



RADIOLINK CP620 PROFESSIONAL HYBRID BALANCE CHARGER



INSTRUCTION MANUAL

RADIOLINK ELECTRONIC LIMITED

Technical updates and additional programming examples available at:

www.radiolink.com

INTRODUCTION

Thank you for purchasing Radiolink hybrid balance charger CP620.

Suggestion: In order to fully enjoy the benefits of this charger, please read the manual carefully and set up the device as described below.

Please refer to the manual or call our after-sales (+86-0755-88361717) or log in BBS (such as www.rcgroups.com, <https://www.facebook.com/Radiolink-1455452961436694/>) to check issues related to our Q & A section.

Due to unforeseen changes in production procedures, the information contained in this manual is subject to change without notice.

More information please check our website as below:

<http://www.radiolink.com>

Support and Service: It is recommended to have your Radiolink equipment serviced annually during your hobby's "off season" to ensure safe operation.

Please be sure to regularly visit the Service and Support web site at www.radiolink.com. This page includes extensive programming, use, set up and safety information.

Any technical updates and manual corrections will be available on this web page. If you do not find the answers to your questions there, please see our contact details for information on contacting us via email for a quick and convenient response.

FOR AFTER-SALES SERVICE:

Please start here for getting more service.

www.radiolink.com

Phone: +86-755-88361717

Email: after_service@radiolink.com.cn / after_service1@radiolink.com.cn

FOR TECHNIQUE SUPPORT:

Please start here for answers to technique questions:

www.radiolink.com

Phone: +86-755-88361717

Email: alice@radiolink.com.cn

CONTENTS

Part one Use Notices.....	1
1.1 Safety Notes.....	1
1.2 CP620 Features.....	2
1.3 Appearance Parameters.....	3
1.4 Specifications.....	3
Part two Interface Introduction	4
2.1 Buttons Function & Icons Description.....	4
2.2 CP620 Main Interface.....	5
2.3 Initial Interface Setting.....	5
Part three Functions Setup.....	8
3.1 LiPo/LiIo/LiFe Battery Charge/Discharge Setup.....	8
3.1.1 Charge Setup.....	8
3.1.1.1 Battery Type Setup.....	8
3.1.1.2 Working Mode Setup.....	8
3.1.1.3 Working Port Setup.....	8
3.1.1.4 Single Battery Cell Balance Voltage Setup.....	8
3.1.1.5 Charge Current Setup.....	9
3.1.1.6 Balance Current Setup.....	9
3.1.1.7 Save and Exit.....	9
3.1.2 Storage(Discharge) Setup.....	9
3.1.2.1 Single Battery Cell Discharge Voltage Setup.....	10
3.1.2.2 Discharge Current Setup.....	10
3.1.2.3 Balance Current Setup.....	10
3.1.2.4 Save and Exit.....	10
3.2 Battery NiMH/NiCd/NiZn Charge/Discharge Setup.....	10
3.2.1 Charge Setup.....	10
3.2.1.1 Working Mode Setup.....	11
3.2.1.2 Working Port Setup.....	11
3.2.1.3 Charge Current Setup.....	11
3.2.2 Discharge Setup.....	11
3.2.2.1 Discharge Voltage Setup.....	12
3.2.2.2 Discharge Current Setup.....	12
3.2.2.3 Save and Exit.....	12
3.3 Pb Battery Charge/Discharge Setup.....	12
3.3.1 Charge Setup.....	13
3.3.1.1 Battery Type Setup.....	13
3.3.1.2 Working Mode Setup.....	13
3.3.1.3 Working Port Setup.....	13
3.3.1.4 Charge Voltage Setup.....	13
3.3.1.5 Charge Current Setup.....	14
3.3.1.6 Save and Exit.....	14
3.3.2 Discharge Setup.....	14
3.3.2.1 Storage Voltage Setup.....	14
3.3.2.2 Storage Current Setup.....	14
Part Four Firmware Upgrade.....	15

Part One Use Notices

1.1 Safety Notes

Please fully read this Manual before using CP620 for enhanced performance and safety reasons.

1. CP620 is a dual port charger, but does not mean it can charge/discharge for any configuration of two sets of batteries! WARM PROMPT: the two battery packs do not have 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 port1, port2 respectively.
2. CP620 input power supply cannot have great fluctuations, which may cause output over current, and can burn the charger or the batteries or input power supply in extreme cases. For example: setting the input protection current and voltage is necessary according to the specifications of the input power supply in order to avoid power overload. Some power overload protection will produce substantial fluctuations for the voltage.
3. Keep the charger always away from children and pets.
4. Keep the charger supervised when charging or discharging. If you have to leave, please disconnect the battery to prevent any unexpected dangers or damage.
5. Ensure the charger setting complies with the battery pack, otherwise the battery will be damaged and cause hazardous risks such as fires.
6. Do not mix batteries of different types, different capacities or from different manufacturers.
7. Do not disassemble the charger.
8. Do not put 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. Do not charging or discharging 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 may cause abnormal charging/discharging.
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 suggested maximum charge rates of battery manufacturer.
14. Carefully follow the recommendations and safety advice of battery manufacturer.

