4010DUO User's Manual (V1.0)

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Use Notice

●Safety Notes

Please read the entire Manual completely before using, to make sure you can use this device better and more safely.

1. 4010DUO is a dual port charger, does not mean can charge/discharge for any configuration of the two sets of batteries! Must follow: two battery packs have not any external electrical connection, otherwise it will burn the charger or batteries. For example: charging 12S battery pack, must split into two separate 6S, and absolutely prohibit to charge with two 6S battery packs in series via connecting with CH-1, CH-2 respectively.
2. 4010DUO input power cannot have fast fluctuations, which may cause output over current, and will burn the charger or the batteries and input power in extreme cases. For example: setting the input protection current and voltage is necessary according to the specifications of the input supply, in order not to cause power overload. Some power overload protection, will produce substantial fluctuations for the voltage.
3. Keep the charger away from children and pets at all times.
4. Never leave the charger unsupervised when charging or discharging. If you leave, disconnect the battery to prevent any unexpected dangers or damage.
5. Ensure the charger program and settings match the battery pack otherwise the battery will be damaged and a dangerous situation may arise, especially for Lithium batteries, which may cause a fire.
6. Do not mix batteries of different types, different capacities or from different manufacturers.
7. Do not disassemble the charger.
8. Do not place the charger or any battery on a flammable surface or near a combustible material while in use. Do not charge or discharge on a carpet, cluttered workbench, paper, plastic, vinyl, leather or wood, inside an R/C model or inside a full-sized automobile.
9. Never block the air intake holes and never use in a refrigerated or high temperature environment. If used in such an environment, the internal temperature protection may result in abnormal charging/discharging that could be dangerous.
10. Do not allow water, moisture, metal wires or other conductive material into the charger.
11. Never charge or discharge any battery having evidence of leaking, expansion/swelling, damaged outer cover or case, color-change or distortion.
12. Do not try to charge “non-rechargeable” dry cells.
13. Do not exceed the battery manufacturer’s suggested maximum charge rates.
14. Carefully follow the battery pack manufacturer’s recommendations and safety advice.

●Copyright

● 4010DUO Special Features

1. The 4010DUO uses advanced Synchronous buck-boost DC/DC converter technology, high power, and high current and high-performance power conversion circuit. The maximum charge power capacity up to 2000W, the maximum charge/discharge current of channel up to 40A, and two channels in Synchronous Mode up to 70A.
2. Channel Supports 10s LiPo, Lilo, LiFe, with maximum 1.2A balance current, adopts unique balance calculation of internal resistance correction .
3. Intelligent fan control. Sensing internal temperature via the internal temperature sensor, to thereby control the fan speed.
4. Internal temperature protection. When the internal temperature exceeds reduce temperature, the output power is automatically reduced; and the charger stops running when temperature exceeds the cut-temperature.
5. 64 parameters sets can be saved, without repeat setting when use, just import/export via SD card.
6. TFT LCD screen that provides rich information including current, voltage, power, capacity, internal resistance, control status, time-consuming and temperature, etc.
7. Multi-discharge features: discharge-self, regenerative to input discharge, regenerative to channel discharge, and Lithium battery expanding discharge.
8. Support measurement for internal resistance of battery offline and online. Can measure not only the internal resistance of the entire battery pack, but also measure the per-cell internal resistance of lithium battery.
9. The iCharger has protection for reversed polarity (input or output), input voltage/current, battery temperature, charging capacity, time overrun and maximum power etc.
10. Supports upgrading the hardware program by USB port. The iCharger also supports the “Logview” software and can display, plot and analyze the charge and discharge data by it. (See detail information about Logview in the following website: http://www.logview.info)

● Appearance Parameters:

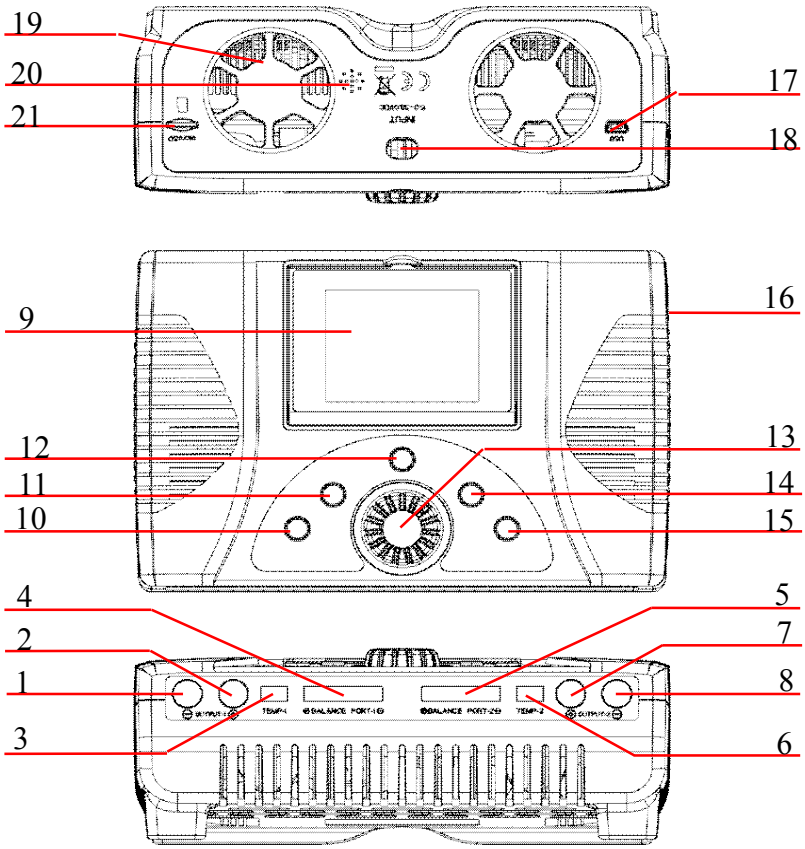
● Net weight:	1.47kg (mainframe)
● Dimension:	210.0×140.1×80.2 ±0.5mm

● Parameters:

● Input voltage range:	9.0—50.0VDC
● Maximum input current limit:	<65A
● Maximum charge/discharge current:	70A@Syn. Mode 40A@Asyn. Mode
● Maximum charge power capacity:	2000W (Channel 1400W @input > 23.5V)
● Maximum discharge power capacity:	200W (Channel 130W)
● Maximum regenerative discharge power capacity:	2000W (Channel 1400W)
● Maximum extern discharge power capacity:	3200W (Channel 1600W @40V/40A)
● Maximum current drain for balancing:	2.4A@Syn. Mode 1.2A@Asyn. Mode

Device Introduction

● 4010DUO Parts, Interface Introduction



（1）OUTPUT-1
（2）OUTPUT-1 +
（3）TEMP-1
（4）BALANCE PORT-1
（5）BALANCE PORT-2
（6）TEMP-2
（7）OUTPUT-2 +
（8）OUTPUT-2 -

（9）LCD
（10）STOP/START-1
（11）STATUS-1
（12）TAB/SYS
（13）KNOB
（14）STATUS-2
（15）STOP/START-2
（16）J1,J2 PORT

（17）USB
（18）POWER OUTPUT LINE
（19）FAN
（20）BUZZER

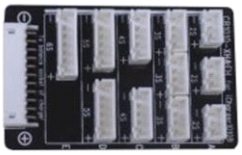
● 4010DUO Buttons Function & Icons Description

Part buttons allow to quick access to certain features when using 4010DUO, familiar with the icons on the interface can make better understand the working status for the charger, as shown in following chart:

Name	Functions & Use
KNOB	Press: confirm Counterclockwise rotation: up Clockwise rotation: down Long press: pop up manage menu via long press on *BATTERY SELECTION* interface exit the program after saving via long press on *BATTERY SETUP* interface
TAB/SYS	Long press: Enter system setup via long press on initial interface, Return to *SYSTEM MENU* via long press on the rest interface Click: can act as backspace when editing memory name, and return to the previous menu via clicking on the rest interface
STATUS-1	Long press: measure internal resistance of CH-1 via long press on initial interface, and to pop up the parameters setup interface via long press when running program Click: switch to the information display of CH-1

STATUS-2	Long press: measure internal resistance of CH-2 via long press on the initial interface, and to pop up the parameters setup interface via long press when running program Click: switch to the information display of CH-2
STOP/START-1	Click: enter *BATTERY SELECTION* of CH-1 via clicking on the initial interface, and click again to return the initial interface Long press: long press on the initial interface to enter the last running program on CH-1, and long press again to run the selected program
STOP/START-2	Click: enter *BATTERY SELECTION* of CH-2 via clicking on the initial interface, and click again to return the initial interface Long press: long press on the initial interface to enter the last running program on CH-2, and long press again to run the selected program
STATUS-1+STOP/START -1	Press simultaneously to enter the monitor setup interface on CH-1
STATUS-2+STOP/START -2	Press simultaneously to enter the monitor setup interface on CH-2
STOP/START -1+STOP/START -2	Long press simultaneously on the running program interface, two channels will run the same program simultaneously
	Fan status: a. Grey shows no running b. Green shows running (the higher the green shows, the faster the fan runs, and vice versa)
	SD card status: a. Grey for the SD card is not inserted b. Green for the SD card has been inserted and can be used normally
	USB status: a. Grey for not connecting USB b. Green for has connected USB

● 4010DUO Standard Accessories

USB data line #1  **700mm**	**Power cable #1**  **600mm**
Standard mini USB data line	**Power input cable**
Balance connector conversion board #2  **70X44mm**	**Output cable #2**  **320mm**
Suit for Align/Dualshy battery etc.	**Banana gold plug power output cable (single channel)）**
Balance wire for balance board #2  **150mm**	**CD-ROM #1** 
Suit for Align/Dualshy battery etc.	**User's manual & Software**

● 4010DUO Optional Accessories

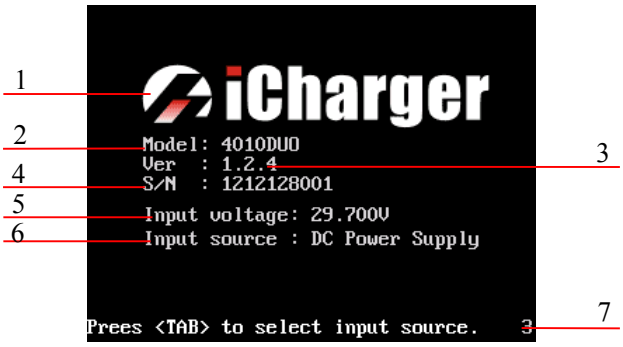
Temperature sensor lead #2  **350mm**	**Dual balance wires for balance board #2**  **150mm**
XP2.54 interface temperature sensor lead	**11Pin-11Pin dual balance wire**
Dual channel output cable #1  **350mm**	
Banana gold plug power output cable (two channels)	

iCharger Charge/Discharge Setup & Use

4010DUO iCharger can charge/discharge LiPo, Lilo, LiFe, NiHM, NiCd, Pb batteries, this manual divides into three parts to introduce features and use for LiXX, NiXX , Pb batteries.

