



# **RC-D100 V2**

**AC/CD Dual Balance Charger,  
Discharger & Power Supply**

**INSTRUCTION MANUAL**

# Contents

Introduction.....	01
Special Features.....	03
Warning and Safety Notes.....	06
Explanation of Buttons.....	10
Operating Program.....	13
Lithium Battery Program (LiPo/LiFe/LiIon/LiHV).....	15
NiMH/NiCd Battery Program.....	18
Pb Lead-Acid Battery Program.....	23
DC Power Supply.....	25
Battery Memory Set & Call Out.....	26
System Settings.....	28
Battery Voltage Meter.....	30
Battery Resistance Meter.....	31
Using the Charge Tracker V2 App.....	32
Warning & Error Messages.....	37
Specifications.....	38
Regulatory Information.....	39
Commonly Used Terms.....	41
Warranty & Service.....	42

## ***Warning! Read before use!***

This charger is not a domestic appliance. It should only be used and positioned in the correct environment. It should be positioned on a fireproof base at least 1.5 metres from any valuables or flammable materials when in use.

Read and familiarise yourself with this instruction manual before operating the charger. Seek advice from other users or Overlander if you are unsure of any procedures.

- NEVER leave the charger unattended when in use
- NEVER charge in the wrong mode
- NEVER charge non-approved or non EU complaint batteries
- NEVER exceed the maximum charge rate for the battery
- NEVER attempt to recharge non-rechargeable batteries

# ***Introduction***

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Thank you for purchasing the Overlander RC-D100<sup>V2</sup> AC/DC Dual Balance Charger/Discharger & Power Supply. This unit is simple to use, but the operation of a sophisticated automatic charger such as this will always require some knowledge on the part of the user. These operating instructions are designed to ensure that you quickly become familiar with its functions. It is therefore important that you read through these instructions in full (including Warning and Safety Notes) before attempting to use your new charger for the first time.

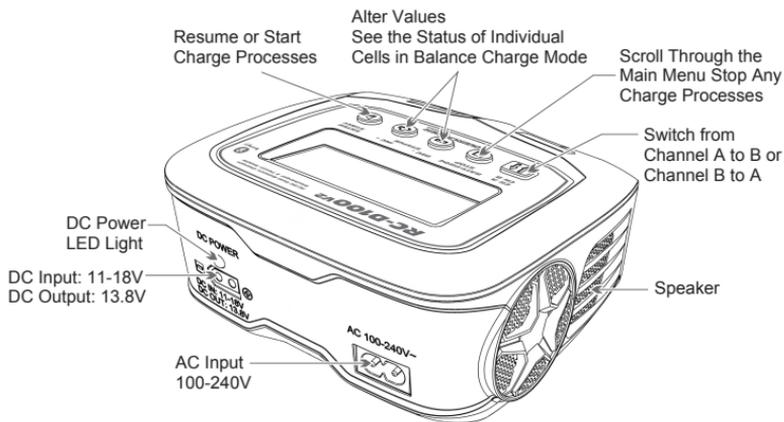
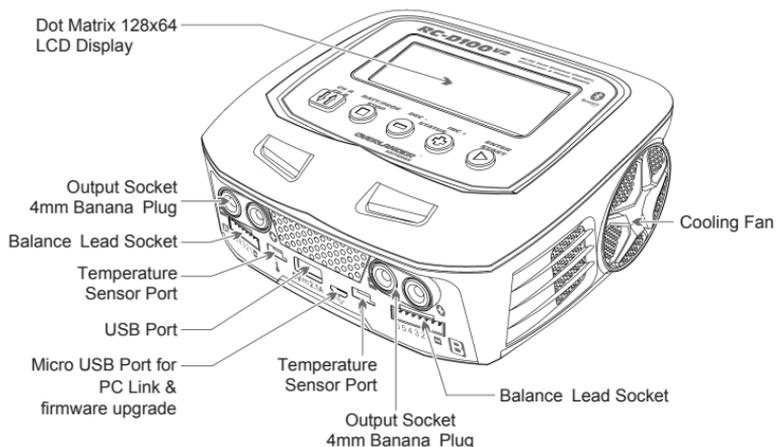
The RC-D100<sup>V2</sup> is a twin-channel charger with two independent circuits which can charge two different kinds of batteries simultaneously. It also supports power distribution in AC mode to get max charging power to shorten charging time. What's more, users could set the terminal voltage by themselves and connect it to PC for PC control and firmware upgrade. Besides that, users could also use it as Lithium Battery Meter and Battery Internal Resistance Meter. There are Automatic Charging Current Limit, Capacity Limit, Temperature Threshold and Processing Time Limit settings which makes the charger safer to use. Capable to operating as a power supply with the maximum output of 100W helps hobbyists to power other DC equipment.

Overlander's RC-D100<sup>V2</sup> is a high performance, micro processor controlled charge/discharge station with battery management suitable for use with all current battery types, with integral equaliser for up to 6 cell Lithium Polymer (LiPo), Lithium iron phosphate(LiFe) and Lithium-Ion (Lilon) batteries; maximum 10A charge current and maximum 100W charge power. The additional LiHV mode will be able to charge the new generation of LiPo batteries with an end of charge voltage 4.35V.

Please **BE SURE** to read these **INSTRUCTIONS, WARNING & SAFETY NOTES** before you use the charger for the first time. It can be dangerous to mis-handle batteries and battery chargers, as there is always a risk of batteries catching fire and exploding.

# Introduction

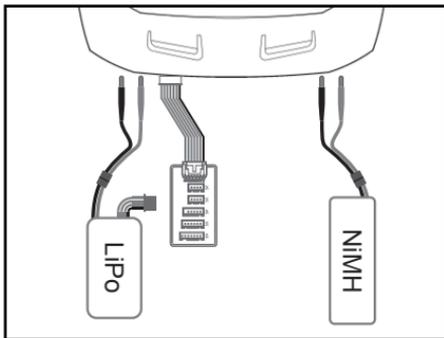
Please read this entire operating manual carefully before using this product as it covers a wide range of information in operation and safety. If in doubt please seek help from an expert or contact Overlander.



# Special Features

## Twin-channel Charger

Overlander's RC-D100<sup>V2</sup> allows you to plug 2 batteries into one charger simultaneously, and it will intelligently and automatically charge 2 batteries at once to their maximum capacity. The batteries being charged do not need to have the same configuration. You can connect different chemistry (LiPo/LiFe/LiIon/LiHV/NiMH/NiCd/Pb) batteries into any of the charging ports.



## Dual Input and Power Distribution

The input of the charger is AC 100-240V and DC 11-18V. In DC mode, the power of each channel is 100W. Total power is 200W. In AC mode, it supports power distribution, between Channel A, Channel B & Power Supply. For example, if both channel A and channel B are set to 40W, then, the DC power is 20W. The total power is 100W.

## Optimized Operating Software

Overlander's RC-D100<sup>V2</sup> features the so-called AUTO function that sets the feeding current during the process of charging or discharging. Especially for lithium batteries, it can prevent the overcharging which may lead to an explosion due to the user's fault. It can disconnect the circuit automatically and alarm once detecting any malfunction. All the programs of this product were controlled through two way linkage and communication, to achieve the maximum safety and minimize the trouble. All the settings can be configured by the user.

## DC Power Output Supported

With the unique feature of DC power source, the user does not have to carry additional big and heavy power supply to the racing track or flying field.

## Voice Guide

Purposes to make the charger more intuitive and user friendly.

# ***Special Features***

## **Battery Memory (Data Store/Load)**

The charger can store up to 10 different charge/discharge profiles for each channel. You can keep the data pertaining to program setting of the battery of continuous charging or discharging. Users can retrieve this data as required without an special program setting.

## **Terminal Voltage Control(TVC)**

The charger allows user to change the end voltage. (for expert user only)

## **PC Control Software “Charge Master”**

The free “Charge Master” software gives you unparalleled ability to operate the charger through the computer. You can monitor pack voltage, cell voltage and other data during the charging, view charge data in real-time graphs. And you can initiate, control the charger from “Charge Master”.

## **Smart Phone Control via Bluetooth (both iOS and Android)**

The charger can be operated with a smart phone via bluetooth connection.

## **SCAN TO GO**

A very unique feature of the RC-D100<sup>V2</sup> is SCAN TO GO (automatically charging system). As the range of battery types and capacity becomes more and more, each battery requires its own dedicated charging process. It is easy to set up the charger incorrectly for a specific type of battery, resulting damage the battery or even cause accident. The revolutionary SCAN TO GO provides a solution to this problem by allowing the user to assign a QR Code which contains all the relevant data for the battery for charging or discharging. The user can create a unique QR Code by using “Charge Tracker V2” apps. Print it and paste it on the battery. Using your smart phone and launch “Charge Tracker V2” app. Since all the essential information is stored in the QR Code. All you need to do is press the Scan button, and the charge or discharge process will start automatically.