● Copyright

Copyright © 2016 Shenzhen Radiolink Electronic, Co., Ltd. All rights reserved.

Without written consent by Shenzhen Radiolink Electronic Co., Ltd, any units or individual extract and copy parts or entire contents of this manual, and transmission in any form is illegal and strictly prohibited.

The product described in this manual, may include copyright software ownership belonged to Shenzhen Radiolink Electronic Co. Ltd and its licensee, except getting the permission from relevant rights holders, otherwise, any copy, distribute, modify, excerpt, decompile, disassemble, decrypt, reverse engineering, lease, transfer, sub-license, as well as other acts of infringement of software copyright is strictly prohibited, but apart from the restrictions prohibited by applicable law.

1.2 CP620 Features

- 1) Efficiency up to 90% charging through power wire and up to 95% charging through balance wire. 135mA working current ensure the temperature of CP620 always less than 50 degree even charging with 30A.
- 2) First hybrid independent balance charger. CP620 starts max 20A series charging through power wire and then automatically change to independent balance mode that charging through balance wire once any cell is full, six independent power supply integrated ensure max 6 cells charging for each port, the max charging current for each cell will be up to 6A. Small capacity battery can charging through balance wire directly.
- 3) Support 1~6S LiPo, 1~16Ni-MH battery, Ni-Cd battery, 1~15 Lead-acid battery, and the Lithium-ion battery, with maximum 6A balance current, adopts unique balance calculation of internal resistance correction.
- 4) Convenience. Patent technology charge port, compatible with 1S-6S battery packs, forbidding ventures of batteries connect in parallel. Automatic detection all the charging ports and then automatic charge all the batteries one by one which are not fully charged.
- 5) Closely. Wide input voltage range, support 10V to 30V input voltage. When the input voltage goes lower than 11V, the unit will automatically adjust current to hold the battery voltage, which protects power source when connect with autos. Lower the input current automatically if connect to the low capacity power supply to protect the power supply and charger.
- 6) Battery Doctor. Charge diaries including initial voltage, complete voltage and charge-discharge voltage etc. CP620 can detect the voltage and current of every single cell and figure out the capacity and resistance according to the voltage and current that detected. Recording the original voltage and adjust to the best charge voltage etc.
- 7) The CP620 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 750W, the maximum charge current of channel up to 20A.
- 8) Intelligent fan control. Sensing internal temperature via the internal temperature sensor, to thereby control the fan speed.
- 9) Internal temperature protection. When the internal temperature exceeds the setting temperature, the output power is automatically reduced; and the charger will shut down when temperature exceeds the cut-temperature.
- 10) USB Flash Disc Upgrade. Connect to computer through USB cable -- Format -- Copy -- Upgrade done. Easily upgrade.
Measures the battery cell capacity and resistance, records the original voltage and adjust to the best charging voltage etc.
- 11) Patent technology charge port, patent NO.201320212324.2, compatible with 1S-6S battery packs, forbidding ventures of batteries connect in parallel. Automatic detection all the charging ports and then automatic charge all the batteries one by one which are not fully charged.
- 12) Multiple Protection
Power Supply Protection. Wrong input protection, even the charger is connected with power source by wrong polarity, the unit will not be damaged.
Battery Protection. Wrong input protection for every port, it will not damage the battery or the charger when connected with wrong polarity or cut the power supply suddenly.
Charger Protection. CP620 can protect itself even when charger connect battery first and then power on.
Temperature Monitoring. It will start alarming when the temperature goes to the preset data, the unit will automatically lower power output.

1.3 Appearance Parameters:

Weight: 1kg

Dimension: 212×117.5×67.5 ±0.005mm

1.4 Specifications

Input voltage: 10.5V~30V

Power output: 750W

Charge current: max 30A for 6S LiPo battery

Balance current: max 6A

Discharge current: 0.1~5.0A

Compatible battery type: 1~6cell LiHV, LiPo, Lilo, LiFe Lithium-ion battery, 1~16cell Ni-MH battery, Ni-Cd battery, and 1-15cell Pb battery.

