EV-PEAK

Intelligent charge management system

INSTRUCTION MANUAL

website : www.ev-peak.com

EV-PEAK ELECTRONIC TECHNOLOGY(HK)CO.,LTD

Model : **C1-XR**

Specifications

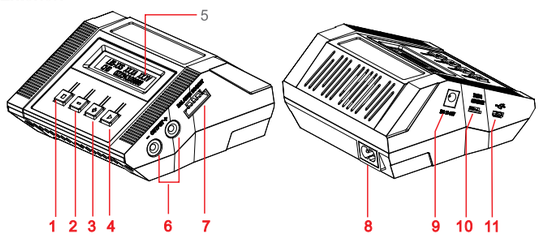
AC Input voltage	100V-240V
DC Input voltage	11.0-18.0V
Charge power	100W
Discharge power	5W
Charge current	10.0A
Discharge current	2.0A
Balance current	400mA/cell
Battery cell count	LiPo/LiIon/LiFe/LiHV 1-6series
	NiMH/NiCd 1-15cells
Pb battery voltage	2-24V
Dimension	130*115*61mm
weight	380g

Connection

Connect steps:

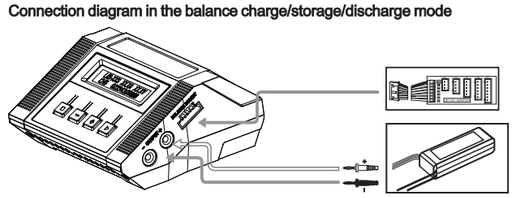
1. Connect charger to power source
2. Connect balance adapter to charger
3. Connect battery to balance adapter
4. Connect charger and battery with main charging cable
5. Make program selection in the charger for battery charging
6. Start to charge battery

Exterior:



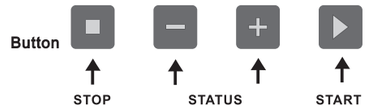
1.Select mode 2.Dec. 3.Inc 4.Start/Enter 5.LCD
6.Output jacket 7.Balance connector 8.AC input 9.DC input
10.Temp. Senser: connect the temperature probe to measure battery temperature
11.Micro port:connect PC and charger via USB cable for firmware update and PC monitor software only

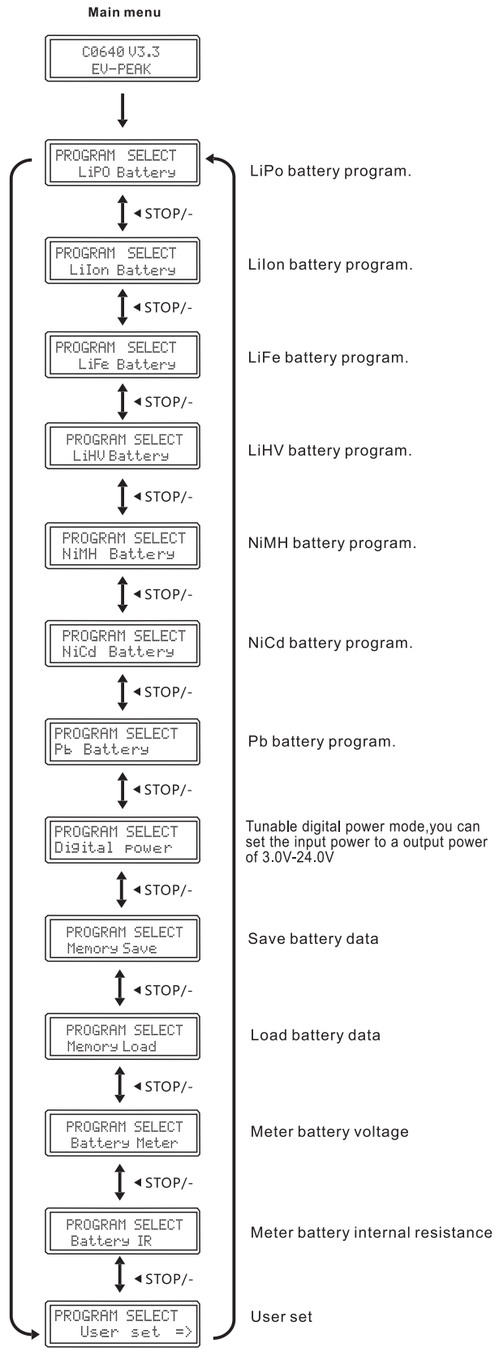
Connection diagram in the balance charge/storage/discharge mode



CAUTION: Always power on the charger before connecting battery to the charger, or will damage charger and battery.