## **Balancing Individual Cells Battery During Discharging**

During the process of discharging, RC-D100<sup>V2</sup> can monitor and balance each cell of the battery individually. Error message will be indicated and the process will be ended automatically if the voltage of any single one cell is abnormal.

## **Fast Charge and Storage Mode of Lithium Battery**

Function of the two modes differs from each other. “FAST CHG” minimizes battery charge time, while “STORAGE” has the capacity to control the final battery voltage, which is necessary and helpful for a rarely used battery.

# ***Special Features***

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## **Re-Peak Mode of NiMH/NiCd Battery**

In re-peak charge mode, the charger can peak charge the battery once, twice or three times in a row automatically. This is good for making the battery fully charged.

## **Delta-peak Sensitivity for NiMH/NiCd**

Delta-peak sensitivity for NiMH/NiCd battery: The automatic charge termination program based on the principle of the Delta-peak voltage detection. When the battery's voltage exceeds the threshold, the process will be terminated automatically.

## **Cyclic Charging/Discharging**

1 to 5 cyclic and continuous process of charge > discharge or discharge > charge is operable for battery refreshing and balancing to stimulate the battery's activity.

## **Automatic Charging Current Limit**

You can set up the upper limit of the charging current when charging your NiMH or NiCd battery, it is useful for the NiMH battery of low impedance and capacity in the 'AUTO' charging mode.

## **Battery Voltage Meter**

The user can check battery's total voltage, the highest voltage, the lowest voltage and each cell's voltage.

## **Battery Internal Resistance Meter**

The user can check battery's total internal resistance and each cell's internal resistance.

## **Capacity Limit**

The charging capacity is always calculated as the charging current multiplied by time. If the charging capacity exceeds the limit, the process will be terminated automatically when you set the maximum value.

## **Temperature Threshold\***

The battery's internal chemical reaction will cause the temperature of the battery to rise. If the temperature limit is reached, the process will be terminated.

\*This function is only available by connecting optional temperature probe, which is not included in the package.

## **USB Power 5V/2.1A**

You can charge your phone and tablet using the built-in USB power output port.

# Warning & Safety Notes

These warnings and safety notes are particularly important. Please follow the instructions for maximum safety; otherwise the charger and the battery can be damaged or at worst it can cause a fire.

- ⚠ Never leave the charger unattended when it is connected to its power supply. If any malfunction is found, **TERMINATE THE PROCESS AT ONCE** and refer to the operation manual.
- ⚠ Keep the charger well away from dust, damp, rain, heat, direct sunshine and vibration. Never drop it.
- ⚠ The allowable DC input voltage is 11~18V DC.  
The allowable AC input voltage is 100~240V AC.
- ⚠ This charger and the battery should be put on a heat-resistant, non-inflammable and non-conductive surface. Never place them on a car seat, carpet or similar. Keep all the inflammable volatile materials away from operating area.
- ⚠ Make sure you know the specifications of the battery to be charged or discharged to ensure it meets the requirements of this charger. If the program is set up incorrectly, the battery and charger may be damaged. It can cause fire or explosion due to overcharging.

## Standard Battery Parameters

Be very careful to choose the correct voltage for different types of battery otherwise you may cause damage to the batteries. Incorrect settings could cause the cells to fire or explode.

	LiPo	Lilon	LiFe	LiHV	NiCd	NiMH	Pb
Nominal Voltage	3.7V/cell	3.6V/cell	3.3V/cell	3.8V/cell	1.2V/cell	1.2V/cell	2.0V/cell
Max Charge Voltage	4.2V/cell	4.1V/cell	3.6V/cell	4.35V/cell	1.5V/cell	1.5V/cell	2.46V/cell
Storage Voltage	3.8V/cell	3.7V/cell	3.3V/cell	3.85V/cell	n/a	n/a	n/a
Allowable Fast Charge	≦ 1C	≦ 1C	≦ 4C	≦ 1C	1C-2C	1C-2C	≦ 0.4C
Min. Discharge Voltage	3.0-3.3V/cell	2.9-3.2V/cell	2.6-2.9V/cell	3.1-3.4V/cell	0.1-1.1V/cell	0.1-1.1V/cell	1.8V/cell

# Warning & Safety Notes

- ❗ **Never attempt to charge or discharge the following types of batteries:**
  - A battery pack which consists of different types of cells (including different manufacturers)
  - A battery that is already fully charged or just slightly discharged.
  - Non-rechargeable batteries (Explosion hazard).
  - Batteries that require a different charge technique from NiCd, NiMH, LiPo or Gel cell (Pb, Lead acid).
  - A faulty or damaged battery.
  - A battery fitted with an integral charge circuit or a protection circuit.
  - Batteries installed in a device or which are electrically linked to other components.
  - Batteries that are not expressly stated by the manufacturer to be suitable for the currents the charger delivers during the charge process.

- ❗ **Please bear in mind the following points before commencing charging:**
  - Did you select the appropriate program suitable for the type of battery you are charging?
  - Did you set up adequate current for charging or discharging?
  - Have you checked the battery voltage? Lithium battery packs can be wired in parallel and in series, i.e. a 2 cell pack can be 3.7V (in parallel) or 7.4V (in series).
  - Have you checked that all connections are firm and secure?
  - Make sure there are no intermittent contacts at any point in the circuit.

- ❗ **Charging:**
  - During charge process, a specific quantity of electrical energy is fed into the battery. The charge quantity is calculated by multiplying charge current by charge time. The maximum permissible charge current varies depending on the battery type or its performance, and can be found in the information by the battery manufacturer.
  - Only batteries that are expressly stated to be capable of quick-charge are allowed to be charged at rates higher than the standard charge current.

Connect the battery to the terminal of the charger: red is positive and black is negative. Due to the difference between resistance of cable and connector, the charger can not detect resistance of the battery pack, the essential requirement for the charger to work properly is that the charge lead should be of adequate conductor cross-section, and high quality connectors which are normally goldplated should be fitted to both ends.

Always refer to the manual by battery manufacturer about charging methods, recommended charging current and charging time. Especially, the lithium battery should be charged according the charging instruction provided by the manufacturer strictly.

# Warning & Safety Notes

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

Do not attempt to disassemble the battery pack arbitrarily.

Please get highlighted that lithium battery packs can be wired in parallel and in series.

In the parallel connection, the battery's capacity is calculated by multiplying single battery capacity by the number of cells with total voltage stay the same. The voltages imbalance may cause fire or explosion .Lithium battery is recommended to charge in series.

## ❗ Discharging:

The main purpose of discharging is to clean residual capacity of the battery, or to reduce the battery voltage to a defined level. The same attention should be paid to the discharging process as charging. The final discharge voltage should be set up correctly to avoid deep-discharging. Lithium battery can not be discharged to lower than the minimum voltage, or it will cause a rapid loss of capacity or a total failure. Generally, lithium battery doesn't need to be discharged. Please pay attention to the minimum voltage of lithium battery to protect the battery. Some rechargeable batteries have a memory effect. If they are partly used and recharged before the whole charge is accomplished, they remember this and will only use that part of their capacity next time. This is a memory effect. It is said that NiCd and NiMH batteries are suffering from memory effect. NiCd has more memory effect than NiMH



# Explanation of Buttons



## **CH A/CH B:**

It is used to switch from Channel A to B or vice versa.



## **BATT PROG / STOP Button:**

It is used to stop the progress or go back to previous step/screen.



## **DEC Button:**

It is used to go through the menus and decrease the parameter value.



## **INC Button:**

It is used to go through the menus and increase the parameter value.



## **ENTER / START Button:**

It is used to enter parameter, store parameter on screen and start the program.

When you are willing to alter the parameter value in the program, press the **START/ENTER** button to make it blink then change the value by pressing **DEC** and **INC** button. The value will be stored by re-pressing the **START/ENTER** button. If there is another parameter can be altered in the same screen, when you confirm the first parameter value, the next parameter value will start to blink which means it is ready to alert.