● Power Supply Setup

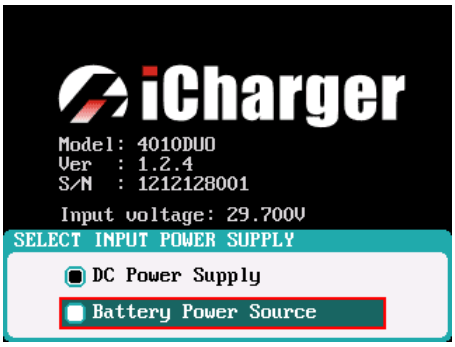
The charger boots automatically when power on and the initial interface will display LOGO, charger relevant information, power source and message etc.



Booting Interface

1: Logo *2: Model*
3: Version *4: Series number*
5: Input power voltage
6: Input power source
7: Hint message

System will delay **5S** after booting, during this period, press ***TAB / SYS*** key to change the input source type, while press any other buttons to enter the initial interface.



Input Power Supply Selection

DC Power Supply
Battery Power Source

*Need set detailed type of input power supply again can set in the **SYSTEM MENU->Power Supply.***

After selecting the input power supply, click the item to enter the initial interface

Initial Interface

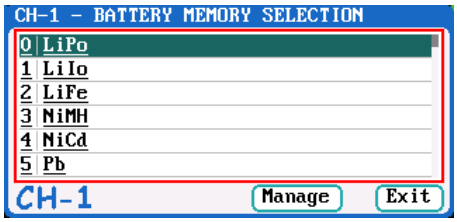
1: CH-1Channel information display
2: CH-2Channel information display
3: Status display

The specific display of each region can refer to the introduction of the Program Running Status and Error Messages chapters.

● Program Add & Manage

Click ***STATUS-x*** button on the initial interface to pop up the *BATTERY MEMORY SELECT* window.

4010DUO has 6 built-in rechargeable battery programs, which cannot be deleted and limit for editing. The built-in program with underline is distinguished from the customized program by users.



Click "Manage" or long press ***KNOB*** to pop up the *BATTERY MEMORY MANAGE* after exiting focus, and click "Edit" to enter *MEMORY SETUP* to edit the program, and click "Add" to add new program and enter its editing interface at the same time.

Note: if the program selected is a built-in program, CopyFrom… and Delete options are inactive status, and unable to be set.

● Run Program

Select program on the *MEMORY MANAGE* and click to enter the program selection interface (long press ***STOP/START-1*** button on the initial interface to enter directly), as below:

1: Run Program Selection

2: Common parameters setup

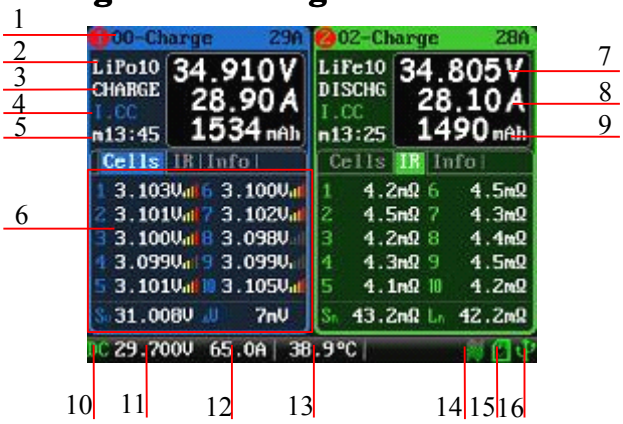
Note: The built-in program is saved by default automatically, while the program customized by users MEMORY setup－>MEMORY OPTION－>Auto save before the program runs.

Click after selecting the program to run, and *RUN PROGRAM* window will be popped up, as below:

Click ***Yes*** to run the program

Note: when the "capacity" set, the C-rate will appear behind the current, and when the C-rate exceeds certain value, the system will alarm beeps and warn . The specific value of battery is: LiXX battery: > 3C,NiXX battery: > 2C,Pb battery: > 0.3C

● Program Running Status



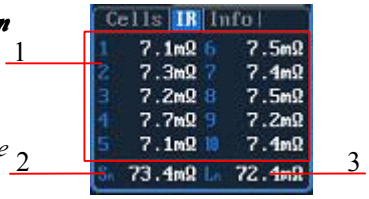
1: Running program name *2: Battery type*
3: Running channel status
4: Channel control status/external temperature
5: Running program time
6: Multipage information
7: Output voltage *8: Output current*
9: Output capacity *10: Power source*
11.: Input voltage *12: Input current*
13: Internal temperature *14: Fan status*
15: SD card status *16: USB status*

See details about Status Indication of Running Channel & Status Indication of Channel Control in Appendix.

Press ***STATUS-x*** button when running program to switch to multi-page information display, as below:

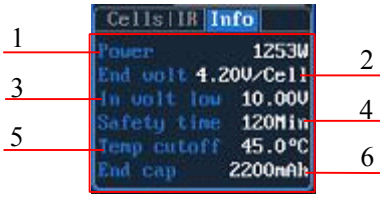
Cells voltage information

1: Cells voltage
2: Cells voltage sum
3: Maximum cells voltage difference
4:Balance current indicate



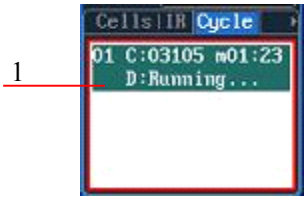
IR information

1: Cell internal resistance
2: Pack internal resistance
3. Line *resistance*



Page information

1： Power
2： End voltage
3:Lowest input voltage
4: Safety time
5: Temp. Cutoff
6:End charge capacity



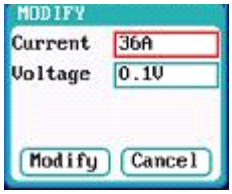
Cycle charge status

1: Cycle charge status

Note: Different types of battery and program have different multi-page information display, see details as below:

LiXX	Cells	IR	Info	Cycle
NiXX	X	X	Info	Cycle
Pb	X	X	Info	Cycle

Press ***STATUS-x*** button for **2S** when running program to pop up *MODIFY* interface, can modify the current, discharge voltage, parameters online, as below:



Press ***STOP/START-x*** button when running program to stop running, and press ***STOP/START-x*** button again to return to the initial interface.

●Error Messages

When the 4010DUO is running, the system will stop the channel immediately and pop up red dialog box and the buzzer alarms if it detects an error, as below:

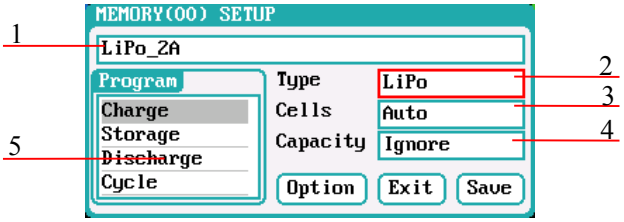
1: Error number

2: Error message

See all details Error Messages in Appendix

● Program Edit

After adding new program or editing saved program, system will enter *MEMORY SETUP* interface, users can set or modify the program on this interface, after editing click "Save" to save and return to the previous interface.



MEMORY SETUP Interface

1: Program name *2: Battery type*

3: Battery number of cells

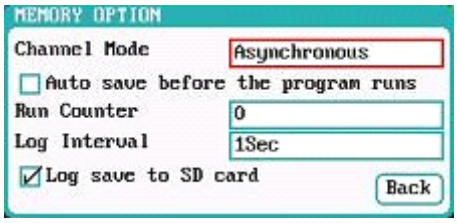
4: Battery capacity *5: Available program*

Note: 1.The program name can be selected by turning Knob to choose characters, clicking the Knob to confirm the selected character, and clicking *TAB/SYS* button to delete the Character; If the program name is empty, the system will name automatically.

2. If the Editing program is the built-in program, program name and the type of battery parameters cannot be changed.

3. Different types of battery have corresponding programs available, which introduced with classification afterwards.

After setting the basic parameters of battery, click "Option" to enter *MEMORY OPTION* interface



MEMORY OPTION Interface

Channel Mode: asynchronous (default), synchronous

Run Counter: 0-999; default:0

Log Interval: 0.5-60Sec; default: 1Sec

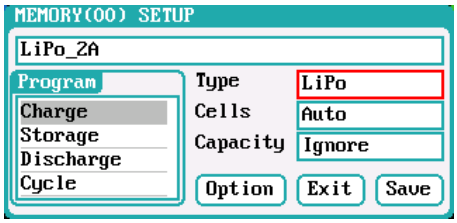
Note:1Channel Mode has asynchronous, synchronous available, more details see Important Notes Chapter.

2. If select synchronous mode, the maximum current setting will change from 40A to 70A

3. For built-in program, the Auto save before the program runs option is ticked by default.

■ LiXX Battery Charge/Discharge Setup

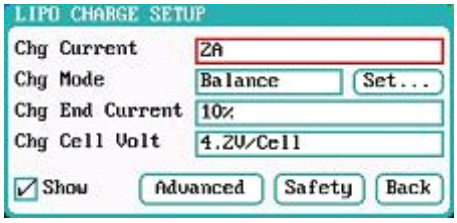
After adding program, it will switch to LiXX battery in the Type option on the *MEMORY SETUP* interface, and set the number of cells and capacity, if not setting for the number of cells, the charger will detect automatically, after editing all parameters for program, click "Save" to save and return to the previous interface.



