

# **HITEC** **RDX1**

AC/DC INPUT,  
PROFESSIONAL  
BALANCE CHARGER  
DISCHARGER

# MULTICHARGER

## INSTRUCTION MANUAL



WARNING: THE CHARGING AND DISCHARGING OF RC HOBBY BATTERIES CAN BE DANGEROUS. FAILURE TO FOLLOW THE INSTRUCTIONS AND WARNINGS IN THIS MANUAL MAY RESULT IN PROPERTY DAMAGE AND/OR LOSS OF LIFE.

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## Introduction

Congratulations on your choice of the RDX1 charger from Hitec RCD, USA. The RDX1 is a high-performance, microprocessor-controlled charger/discharger with battery management capabilities that are suitable for use with most popular battery types. The RDX1 also features integrated balancing for six-cell, Lithium-Polymer (LiPo), Lithium-Ferrite (LiFe) and Lithium-Ion (Li-Ion), as well as the latest high voltage Lithium-Polymer (LiHV) batteries.

Please read this entire operating manual before using the RDX1 Charger. If you are unsure of its proper operation after reading the manual, please seek advice from an experienced hobbyist or someone familiar with proper battery charging procedures.



**THE CHARGING AND DISCHARGING OF RC HOBBY BATTERIES CAN BE DANGEROUS. FAILURE TO FOLLOW THESE EXPLICIT WARNINGS CAN RESULT IN PROPERTY DAMAGE AND/OR LOSS OF LIFE.**

**Warning**

- ⚠ NEVER LEAVE YOUR CHARGER UNATTENDED WHILE IN OPERATION.
- ⚠ NEVER CHARGE ON OR AROUND COMBUSTIBLE MATERIALS.
- ⚠ NEVER CHARGE A DAMAGED BATTERY PACK.
- ⚠ LOW COST, NO-NAME BATTERY PACKS POSE THE MOST DANGER. WE RECOMMEND YOU ONLY USE BATTERY PACKS THAT ARE SOLD AND WARRANTED BY A REPUTABLE COMPANY.
- ⚠ IT IS HIGHLY RECOMMENDED THAT YOU UTILIZE A SAFETY DEVICE SUCH AS A STEEL CASE OR LIPO SACK™ WHILE CHARGING LITHIUM CHEMISTRY BATTERIES.
- ⚠ IT IS HIGHLY RECOMMENDED THAT YOU KEEP AN OPERABLE “CLASS A” FIRE EXTINGUISHER IN THE CHARGING AREA.

**FAILURE TO FOLLOW THESE WARNINGS CAN BE CONSIDERED NEGLIGENCE BY THE OPERATOR AND MAY NEGATE ANY CLAIMS FOR DAMAGES INCURRED.**

Hitec RCD USA will not be held responsible for any damages or injuries that may occur by persons who fail to follow these warnings or who fail to properly follow the instructions in this manual.

## Warnings and Safety Notes



Warning



Tip

**Warning:** Be sure to read this section for your own safety.

**Caution:** Be sure to read this section to prevent accidents and damage to your charger.



Note



Caution

**Tip:** This section will help you maximize the performance of your charger.

**Note:** This section will provide more detailed explanations.

These warnings and safety notes are of the utmost importance. You must follow these instructions for maximum safety. Failure to do so can damage the charger and the battery and in the worst cases, may cause a fire.



Warning

**NEVER LEAVE THE CHARGER UNATTENDED WHILE IT IS CONNECTED TO ITS POWER SOURCE. IF ANY MALFUNCTION IS FOUND, TERMINATE THE PROCESS AT ONCE AND REFER TO THE OPERATION MANUAL.**

- ⚠ The allowable AC input voltage is 100 - 240V AC
- ⚠ The allowable DC input voltage is 11-18V DC.
- ⚠ Keep the charger away from dust, damp, rain, heat, direct sunlight and excessive vibration.
- ⚠ If the charger is dropped or suffers any type of impact, it should be inspected by an authorized service station before using it again.
- ⚠ This charger and the battery should be put on a heat-resistant, non-flammable and non-conductive surface.
- ⚠ Never place a charger on a car seat, carpet or similar surface. Keep all flammable volatile materials away from the 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 can be damaged.
- ⚠ Fire or explosion can occur due to overcharging.
- ⚠ To avoid a short circuit between the charge lead, always connect the charge cable to the charger first, then connect the battery. Reverse the sequence when disconnecting.