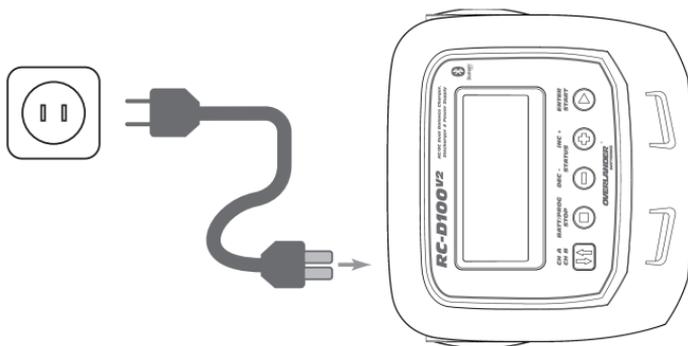
When you are willing to start the process, press and hold the **START/ENTER** button for 3 seconds. When you are willing to stop the progress or go back to previous step/screen, press the **BATT PROG/STOP** button once.

# Power & Battery Connection

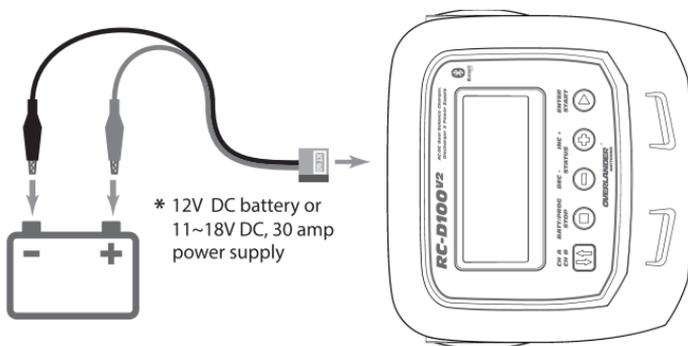
## 1. Connecting to power source

There are two kinds of inputs for RC-D100V2, DC 11-18V and AC 100-240V.

AC 100-240V power source connection.



12V DC Battery / DC power supply connection.



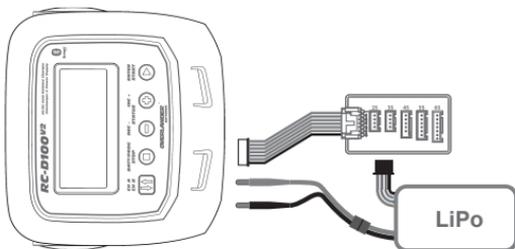
# Power & Battery Connection

## 2. Connecting the battery (identical for both channels)



TO AVOID SHORT CIRCUITS, ALWAYS CONNECT THE CHARGE LEADS TO THE CHARGER FIRST, AND THEN TO THE BATTERY. REVERSE THE SEQUENCE WHEN DISCONNECTING THE PACK.

### 1) LiPo Battery Connection with Balance Adapter

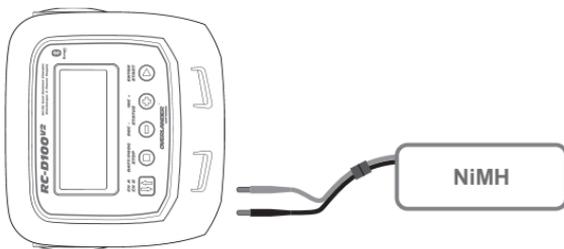


#### Balance Socket:

For safety reasons, the default setting for charging Lithium (LiPo, Lilon, LiFe and LiHV) battery is using balance adaptor to connect battery and charger in Charge, Fast Charge, Balance Charge, Discharge and Storage modes. But if the battery comes without balance wire, please proceed with the prompting message "No balance cable detected, push enter to continue".

The balance wire attached to the battery must be connected to the charger with the black wire aligned with the negative marking. Ensure correct polarity!

### 2) NiMH/NiCd or Pb Battery Connection



# Operating Program

Here is the detailed procedure to make the charger work. All the screens and operations will take Li-Po BALANCE CHARGE program for example.

## 1. Connection

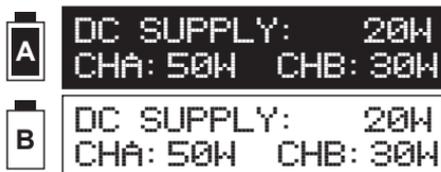
### 1) Connecting to power source

There are two kinds of inputs for this charger, DC 11-18V and AC 100-240V.

#### A. Operating in AC mode

Overlander's RC-D100<sup>v2</sup> comes with built-in switching power supply. You can connect the AC power cord directly to the main AC socket. (100-240V AC).

In AC mode, it supports Power Distribution. The total power for Channel A, Channel B and power supply is 100W. You could set the Max Power for one output port (take Channel A for example) as following,



Then, the channel B and DC power supply will take the rest power automatically (For example, if you set DC power supply as 20W and Channel A as 50W, the Channel B will take the rest power of 30W).

Note: If Channel A/Channel B and DC power supply are both working, you can't change the power for them. If DC power supply is working, you can change the power of Channel A and Channel B. thus, the DC power supply will take the rest power automatically.

#### B. Operating in DC mode

Please connect Overlander's RC-D100<sup>v2</sup> with AC/DC power supply by supplied DC input cable. Also you could use terminal clips with DC connectors, for attaching directly to 12V car batteries. It is critically important that you use either a fully charged 13.8V car battery or a high-quality AC/DC power supply in the range of 11-18V DC output with minimum power 300W or higher to insure reliable performance.

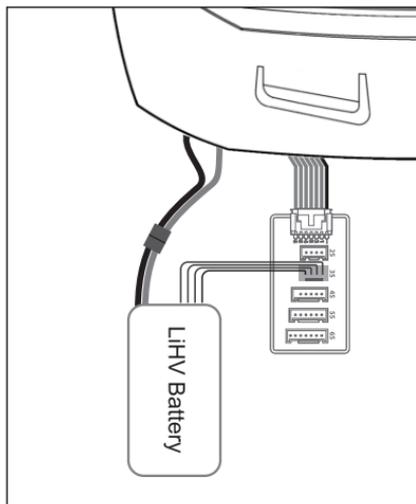
# Operating Program

## 2) Connecting the battery

Important!!! Before connecting a battery it is absolutely essential to check one last time that you have set the parameters correctly. If the settings are incorrect, the battery may be damaged, and could even burst into flames or explode. To avoid short circuits between the banana plugs, always connect the charge leads to the charger first, and only then to the battery. Reverse the sequence when disconnecting the pack.

## 3) Balance Socket

The balance wire attached to the battery must be connected to the charger with the black wire aligned with the negative marking. Take care to maintain correct polarity! (See the wiring diagram below.) This diagram shows the correct way to connect your battery to the RC-D100<sup>V2</sup> while charging.



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

# Lithium Battery Program

1) A memory profile is available for setting and storing pertinent information for up to 20 different program sets; each channel can store 10 program. Once a battery program is stored into memory, it will be retained until changed again manually. Recalling a program memory number makes the charger instantly ready to go!

2) If you do not wish to use the battery program memories, this charger can be manually set before each use.

The following flowchart shows how the program is set manually:

BATT/PROGRAM  
LiPo BATT

START/ENTER

LiPo BALANCE  
2.0A 11.1V (3S)

START/ENTER  
> 3 Seconds

## BATT/PROGRAM Select

Press INC and DEC to go through all the programs and press START/ENTER to enter LiPo BATT Program.

## Mode Select

Press INC and DEC to go through all the modes and press START/ENTER to enter LiPo Balance Charge Mode.

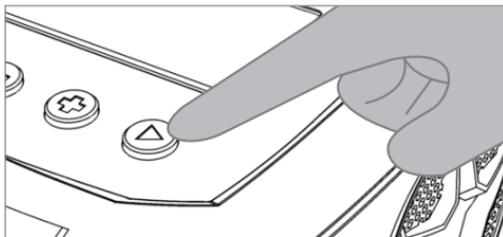
## Program Start

Press START/ENTER, the present value will start to blink. Press INC and DEC to change the value and press START/ENTER to confirm your setting.

At the same time, the battery pack's cell count will start to blink, press INC and DEC to change the value and press START/ENTER to confirm your setting.

## Battery Setting

Press and hold START/ENTER for 3 seconds to start the program.



# Lithium Battery Program

BATTERY CHECK  
WAIT...

The charger is detecting the battery cell.

R:3SER S:3SER  
CANCEL(STOP)

R shows the number of cells detected by the charger and S is the number of cells set by you on the previous screen. If the two numbers are not identical, press STOP to go back to the previous screen to recheck the number of cells of the battery pack that you set before going ahead.

R:3SER S:3SER  
CONFIRM(ENTER)

R shows the number of cells detected by the charger and S is the number of cells set by you on the previous screen. If the two numbers are identical, press START/ENTER to start the charging process.

START/ENTER

Lp3s 1.5A 12.14V  
BAL 000:50 00022

## Charging Status Monitor

During charge process, real-time status will be shown as seen on the left.