Lithium charging mode: mixed charging, large current series charging, independent balance

Voltage accuracy: 0.001V





Charge port: 2 ports, automatically charging in cycle mode

Working mode: cycle/alternate/discharge(storage) mode

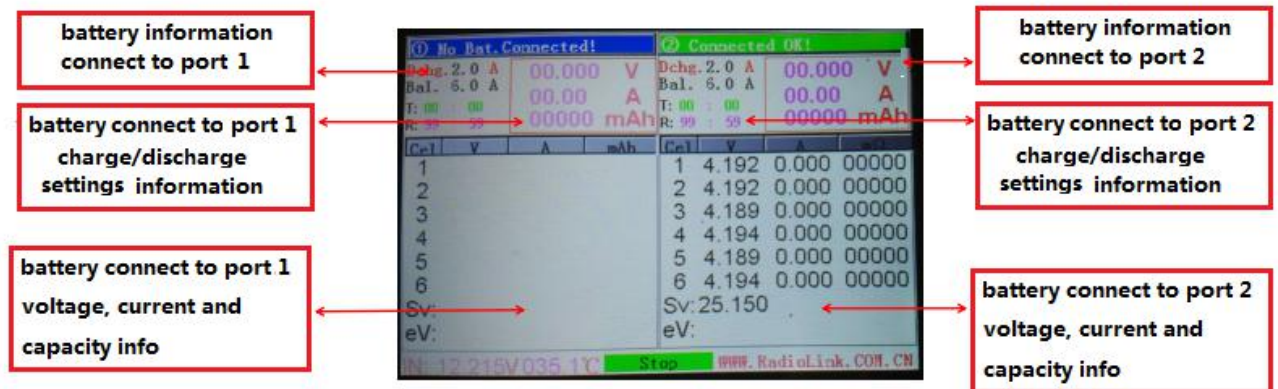
Part Two Interface Introduction

2.1 Buttons Function & Icons Description

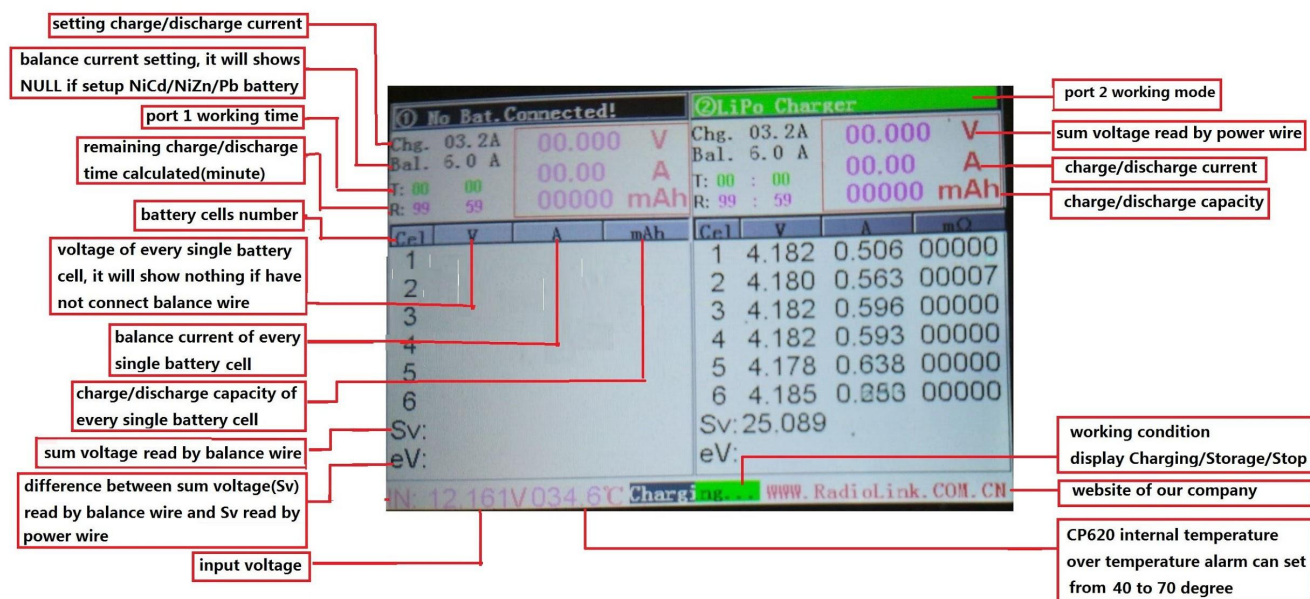
Part buttons allow to quick access to certain features when using CP620. First, be familiar with the icons on the interface to help better understand the working status of the charger, as shown in following chart:

START/STOP 	Start or stop charging. Push-to-start or push to charging/discharging at any status.
UP 	Move cursor or change the settings by pressing the UP button in SET MENU. Pressing the UP button can allow access into the menu to show the capacity and resistance of every single battery cell which connects to port one(on the left side).
DOWN 	Move cursor or change the settings by pressing the DOWN button in SET MENU. Pressing the DOWN button can allow access into the menu to show the capacity and resistance of every single battery cell which connects to port two(on the right side).
SET 	Press the SET button in SET MENU on the main interface; press SET button to activate or cancel the setting(blue select box shows this setting have activate, you can change the setting by pressing the UP/DOWN button). Press SET button and quit back to the main interface from SET MENU if press Cancel or OK(pay attention: settings will keep effective once, it will not effective when power on next time if press Cancel, while settings will always keep effective if press OK, it means you have not need reset up next time if you charge/discharge the same battery with the same setting.