## Warnings and Safety Notes

⚠ Never attempt to charge or discharge the following types of batteries:

- A battery fitted with an integral charge circuit or a protection circuit
- A battery pack which consists of different types of cells (including different manufacturer's cells)
- A battery that is already fully charged or just slightly discharged and non-rechargeable batteries (these pose an explosion hazard)
- A faulty or damaged battery
- 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 YOU COMMENCE CHARGING:

- Did you select the appropriate program suitable for the type of battery you are charging?
- Did you set up the 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.

## Warnings and Safety Notes

### Standard Battery Parameters

	LiPo	LiPo HV	Lilon	LiFe	NiCd	NiMH	Pb
Nominal Voltage	3.7V/cell	3.8V/cell	3.6V/cell	3.3V/cell	1.2V/cell	1.2V/cell	2.0V/cell
Max. Charge Voltage	4.2V/cell	4.35V/cell	4.1V/cell	3.6V/cell	1.5V/cell	1.5V/cell	2.46V/cell
Storage Voltage	3.8V/cell	3.85V/cell	3.7V/cell	3.3V/cell	n/a	n/a	n/a
Allowable Fast Charge	≤ 1C	≤ 1C	≤ 1C	≤ 4C	≤ 1-2C	≤ 1-2C	≤ .04C
Min. Discharge Voltage	3.0-3.3V/cell	3.1-3.4V/cell	2.9-3.2V/cell	2.6-2.9V/cell	0.1-1.1V/cell	0.1-1.1V/cell	1.8V/cell



Warning

**WHEN ADJUSTING YOUR RDX1 CHARGING PARAMETERS, BE SURE YOU SELECT THE PROPER BATTERY TYPE AND CELL VOLTAGE FOR THE TYPE OF CELL YOU ARE CHARGING. CHARGING BATTERIES WITH THE WRONG SETTINGS MAY CAUSE THE CELLS TO BURST, CATCH FIRE OR EXPLODE.**

### Charging

Before charging your batteries, it is critical that you determine the maximum allowable charge rate for your batteries. The RDX1 is capable of charging at high rates that may not be suitable or safe for your particular batteries. For example, Lithium cells are typically safe to charge at 1C, or the total mAh ÷ 1000. A 1200mAh battery would have a 1C charge rate of 1.2 amps. A 4200mAh battery would have a 1C charge rate of 4.2 amps. Some manufacturers are offering Lithium cells that can be charged at greater than 1C but this should ALWAYS be verified before charging a Lithium battery at rates higher than 1C. Voltage is just as critical as the charging amperage rate and this is determined by the number of cells in series, or "S". For example, a 3S LiPo is rated at 11.1 volts ("S" multiplied by a single LiPo cell with a nominal voltage of 3.7 volts DC. 3 cells x 3.7 volts each equals 11.1 volts DC).

Connect the battery's main leads to the charger output: red is positive and black is negative. Keep in mind that the gauge or thickness of your charging leads from the RDX1 to your battery must be of an acceptable current rating to handle the applied charge current. For maximum safety and charging effectiveness, always match or exceed the main battery lead rating when assembling or selecting your charging leads. If you charge a

## Warnings and Safety Notes

battery at a high current rate (amperage) with a charging lead not rated for the chosen amperage, the wire could get hot, catch fire, short out and/or potentially destroy your battery and the charger. When in doubt, always use a higher gauge wire (lower AWG number). It is common to see charging leads constructed of 14AWG, 16AWG or 18AWG wire.

Always refer to recommendations from your battery manufacturer for your specific battery type and size before initiating a charge or discharge process.

**Do not attempt to disassemble or modify Lithium or Lead-Acid battery packs.**

### Discharging

The RDX1 discharging functions are for two specific purposes:

- Refreshing the capacity of a Nickel-based battery that has lost capacity over time (NiMH or NiCd).
- Reducing the voltage of a Lithium battery for safe storage.