As shown in above picture, the program of LiXX battery has: Charge, Storage, Discharge, Cycle and Balance Only:

① LiXX Battery Charge/Discharge Setup

Select Charge on Program bar and enter the setup interface.



LiXX Battery Charge Program Setup

Chg Current: 0.05A-40A; default: 2A

Chg Mode: Balance (default), Not Balance

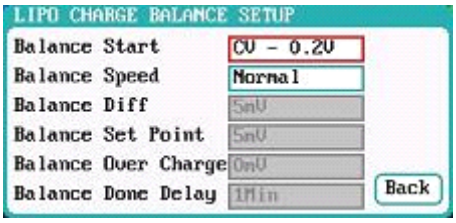
Chg End Current: 1%-50%; default: 10%

Chg Cell Volt: 3.85V/Cell-4.35V/Cell; default: 4.2V/Cell

Note:1. Charge mode has Balance, Not Balance two modes available, when choose Balance mode, Balance board must be connected except for connecting 1S battery.

2.When the value of charge cells voltage exceeds the recommended value (LiPo 4.2V, LiIo 4.1V, LiFe 3.6V), there will alarm and beep tones. As long as the users change the value, the main charging interface, "battery types" and "cells voltage" setting value will displayed alternately.

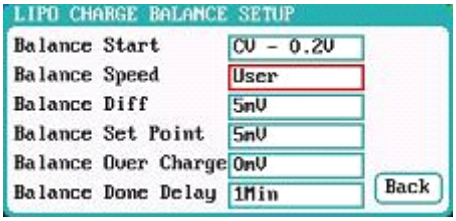
Switch to Balance mode on Chg Mode to active "Set..." button and click to enter Balance mode setup interface.



LiXX Charge Balance Setup

Balance Start: CV, CV-0.1V--1V, Always
Default: CV-0.2V
Balance Speed: User, Fast,
Normal（default）, Slow

Switch to User mode on *Balance Speed* to active *Balance Diff, Balance Set Point, Balance Over Charge, Balance Done Delay* setting, and users can set these parameters, after setting, click"Back" to return to the previous interface.



LiXX Charge Balance Setup

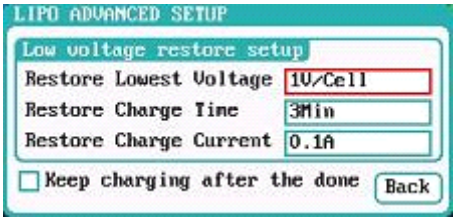
Balance Diff：1mV-10mV；default：5mV
Balance Set Point:1mV-50mV；default：5mV
Balance Over Charge:0mV-10mV；default：0mV
Balance Done Delay:0Min-20Min；default：1Min

Note: If Balance Diff value is smaller, the voltage difference between batteries will be smaller and time-consuming will be more when program ends.
If The Balance Set Point value is smaller, the battery will be closer to the setting cut-off voltage and time-consuming will be more when program ends.
Balance Over Charge, the maximum overcharge compensation voltage acts as accelerated charge, and the larger the value, the more obvious of accelerated charge.
For example: Charge Lipo with Vstd, set Balance Over charger to Vboc,the cells internal resistance detected is Ri, when the charge current is Ia, the actual CV value of cells is Va

IF Ri*Ia > Vboc THEN
Va = Vstd + Vboc
ELSE
Va = Vstd+Ri*Ia

Please set this parameter after understanding fully, or keep the default value of 0. The value of Balance Done Delay is larger; the battery is closer to the setting cut-off voltage, when program ends.

Click "Advanced" to enter LiXX Advanced setup, after setting click"Back"to return to the previous interface.

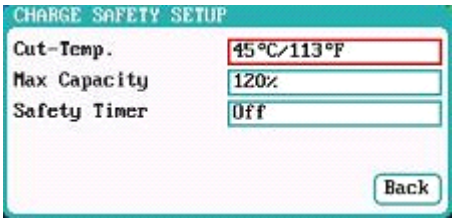


LiXX Battery Charge Advanced Setup

Restore Lowest Voltage:0.5V/Cell-2.5V/Cell;
default：1V/Cell
Restore Charge Time:1Min-5Min;default：3Min
Restore Charge Current:0.02A-0.5A;default：0.1A

Note:1. It's necessary to start this setting when battery over discharges, and to charge the battery with smaller current at the beginning, when the battery voltage rises to the normal value then returns to charge program, otherwise, it will stop.
2. Tick Keep charging after the done means the charger keep charging with smaller ending current to stop charging after program reminds charging ends.

Click "Safety" to enter LiXX battery charge safety setup interface, after setting, click"Back" to return to the previous interface.



LiXX Battery Charge Safety Setup

Cut-Temp: 20℃-80℃; default:45℃

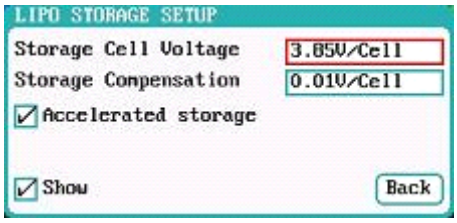
Max Capacity: 50%-200%; default: 120%

Safety Timer:0Min-9999Min; default: off

Note: Cut-Temp is the maximum safety temperature of the battery and the program will stop running when the temperature the sensor detected reaches this value.

②LiXX Battery Storage Setup

Select Storage on Program bar and enter the setup interface, after setting, click "Back" to return to the previous interface.



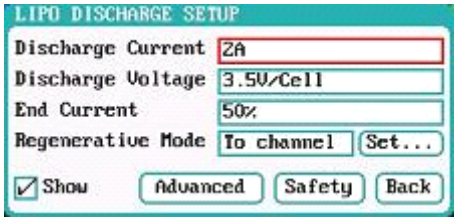
Storage Cell Voltage:3.7V/Cell-3.9V/Cell;
default: 3.85V/Cell

Storage Compensation: 0V/Cell-0.2V/Cell;
default: 0.01V/Cell

Note:1 .Tick Accelerated storage to accelerated storage.
2. Storage Compensation is the storage compensation for the battery voltage fallback: for storage charge, the actual storage voltage=Storage Cell Voltage+Storage Compensation; for storage discharge, the actual storage voltage = Storage Cell Voltage - Storage Compensation.
3. Accelerated storage: storage accelerated via internal resistance correction.

③LiXX Battery Discharge Setup

Select Discharge on Program bar and enter the setup interface.



LiXX Battery Discharge setup

Discharge Current: 0.05A-40A; default: 2A

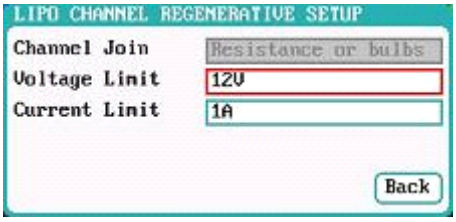
Discharge Voltage: 3V/Cell-4.1V/Cell;
default: 3.5V/Cell

End Current: 1%-100%; default: 50%

Regenerative Mod: OFF (default),
To input,,To channel

Note:1. Regenerative mode has OFF, To input, To channel three modes available, more details see **Important Notes**.

When switch to To channel on Regenerative Mode, "Set..."button changes to the operational state, click to enter Channel regenerative setup interface, which is mainly in charge of controlling the regenerative voltage and current, to prevent the charger from being damaged by regenerative charge. After setting, click "Back" to return to the previous interface.



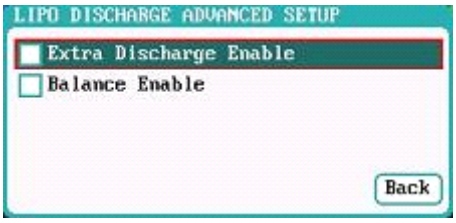
LiXX Battery Channel Regenerative Setup

Channel Join: Not available

Voltage Limit:0.1V-40V; default: 12V

Current Limit:0.05A-40A; default: 1A

Click "Advanced" to enter LiXX battery discharge advanced setup interface, after setting, click"Back" to return to the previous interface.



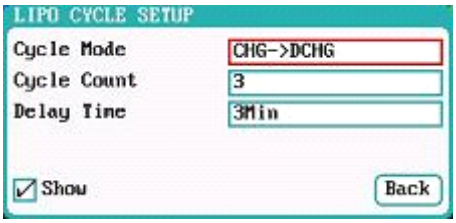
Note: 1.Tick Extra Discharge Enable to active Extra Discharge Enable, more details see Expanding Discharge chapter.

2. Tick Balance enable to active balance discharge; when discharge enters the CV phase, it starts to balance for the cell voltages.

Click "Safety" to enter LiXX battery discharge safety setup interface, details about setting please see LiXX Battery Charge Setup chapter.

④LiXX Battery Cycle Setup

Select Cycle on Program bar and enter the setup interface, after setting, click"Back" to return to the previous interface.



LiXX Battery Cycle Setup

Cycle Mode: CHG→DCHG (default),

DCHG→CHG

Cycle Count: 1-99;default: 3

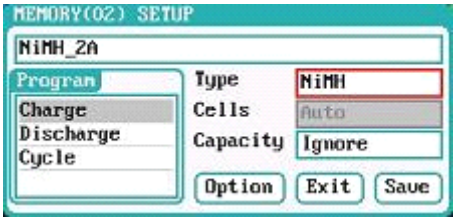
Delay Time: 0Min-9999Min; default:3Min

⑤LiXX Battery Only Balance Feature

Note: Only Bal is the program to perform balance feature, which cannot charge/discharge the Battery.

■ NiXX Battery Charge/Discharge Setup

After adding program, it will switch to NiXX battery in the Type option on the *MEMORY SETUP* interface, and set the number of cells and capacity, if not setting for the number of cells, the charger will detect automatically, after editing all parameters for program, click"Save" to save and return to the previous interface.



As shown in above picture, the program of NiMH, NiCd have: Charge, Discharge and Cycle.

① NiXX Battery Charge Setup

Select Charge on Program bar and enter the setup interface.