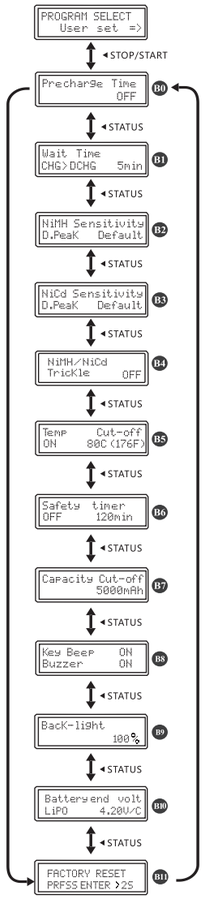
Main menu





Initial parameter set up

Tips: please set up correctly in the “user set” menu when you use it for the first time.



Press STOP key to the first screen on the left,then press START key to enter into the parameter setting menu

You can switch at the same level menu by STATUS . key. please refer the detailed flow chart on the left

when you are willing to alter the parameter value in the program, press START key to make it blink, then change the value with STATUS key. the value will be stored by press START key once.

The charger can accept seven types of batteries:LiPo/Liion/LiFe/LiHv/NiMH/NiCd/PB, you have to check the battery carefully and set it up correctly, or it will cause a explode!(Please refer chart A)
This charger has a precharge function to restore the battery. You can set the precharge time(normally 2 minutes) in the **B0** menu, then precharge program will start up. The more capacity of battery is, the more time it will need.
CAUTION:
In the normal charge mode, you need turn off the precharge process.DO NOT use this function unless you know the battery status very well.If battery voltage increase very few, pls stop the precharge process immediately, or it will cause a danger.

When NiMH or NiCd battery is on the cycle process of charge/discharge, it may become warm. The program insert a time delay to occur after each charge and discharge process to allow the battery adequate time to cool down before being subjected to the next process. (See the screen **B1**) the value ranges from 1 to 60 minutes. If you are not sure, you can set it over 10 minutes.

B2 B3 shows the trigger voltalge for automatic charge termination of NiMH and NiCd battery (△V), the effective value ranges from 5 to 20 mV per cell. If △V is set higher, there is a danger of over charging the battery; if it is set lower, there is a possiblity of premature termination. Please refer technical specification of the battery.(NiCd: 12mV, NiMH:7Mv)

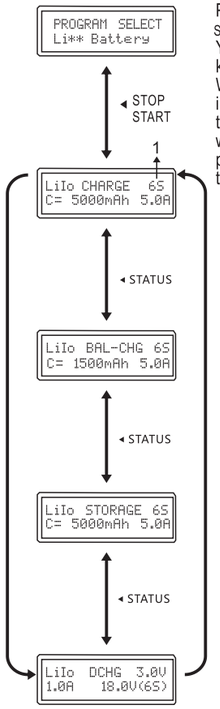
Tips: If the voltage of charging battery is lower than 2.5V, △V may can not be perceived , this will cause a danger of discharge. You can connect a temperature sensor or use the charger current above 1C to avoid it.
The charger will automatically supply the trickle function to achieve the full charge with out outerheating the battery after fast charge has been teminated. You can alter the trickle value when the charger shows you the screen **B4.**

The 3-pin port on the left side of the unit is a temp. sensor port, you can set the max. safety temperature(see screen **B5**) then monitor the battery temp. via the temp. sensor.
When you start a charge process, the integral safety timer automatically starts running at the same time. This is programmed to prevent overcharge the battery it it proves to be faulty, or if the termination circuit can not detect the battery full.
B6 shows you this program can be on or off, and you can set the maximum safety time, the value ranges from 10 to 720 min. As the same principle, there is a maximum-capacity limited function. See **B7**, the value ranges from 100 to 99900mAh.
At the screen **B8** you can set the audible sounds to be on or off by this program.
You can adjust the brightness of LCD screen at the charger. (see **B9**)
B10: Set battery end voltage value, when battery reach the setting value, charge will stop automaticly.
B11: Press “Enter” button over 2 seconds into FACTORY RESET program, you could reset all parameter.