Warning

**LITHIUM CHEMISTRY BATTERY PACKS SHOULD ONLY BE DISCHARGED TO THEIR MINIMUM SAFE VOLTAGE, NO LOWER. DEEP DISCHARGING A LITHIUM CELL WILL DO PERMANENT DAMAGE. REFER TO THE STANDARD BATTERY PARAMETERS TABLE ON PAGE 6 OF THIS MANUAL FOR MINIMUM DISCHARGE VOLTAGES.**

### LiPo & LiHV Charge/Discharge Cycling

Lithium batteries are known to reach full capacity after a break-in period of about 10 charge/discharge cycles. We do not recommend you use the RDX1 charger to do this; normal use and recharging will achieve the same results. If you wish to perform a Lithium break-in on the bench with the RDX1 discharging to minimum acceptable voltages and performing a balance charge at 1C maximum rate is recommended. If you choose to break in your Lithium batteries under normal use, charging at only 1C for the first ten cycles will help ensure full performance and service life from your Lithium cells.

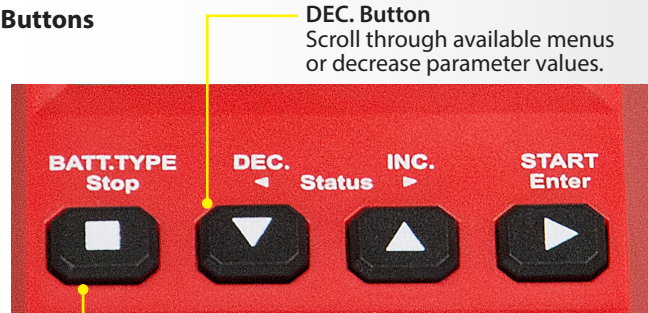


## Charger Layout



1. Hitec RDX1 Charger
2. AC Cord
3. XT60 Charge Connector
4. 18AWG Wire Charging Cable
5. XH Balance Board

### Input Buttons



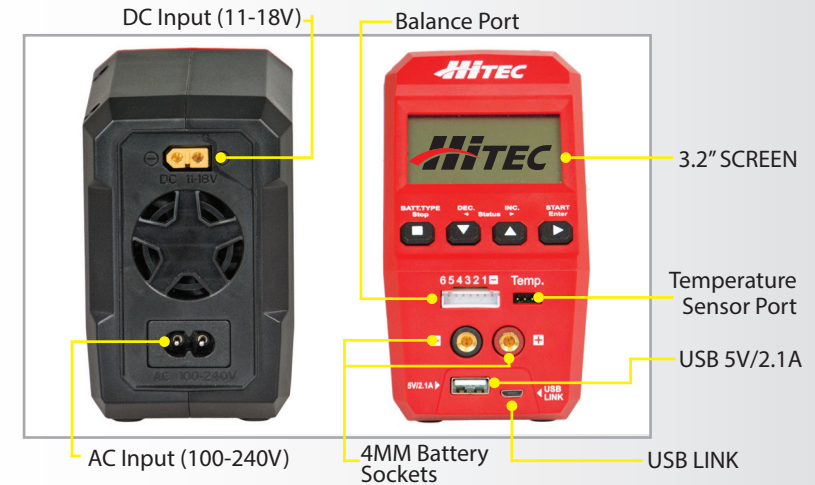
**Batt. Type/Stop Button**  
Stop the progress of the current action or cycle back to the previous step/screen.

**INC. Button**  
Scroll through available menus or increase parameter values.

**DEC. Button**  
Scroll through available menus or decrease parameter values.

**Start/Enter Button**  
Stop the progress of the current action or cycle back to the previous step/screen.

## Charger Layout



## Specifications

<b>AC Input Voltage</b>	100-240V
<b>DC Input</b>	11-18V
<b>Maximum Charge Power</b>	60W
<b>Charge Current Range</b>	0.1 - 6.0A
<b>Maximum Discharge Power</b>	5W
<b>Discharge Current Range</b>	0.1 - 2.0 A
<b>Balancing Port Current Drain</b>	300mA/Cell
<b>NiCd/NiMH Battery Cell Count</b>	1-15 Cells
<b>LiPo/LiHV/LiFe/Lilon Cell Count</b>	1 - 6 cells
<b>Pb Battery Voltage</b>	2 - 20 V
<b>New Weight</b>	470 G
<b>Dimensions</b>	159 x 72.5 x 123 mm

### **Optimized Operating Software**

The RDX1 "auto" feature sets the charge and discharge current for you automatically, preventing overcharging which can damage your battery. In the event of an error, the RDX1 instantly disconnects the circuit and sounds an alarm. This feature can be set by the user and controlled through the two-way link for maximum safety.