After selecting the input power supply, confirm and enter the initial interface.



2.2 CP620 Main Interface

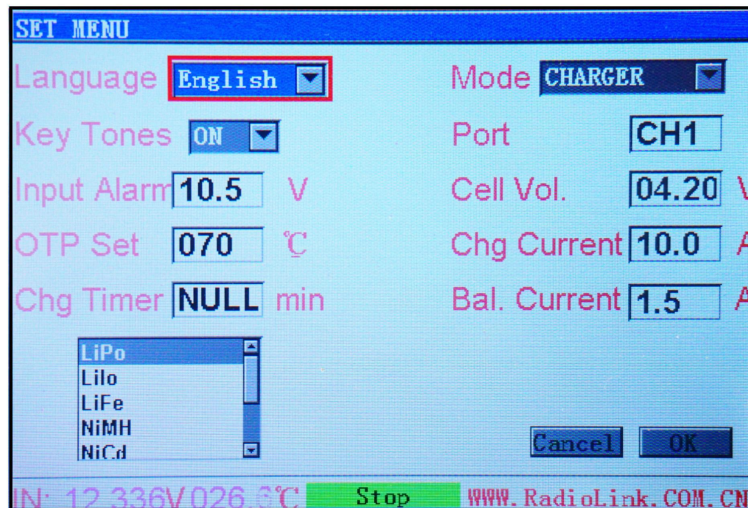


2.3 Initial Interface Setting(SET MENU)

CP620 can setup Language, Key Tones, Input Alarm, OTP Set, Chg Timer, Working Mode, Charging Voltage, Charging Current and Balance Current. Press UP/DOWN button to choose witch function ready to setup, then press SET to run this function and then press UP/DOWN to set the parameters, press SET to save the settings.

Language Setting

CP620 support English and Chinese now. Setting in SET MENU.



Beep Tone Setup

Select SET MENU→Key Tones to enter the setup interface.

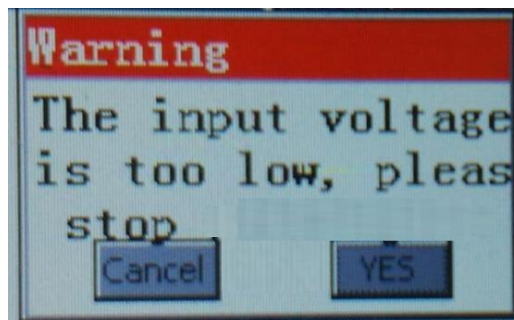
Tones ON means sound is activated and tones OFF means sound is deactivated when pressing any buttons. It cannot turn off the abnormal warning beep or working status prompt.

Low Input Voltage Setup

Low input voltage alarming setting.

CP620 will pop-up warnings and nag screens and stop charging/discharging when the input voltage goes down than the prior setting voltage. Adjust voltage from 10.5 to 30V depending on the power supply, for example, you can setup 22.8V if use a 6S LiPo to supply for CP620.

You can press START/STOP button to close the warning window and back to the main interface, the alarm beep will slow down.



High Internal Temperature Alarm Setup

CP620 will alarm and confine the output power if the internal temperature exceeds the default setting, the temperature can setup from 40°C to 70°C.

① No Bat. Connected!				② Thermal protection			
Dchg. 4.0 A		00.696 V		Dchg. 4.0 A		24.467 V	
Bal. 1.0 A		00.00 A		Bal. 1.0 A		02.28 A	
T: 00 00		00000 mAh		T: 00 : 01		00039 mAh	
R: 00 01				R: 00 : 00			
Cell	V	A	mAh	Cell	V	A	mAh
1				1	4.142	0.000	00040
2				2	4.138	0.000	00040
3				3	4.140	0.000	00040
4				4	4.140	0.000	00040
5				5	4.133	0.000	00040
6				6	4.140	0.000	00040
Sv:				Sv: 24.833			
eV:				eV: 00.366			
IN: 11.961V 070.9°C				Storage. www.radiolink.com.cn			

Charging Time Setup

The charge time is default setting is NULL(0): the charger will stop charge/discharge automatically if the battery is fully charged. Also, you can setup the charge/discharge time from 0 to 9999 minutes.