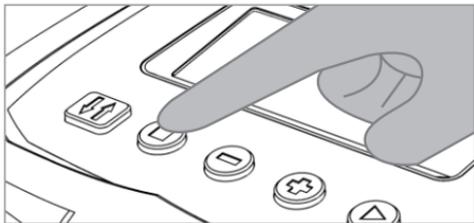
[ END: FINISH ]  
16.8V 2600mAh

## Program Complete

Once the battery is fully charged, the screen will read "END: FINISH" and the charger will emit a ringing sound. The charger also displays battery voltage, charged capacity and elapsed time.

[ Time: 00: 45: 32 ]  
16.8V 2600mAh

During the charging process, press STOP to stop the charging process.



# Lithium Battery Program

## VARIOUS INFORMATION DURING THE PROCESS

Press INC or DEC during the charging or discharging process to view further pertinent information on the LCD screen.

Lp3s 1.5A 12.14V  
BAL 000:50 00022

↕ INC ▶

4.07 4.06 4.11 V  
0.00 0.00 0.00 V

▶ ↕ INC

Fuel= 90%  
Cell= 4.10V

Real-time status: battery type, battery cell count, charge current, battery pack total voltage, working mode, elapsed time and charged capacity.

Voltage of each cell in the battery pack when the battery is connected with balance lead.

Charged capacity percentage and average cell voltage of the battery pack.

Lp3s 1.5A 12.14V  
BAL 000:50 00022

◀ ↕ DEC

End Voltage  
12.6V(3S)

◀ ↕ DEC

IN Power Voltage  
12.56V

◀ ↕ DEC

Ext. Temp ----  
Int. Temp 37°C

◀ ↕ DEC

Temp Cut-Off  
50C

◀ ↕ DEC

Safety Timer  
ON 200min

◀ ↕ DEC

Capacity Cut-Off  
ON 5000mAh

Final voltage when the program ends.

Input voltage.

Internal temperature.

Temperature probe needs to be connected to show external temperature.

Cut-off temperature.

Safety timer ON and duration of time in minutes.

Capacity cut-off ON and value of the set capacity limit.

# NiMH/NiCd Battery Program

This program is only suitable for charging/discharging NiMH/NiCd batteries. The RC-D100v2 offers the following NiMH/NiCd charge modes: Charge, Auto Charge, Discharge, Re-Peak and Cycle.

## Selecting the Battery Type:

After powering on the D100v2, press the INC or DEC button repeatedly until you reach the appropriate program for the battery type you wish to charge. For this example we have chosen the “NiMH BATT” or “NiCd BATT” program. Now press the ENTER button to enter the desired program.



**BEFORE YOU BEGIN CHARGING YOUR BATTERY, MAKE SURE YOU ARE CHARGING NIMH/NICD BATTERIES. CHARGING LIPO BATTERY UNDER NIMH/NICD BATTERY PROGRAM WILL CAUSE FIRE.**

## NiMH/NiCd Charge Mode:

After selecting the correct battery type, if the screen does not read “CHARGE”, use the DEC or INC buttons to change it to the “CHARGE” mode.

NIMH CHARGE  
CURRENT 2.0A

START/ENTE

NIMH 2.0A 5.42V  
CHG 002:22 00106

Press the ENTER button and the amp rate value will begin blinking. Use the DEC or INC button to adjust the value to the desired rate. Follow the instructions provided on your battery when setting the charge current.

Press and hold the ENTER button for 3 seconds to start charging.

Once charging has commenced, the charger will display the following real-time information: battery type, charging current, battery voltage, working mode, elapsed time and charged capacity. Once the battery is fully charged, the screen will read “END: FINISHED” and the charger will emit a ringing sound. You can press the STOP button at any time during the charging process to stop charging.

## NiMH/NiCd Auto-Charge Mode:

In this mode, the charger automatically detects the connected NiMH or NiCd battery and determines the proper full charge and cut-off thresholds. Setting the upper charge current limit for safe levels based on your battery specifications will ensure safe charging of your specific battery. If you are unsure of the maximum allowable charge rates, set the charger to a maximum of 1C (battery mAh/1000, e.g. 3200mAh = 3.2A).

# NiMH/NiCd Battery Program

NiMH Auto CHARGE  
CURRENT 1.3A

START/ENTER

NiMH 1.3A 5.42V  
AUT 002:22 00106

After selecting the correct battery type, use the INC or DEC button to change the charge mode to the “Auto CHARGE” setting.

Press the START button and the amp rate value will begin flashing. Use the INC or DEC button to adjust the value to the desired rate. Follow the instructions provided on your battery when setting the upper charge amperage rate.

Press and hold the START button for 3 seconds to start charging.

Once charging has commenced, the charger will display the following real-time information: battery type, charging current, battery voltage, elapsed time and charged capacity.

Once the battery is fully charged, the screen will read “END: FINISHED” and the charger will emit a ringing sound. You can press the STOP button at any time during the charging process to stop charging

## NiMH/NiCd Discharge Mode:

NiMH DISCHARGE  
1.3A CUT:9.6V

NiMH 1.3A 10.42V  
AUT 002:22 00106

After selecting the correct battery type, use the INC or DEC button to select the “DISCHARGE” mode. Press the START button and the amp rate value will begin flashing. Use the INC or DEC buttons to adjust the value to the desired discharge rate.

Press the START button again and the voltage cut-off will begin to flash. Use the INC or DEC button to adjust the value to the desired rate.

Follow the instructions provided on your battery when setting the voltage cut-off. The RC-D100<sup>V2</sup> will stop discharging when the battery has reached the preset voltage cut-off.

Press and hold the START button for 3 seconds to start discharging. Once discharging has commenced, the charger will display the following real-time information: battery type, discharging current, battery voltage, working mode, elapsed time and discharged capacity.

# NiMH/NiCd Battery Program

[ TIME: 00:04:04 ]  
9.6V 00640mAh

When discharging is complete, the screen will read “END:CUTOFF-VOL” and the charger will emit a ringing sound. The charger will display the elapsed time, end voltage and the discharged capacity in mAh.

You can press the STOP button at any time during the discharging process to stop the discharge process.

## NiMH/NiCd Re-Peak Mode:

Applicable to NiMH and NiCd batteries only, in re-peak mode the charger can peakcharge the battery once, twice, or three times in a row automatically. This process is good for confirming that the battery is fully charged and for verifying how well the battery can accept a fast charge. A five-minute cool-down delay occurs after each re-peak charge.

IN RE-PEAK MODE, THE RC-D100<sup>v2</sup> USES THE CHARGE AMPERAGE AND VOLTAGE SETTINGS ENTERED IN CHARGE MODE.

NiMH RE-PEAK  
2

After selecting the correct battery type, use the INC or DEC button to select the “RE-PEAK” mode. Press the START button and the Re-peak cycle number 1 begins to flash on the screen. Use the INC or DEC button to scroll through the cycle count and set a number between 1 and 3.

START/ENTER

Press and hold the START button for 3 seconds to start the repeak process.

NiMH 1.3A 10.42V  
RPC 004:04 00686

Once the Re-Peak process has begun, the charger will display the following real-time information: battery type, charging current, battery voltage, elapsed time and charged capacity.

Once the Re-Peak process has completed, the screen will read “END: RE-PEAK” and the charger will emit a ringing sound. The charger will display the charge/discharge capacity for each cycle. Using the + and - buttons, you can scroll through the history data of each cycle.

# NiMH/NiCd Battery Program

## NiMH/NiCd Cycle Mode:

The RC-D100<sup>V2</sup> makes cycling of NiMH/NiCd batteries easy. The process of discharging and recharging (cycling) can be performed automatically with one simple step and will improve the performance of NiMH/NiCd batteries. We strongly recommend cycling any battery that has been discharged and stored for a period of time. This will increase the remaining usable battery life and also improve the battery performance.

NiMH CYCLE  
DCHG > CHG 2

START/ENT

NiMH CYCLE  
CHG > DCHG 5

NiMH 0.5A 9.6V  
D > C 004:04 00034

After selecting the correct battery type, use the INC or DEC button to select the "CYCLE" mode. The Cycle Mode gives you two cycling options: "DCHG>CHG" or "CHG>DCHG". The "DCHG>CHG" option will first discharge the battery and then recharge the battery.

The "CHG>DCHG" option will first charge the battery and then discharge the battery. If this screen does not show your desired cycling option, press the START button once and this setting will begin flashing. Use the INC or DEC button to change this setting.