### **Program Select**

The charger can store up to 10 different charge/discharge profiles for your convenience. You can keep the data pertaining to program settings of the battery for continuous charging or discharging. Users can call out this data at any time without setting any additional programming.

### **Internal Independent Lithium Battery Balancer**

The RDX1 features a built-in cell voltage balancer so you don't need to fuss with external balancers while charging.

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

When used with a balancing board the RDX1 can monitor and balance each cell in the pack individually while discharging. If the voltage of any single cell is abnormal, the RDX1 will display an error message and the process will end automatically.

### **Adaptable to Various Types of Lithium Batteries**

The RDX1 will charge and discharge a variety of Lithium batteries such as Li-ion, LiPo, LiFe and the new higher voltage LiPo, (LiHV) batteries.

### **Multiple Lithium Battery Charge Modes**

The RDX1 features four methods of charging: Regular charge, Fast charge, Balance charge and Storage charge modes. We highly recommend using balance charge as it is the safest and best way to charge lithium chemistry batteries. If you plan on not using your Lithium chemistry batteries for an extended period of time, Storage charge mode is recommended to optimize your packs for long term storage and maximum lifespan.

### **Input Power Monitoring**

The RDX1's input voltage is monitored to protect the battery from becoming damaged. The process ends automatically if it drops below the limit.

### **Capacity and Temperature Limits**

The charge process will terminate if either the charging capacity or battery temperature exceeds the limit set by the user. The temperature function requires an optional temperature probe, which is not included with the RDX1.

### **Processing Time Limit**

Protect your battery by setting a maximum time limit for charging and discharging.

### **Cyclic Charging/Discharging**

A battery can be cycled 1 to 5 times consecutively. This process is good for refreshing and balancing your battery.

### **Maximum Safety**

Our delta-peak voltage detection program ends the charge cycle whenever a battery's voltage exceeds the set threshold.

### **Automatic Charging Current Limit**

Charging current can be set by the user when charging Lithium, NiCd or NiMH batteries. The 'AUTO' charging mode, however, is recommended when charging NiMH batteries with low impedance and capacity.

### **LiPo Battery Meter**

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

### **PC Control Using Charge Master Software**

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 operation. Additionally, you have the ability to set up the charger and update the firmware.

## Charger Connections

### 1.) Connecting to a power source

The Hitec RDX1 features a built-in switching power supply. You can connect the AC power cord directly to an AC socket (100-240V AC) or use an 11-18V DC power source (such as an automotive battery or 12 Volt power supply).

### 2.) Connecting the battery

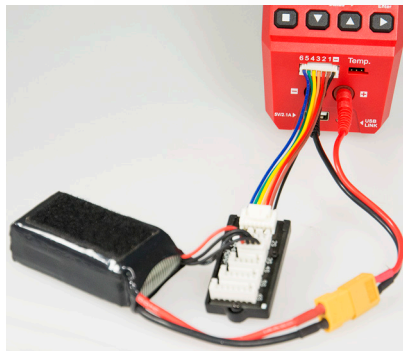
NOTE: Before connecting any battery, it is absolutely essential to check one last time that the parameters were set correctly. If the settings are incorrect, the battery may be damaged and, in worse case scenarios, could even burst into flames or explode. To avoid short circuits between the banana plugs, always connect the charge leads to the charger first, and then to the battery second. Reverse the sequence when disconnecting the pack.

### 3.) Balance Socket

#### For Lithium Batteries in all modes

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 wiring diagram below)

This diagram shows the correct way to connect your battery to the Hitec RDX1 when charging in the balance charge program mode.



#### WARNING:

Failure to connect as shown in this diagram will damage your charger. To avoid a short circuit between the charge lead, always connect the charge cable to the charger first, then connect the battery. Reverse the sequence when disconnecting.

## Initial Setup of the Charger

After connecting the battery you are now ready to setup the charger to charge your specific type of battery. When the charger is first powered on, you will enter the PROGRAM SELECT (01) mode by default. The default mode of the charger is for a regular charge mode of a 2 Cell 2000 mAh Lithium Polymer battery. If this is not the battery you plan on working with then you will need to make changes to the operation programming based on the following instruction.