Part Three Functions Setup

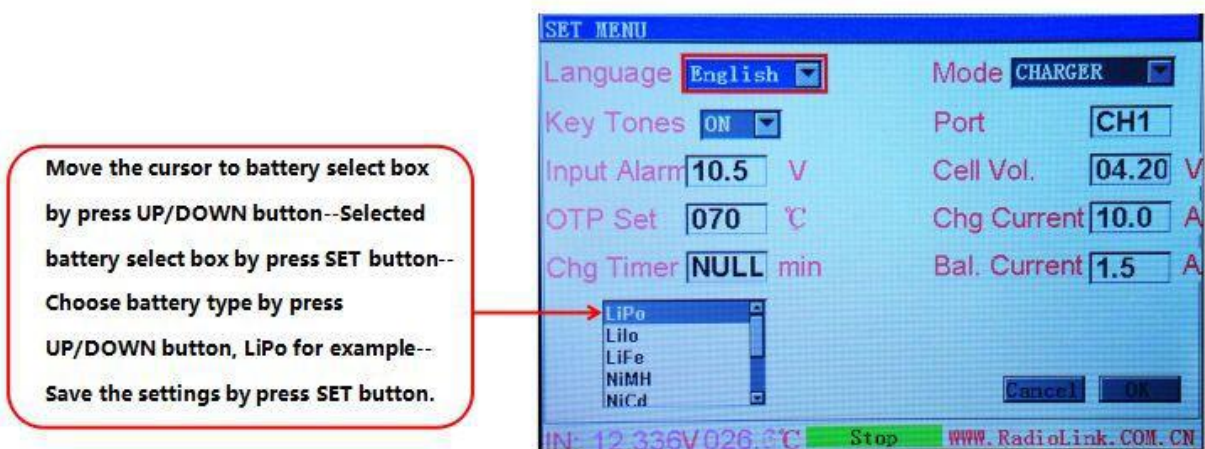
CP620 Compatible with 1~6cell LiHV, LiPo, LiIo, LiFe Lithium-ion battery, 1~16cell Ni-MH battery, Ni-Cd battery, and 1-15cell Pb battery

3.1 LiPo/LiIo/LiFe Battery Charge/Discharge Setup

3.1.1 Charge Setup

Press SET button to open SET MENU to setup the battery type and charge mode, single battery cell voltage, charge current and balance current.

3.1.1.1 Battery Type Setup



3.1.1.2 Working Mode Setup

Move the cursor to Mode by pressing the UP/DOWN button--select Mode by pressing SET button-- Choose charge or storage(discharge) by pressing UP/DOWN button--save the settings by pressing SET button. You can skip setup working mode by pressing UP/DOWN button if the original setting is the mode you need.

3.1.1.3 Working Port Setup

Move the cursor to Port by pressing UP/DOWN button--select Port by pressing SET button-- Choose CH1 or CH2 by pressing UP/DOWN button--save the settings by pressing SET button. You can skip setup working port by pressing UP/DOWN button if do not need assign which port charge/discharge first. It will charge/discharge from left to right automatically if have not setup working port.

3.1.1.4 Single Battery Cell Balance Voltage Setup

Single LiPo/LiIo cell balance voltage is defaulted 4.2V, single LiFe cell balance voltage is defaulted 3.6V and support single LiHV cell 4.35V charge.

Note: Do not setting the voltage of single battery cell over than the defaulted voltage, or it will overcharge.

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.

3.1.1.5 Charge Current Setup

Move cursor by pressing UP button-- Select charge current by pressing SET button--Setup the charge current by pressing UP/DOWN button(Attention: Do not exceed the maximum current that battery manufacturer stated.) Touch-hold can let data change quickly, the max charge current can be up to 20A, press SET to save the setting.

3.1.1.6 Balance Current Setup

Move cursor by pressing the UP button-- Select balance current by pressing SET button--Setup the balance current by pressing UP/DOWN button(Attention: Do not exceed the maximum balance current that battery manufacturer stated.) Touch-hold can let data change quickly, the max balance current can up to 6A, press SET to save the setting or press START/STOP back to the main interface if need not save the settings.

So far, the setting for LiPo is finished, press START/STOP back to the main interface.

3.1.1.7 Save and Exit

Parameter can be saved after setup, and do not need reset next time.

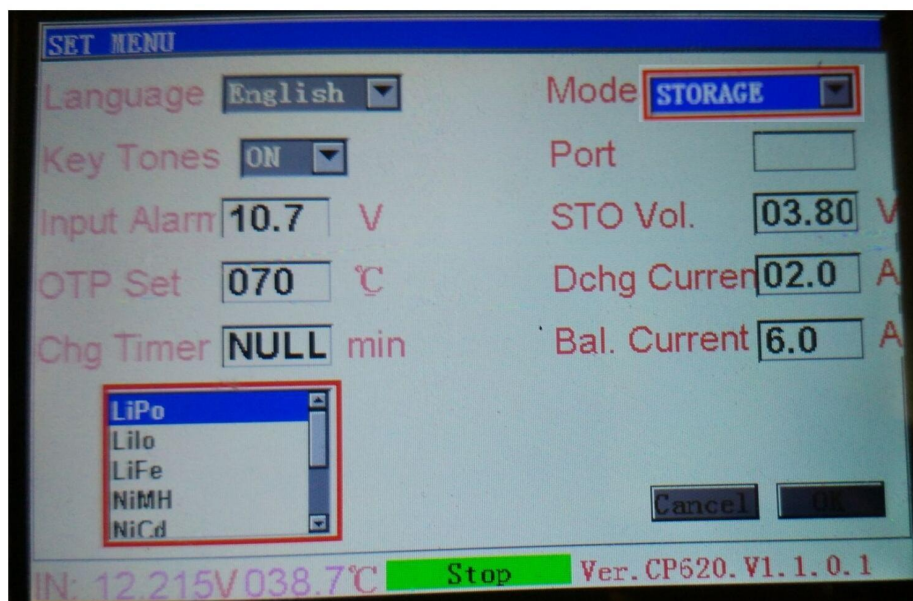
Move cursor to OK by press UP/DOWN button--Save the settings by press SET button.