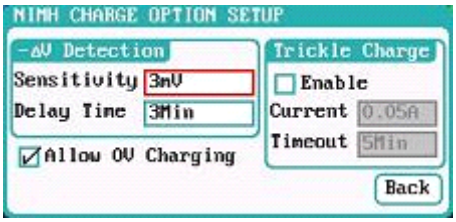
NiXX Battery Charge Setup

Chg Current: 0.05A-40A; default: 2A

Chg Mode: Normal (default), Reflex

Note: 1. Charge Mode has Normal, Reflex two modes available; use the reflex mode to charge battery can reduce heat of battery; Please see charge principle in Important Notes chapter.

Click "Advanced" to enter NiXX battery charge Advanced setup interface, after setting, click "Back" to return to the previous interface.



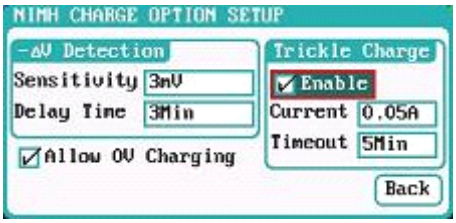
NiXX Battery Charge Advanced Setup

Sensitivity: 1mV-20mV: default: 3mV

Delay time: 0Min-20Min: default: 3Min

Note: Tick Allow OV Charging to allow charge with OV.
Allow OV Charging: suit for some applications (such as charge the battery pack in the transmitter, the circuit in series with a diode).

Tick Trickle Enable to active trickle charge and set for other parameters, after setting, click"Back" to return to the previous interface.



NiXX Battery Trickle Charge Setup

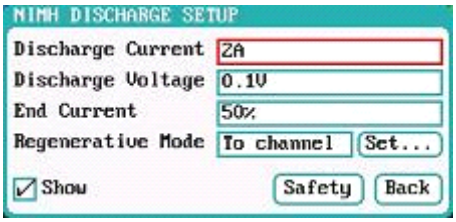
Trickle current: 0.02A-1A; default: 0.05A

Trickle timeout: 1Min-999Min;
default:5Min

Click "Safety" to enter NiXX battery discharge safety setup interface, details about setting please see LiXX Battery Charge Setup chapter.

② NiXX Battery Discharge Setup

Select Discharge on Program bar and enter the setup interface



LiXX Battery Discharge Setup

Discharge Current:0.05A-40A; defaul:2A
Discharge Voltage: 0.1V-40V: defaul: 0.1V
End Current:1%-100%: defaul: 50%
Regenerative Mode: OFF(default),To input, To channel

Note: 1. To channel Setup please see LiXX Charge/Discharge setup chapter.
2. Regenerative mode has OFF,To input,To channel three modes available, more details see Important Notes chapter.

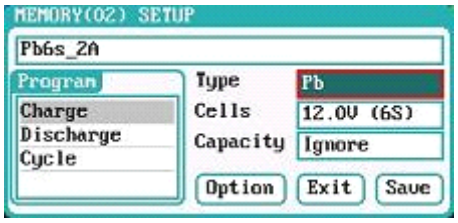
Click "Safety" to enter NiXX battery discharge safety setup interface, details about setting please see LiXX Battery Charge Setup chapter.

③ NiXX Battery Cycle Setup

Select Cycle on Program bar and enter the setup interface, details about setting please see LiXX Battery Cycle Setup chapter.

■ Pb Battery Charge/Discharge Setup

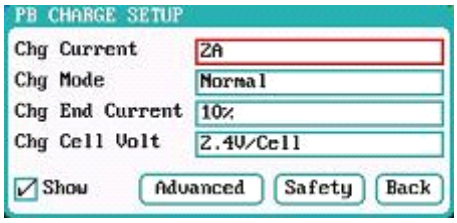
After adding program, it will switch to Pb battery in the Type option on the *MEMORY SETUP* interface, and set the number of cells and capacity, if not setting for the number of cells, the charger will detect automatically, after editing all parameters for program, click"Save"to save and return to the previous interface.



As shown in above picture, the program of Pb battery has: Charge, Discharge and Cycle.

① Pb Battery Charge Setup

Select Charge on Program bar and enter the setup interface.



LiXX Battery Charge Setup

Chg Current: 0.05A-40A: defaul: 2A
Chg Mode: Normal (default), Reflex
Chg End Current: 1%-50%; defaul: 10%
Chg Cell Volt: 2V/Cell-2.6V/Cell; defaul: 2.4V/Cell

Note: 1. Charge mode has Normal, Reflex two modes available, about the Reflex mode (Reflex) principle please see **Important Notes** chapter;
2. Tick Show to display the Charge program on Run Program interface, the built-program is ticked by default and unchangeable.

Click "Advanced" to enter the Pb battery charge advanced setup interface, details about setting please see the LiXX Battery Charge Setup.

Click "Safety" to enter Pb battery charge safety setup interface, details about setting please see the LiXX Battery Charge Setup.

② Pb Battery Discharge Setup

Select Discharge on Program bar and enter the setup interface, details about setting please see the LiXX Battery Discharge Setup.

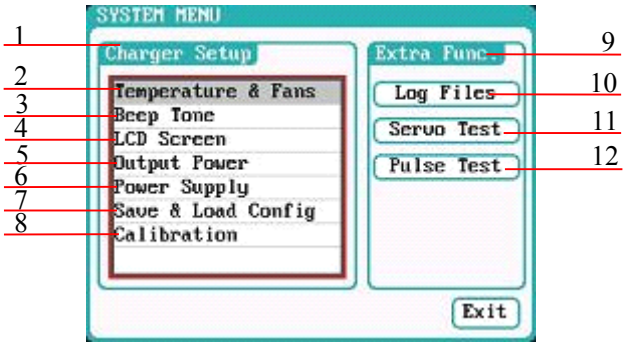
③ Pb Battery Cycle Setup

Select Cycle on Program bar and enter the setup interface, details about setting please see the LiXX Battery Cycle Setup.

4010DUO Parameters Setup

● 4010DUO Parameters Setup

Press ***TAB/SYS*** button for 2S on the initial interface to enter *SYSTEM MENU* interface, set and test the system parameters, storage and servo.



1: Charger Setup menu

2: Temp. & Fans Setup 3: Beep Tone Setup

4: LCD Setup 5: Output Power Setup

6: Power Supply Setup

7: Save & Load Configuration Setup

8: Calibration

9: Extra- Function

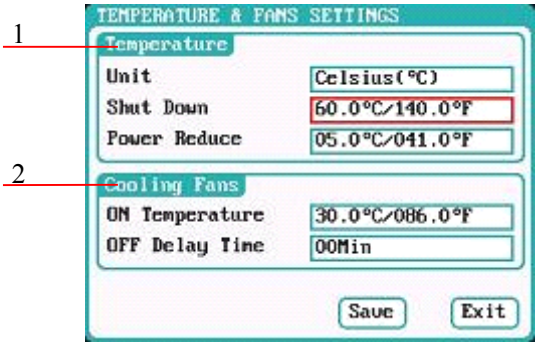
10: Log Files Manage 11: Servo Test

12: Pulse Test

■ Charger Setup

① Temp. & Fans Setup

Select **Temperature &Fans** on *SYSTEM MENU* and enter the setup interface, after setting, click "Save"to save and return to the previous interface.



1: Temperature setup

Unit: Celsius(default),Fahrenheit

Shut Down:60℃-75℃;defaul:75℃

Power Reduce:5℃-20℃;default:10℃

2: Cooling Fans setup

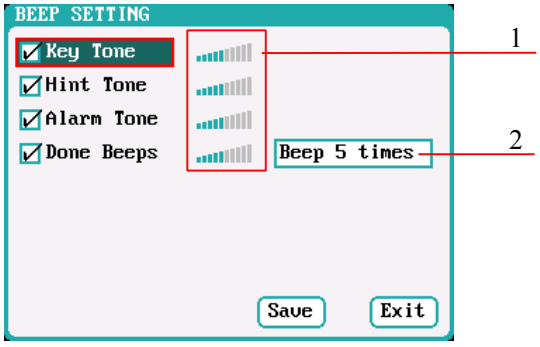
ON Temperature:30℃-50℃;default:40℃

OFF Delay Time: 0Min-10Min;default:2Min

Note: When the charger internal temperature reaches to the fan opening temp.(ON Temperature), the fan will boot automatically to dissipate heat, and the fan adjust speed automatically depends on the temperature increasing or decreasing. When the temp. exceeds (Shut Down – Power Reduce), the charger will stop increasing(temp. shown in orange) via reducing the largest power limit. When the temp. reaches (Shut Down) temperature, the charger will stop running.(when temp. > (Shut Down-3), the temp. shown in red flashing). When the temp. is lower than the ON Temperature, the fan will keep running within the setting time of OFF Delay Time.

②Beep Tone Setup

Select **Beep Tone** on *SYSTEM MENU* and enter the setup interface, after setting, click "Save" to save and return to the previous interface.



Beep Tone Setup

1: Program Done Beep Tones selection

Beep 5times (default)

Beep 30sec

Beep always

Beep 3mnutes

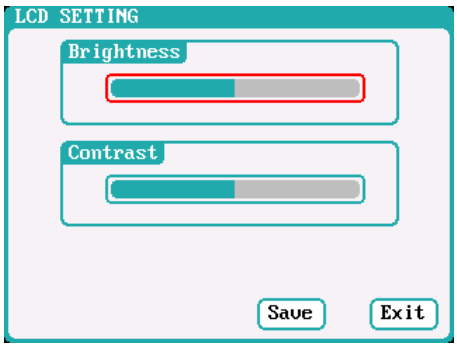
2: Volume adjustment display

Note: Tick the appropriate tone, and then go to Volume adjustment bar of tones to adjust the volume;

If the beep tone failed to tick the corresponding volume adjustment it shows inactive; Done Beeps are many styles available, as shown above.

③ LCD Setup

Select **LCD Screen** on *SYSTEM MENU* and enter the setup interface, after setting, click "Save"to save and return to the previous interface.