Warning

**BEFORE SELECTING AN OPERATION, IT IS CRITICAL THAT YOU KNOW THE TYPE OF BATTERY YOU ARE WORKING WITH AND WHAT THE MANUFACTURER RECOMMENDATIONS ARE FOR CHARGING OR DISCHARGING. FAILURE TO FOLLOW THE MANUFACTURERS RECOMMENDATIONS CAN RESULT IN DAMAGE TO THE BATTERY AND POSSIBLE EXPLOSION.**

## Available Operations

Depending on battery type, different operations will be available. This chart shows which operations are available for the different types of batteries the RDX1 is capable of working with.

Battery Type	Operation	Operation Description
LiPo	CHARGE	The charge mode is for charging LiPo/LiFe/Lilon/LiHV batteries in normal mode.
	DISCHARGE	This mode is for discharging LiPo/LiFe/Lilon/LiHV batteries.
Lilon LiFe	STORAGE	This program is for charging or discharging a lithium battery which will not be used again for an extended period of time.
LiHV	FAST CHG	A fast charge will result in a smaller than usual charging capacity but will reduce the total charge time.
	BAL CHARGE	This mode is for balancing the voltage of LiPo battery cells while charging.



## Available Operations (continued)

Battery Type	Operation	Operation Description
NiMH NiCd	CHARGE	The charger will charge NiMH and NiCd batteries using the charge current set by the user.
	AUTO CHG	In this program, the charger detects the condition of the connected battery and automatically charges the battery. <b>Note:</b> You should set the upper limit of the charge current to avoid damage by excessive charging current. The RDX1 may not be able to detect the charge capacity of low resistance batteries.
	DISCHARGE	This mode is for discharging a NiMH/NiCd battery
	RE-PEAK	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 confirming the battery is fully charged and for checking how well the battery receives fast charges.
	CYCLE	Automatically charges/discharges the battery up to 5 times. This process can enhance the performance of NiMH/NiCd batteries.
Lead Acid Pb	CHARGE	This mode is for charging a Pb battery.
	DISCHARGE	This mode is for discharging a Pb battery.

## Operating the Charger

The following is a step-by-step guide for operating the RDX1. The screen shots and operation templates shown below are for the operation of a Li-Po BALANCE CHARGE program. Refer to the **Available Operations** chart on page 13 and 14 to setup your specific type of battery.

Whenever a parameter value in the program needs to be adjusted, highlight the value by pressing the START/Enter button to make it blink; to change the value press the DEC or INC buttons. The new value will be stored by re-pressing the START/Enter button. If there is another parameter to be adjusted as part of a range on the same screen, it will start blinking after the first parameter value has been confirmed.



**BEFORE YOU BEGIN CHARGING YOUR BATTERY, MAKE SURE YOU HAVE READ AND UNDERSTAND ALL OF THE WARNINGS AND SAFETY INFORMATION CONTAINED ON PAGES 3-7.**

PROGRAM SELECT(01)	
Battery Type:	LiPo
Battery Cells:	3S
Mode:	Balance
C Current	3.3A

### BATT/PROGRAM Select

Press INC and DEC to cycle through all battery types and press START/ENTER to select the appropriate battery types to be charged.

PROGRAM SELECT(01)	
Battery Type:	LiPo
Battery Cells:	3S
Mode:	Balance
C Current	3.3A

### Battery Cells

Press INC and DEC to scroll through the battery cells supported by the charger. Press START/ENTER to select the appropriate cells for your battery.

PROGRAM SELECT(01)	
Battery Type:	LiPo
Battery Cells:	3S
Mode:	Balance
C Current	3.3A

### Mode Select

Press INC and DEC to scroll through all available modes. If you plan to charge your battery, select Charge mode. Press the START/ENTER button to confirm the mode of your choice.



## Operating the Charger (continued)

### C. Current (Charge Current)

The charger supports a maximum 6.0A charge current, but a current suitable for your battery should be set. It is inappropriate to set a high charge current for a low capacity battery, as doing so would result in unwanted consequences.