chart A

types / iterm	Li-Po	LiHV	Li-Io	Li-Fe	NiMH	NiCD	Pb
Standard voltage (V/cell)	3.70	3.80	3.60	3.30	1.20	1.20	2.00
Max. Charge voltage cut off level (V/cell)	4.20	4.35	4.10	3.60	1.60	1.60	2.45
Allowable fast current	<1C	<1C	<1C	<4C	<2C	<2C	<0.4C
Min.Discharge voltage cut off level (V/cell)	>3.00	>3.00	>3.00	>2.00	>1.00	>0.85	>1.75

Lithium batteries program



Press STOP key to the screen on the left, then press START key to enter into the parameter setting menu You can switched at the same level menu by STATUS key. Please refer the detailed flow chart on the left. When you are willing to alter the parameter value in the program, press START key to make it blink, then change the value with STATUS key. the value will be stored by pressing START key once. then press START key for more than 2 seconds to start the process.

This mode is for individual battery or some special battery pack without balance port or cell count.1shows you the cell count number, C shows youthe capactity of the battery pack.

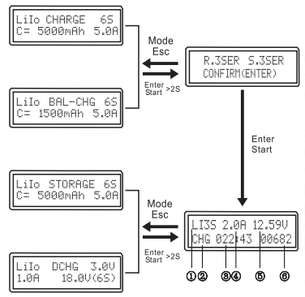
Notice:charger will set the charge current according a rate of 1C automatically when you set the capacity of the battery pack, If you charge a high-rate battery pack,you can set the value of the "Current" a little higher

"Balance charging" this is for 2-6 cells of Lithium battery with balance port, the battery pack being charged should have the individual cell connect, and connect it to the individual portat the right side of charger with a suitable connection cable that fits with your battery pack, (see picture B)In this mode, the charging process will be different from ordinary charging mode. the internal processor of the charger will monitor and control the voltage of each cell of the battery pack. This can improve the discharging performance of the battery!
the charger use the optimised calculation to control the tolerance in the range of ±0.01V!

"Storage mode" this is for charging or discharging Lithium battery not to be used for the time being. In order to reduce the wastage, you can select this mode to remain the power to 40% to store. The final voltage are different from the type of the battery, LiIo:3.75V/LiPo/LiHV :3.85V/LiFe:3.3V.
This is an intellective program, If the voltage of battery at its initial stage is over the voltage level to storage, the program will start to discharge,and if it is lower, the program will start to charge automatically. In order to ensure each battery meets the demand, the individual plug of the battery pack should be connected to the individual port of charger.

"Discharge mode" theoretically, Lithium battery do not need to discharge, especially deep-discharge. To avoid the overcharge of the individual battery, you should connect the balance plug of the battery to the charger, you can set the discharge cut-off voltage to 3.0V-4.0V

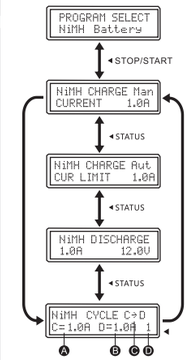
Start to charge/discharge: after set up the mode menu correctly, press START key for more than 2 seconds to start the process.



This screen shows the number of cells you set up and the processor detects."R"shows the number of cells found by charger and "S" is the number of cells selected by you at the previous menu. If both number are identical you can start chargingby press START button.if not, press START button to go back to previous menu, then carefully check the number of cells of the battery pack to charge again. If you selected the AUTO mode or discharge mode, you can pass over this screen directly.