Pressing the START button again will cause the cycle count to begin flashing. Use the INC or DEC button to change this to the number of cycles you want the RC-D100<sup>V2</sup> to run. The RC-D100<sup>V2</sup> can cycle the battery a maximum of 5 times consecutively. Press and hold the START button for 3 seconds to start the Cycle Mode.

Once cycling has commenced, the charger will display the following real-time information: battery type, charging/discharging current, battery voltage, working mode, elapsed time and charged/discharged capacity. You will also see "D>C" or "C>D". This will indicate which cycling order you have chosen. Either "D" or "C" will be flashing. This flashing indicates which part of the cycle is currently being executed.

Once the cycling process is complete, the screen will read "END: CYCLE" and the charger will emit a ringing sound. The RC-D100<sup>V2</sup> will display the charged/discharged capacity for each cycle. Using the + and - buttons, you can scroll through this data for each cycle.

# ***NiMH/NiCd Battery Program***

## **VARIOUS INFORMATION DURING THE PROCESS**

Press INC or DEC during the charging or discharging process to view further pertinent information on the LCD screen.

NiMH Sensitivity  
D.Peak 4mV/CELL

Delta Peak Voltage Sensitivity setting

Ext. Temp ----  
Int. Temp 37 C

External\*/ internal temperature  
(\*when temperature probe is used)

Safety Timer  
ON 200min

Safety timer setting

In Power Voltage  
12.56V

Input Voltage

Temp Cut-off  
50 C/122 F

Temperature cut-off

Capacity Cut-Off  
ON 5000mAh

Capacity limit setting

# Pb Lead-Acid Battery Program

This program is only suitable for charging Pb (lead-acid) batteries with nominal voltage ranging from 2 to 20V which are significantly different from NiMH/NiCd batteries. Pb batteries are suggested to charge with a low current of 0.1C and cannot be used for fast charging. The RC-D100<sup>V2</sup> offers the following Pb charge modes: Charge and Discharge.

## Pb Charge Mode:

After selecting the correct battery type, use the INC or DEC button to change it to the "CHARGE" mode. Press the START button and the amp rate value will begin flashing. Use the INC or DEC buttons to adjust the value to the desired charge rate. The amp rate should be set to 1/10th of capacity. For example, if you are charging a 20Ah battery the charge rate should be set to 2A. Follow the instructions provided on your battery when setting the amp rate.

Pb Charge  
1.5A 12.0V(6P)

Press the START button again and the nominal battery pack voltage will begin flashing. Use the INC or DEC button to set the voltage and the number of cells. Press and hold the START button for 3 seconds to start charging.

P-6 1.5A 13.56V  
CHG 002:22 00106

Once charging has commenced, the charger will display the following real-time information: battery type, charging current, battery voltage, working mode, elapsed time and charged capacity. When charging is complete, the screen will read "FINISHED" and the charger will emit a ringing sound.

## Pb Discharge Mode:

After selecting the correct battery type, use the INC or DEC buttons to change it to the "DISCHARGE" mode. Press the START button and the amp rate value will begin flashing. Use the INC or DEC buttons to adjust the value to the desired discharge rate. Follow the instructions provided with your battery when setting the amp rate.

Pb Discharge  
1.5A 12.0V(6P)

Press the START button again and the nominal battery pack voltage will begin flashing. Use the INC or DEC buttons to set the voltage and the number of cells. Press and hold the START button and discharging will begin.

P-6 1.0A 13.56V  
DCH 005:10 00964

Once discharging has commenced, the charger will display the following real-time information: battery type, cell count, discharging current, battery voltage, elapsed time and discharged capacity. When discharging is complete, the screen will read "FINISHED" and the charger will emit a ringing sound.

# ***Pb Lead-Acid Battery Program***

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## **VARIOUS INFORMATION DURING THE PROCESS**

Press INC or DEC during the charging or discharging process to view further pertinent information on the LCD screen.

Capacity Cut-Off  
ON 5000mAh

Capacity cutoff setting

Temp Cut-off  
50 C

Temperature cut-off

In Power Voltage  
12.56V

Input voltage

Safety Timer  
ON 200min

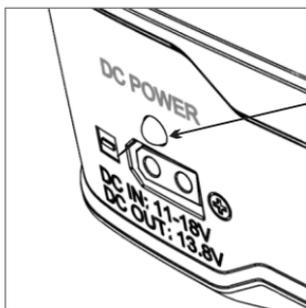
Safety timer setting

Ext. Temp ---  
Int. Temp 37 C

External\*/ internal temperature  
(\*when temperature probe is used)

# DC Power Supply

To use the RC-D100V<sup>2</sup> as a power supply, the user must connect it to AC power source. When the green LED on the back side turns on, then the user is free to use the power supply. The power of DC output is adjustable from 10W to 100W. The output voltage is 13.8V. The power of DC output is shared with charger power. When you increase the power of DC output, the charger power will be decreased accordingly. (DC Power + Channel A+Channel B = 100 Watts)



EXPLANATION OF LED STATUS	
OFF	DC Power Off
Green	0-30% Loading
Yellow	31-60% Loading
Red	61-100% Loading
Red Blinking	Over Load

## Operating Instructions

BATT/PROGRAM  
SYSTEM SETTING->

↓ ENTER

DC SUPPLY: 20W  
CHA: 50 CHB: 30W

↓ ENTER

CH1: 50 CH2: 50W  
DC SUPPLY: 150W

Press the ENTER to enter the DC Power Supply program.

Set the output power for the DC charger or other devices. (please note the voltage is 13.8V)

Set the power of channel A and channel B, the power supply will take the rest power automatically.

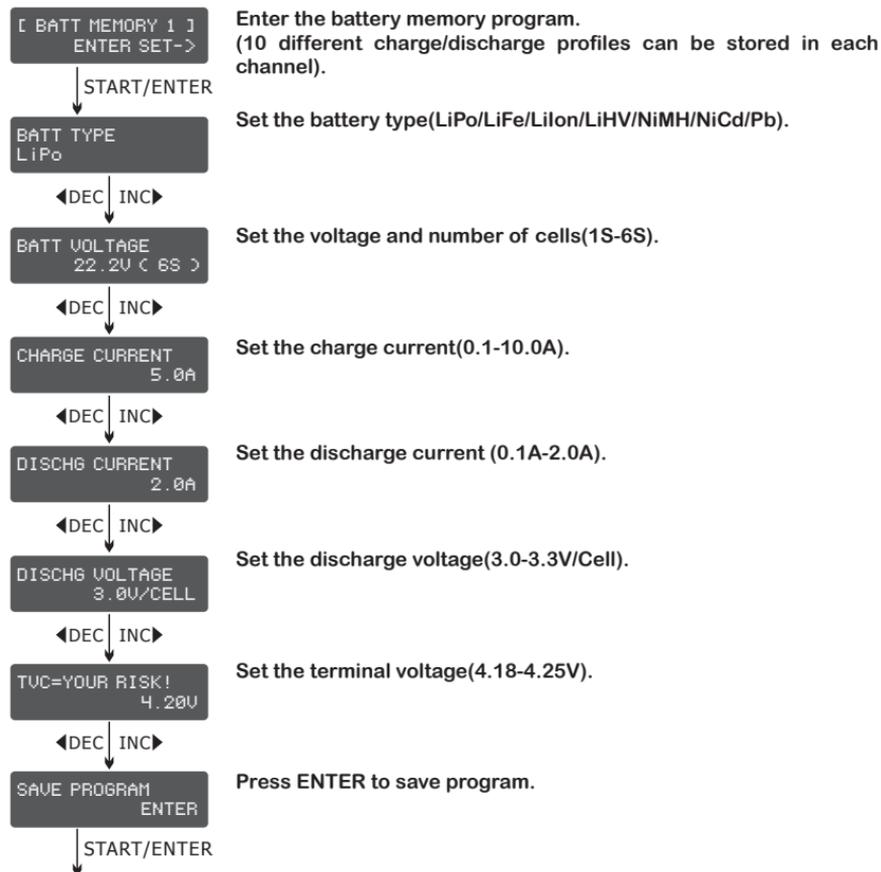
**Caution:** The maximum DC Power output is 100 Watts. Please check the total loading of your equipments before using DC power supply. If the DC power supply is over load, the led light will flash red and stop working.

# Battery Memory Set & Call Out

The charger can store up to 20 different charge/discharge profiles (each channel 10 sets).

When you are willing to alter the parameter value in the program, press START/ENTER to make it blink then change the value with INC or DEC. The value will be stored by pressing START/ENTER once.

## 1. Battery Memory Set



# Battery Memory Set & Call Out

SAVE PROGRAM  
SAVE .