Press both Cancel and OK can back to the main interface.

3.1.2 Storage(Discharge) Setup

Into SET MENU, select LiPo first:

Press START/STOP button--Press SET button into SET MENU--Move cursor by press UP/DOWN.



3.1.2.1 Single Battery Cell Discharge Voltage Setup

The defaulted storage voltage of single LiPo/LiIo cell is 3.85V and LiFe is 3.2V.

3.1.2.2 Discharge Current Setup

Move cursor to Mode by press UP/DOWN button--Select Mode by press SET button--Move cursor to Dchg Current by press UP/DOWN button-- Select Dchg Current by press SET button--Setup the discharge current by press UP/DOWN button(Attention: Do not over than the max current that battery manufacturer stated.) Touch-hold UP/DOWN button can let data change quickly, the max charge current can up to 5A, press SET to save the setting.

3.1.2.3 Balance Current Setup

The charger will charge battery through balance wire if the voltage is lower than the setting storage (discharge) voltage.

Move cursor to Bal. Current by pressing the UP/DOWN button-- Select Bal. Current by pressing SET button--Setup the balance current by pressing UP/DOWN button(Attention: Do not exceed the maximum current that battery manufacturer stated.) Touch-hold UP/DOWN button can let data change quickly, the max balance current can up to 6A, press SET to save the setting.

3.1.2.4 Save and Exit

Parameter can save after setup, and do not need reset next time.

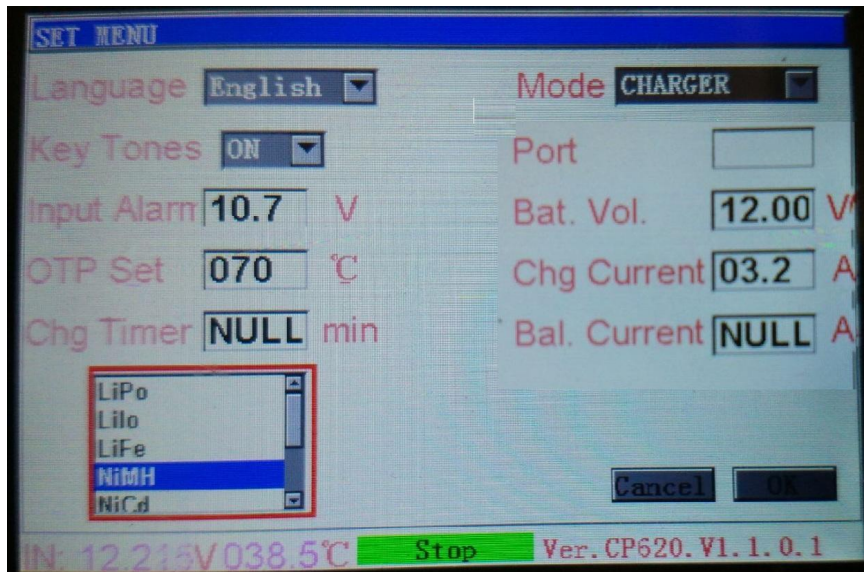
Move cursor to OK by press UP/DOWN button--Save the settings by press SET button.

Press both Cancel and OK can back to the main interface.

3.2 Battery NiMH/NiCd/NiZn Charge/Discharge Setup

3.2.1 Charge Setup

Press SET button into SET MENU. Since the NiMH/NiCd/NiZn battery have not balance wire, you only need connect the power wire and setup working mode, charge/discharge current, do not need setup the balance voltage and balance current when you charge these batteries.



3.2.1.1 Working Mode Setup

Move the cursor to Mode by pressing the UP/DOWN button--select Mode by press SET button-- Choose charge or storage by pressing UP/DOWN button--save the settings by press SET button. You can skip setup working mode by pressing UP/DOWN button if the original setting is the mode you need.