**\*NOTE:** This mode is only available under the Charge mode

PROGRAM SELECT(01)	
Battery Type:	LiPo
Battery Cells:	3S
Mode:	Balance
C. Current	3.3A

### D. Current (Discharge Current)

The charger supports a maximum -2.0A discharge current, but users should set the appropriate discharge current for the battery in use.

\* Note that this mode is only available under the Discharge mode.

PROGRAM SELECT(01)	
Battery Cells:	3S
Mode:	Discharge
C.Current	OFF
D. Current	-2.0A

### Target Volt - (Target Voltage)

This function is available when working with Lithium and Lead Acid (Pb) chemistry batteries. Here you can set the target voltage for each individual cell.

**WARNING:** Setting the target voltage too high can damage your battery and cause your battery to explode. See the packs manufacturer's recommended settings before changing this value from the defaults.

PROGRAM SELECT(01)	
C. Current	3.3A
D. Current	OFF
Target Volt:	4.20V
Cut Volt:	OFF

### Cut Volt - (Cutt-off Voltage)

This function can be activated under Discharge mode no matter the type of batteries being discharged. This function protects a battery from deep discharging. Refer to the chart on page 6 for recommended cut-off voltage.

PROGRAM SELECT(01)	
C. Current	3.3A
D. Current	OFF
Target Volt:	4.20V
Cut Volt:	OFF

## Operating the Charger (continued)

The following functions are available when working with NiMH or NiCd batteries

PROGRAM SELECT(01)	
Battery Cells:	5S
Mode:	Cycle
C.Current	3.0A
D. Current	-1.0A

### Cycle Mode

In Cycle Mode, users can choose between charging>discharging or discharging>charging. There are two requirements for making the Cycle Mode accessible: 1. the battery type must be NiMH or NiCd and 2. the mode must be Cycle. This mode is intended to help refresh your battery if it has been sitting for a long period of time.

PROGRAM SELECT(01)	
Cycle Count:	4
Repeak Count:	OFF
Trickle:	OFF
Cut Volt:	OFF

### Cycle Count

In cycle mode, users must select the number of cycles (between 1 and 5) for the Cycle Count.

PROGRAM SELECT(01)	
Cycle Count:	Off
Repeak Count:	OFF
Trickle:	OFF
Cut Volt:	OFF

### Repeak Count

There are two requirements for accessing Repeak Count: 1. the battery is either NiMH or NiCd and 2. users are in Re-Peak mode. There are 3 Repeak Counts in total.

PROGRAM SELECT(01)	
Cycle Count:	OFF
Repeak Count:	OFF
Trickle:	OFF
Cut Volt:	OFF

### Trickle

When the Trickle function is activated, the battery will continue charging, but at very low current. This function is only available when charging a NiMH or NiCd battery.

## Charging Your Battery

Now that you have set all the parameters for your battery you are ready to execute the operation. Now would be a good time to check to make sure the charge settings are correct and within the battery manufacturers recommendations.



**BEFORE YOU BEGIN CHARGING YOUR BATTERY, MAKE SURE YOU HAVE READ AND UNDERSTAND ALL OF THE WARNINGS AND SAFETY INFORMATION CONTAINED ON PAGES 3-7.**



**DURING CHARGING/DISCHARGING, THE BATTERY SHOULD BE PLACED INSIDE A FIRE PROOF/RETARDANT BAG AND ON A FIRE PROOF SURFACE, AWAY FROM OTHER COMBUSTIBLE OBJECTS.**

### Start the Process

Press and hold the ► button until you see “BATTERY CHECK...” followed by the confirmation screen. This screen displays the number of cells you set up as “R” and the number of cells detected by the processor as “S”. If both numbers are identical, you may press and hold the **START** button to confirm and begin charging. If these numbers do not match, press the **STOP** button to return to the previous screen and carefully check the number of cells of the battery pack before proceeding.

### Information Displayed During the Process

Use the **INC.** and **DEC.** buttons to scroll through the various information displayed during the process.