This screen shows the present situation during charge process. to stop charging press START key once; As you can see in the sketch on left,①:for the cells count,②:for the operating mode,CHG=charging at auto mode / BAL=balance charging mode / FAS =fast charging / STO=storage mode / DSC=discharge mode,③:elapsed time, ④:charge/discharge current,⑤:charge/discharge voltage of battery,⑥:capacity of charge/discharge

NiMH/NiCd battery program



Ⓐ Charge current in the cycle mode
Ⓑ Discharge current in the cycle mode
Ⓒ Sequence fo cycle Ⓓ Number of cycle times

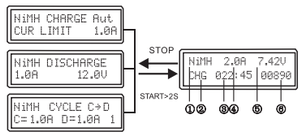
Press START key to the screen on the left,then press START key to START into the submenu. You can switched at the same level menu to select the mode by STATUS Key. please refer the etailed flow chart on the left. When you are willing to alter the parameter value in the program, press START key to make it blink, then change the value with STATUS key, the value will be stored by pressing START key once.then press START key for more than 2 seconds to start the process.Since the menu of NiMH are the same as NiCd, there is an example of NiMH only.

"CHARGE" mode the default mode is "AUT " . In "AUT"mode, you need to set the upper limit of charge current to avoid from higher feeding current that may damage the battery. Because some batteries of low impedance and small capacity can lead to the higher charge current by the processor at automatic charge mode. But in "Man" mode, it will charge the battery with the charge current you set at the display. Each mode can be switched by pressing start/enter key, when the current field is blinking, press STATUS · Key for more than 1 second.

"DISCHARGE"mode the discharge current ranges from 0.1A to 2.0A and the final voltage ranges from 1.0 to 24.0V, the operating method is similar as Lithium battery. The final voltage of NiMH battery is 1.0V/cell, and the NiCd is 0.85V/cell,please refer the recommend by the battery of manufacturer.

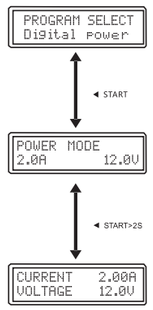
"CYCLE" mode EV can perform 1-6 cycles of DCHG >CHG or CHG>DCHG continually.You can select it for the new NI** battery or the long-term placement NI** battery ,please set up carefully,or it will damage the battery! To set the parameter please follow the previous charge/discharge menu

After check all the mode,to start the process press START key for more than 2 seconds



The screen displays the present state of process.To stop it press STOP key;
Description①:the type of battery,②: operating mode:CHG=charge/DSC =discharge/DCHG>CHGorCHG> DCHG=thecycle mode③:elapsed time ,④:charge/discharge current of the battery,⑤:voltage of the battery pack,⑥:capacity of charge/discharge
You can inquire the temperature and △V continua lly by press STATUS key

Digital power program



In this mode,charger can provide a output power of DC3.0V-24V for the other electronic equipment

Error Messages

This charger is protected against faults and operation errors by the Multi-Protection-System. Faults/Errors are displayed on the LCD screen and they interrupt the active process to protect the unit and the battery.

REVERSE POLARITY	The output is conne cted to a battery with incorrect polarity
CONNECTION BREAK	This will be displayed in case of detecting an interruption of the connection between battery and output or voluntarily disconnecting the charge lead during the operation of charge or discharge on output
SHORT ERROR	There was a short-circuit at output.please check the charging leads.
INPUT VOL ERR	The voltage of input power drops below the limit.
BATTERY CHECK LOW VOLTAGE	The processor detects the voltage is lower than you set at Lithium program.please check the cell count of the battery pack.
BATTERY CHECK HIGH VOLTAGE	The processor detects the voltage is higher than youset at Lithium program.please check the cell count of the battery pack.
BATTERY VOLTAGE CELL LOW VOL	The voltage of one of the cell in the Lithium battery pack is too low.please check the voltage of the cell one by one.
BATTERY VOLTAGE CELL HIGH VOL	The voltage of one of the cell in the Lithium battery pack is too high.please check the voltage of the cell one by one.
BATTERY VOL ERR CELL CONNECT	There are bad connection at the individual connector,please check the connector and cables carefully
TEMP OVER ERR	The internal temperature of the unit goes too high. cool down the unit.

Warning

WARNING: Failure to exercise caution while using this product and comply with the following warnings could result in product malfunction, electronic issues,excessive heat, FIRE, and ultimately injury and property damage.