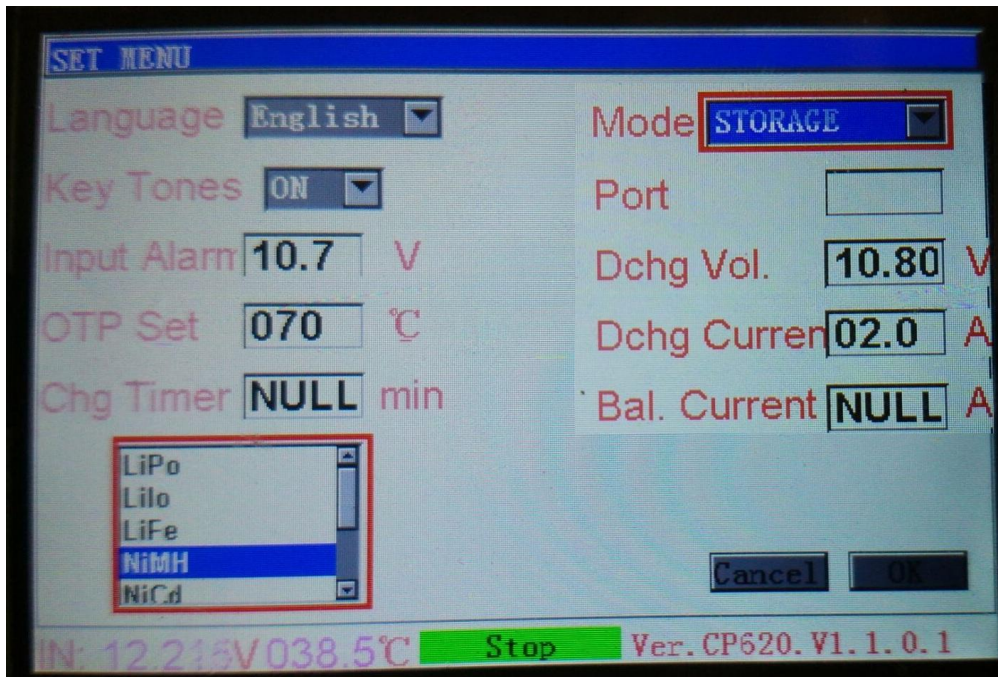
3.2.1.2 Working Port Setup

Move the cursor to Port by pressing the UP/DOWN button--select Port by pressing SET button-- Choose CH1 or CH2 by pressing UP/DOWN button--save the settings by press SET button. You can skip setup working port by pressing UP/DOWN button if do not need assign which port charge/discharge first. It will charge/discharge from left to right automatically if have not setup working port.

3.2.1.3 Charge Current Setup

Move cursor to Chg Current by pressing the UP/DOWN button-- Select Chg Current by pressing SET button--Setup the charge current by pressing UP/DOWN button(Attention: Do not exceed the maximum current that battery manufacturer stated.) Touch-hold UP/DOWN button can let data change quickly, the max charge current can up to 20A, press SET to save the setting.

3.2.2 Discharge(Storage) Setup



3.2.2.1 Discharge(Storage) Voltage Setup

Move cursor to Mode by pressing the UP/DOWN button--Select Mode by pressing SET button--Move cursor to Dchg Current by pressing UP/DOWN button-- Select Dchg Current by pressing SET button--Setup the discharge current by pressing UP/DOWN button(Attention: Do not exceed over the maximum current that the battery manufacturer stated.) Touch-hold UP/DOWN button can let data change quickly, the max charge current can be up to 5A, press SET to save the setting.

3.2.2.2 Discharge Current Setup

Move cursor to Mode by pressing the UP/DOWN button--Select Mode by pressing SET button--Move cursor to Dchg Current by pressing UP/DOWN button-- Select Dchg Current by pressing SET button--Setup the discharge current by pressing UP/DOWN button(Attention: Do not exceed over the maximum current that battery manufacturer stated.) Touch-hold UP/DOWN button can let data change quickly, the max charge current can be up to 5A, press SET to save the setting.

3.2.2.3 Save and Exit

Parameter can save after setup, and do not need reset next time.

Move cursor to OK by pressing the UP/DOWN button--Save the settings by pressing SET button.

Press both Cancel and OK can back to the main interface.

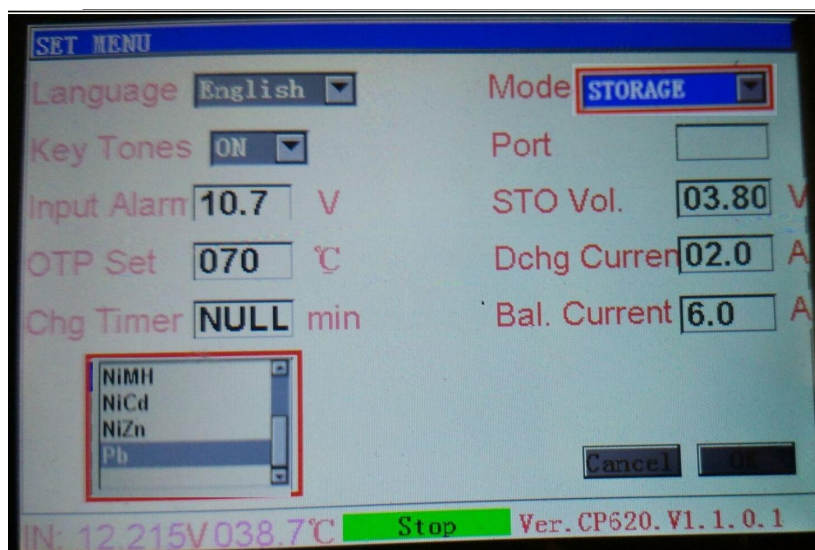
3.3 Pb Battery Charge/Discharge Setup

CP620 supports 1~15 cell Pb battery.