### Program Stop

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

### Program Complete

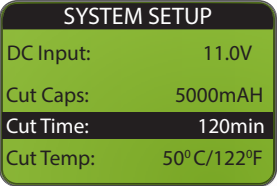
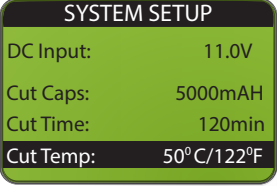
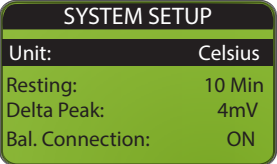
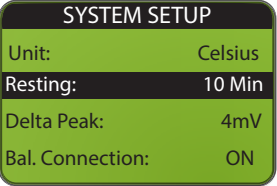
When the charging process is finished, an audible sound will be heard.

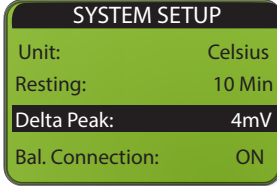
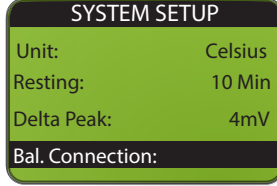
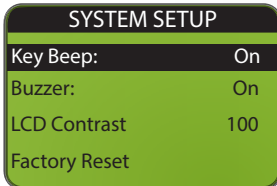
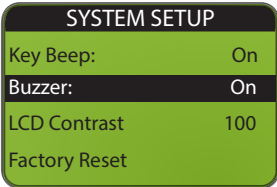
## System Settings

When powered on for the first time, your RDX1 charger will load with default values in the programmable user settings. The screen displays the following information in sequence and the user can change the value of the parameters on each screen.

When you are ready to change the parameter values in the program, press **START/ENTER** to make it blink, and then select the appropriate values with **INC** or **DEC**. Store the value by pressing **START/ENTER** once.

Item	Selection	Description
	10-12V	Users can change the DC Input low voltage warning as necessary. The default value is 11.0V
	OFF/(100-5000 mAh)	This program sets the maximum charge capacity that will be supplied to the battery during a charge. If the delta peak voltage is not detected nor has the safety timer expired for any reason, this feature will automatically stop the process at the selected capacity value. Default is 5000mAh.

Item	Selection	Description
	OFF/(1-720 Min)	When starting a charge process, the built-in safety timer automatically runs at the same time. This is programmed to prevent the battery from overcharging if it proves to be faulty or if the termination circuit cannot detect that the battery is fully charged. The value for the safety timer should be generous enough to allow a full charge of the battery. Default is 120min.
	OFF/(20°C/68°F - 80°C/176°F)	When charging or discharging batteries, internal chemical reactions will cause the temperature of the battery to rise. If the temperature limit is reached, the process will be terminated <b>NOTE:</b> Requires the optional temperature sensor Part#44159
	Celsius Fahrenheit	Display the temperature in Celsius or Fahrenheit.
	1-60 Min	Rest Time allows the battery to cool down between charging/ discharging cycles.

Item	Selection	Description
	3-15mV	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.
	ON/OFF	Balance Connection can be switched to OFF to allow you to charge your battery without the balance socket connected.
	ON/OFF	Key Beep sounds a beep with every touch of a button to confirm your action. Buzzer plays at various times during operation to alert the user to different mode changes. Both these features can be turned off.
		

Item	Selection	Description
<div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center; margin: 0;"><b>SYSTEM SETUP</b></p> <p>Key Beep: ON</p> <p>Buzzer: ON</p> <p>LCD Contrast: 100</p> <p>Factory Reset</p> </div>	89-109	Choose the LCD definition best suited to your preference
<div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center; margin: 0;"><b>SYSTEM SETUP</b></p> <p>Key Beep: ON</p> <p>Buzzer: ON</p> <p>LCD Contrast: 100</p> <p>Factory Reset</p> </div>		Press the Start/Enter button to make "Reset" blink; then, press and hold the Start/Enter button to load the factory default settings.
<div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center; margin: 0;"><b>SYSTEM SETUP</b></p> <p>LCD Contrast: 100</p> <p>Factory Reset 100</p> <p>FW Version: 1.01</p> <p>HW Version: 1.00</p> </div>		Display the hardware and firmware version.
<div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center; margin: 0;"><b>SYSTEM SETUP</b></p> <p>LCD Contrast: 100</p> <p>Factory Reset</p> <p>FW Version: 1.01</p> <p>HW Version: 1.00</p> </div>		

## Battery Meter

The user can check the battery's total voltage, the highest voltage, the lowest voltage and each cell's voltage. Connect the battery via the charger's main battery lead to battery socket and balance wires to the balance socket as shown below.