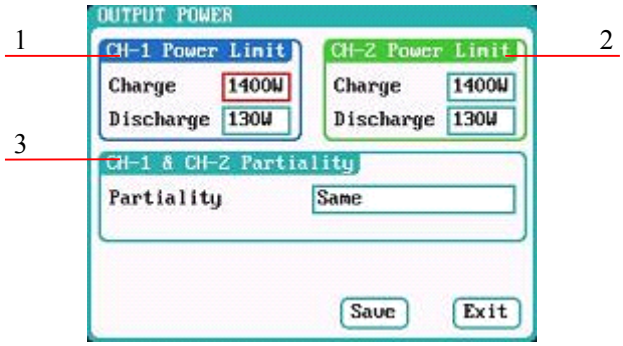
LCD Setting Interface

1: Brightness adjustment

2: Contrast adjustment

④Output Power Setup

Select **Output Power** on *SYSTEM MENU* and enter the setup interface, after setting, click "Save"to save and return to the previous interface.



1/2: CH-1/CH-2 Output Power Setup

Charge: 5W-1400W; default: 1400W

Discharge: 5W-130W; default: 130W

3: CH-1/CH-2 Channel Partiality Select

Same (default), CH-1, CH-2

Note: The maximum power limit for regenerative discharge is equal to the maximum power limit for charge.

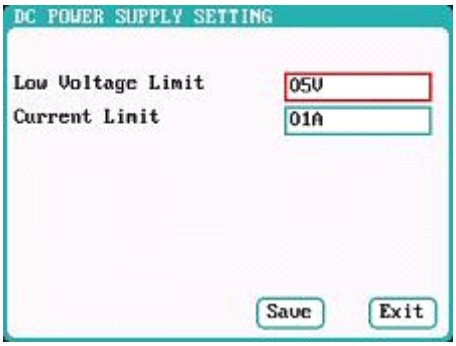
When the input or output power of charger is limited, it will trigger the CH-1/CH-2 Channel Partiality.

When Partiality switches to Same, charger assigns averagely the output power to two channels, switch to CH-1 or CH-2, the charger will give priority to the selected channel output power, while the output power of other channel will be reduced to 50W (discharge for 5W).

⑤Power Supply Setting

Select **Power Supply** on *SYSTEM MENU* and enter the setup interface, after setting, click "Save"to save and return to the previous interface.

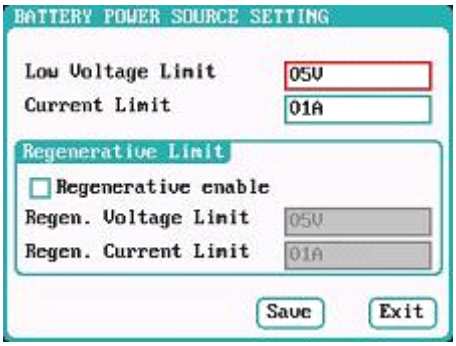
After selecting input source, click the "Setting..." followed the option, enters the relevant power supply setting to set the parameters, after setting ,click "Save"to save and return to the previous interface.



DC Power Supply Setting

Low Voltage Limit: 9V-48V; default: 10V

Current Limit: 1A-65A; default: 65A



Battery Power Source Setting

Low Voltage Limit: 9V-48V; default: 10V

Current Limit: 1A-65A; default: 65A

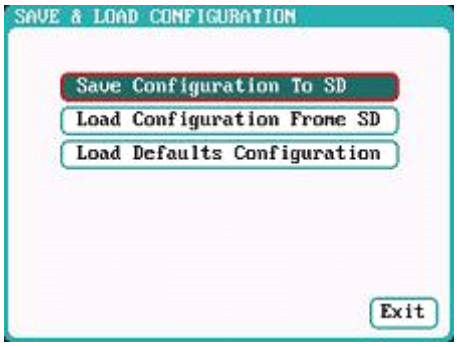
Regen. Voltage Limit:9V-48V;default:14.5V

Regen. Current Limit:1A-65A;default:10A

*Tick **Regenerative enable** to active power supply regenerative feature, enable the charger to charge back to the power supply in the discharge process.*

⑥Save & Load Configuration Setup

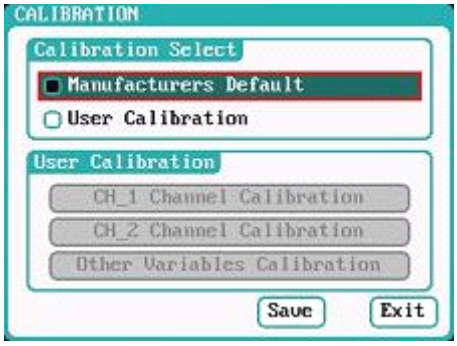
Select **Save & Load Config** on *SYSTEM MENU* and enter the setup interface.



Note: 1. Users can save configuration to SD card, just load via SD card if use again.
2. After loading the configuration files, in addition to the Calibration Select, it will cover all settings within the device.

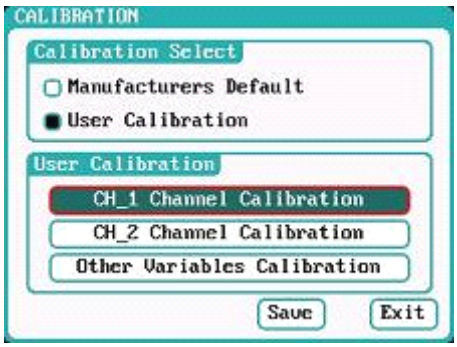
⑦ Calibration

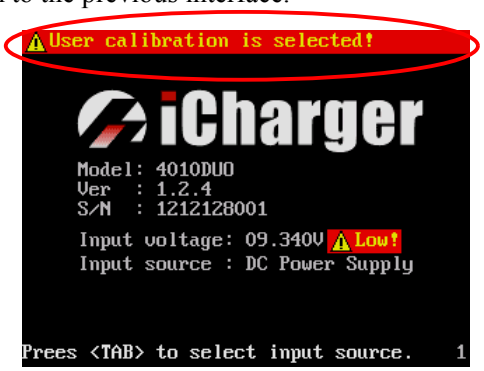
Select **Calibration** on *SYSTEM MENU* and enter the setup interface.



The user calibration may lead to large data deviation, affecting the normal use;
self-calibration for charger is not recommended.

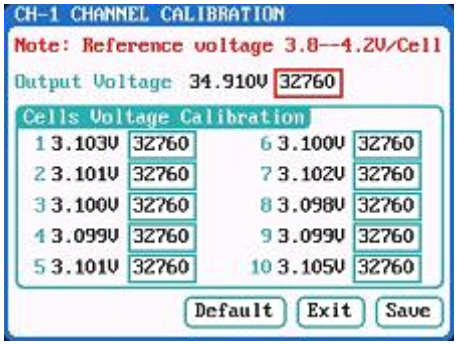
If users select User Calibration, the User Calibration option changes to active status; then select channel to enter the interface to calibrate, after setting, click "Save" to save and return to the previous interface.

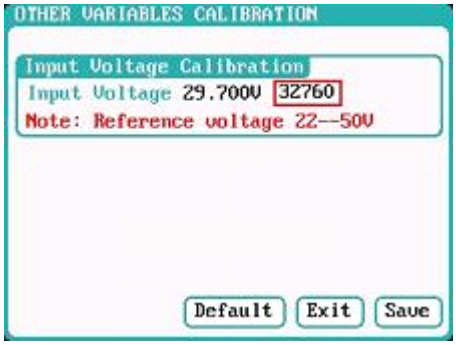




Note: User Calibration has "CH-X Channel Calibration" and "Other Variables Calibration" two options, users can calibrate charger for one channel alternatively. If users select User Calibration, the corresponding message will appear in the interface after booting, as shown in the right picture above.

Select CH-1/2 Channel Calibration to enter the calibration interface (as left picture shown), Select Other Variables Calibration to enter the other variable calibration (as right picture shown); After Calibration, click "Save" to save and return to the previous interface; click "Default" to load default value.

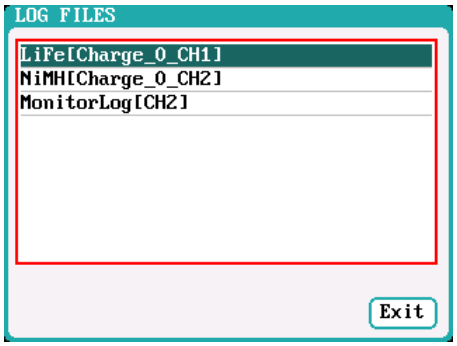




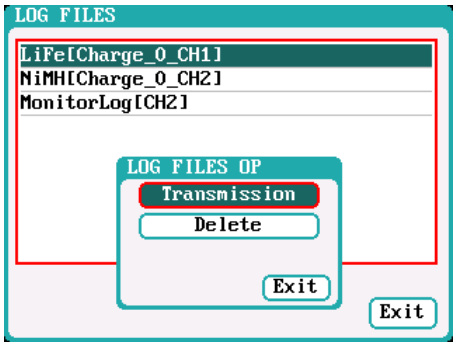
■ Extra Function

① Log Files Manage

Select **LOG FILES** on *SYSTEM MENU* and enter the log files manage interface.

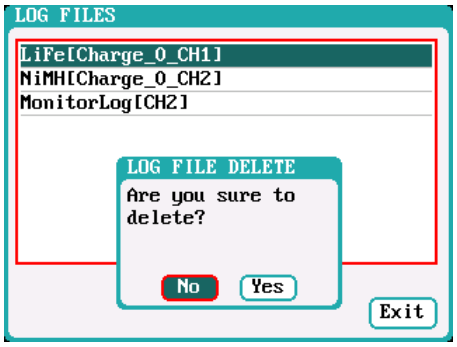


First select and click the .TXT files when manage log files, and the system will pop up the LOG FILES OP dialog box.



The charger must be connected with computer when select Transmission, and the client software has identified to the charger.

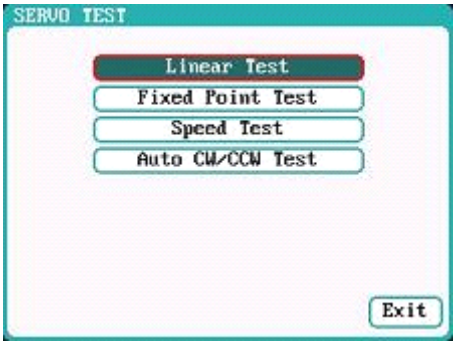
Select Delete on the Log files manage dialog box to pop up the dialog box for deleting the file. Select ***Yes*** to delete this file, select ***No*** to cancel.