[ BATT MEMORY 1 ]  
LiPo 22.2V (6S)

Indicate the battery type and battery cell of the saved profile.

## 2. Battery Memory Call Out

[ BATT MEMORY 1 ]  
C: 5.0A D: 2.0A

Press the DEC/INC to select memory number.

◀DEC INC▶



[ BATT MEMORY 1 ]  
C: 5.0A D: 2.0A

e.g. Select memory 1

Press and hold the START/ENTER for 2 seconds to call out the memory.

START/ENTER  
>2 Seconds



LiPo BALANCE CHG  
5.0A 22.2V(6S)

Press START/ENTER for 3 seconds to start the process.

# System Settings

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

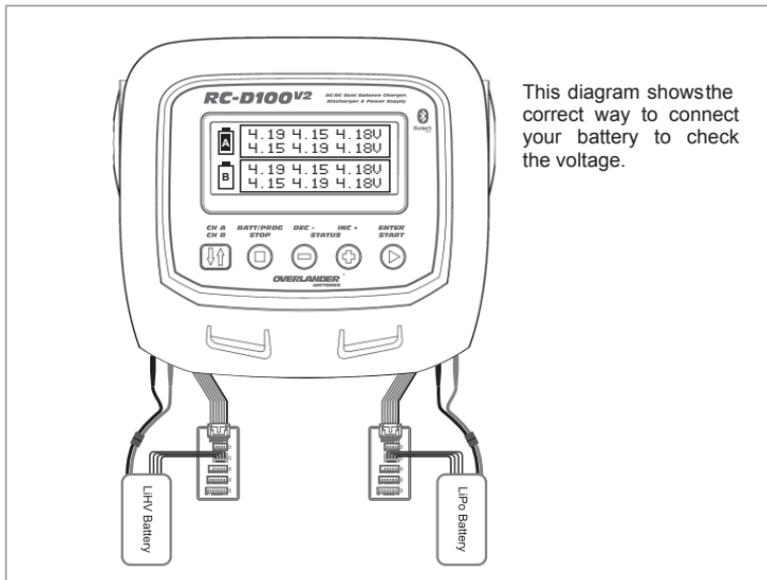
ITEM	SELECTION	DESCRIPTION
DC SUPPLY : OFF CH1: 50 CH2: 50W	OFF/ 10-100W	In AC mode, it supports Power Distribution. The total power for Channel A / Channel B and DC supply is 100W. You could set the AC Max Power for one output.
Safety Timer ON 120Min	OFF/ ON (1-720 Min)	When you start a charge process, the integral safety timer automatically starts running at the same time. This is programmed to prevent overcharge the battery if it proves to be faulty, or if the termination circuit cannot detect the battery full. The value for the safety timer should be generous enough to allow a full charge of the battery.
Capacity Cut-Off ON 5000mAh	OFF/ ON (100-50000 mAh)	This program sets the maximum charge capacity that will be supplied to the battery during charge. If the delta peak voltage is not detected nor the safety timer expired by any reason, this feature will automatically stop the process at the selected capacity value.
Temp Cut-Off ON 50 C 122 F	OFF/ ON (20°C/68°F - 80°C/176°F)	The battery's internal chemical reaction will cause the temperature of the battery to rise. If the temperature limit is reached, the process will be terminated.

# System Settings

ITEM	SELECTION	DESCRIPTION
Temperature Unit Celsius	Celsius Fahrenheit	You can choose the temperature displayed by Celsius or Fahrenheit as you like.
Rest Time CHG>DCHG 10Min	1-60Min	A rest time allowing the battery to cool down between charging/discharging cycle.
NiMH Sensitivity D.Peak 4mV	Default: 4mV/Cell 3-15mV/Cell	This program is for NiMH/NiCd battery only. When the charger detects the delta peak value reaches the value you set, the charger will say the battery is fully charged.
NiCd Sensitivity D.Peak 4mV		
Key Beep Voice ON ON	OFF/ON	The beep sounds at every time touching the buttons to confirm your action. The beep or melody sounded at various times during operation to alert different mode changes.
DC Input Low Cut-Off 11.0V	10.0-12.0V	This program monitors the voltage of input battery. If the voltage drops below the value you set the operation forcibly terminated to protect the input battery.
Load Factory Set Enter		Press ENTER to load factory default setting.
Version HW: 1.00 FW: 2.00		It indicates the hardware and firmware version.

# Battery Voltage Meter

The user can check battery's total voltage, the highest voltage, the lowest voltage and each cell's voltage. Please connect the battery to the charger main battery lead to battery socket and balance wires to balance socket.



This diagram shows the correct way to connect your battery to check the voltage.

BATT/PROGRAM  
BATT METER

START  
ENTER

4.20 4.19 4.19 U  
4.18 4.18 4.19 U

INC ↓  
↑ DEC

MAIN 25.13V  
H4.200V L4.182V

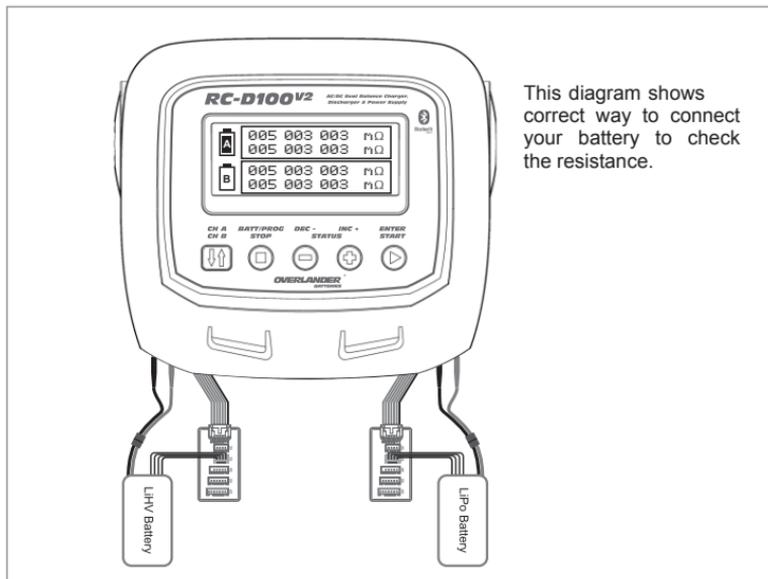
Press the START/ENTER to enter the Lithium Battery Meter program.

The screen indicate each cell's voltage.

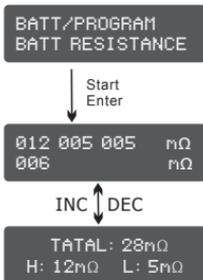
The screen indicate the total voltage, the highest voltage and the lowest voltage.

# Battery Resistance Meter

The user can check battery's total resistance, the highest and lowest resistance and each cell's resistance. Please connect the battery to the charger main battery lead to battery socket and balance wires to balance socket.



This diagram shows correct way to connect your battery to check the resistance.



Press the START/ENTER to enter the Lithium Battery Meter program.

The screen indicate each cell's resistance.

The screen indicate the total resistance, the highest resistance and the lowest resistance.

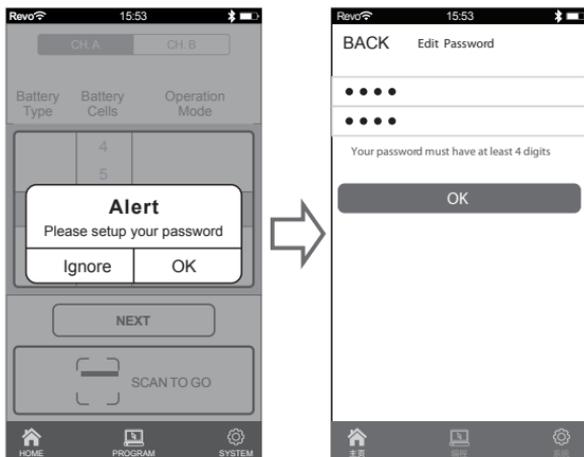
# Charge Tracker V2 App

The Bluetooth 4.0 connectivity allows the user to control and monitor the RC-D100V<sup>2</sup> comfortably through an app on a portable device such as smart phone, iPad, or iPhone. The iOS app can be downloaded from iTunes store, the Android app from Google Play Store. Operation of the app is self-explanatory and the same on iOS and on Android. Explicit pairing is not required; after download and installation just activate Bluetooth on your mobile device and launch the App. RC-D100V<sup>2</sup> and your device will establish Bluetooth connection automatically.

## Operation:

- 1) Connect the power cord to RC-D100V<sup>2</sup>, then plug the power cord into the outlet (100~240V AC, 50/60Hz).
- 2) Connect the batteries to the corresponding channels.
- 3) Enable the Bluetooth function on your mobile device and launch the Charge Tracker V2 app.