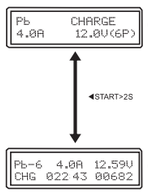
1.Never leave the power supply, charger and battery unattended during use.
2.Never attempt to charge dead, damaged or wet battery packs.
3.Never attempt to charge a battery pack containing different types of batteries.
4.Never allow children under 14 years of age to charge battery packs.
5.Never charge a battery in extremely hot or cold places or place in direct sunlight.
6.Never charge a battery if the cable has been pinched or shorted.
7.Never connect the charger if the power cable has been pinched or shorted.
8.Never connect the charger to an automobile 12V battery while the vehicle is running.
9.Never attempt to dismantle the charger or use a damaged charger.
10.Never connect the input jack (DC input) to AC power.
11.Always use only rechargeable batteries designed for use with this type of charger.
12.Always inspect the battery before charging.
13.Always keep the battery away from any material that could be affected by heat.
14.Always monitor the charging area and have a fire extinguisher available at all times.
15.Always end the charging process if the battery becomes hot to the touch or starts to change form(swell) during the charge process.
16.Always connect the charge cable to charger first. Then connect the battery to avoid short circuit between the charger leads. Reverse the sequence when disconnecting.
17.Always connect the positive red leads(+) and negative black leads(-) correctly.
18.Always disconnect the battery after charging and let the charger cool between chargers.
19.Always charge in a well-ventilated area.
20.Always terminate all processes and contact local dealer if the product malfunctions.

WARNING: Never leave charger unattended, exceed maximum charge rate, charge with non-approved batteries or charge batteries in the wrong mode. Failure to comply may result in excessive heat , fire and serious injury.
CAUTION: Always ensure the battery you are charging meets and specifications of this charger and that the charger settings are correct. Not doing so can result in excessive heat and other related product malfunctions, which can leat to user injury to property damage.

Pb battery program

This is programmed for charging Pb battery with nominal voltage from 2 to24V,Pb battery can not be charged rapidly.they can only deliver relatively lower current compare to their capacity.the optimal charge current will be 1/10 of the capacity.please always follow the instruction supplied by the manufacturer of battery.

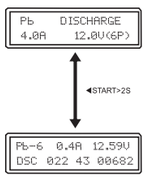
Charging Pb battery



As you can see on left,you can set up the charge current on the left .the nominal of the second line and voltage of the battery on the right of the second line .the charge current ranges from 0.1-10.0A and the voltage should be matched with the battery being charged. start the charge process by pressing START key for more than 2 seconds.

The screen displays the state of charging process. to stop charging forcibly,press STOP key once.

Discharging Pb battery

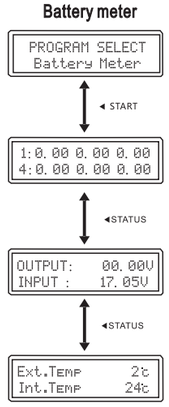


Set discharge current on the left and final voltage on the right,the discharge current ranges from 0.1-2.0A and the voltage should be matched with the battery being discharged.start the discharge process by pressing START key for more than 2 seconds.

The screen displays the current state of discharge.

Battery Meter and Battery IR Meter

Battery meter



After connecting battery to charger, use this function could check cell voltage.

Check total output and input voltage.

Check external and internal tempreture.

Battery IR Meter

Check battery internal resistance to estimate battery quality.

After-sale service and guarantee

Thank you for purchasing this balance charger, we will do our best to provide you with a comprehensive after-sale service and protect your rights.

We warrant this product for a period of one year from the date of purchase. If it has a quality problem itself, all guarantee wil be free. In case customers can not provide an effective certificate of purchase, we will refer the date of machine's internal. If it is over one year since the purchase date, an appropriate cost will be charged, users need bear the transportation cost back and forth. User disassembly, alteration or damage caused by improper use, they should bear the maintenance and transport costs.

COMPLIANCE INFORMATION FOR THE EUROPEAN UNION

Declaration of Conformity

CE

Product(s): Battery balance charger
Item Numer(s): C1-XR

The object of declaration described above is in conformity with the requirements of the specifications listed below, following the provisions of the European EMC Directive 2004/108/EC

EN 55014-1:2006
EN55014-2:1997+A1:2001
EN61000-3-2:2006
EN61000-3-3:2008

FC RoHS

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