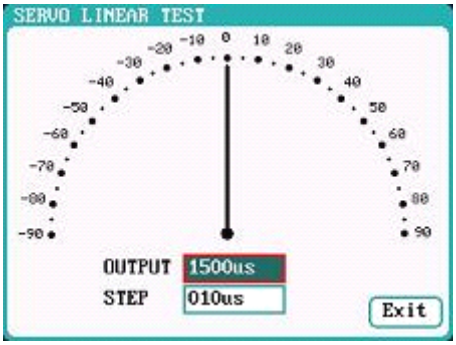
② Servo Test

Insert Servo into J1 or J2 port (Only J1 port supports Speed Test) .

Select **SERVO TEST** on *SYSTEM MENU* and enter the servo test interface.

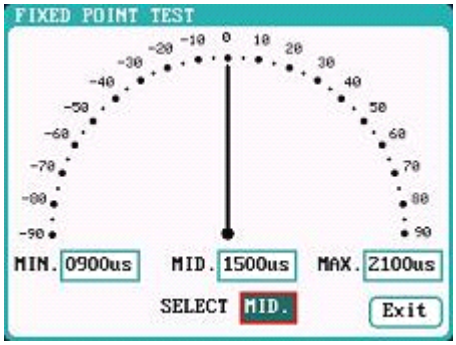


Select the test mode and go to the following corresponding interface.



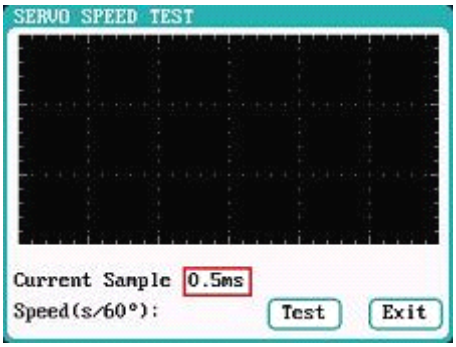
Liner Test

When turning the knob, the pointer deflects with step of 10us, and the servo responds accordingly.



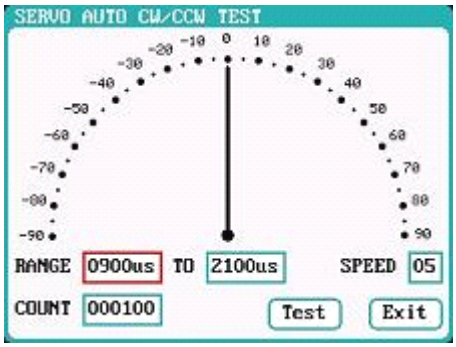
Fixed Point Test

When turning the knob, the pointer deflects among each setting values, and the servo responds accordingly



Speed Test

Press Test button to read the test curves and test results



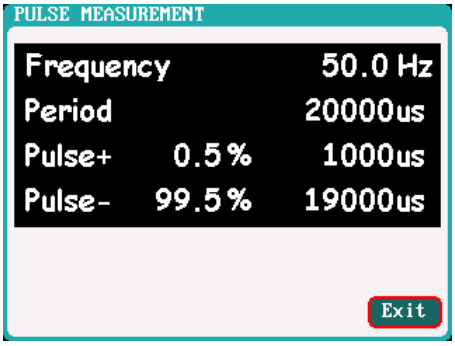
Auto CW/CCW Test

Click Test button then the pointer deflects setting times at a set rate back and forth among each setting values, and the servo responds accordingly.

③Pulse Measurement

The input signal of Pulse Measurement is only supported by J2 port.

Select **PULSE MEASUREMENT** on *SYSTEM MENU* and enter the pulse test interface.



● USB & SD Card Use

4010DUO is the HID device of USB, supported by windows system directly, dispense with installing additional drivers. The USB icon will light up on the lower right corner of the screen when the 4010DUO connects with computer normally.

The SD icon will light up on the lower right corner of the screen when the SD card inserted. If 4010DUO connects with USB without running program, the new added U disk can be found on the "My Computer" of the PC, and can operate the file. Log files are stored in the X: \ Junsi \ iC4010DUO \Log folder and config. files are stored in X:\Junsi\iC4010DUO\System folder.

Note: 1. The file system of SD card must be FAT or FAT32.
2. Data in SD card needs to be backed up in case to lose.

● Warranty & Service

① The product from the date of purchase enjoys free maintenance service within one year under normal conditions of use.

② Over the warranty, if need replace parts, appropriate charge will be for components and maintenance fee.

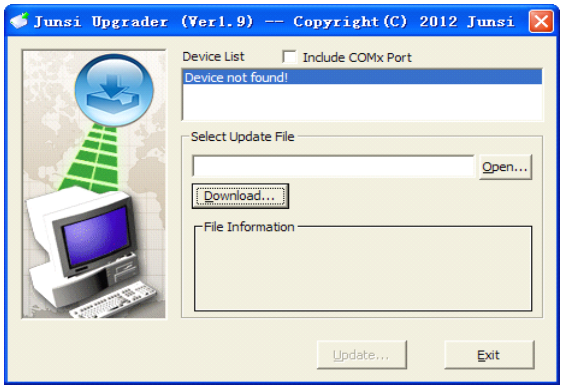
③ During the warranty period, any of the following circumstances will not enjoy free repairing:

1) Failed use in accordance with the requirements of the user manual;
2) Failure or damage caused by user to dismantle, append or modify unauthorized;
3) Failure or damage due to natural disasters, bruises, collisions, improper voltage.

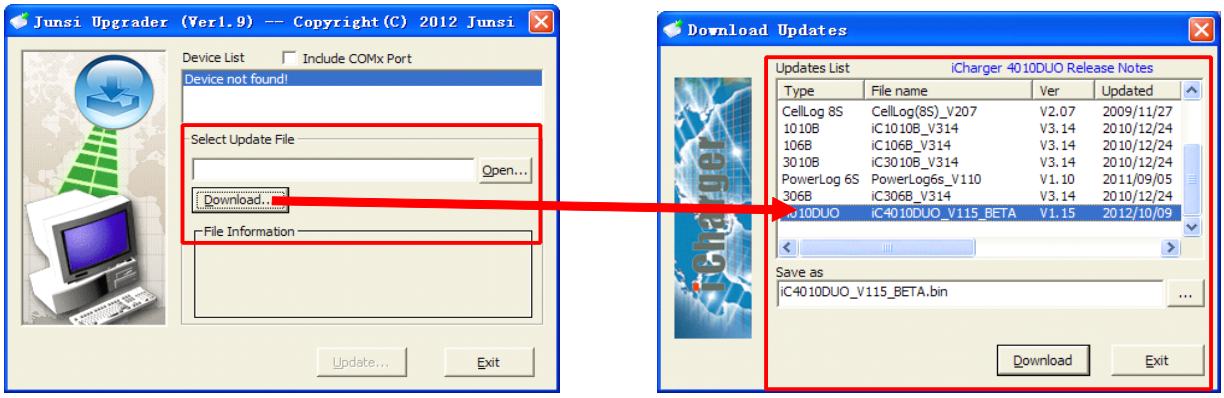
4010DUO Firmware Upgrades

① Landing to the website http://www.jun-si.com/UploadFiles/Upgrader.rar to download above VER1.9 version upgrader zip file "Upgrader.rar", and extract to any disk on the PC;

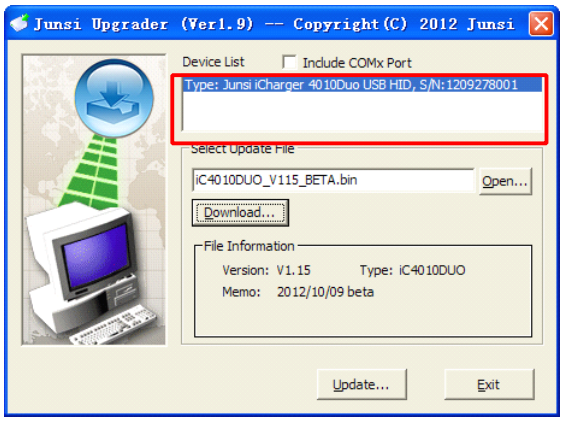
② Open the extract directory X:\upgrader\upgrader.exe,double click" upgrader.exe "to run the upgrader and enter program interface.



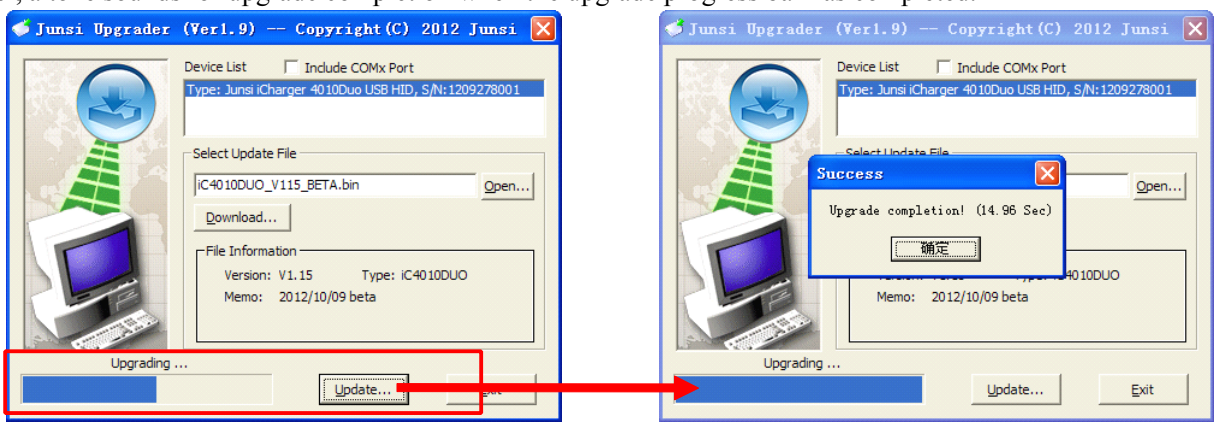
③ Click "Open..."to open firmware file, If not a firmware file on the PC, click "Download..." to open the download window, and find the corresponding device firmware of 4010DUO, click"Download..." to download the firmware file to the PC;



④ Connect 4010DUO charger to the PC via USB (windows system directly supports device, dispense with installing additional drivers). When the device information appearing in Device List column shows the upgrade tool has identified the device.