1) Launch the App and set the password: (Please do not set the password to 5793 which is the reserved for the system using)



# Charge Tracker V2 App

How to reset the password:

BATT/PROGRAM  
SYSTEM SETTING->

Press ENTER button

START  
ENTER

DC SUPPLY : OFF  
CHA: 50 CHB: 50

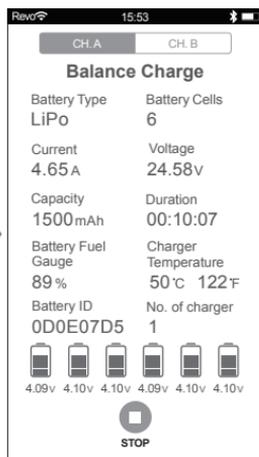
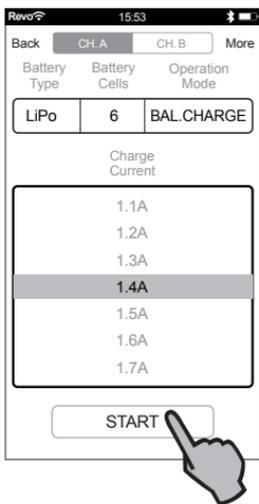
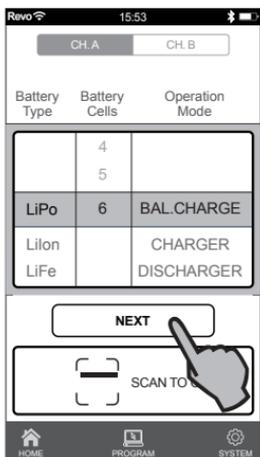
Press DEC twice

Load Factory Set  
ENTER

Press and hold the ENTER button for 3 seconds to reset password.

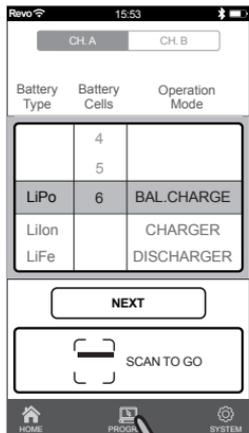
## 2) Operation Steps for Charging (6S LiPo battery for example):

Connect the batteries to the corresponding channels, select battery type, cells. Press "NEXT" to set the proper charge current.

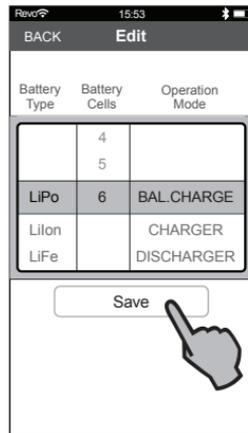


# Charge Tracker V2 App

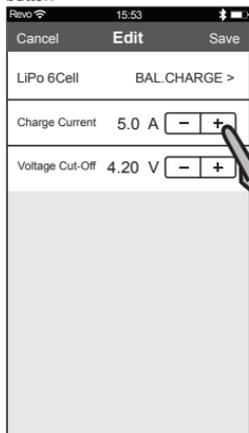
## 3) How to use the memory program:



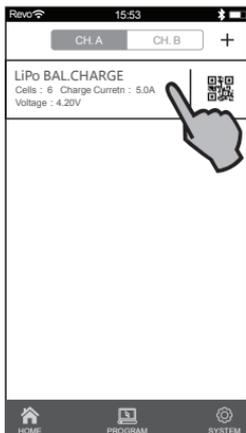
Press "PROGRAM" button



Set battery type, cells and working modes



Press to save the program after set the charge current and voltage cut-off



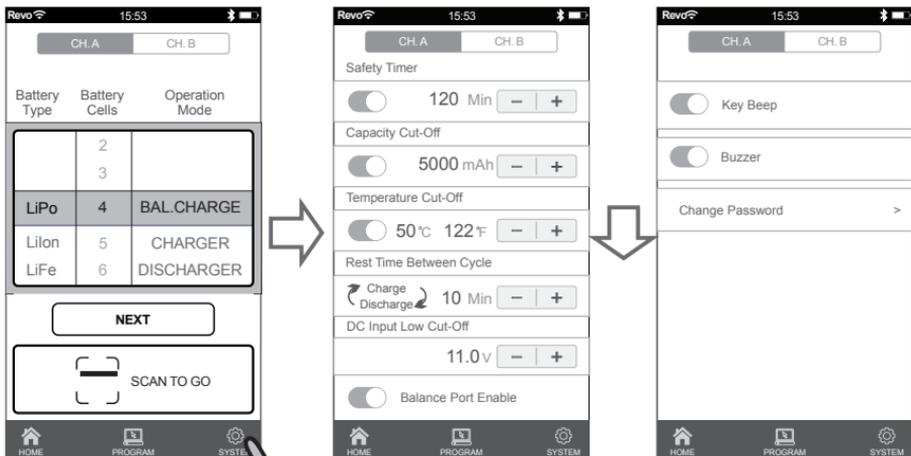
Memory program setting finishes.



Press "START" button to start charge  
Press "EDIT" button to change the setting

# Charge Tracker V2 App

## 4) System Settings:



Enter into System Setting

## 5) Scan To Go:

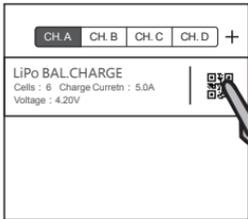
A very unique feature of RC-D100V<sup>2</sup> is SCAN TO GO (automatically charging system). As the range of battery types and capacity becomes more and more, each battery requires its own dedicated charging process. It is easy to set up the charger incorrectly for a specific type of battery, resulting damage the battery or even cause accident.

The revolutionary SCAN TO GO provides a solution to this problem by allowing the user to assign a QR Code which contains all the relevant data for the battery for charging or discharging. The user can create a unique QR Code by using the “Charge Tracker V2” app. Print it and paste it on the battery.

Using your smart phone and launch the “Charge Tracker V2” app. Since all the essential information is stored in the QR Code. All you need to do is press the Scan button, and the charge or discharge process will start automatically.

# Charge Tracker V2 App

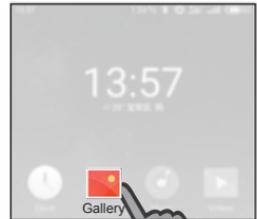
## How to print a QR code:



Press the QR code



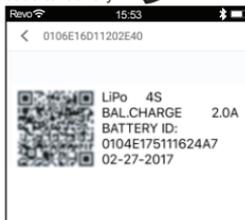
Save the QR code to Gallery



Open Gallery



Select the QR code and open it

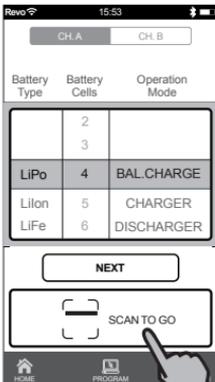


You can print it from your mobile phone or send the QR code image to computer to print it out.

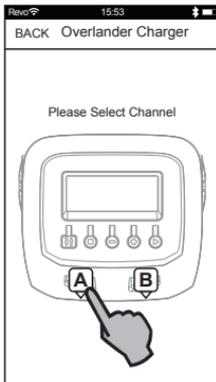


Attach the printed QR code to the battery

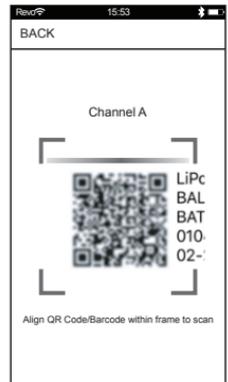
## Scan to charge



Press "SCAN TO GO"



Select corresponding channels



Scan to launch the program

# Warning & Error Messages

REVERSE POLARITY

Incorrect polarity connected.

CONNECTION BREAK

The battery is interrupted.

CONNECT ERROR  
CHECK MAIN PORT

The battery connection is wrong.

NO POWER  
DISTRIBUTED

No power allocate to the charger.

DC IN TOO LOW

Input voltage less than 11V.

DC IN TOO HIGH

Input voltage higher than 18V.

CELL ERROR  
LOW VOLTAGE

Voltage of one cell in the battery pack is too low.

CELL ERROR  
HIGH VOLTAGE

Voltage of one cell in the battery pack is too high.

CELL ERROR  
VOLTAGE-INVALID

Voltage of one cell in the battery pack is invalid.

INT . TEMP . TOO HI

The internal temperature of the unit goes too high.

