ►

Please press "Start/Enter"(>3 seconds) button again,it indication of voltage is balancing of each cell in your battery pack.

```
3.31 3.31V 3.31V
3.31 3.31V 3.31V
```

The voltage of your battery pack is balanced.

4>Set up voltage and current of digital power

```
4> Digital Power
    ---->
```

Start
Enter

```
Digital Power
12.0V    2.0A
```

◄ DEC   INC ►   ◄ DEC   INC ►

Start
Enter   >3seconds

Using the charger's output as a DC power supply. Press "Start/Enter" again,a beep will be sound, then you press "DEC►" or "◄ Inc" button to set up the voltage and current of digital power.(Voltage range:5.0-25.0V, current range:0.1-10.0A)

```
DGPW 0.0A 19.87V
001:54      0.0W
```

Please press "Start/Enter" button for more than 3 seconds, and this screen display the currnet,voltage and test time of digital power .(Max. power: 80W)

5>Brushed Motor Drive

You can easily break-in new bushed electric motor using a variable voltage and running time. With this function you also check the motor performance to optimize your power-train.The break-in process is essential for maximizing the power of a new brushed motor.New motors have square brushes which press up against the curved cpmmutator.The goal for the break-in process is to gentle shape the brushed so that they develop a curved surface that fits snugly against the commutator giving greater conducting surface area and hence lower losses and higher effciency.

```
5>Brushed Motor
  Drive  ———>
```

↓ Start
  Enter

```
MOTOR DRV 30min
2.0A      2.0AV
```

◄ DEC INC ►   ◄ DEC INC ►
- / + |DEC INC►| - / +
Bat.Type | Start | >3seconds
Stop | Enter |

The value in the right side of the first line sets the test duration in minutes.The second line shows the upper limit of current on the left and drive voltage on the right.After setting the current and voltage,Press"Start/Enter"for more than 3 seconds to start the new process.A beep tone will sound.(Test time:1-90min,Current:0.1-20A,Test voltage:1-15)

```
MOTOR 0.0A 19.87V
DRV 000:43 0.0W
```

↓ Start
  Enter

Stauts display.The top line shows the drive current and voltage.The second line shows the output capacity(mAh) and in the lower right corner alternately displays the output power or total run time.

```
MOTOR 0.0A 19.87V
STOP000:00  0.0W
```

You can stop the test at any time by pressing "Start/Enter"

6>Hot Wire Foam Cutter Drive

In this mode,the charger acts as a convenient power supply for a hot wire foam cutter.

```
6>Hot Wire Foam
Cutter DRV --->
```

↓ Start
Enter

```
FOAM CUT  30min
2.0A        1.0V
```
- + ◄DEC INC► - + ◄DEC INC►

The value on the right side of the first line sets the test duration in minutes.The second line shows the upper limit of current on the left side and drive voltage on the right.After setting the current and voltage press"Start/Enter"for more than 3 seconds to start the next process.A beep tone will be sound.(Running time:0-90min,Current:0.1-20A,Voltage:1-40V)

↓ Start
Enter >3seconds

```
FOAM 0.0A 19.87V
RUN 001:48 0.0W
```

Stauts display.The top line shows the foam cut current and voltage.The second line shows the status and in the lower right comer alternately displays the output power or tatal run time.

↓ Start
Enter

```
FOAM 0.0A 19.87V
STOP000:00  0.0W
```

You can stop the test at any time by pressing"Start/Enter".

7> Check ESC/Motor PPM and BL Motor RPM

```
7>Esc/Motor PPM
BLMOTOR RPM -->
```

The I6AC+ incorporates,as the first charger,a fantastic feature which allows you to check your brushless motors sensors and even measure motor RPM! In combination with the built-in receiver simulator port you can even speed-controls for correct function.The receiver simulator port also allows the check of servo's.

↓ Start
Enter

```
SignalMin: 900us
SignalMax:1100us
```
- + ◄DEC INC► - + ◄DEC INC►

Press"Start/Enter"button,then press"◄DEC or INC► ".After setting the max.signal and max.signal,press"Start/Enter"for more than 3 seconds to start the next process. Min. Pules width (range:700~1500us) Max. Pules width (range:1500~2300us)
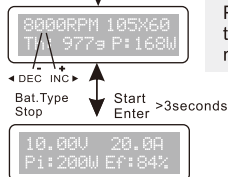
27

Start
Enter >3seconds

SignalOut: 900us
Motor RPM: 30076

◄ DEC INC ► / - \ +
◄ DEC INC ►
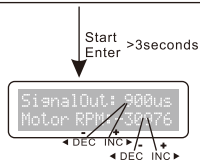
Status display.this screen check out the output signal and motor RPM

8>Thrust Calculator

8> Thrust Calc
──────>

In this program, you can easily calculate the thrust of a propeller.

Start
Enter

8000RPM 105X60
T: 977g P:168W

◄ DEC INC ►
- +

Press " ◄DEC " or " INC►" button, you can set up the RPM,the screen display the thrust calculator and its power.After setting the RPM,please press"Start/Enter" for more than 3 seconds to start the next process.

Bat.Type
Stop

Start
Enter >3seconds

10.00V 20.0A
Pi:200W Ef:84%

9>Measure External Temperature

9>Measure Ext.
Tempra: 0C

In this program, the charger can measure the external temperature by using a temperature sensor.

A>Measure Input Voltage and Output Voltage

A> Measure VOL
I:12.1V O:19.87V

In this program, the charger can measure the DC voltage of an object.

B>Measure TR/RX

```
B>Measure TR/RX
Signal:    0us
```

In this program, the charger can measure the signal between TR and RX.

Warning and error information

I6AC+ 80W 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
```
Erroneous selection of voltage of Lithium pack,please check the voltage of the battery pack.

```
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 VOLTAGE 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 down.
CONNTROL FAILURE	The processor cannot control the feeding current,please repair it.

⚠ *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.

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 resuit of failure to observe the procedures outlined in this manual.