⑤ Click the iron "Update..." on the lower right corner, then the upgrade progress bar will appear on the lower left corner, a tone sounds for upgrade completion when the upgrade progress bar has completed.



Note: 1. Upgrade failed in the case of not power outages, click "Update..." to upgrade again;

2. Upgrade failed in the case of power outages, need power on again and press knob, *STATUS-2* and *STOP/START-2* buttons at the same time and repeat the above steps to upgrade again.

Use Logview for 4010DUO

First, gratitude to the development team of Logview, more details please see http://www.logview.info

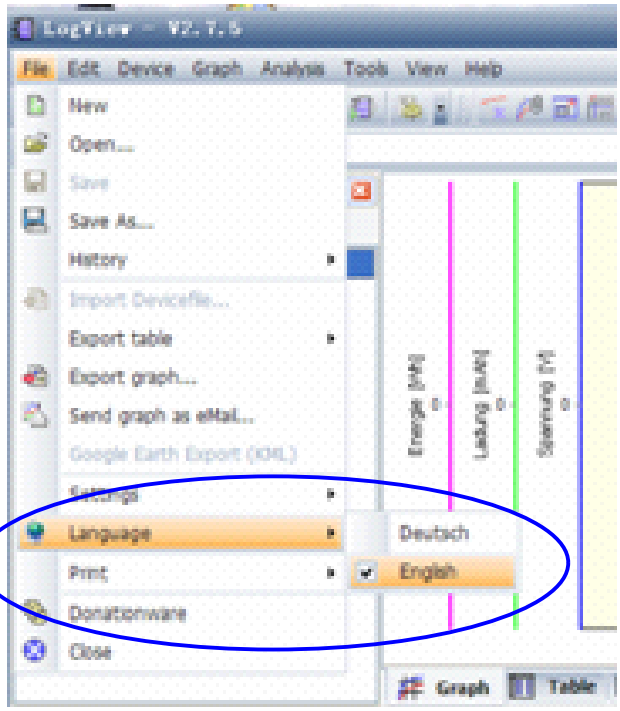
Communication steps:

① To install the software Logview, start the procedure of X:\ logview \ LogViewInstaller.exe (here X is the drive letter designator for the CD-ROM drive.)

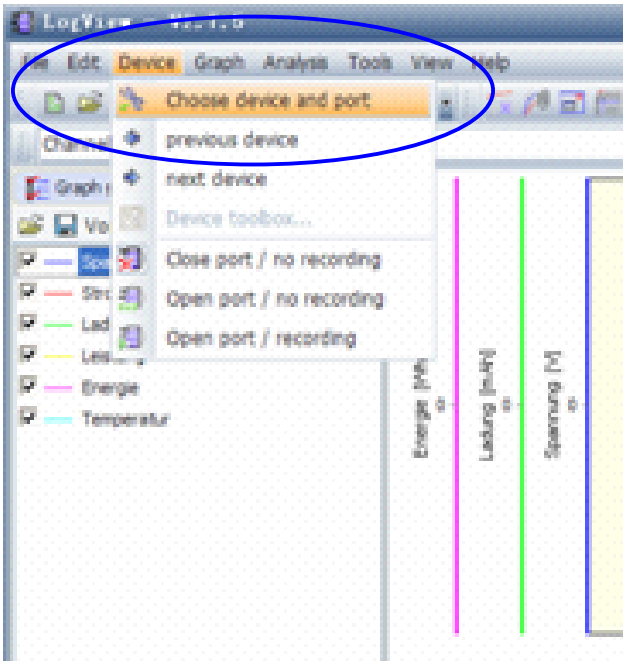
② Connect the iCharger with PC via USB port (make sure USB driver has been installed)

③ Start **LogView**

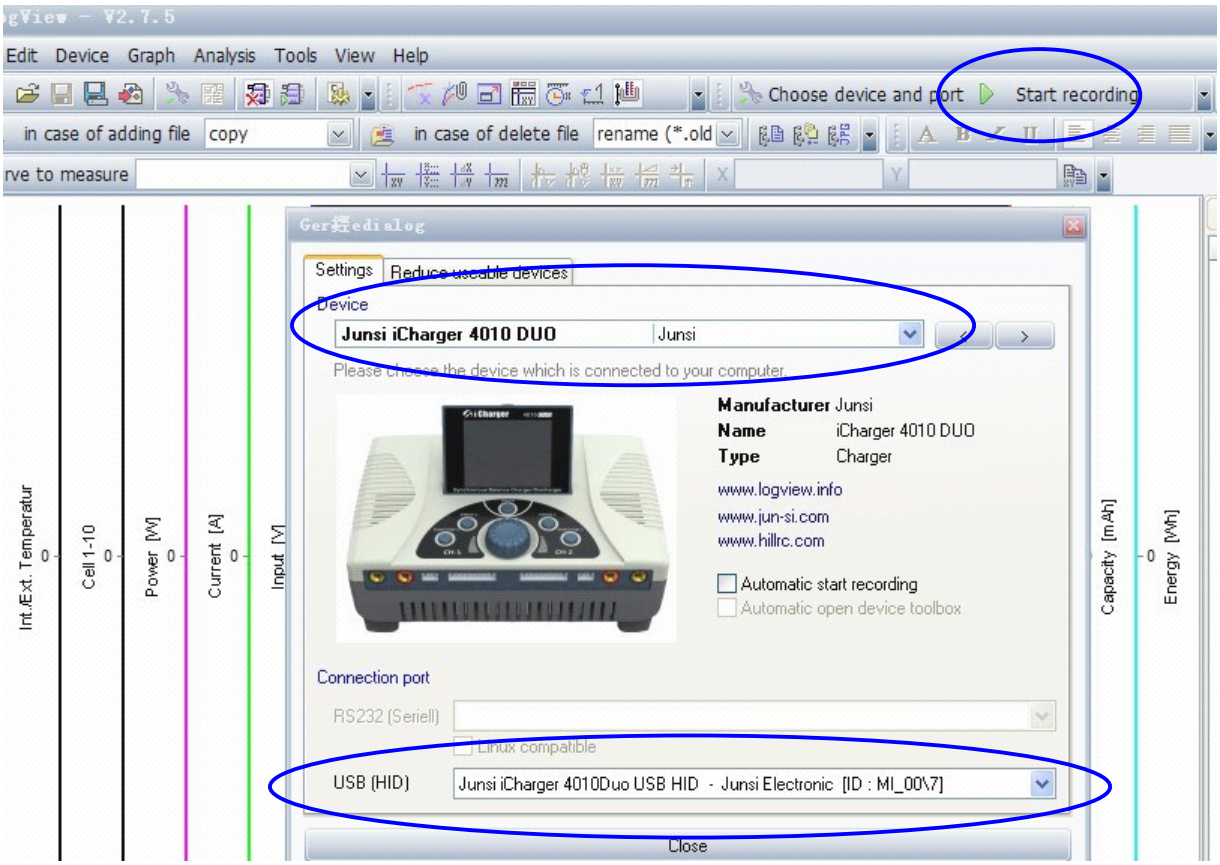
1) Please choose language first;



2) Choose ***Device —>Choose device and port ;***



3)Choose iCharger4010DUO in the following options of Device, and then choose the correct communication Port;

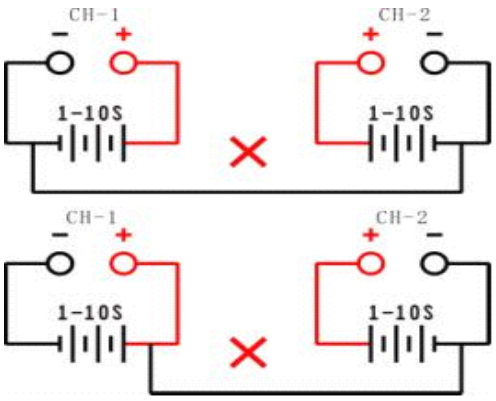


4) Start iCharger charge/discharge mode, then click “Start recording” to record data. See other functions of this software on "Help".

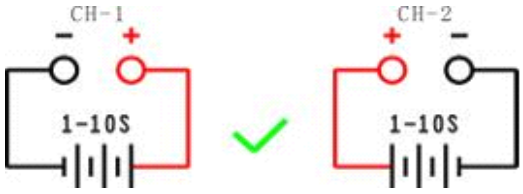
Important Notes

• Channel Mode

1. Channel Asynchronous Mode: i.e. CH-1 and CH-2 work independently.



Picture1: Error Connection

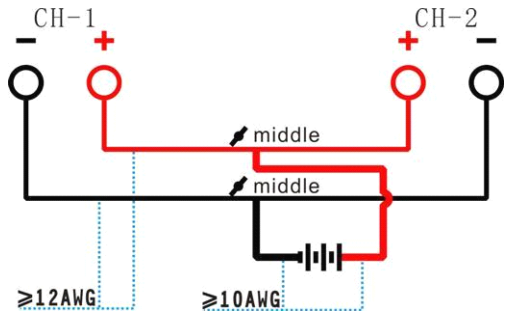


Picture2: Correct Connection

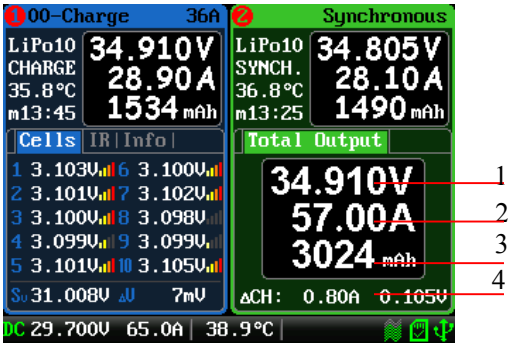
Go to *MEMORY(**)SETUP--Option--Channel Mode* to select Asynchronous.