EXT . TEMP . TOO HI

The external temperature of the battery goes too high.

OVER CHARGE  
CAPACITY LIMIT

The battery capacity is more than the maximum capacity which the user sets.

OVER TIME LIMIT

The charging time is longer than the maximum charging time which the user sets.

BATTERY HAS FULL

The battery voltage is higher than the maximum voltage which the user sets when charging in balance mode.

# Specifications

- ▶ DC Input Voltage : 11-18V
- ▶ Display Type: 128x64
- ▶ Case Material: Plastic
- ▶ Case Size: 153x140x67mm
- ▶ DC Power Supply Output: 13.8V / Max. 100W
- ▶ PC Communications: USB Port for PC Control & Firmware Upgrade
- ▶ External Port: 2-6S Balance Socket-XH, Temperature Probe Socket, Battery Socket, AC/DC Input, DC Output, Micro USB
- ▶ Port for PC, 5V-2.1A USB Output.
- ▶ Delta Peak Detection for NiMH/NiCd: 3-15mV/cell / Default: 4mV/cell
- ▶ Charge Cut-off Temperature: 20°C/68°F-80°C/176°F(adjustable)
- ▶ Charge Voltage: NiMH/NiCd: Delta peak detection  
LiPo: 4.18-4.25V/cell      Lilon: 4.08-4.2V/cell  
LiFe: 3.58-3.7V/cell      LiHV: 4.25-4.35V/cell
- ▶ Balance Current: 300mA/cell
- ▶ Reading Voltage Range: 0.1-26.1V
- ▶ Battery Types/Cells: LiPo/Lilon/LiFe/LiHV: 1-6cells  
NiMH/NiCd: 1-15cells  
Pb: 2-20V
- ▶ Battery Capacity Range: NiMH/NiCd: 100-50000mAh  
LiPo/Lilon/LiFe/LiHV: 100-50000mAh  
Pb: 100-50000mAh
- ▶ Charge Current: (0.1A-10.0A) x2
- ▶ Safety Timer: 1-720minutes / OFF
- ▶ Charge Wattage: AC 100W(Support Power Distribution) DC 100Wx2
- ▶ Discharge Current: (0.1A-2.0A) x2
- ▶ Discharge Cut-off Voltage: NiMH/NiCd: 0.1-1.1V/cell  
LiPo: 3.0-3.3V/cell      Lilon: 2.9-3.2V/cell  
LiFe: 2.6-2.9V/cell      LiHV: 3.1-3.4V/cell  
Pb: 1.8-2.0V/cell
- ▶ Discharge Wattage: 10Wx2
- ▶ Balance Cells: 2-6 cells
- ▶ Memory: 10x2 Different Charge/Discharge Profiles
- ▶ Charge Method: CC/CV for Lithium Types and Lead (Pb) Batteries  
Delta-peak Sensitivity for NiMH/NiCd

# Regulatory Information

The Overlander RC-D100<sup>V2</sup> satisfies all relevant and mandatory CE directives and FCC Part 15 Subpart B: 2016.

For CE directives:

The product has been tested to meet the following technical standards:

Test Standards	Title	Result
EN 55014-1:2006+ A1:2009+A2:2011	Electromagnetic Compatibility- Requirements for household appliances, electric tools and similar apparatus- Part 1: Emission	Conform
EN 55014-2:2015	Electromagnetic Compatibility- Requirements For Household Appliances, Electric Tools And Similar Apparatus- Part 2: Immunity Product Family Standard	Conform
EN 61000-3-2:2014	Electromagnetic Compatibility (EMC) Part 3-2: Limits for harmonic current emissions(Equipment input current up to and including 16A per phase)	Conform
EN 61000-3-3:2013	Electromagnetic Compatibility (EMC) Part 3-3: Limitation of voltage supply systems for equipment with rated current $\leq 16A$	Conform
EN 300 328 V2.1.1	Wideband transmission systems; Data transmission equipment operating in the 2,4 GHz ISM band and using wide band modulation techniques; Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU	Conform
EN 301489-1 EN 301489-17	Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements. Part 17: Specific conditions for Broadband Data Transmission Systems.	Conform
EN 62479	Assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0 Hz - 300 Ghz).	Conform
EN 60950-1	Information Technology Equipment-Safety- Part 1: General Requirements	Conform

# Regulatory Information

## FCC Note:

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions:

(1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications or change to this equipment. Such modifications or change could void the user's authority to operate the equipment.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

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

App store is a service make of Apple Inc.

Android and Google Play are trademarks of Google Inc.

The Bluetooth word mark and logos are registered trademarks owned by Bluetooth SIG, Inc. and any use of such marks by Overlander is under license.



This symbol means that you must dispose of electrical from the General household waste when it reaches the end of its useful life. Take your charger to your local waste collection point or recycling centre. This applies to all countries of the European Union, and to other European countries with a separate waste collection system.

# Commonly Used Terms

**Final charge voltage:** the voltage at which the battery's charge limit (capacity limit) is reached. The charge process switches from a high current to a low maintenance rate (trickle charge) at this point. From this point on further high current charging would cause overheating and eventual terminal damage to the pack.

**Final discharge voltage:** the voltage at which the battery's discharge limit is reached. The chemical composition of the batteries determines the level of this voltage. Below this voltage the battery enters the deep discharge zone. Individual cells within the pack may become reverse polarized in this condition, and this can cause permanent damage.

**A, mA:** unit of measurement relating to charge or discharge current.  $1000 \text{ mA} = 1 \text{ A}$  (A=Ampere, mA=Milliampere)

**Ah, mAh:** unit of measurement for the capacity of a battery (Amperes x time unit; h = hour). If a pack is charged for one hour at a current of 2 A, it has been fed 2 Ah of energy. It receives the same quantity of charge (2 Ah) if it is charged for 4 hours at 0.5 A, or 15 minutes ( $=1/4 \text{ h}$ ) at 8 A.

**'C'-rating:** Capacity is also referred to as the 'C' rating. Some battery suppliers recommend charge and discharge currents based on the battery 'C' rating. A battery's '1C' current is the same number as the battery's rated capacity number, but noted in mA or amps. A 600mAh battery has a 1C current value of 600mA, and a 3C current value of (3 x 600mA) 1800mA or 1.8A. The 1C current value for a 3200mAh battery would be 3200mA (3.2A).

**Nominal voltage(V):** The nominal voltage of the battery pack can be determined as follows;

- NiCd or NiMH: multiply the total number of cells in the pack by 1.2. A 8-cell pack will have a nominal voltage of 9.6 volts ( $8 \times 1.2$ ).
- LiPo: multiply the total number of cells in the pack by 3.7. A 3-cell LiPo wired in series will have a nominal voltage of 11.1 volts ( $3 \times 3.7$ ).
- Lilo: multiply the total number of cells in the pack by 3.6. A 2-cell Lilo wired in series will have a nominal voltage of 7.2 volts ( $2 \times 3.6$ ).
- LiFe: multiply the total number of cells in the pack by 3.3. A 4-cell Lilo wired in series will have a nominal voltage of 13.2 volts ( $4 \times 3.3$ ).
- LiHV: multiply the total number of cells in the pack by 3.7V. A 4-cell LiHV wired in series will have a nominal voltage of 14.8 volts ( $4 \times 3.7$ ).

If the nominal voltage of the battery is not printed on the battery's label, consult your battery manufacturer or supplier. Do not guess the rated voltage of battery.

# **Warranty & Service**

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## **Liability Exclusion:**

This charger is designed and approved exclusively for use with the types of battery stated in this Instruction Manual. Overlander accepts no liability of any kind if the charger is used for any purpose other than that stated.

We are unable to ensure that you follow the instructions supplied with the charger, and we have no control over the methods you employ for using, operating and maintaining the device. For this reason we are obliged to deny all liability for loss, damage or costs which are incurred due to the incompetent or incorrect use and operation of our products, or which are connected with such operation in any way. Unless otherwise prescribed by law, our obligation to pay compensation, regardless of the legal argument employed, is limited to the invoice value of those Overlander products which were immediately and directly involved in the event in which the damage occurred.

## **Warranty and Service:**

We guarantee this product to be free of manufacturing and assembly defects for a period of one year from the time of purchase. The warranty only applies to material or operational defects, which are present at the time of purchase. During that period, we will repair or replace free of service charge for products deemed defective due to those causes.

This warranty is not valid for any damage or subsequent damage arising as a result of misuse, modification or as a result of failure to observe the procedures outlined in this manual.

If you have any question about this document, please contact  
Overlander Batteries by sending a message to [support@overlander.co.uk](mailto:support@overlander.co.uk)  
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