Since the the full charged voltage is different depend on different battery cells and Pb battery have not balance wire, you have to connect Pb battery by the power wire and setup charge current and battery rated voltage.

3.3.1 Charge Setup

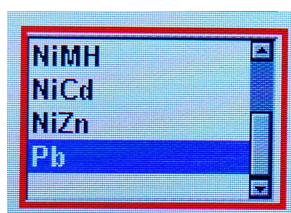
Press SET button into SET MENU.



3.3.1.1 Battery Type Setup

Move the cursor to Battery Type setup box by pressing the UP/DOWN button--select Pb by pressing SET button--save the settings by pressing SET button.

You can skip setup working mode by pressing UP/DOWN button if the original setting is the battery type you need.



3.3.1.2 Working Mode Setup

Move the cursor to Mode by pressing the UP/DOWN button--select Mode by pressing SET button-- Choose charge by pressing UP/DOWN button--save the settings by pressing SET button.

You can skip setup working mode by pressing UP/DOWN button if the original setting is the mode you need.



3.3.1.3 Working Port Setup

Move the cursor to Port by pressing the UP/DOWN button--select Port by pressing SET button-- Choose CH1 or CH2 by pressing UP/DOWN button--save the settings by pressing SET button.

You can skip setup working port by pressing UP/DOWN button if do not need assign which port charge first. It will charge from left to right automatically if have not setup working port.

3.3.1.4 Charge Voltage Setup

Move cursor to Cell Vol. by pressing the UP/DOWN button--Select Cell Vol. by pressing SET button--Increase or decrease the charge voltage by press UP/DOWN button-- Save the setting by press SET button(Attention: Do not exceed over the maximum current that battery manufacturer stated. You have to setup the charge voltage based on the type of battery because CP620 cannot recognize the number of battery cells though support 1-15 Pd battery.) Touch-hold UP/DOWN button can let data change quickly, the charge voltage can be setup from 2V to 30V, press SET to save the setting.

3.3.1.5 Charge Current Setup

Move cursor to Chg Current by pressing the UP/DOWN button-- Select Chg Current by pressing SET button--Setup the charge current by pressing UP/DOWN button(Attention: Do not exceed over the maximum current that battery manufacturer stated.) Touch-hold UP/DOWN button can let data change quickly, the max charge current can up to 20A, press SET to save the setting.

3.3.1.6 Save and Exit

Parameter can save after setup, and do not need reset next time.

Move cursor to OK by pressing the UP/DOWN button--Save the settings by pressing SET button.

Press both Cancel and OK can back to the main interface.

3.3.2 Discharge(Storage) Setup

3.3.2.1 Discharge(Storage) Voltage Setup

Move cursor to Mode by pressing the UP/DOWN button--Select Mode by pressing SET button--Move cursor to Dchg Voltage by pressing UP/DOWN button--Select Dchg Voltage by pressing SET button--Setup the discharge voltage by pressing UP/DOWN button(Attention: The discharge voltage of one cell of Pb battery is 1.8V. Do not exceed below than the minimum voltage that battery manufacturer stated in case overdischarged.) Touch-hold UP/DOWN button can let data change quickly.

3.3.2.2 Discharge(Storage) Current Setup

Move cursor to Mode by pressing the UP/DOWN button--Select Mode by pressing SET button--Move cursor to Dchg Current by pressing UP/DOWN button-- Select Dchg Current by press SET button--Setup the discharge current by pressing UP/DOWN button. Touch-hold UP/DOWN button can let data change quickly, the max charge current can be up to 5A, press SET to save the setting. CP620 will lower the discharge current automatically if the temperature is over than the setting.

Part Four Firmware Upgrade

Landing to the website : www.radiolink.com to download the upgrade firmware.

Connect to computer through USB cable -- Format -- Copy -- Upgrade done. Easily upgrade.

CB86PLUS upgrade steps:

1. Put your CB86PLUS via USB cable to your computer.
2. Connect CB86PLUS to a suitable DC power supply with 10.5-15V output voltage and minimum of 15A output current.
3. It appears like disc on your computer.
4. Format original files (Format original file means format the transmitter files when you bought. For example, your CB86PLUS is the version V1-8, you want upgrade to the version V1-9. Then you have to format the file of V1-8, and then copy the file of V1-9. So the file V1-8 is the original file).
5. Copy upgrade file.
6. Put USB cable off.