Note: on this mode, the two channels must have not any external electrical connection; otherwise it will damage the charger. Cannot charge with connection as shown in picture 1, the correct connection is shown in picture2.

2. Channel Synchronous Mode: i.e. CH-1 & CH-2 are controlled at the same time to charge/discharge one battery pack.



Picture 3



Synchronous mode display:

1: The total voltage of dual-channel

2: The total current of dual-channel

3: The total capacity of dual-channel

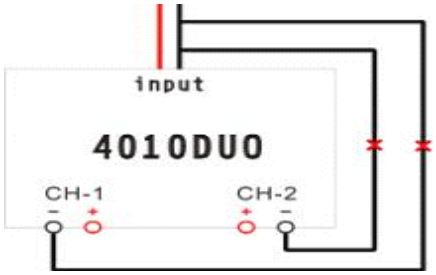
4: Channel current & voltage difference

Go to ***MEMORY(**) SETUP--Option--Channel Mode*** to select *Synchronous*

On this mode, the maximum current can up to 70A, power capacity is the sum of two channels limit.

Note: The two channels charge one battery pack simultaneously must connect as shown in picture 3, and the two channels must work in synchronous mod, or it will damage the charger.

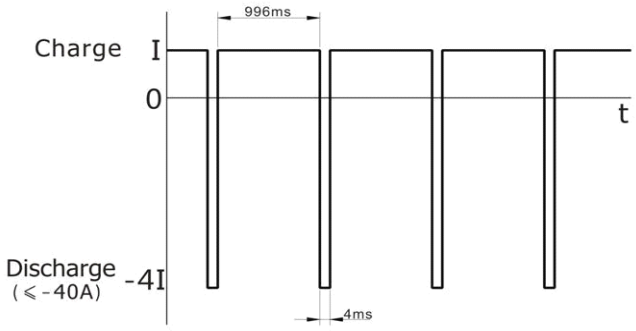
• The Power Input Ground cannot be Communicated With the Output Ground:



Picture 4

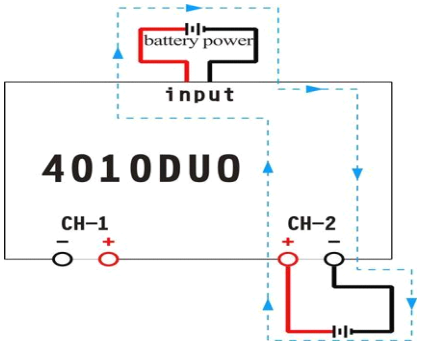
Note: *The power lead of the input cannot be connected directly to the output (see picture 4), and the voltage of input power supply cannot have too large instantaneous fluctuations, otherwise it will damage the charger.*

• Reflex Charge Mode:



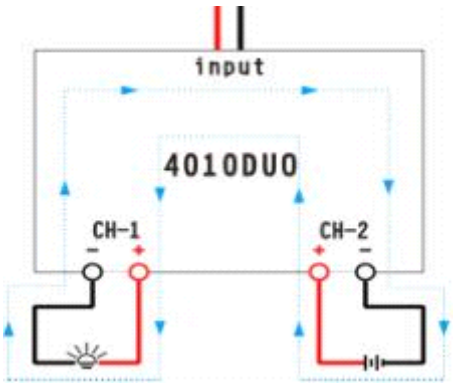
Note: *Reflex charge mode only supports NiMH battery, Pb battery, not support lithium battery. Using reflex charge mode to charge battery can reduce effectively the heat of the battery; go to the MEMORY (**) SETUP - Charge - Chg Mode to select Reflex mode.*

• Power Regenerative Mode:

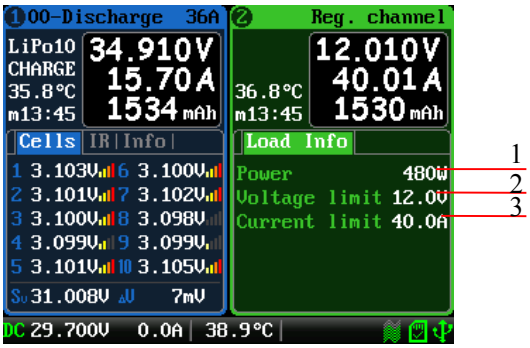


Power Regenerative Mode:*Power regenerative mode is when the power supply for the charger acts as "battery power", the charger will charge for "battery power" during the process to discharge the battery. Go to* ***MEMORY (**) SETUP--Discharge --Regenerative Mode*** *to select To input Mode*

• Channel Regenerative Mode:



Channel Regenerative Mode



Channel Regenerative Mode Display:

1: Regenerative Power

2: Regenerative voltage Limit

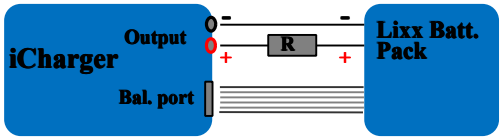
3: Regenerative current limit

Channel Regenerative Mode is for discharging from one channel to another channel, the current version only support resistor and bulbs discharge, but the coming versions will realize the battery regenerative.

Go to MEMORY (**) SETUP - Discharge - Regenerative Mode to select To channel mode.

• Lithium Battery Extra Discharge:

You can expand the iCharger's discharge power capacity by connecting the external capacity resistance. What should pay special attention is that, when expanding discharge, the balance port must connect to the battery and the expanding capacity resistance R should be series connected to the positive pole (See in the following diagram)



In this mode, the lithium battery discharges through iCharger and R, P = Pi + Pr, (Pi is charger's wasted power capacity; Pr is wasted power capacity by resistance). Pi is limited by the set charger's maximum discharge power capacity（<80W）. But in the first 30 seconds of discharge startup, Pi can be reached 150W. This characteristic is tend to active some resistance loads which shows a remarkably increase in resistance value along with increase of the temperature, such as bulbs.

In Expanding Discharging Mode, if starts Regenerative discharge at the same time(see details in Page 11), the above stated Pi restrict will alter less than 1400W.

External capacity resistance's setting:

R = Vbat / Iset;

P = Vbat * Iset;

R： The value of the external capacity resistance

P： Rating capacity of the external capacity resistance

For example: discharge a pack of 20V lithium battery at 7A

R = 20V / 7A = 2.85Ω

P = 20V×7A = 140W

Appendix

●Status Indication of Running Channel

Status	Status Indication	Status	Status indication
No display	No program, can select program to run	TRICK	Trick charging status, keep small current for a while after finishing charging NiCd or NiMh
STOPS	Stop status, press "stop" button to stop the running program	MONITO	Monitor status, only monitor the data
START	Start the program	FLOAT	Float charge, support Pb battery
CHECK	Check status before running program	SYNCH.	Synchronous state, this channel run with another channel in synchronously
CHARGE	Charge status	LOAD	Load status, this channel works on the load control status of Channel regenerative
DISCHG	Discharge status	WAIT	Waiting status
PRE_C	Pre-charge, program will pre-charge when the cell voltage is too low	CY_DE	Cycle delay status
KEEP	Keep charging status, keep charging for a while after setting pre-charge	OVER!	Over status
BAL	Independent balance status. Only balance the Li-battery, not charge	ERROR	Error status

●Status Indication of Channel Control

Status	Status Indication	Status	Status Indication
O.CV	Constant voltage status of output voltage	I.CC	Constant current status of input current
B.CV	Constant voltage status of Li-battery cells voltage	I.CP	Constant status of input power
O.CC	Constant current status of output current	O.C0	0 current regulation status
C.CP	Constant status of output power capacity	O.CP	Total power regulation status
C.TP	Temperature power reduce status	C.BL	Channel imbalance regulation status
I.CV	Constant status of input voltage	O.PC	Channel power containment regulation status

● Error Messages

Error NO.	Error Messages	Error Description
02XX	"Input over voltage"	The input voltage is too high
03XX	"Input under voltage"	The input voltage is too low
04XX	"Output over voltage"	The output voltage is too high
05XX	"Low battery voltage"	The voltage of the connected battery is too low
06XX	"High battery voltage"	The voltage of the connected battery is too high
07XX	"Output over current(+)"	Output over current (+)
08XX	"Output over current(-)"	Output over current (-)
09XX	"Input over current(+)"	Input over current (+)
10XX	"Input over current(-)"	Input over current (-)
11XX	"The internal temperature is too high"	The internal temperature is too high
12XX	"The internal temperature is too low"	The internal temperature is too low
13XX	"Connection check error"	Connection check error
14XX	"CH1 & CH2 common-negative connection prohibited"	Common-negative connected to CH1&CH2 is prohibited
15XX	"Battery polarity reversed!"	Battery connected with polarity reversed.
16XX	"Internal control error"	Internal control checking error
17XX	"Exceed safe time limit"	Exceed safe time limit
18XX	"Exceed safe capacity limit"	Exceed safe capacity limit
19XX	"Exceed safe temperature range"	Exceed safe temperature range
20XX	"Output connection broken"	Output connection broken
21XX	"Balance port connection error"	Balance port connection error
22XX	"Low cell voltage detected on balance port"	Low cell voltage detected on balance port
23XX	"High cell voltage detected on balance port"	High cell voltage detected on balance port
24XX	"Voltage match error. Balance port sum is lower than output."	Voltage matched error, the voltage of balance port sum is lower than the one of output
25XX	"Voltage match error. Balance port sum is higher than output."	Voltage matched error, the voltage of balance port sum is higher than the one of output
26XX	"Number of cells doesn't match the setting"	Number of cells connected doesn't match the setting
27XX	"Number of cells setting appears low"	Number of cells setting appears low
28XX	"Number of cells setting appears high"	Number of cells setting appears high

29XX	"Balance not needed, Remove connection from balance port"	Balance port error, Ni-, Pb don't need balance port, but voltage of balance port is detected
30XX	"Balance required!"	Balance port is out plugged
31XX	"Auto detect the number of cells failed, please connect balance or set cells"	
32XX	"AD watchdog error"	AD watchdog error
33XX	"Synchronous mode: Channel outputs imbalance"	Channel outputs are imbalance in Synchronous mode
34XX	"This channel is needed to access the resistor or bulb load"	This regenerative channel is needed to access the resistor or bulb load
35XX	"The other channel is occupied"	The other channel is occupied