The display indicates the current Main Voltage, Percentage of Charge, Individual Cell Voltage, and the Highest and Lowest voltages of the packs cells.





## Warnings and Error Messages

<b>WARNING</b> REVERSE POLARITY	Incorrect polarity connected.
<b>WARNING</b> CONNECTION BREAK	The battery connection has been interrupted.
<b>WARNING</b> CONNECT ERROR CHECK MAIN PORT	The battery connection is wrong.
<b>WARNING</b> DC IN TOO LOW	The input voltage is less than 11V.
<b>WARNING</b> DC IN TOO HIGH	The input voltage is higher than 18V.
<b>WARNING</b> CELL ERROR	Misoperation or connection error will activate this function.
<b>WARNING</b> CELL NUMBER	The cell number is wrong.
<b>WARNING</b> INT.TEMP.TOO HI	The internal temperature of the unit goes too high.
<b>WARNING</b> EXT.TEMP.TOO HI	The external temperature of the battery is too high. Requires optional Temperature Sensor to be connected.

## Warnings and Error Messages (cont.)

<b>WARNING</b> OVER CHARGE CAPACITY LIMIT	The battery capacity is more than the maximum capacity which the user sets.
<b>WARNING</b> OVER TIME LIMIT	The charging time is longer than the maximum charging time which is set by the user.
<b>WARNING</b> BATTERY WAS FULL	The battery voltage is higher than the maximum voltage set by the user when charging in balance mode.

## Using the Charge Control Software - "Chargemaster"

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 while charging, view charge data in real-time graphs and you can control charging and update firmware via the "Charge Master" software. In order to connect the charger to the computer and use the "Charge Master," you will need a USB cable which is not included in this package. The cable must end on one side with an "A" plug and the opposite side with a "micro-B" plug to connect to the charger directly.

Download the latest ChargeMaster Software at:  
<http://hitecrd.com/support/software-downloads>, the RDX1 uses the ChargeMaster 2 software.

### LIABILITY EXCLUSION

This charger is designed and approved exclusively for use with the types of batteries stated in this Instruction Manual. Hitec RCD, USA 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 any misuse or operation of our products. Unless otherwise prescribed by law, our obligation to pay compensation, regardless of the legal argument employed, is limited to the invoice value of Hitec RCD, USA products which were immediately and directly involved in the event in which the damage occurred.

### ONE YEAR LIMITED WARRANTY

For a period of one year from the date of purchase, HITEC RCD USA, INC. shall REPAIR OR REPLACE, at our option, defective equipment covered by this warranty. Otherwise, the purchaser and/or consumer is responsible for any charges for the repair or replacement of the charger. This warranty does not cover cosmetic damages and damages due to acts of God, accident, misuse, abuse, negligence, improper installation, or damages caused by alterations by unauthorized persons or entities. This warranty only applies to the original purchaser of this product and for products purchased and used in the United States of America, Canada and Mexico. Plastic cases are not covered by this warranty.

THIS WARRANTY IS IN LIEU OF ANY AND ALL OTHER WARRANTIES, WHETHER FOR MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE AND WHETHER EXPRESS OR IMPLIED. REPAIR OR REPLACEMENT AS PROVIDED UNDER THIS WARRANTY IS THE EXCLUSIVE REMEDY. HITEC RCD, INC. SHALL NOT BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES FOR BREACH OF ANY EXPRESS OR IMPLIED WARRANTY RELATING TO THIS PRODUCT, EXCEPT TO THE EXTENT PROHIBITED BY APPLICABLE LAW. ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ON THIS PRODUCT IS LIMITED TO THE DURATION OF THIS WARRANTY, REPAIR AND SERVICE.

### SERVICE AND REPAIR INFORMATION

To have your Hitec charger serviced:

1. Visit the Hitec website at **www.hitecrd.com** and download the service request form (under Support section).
2. Fill out the service request form completely and include a copy of your original receipt showing the purchase date.
3. Package your product in its original packaging or use a suspension-type packaging (foam peanuts or crumpled newspaper). Hitec RCD shall not be responsible for goods damaged in transit.
4. Ship prepaid (COD or postage-due returns will not be accepted) via a traceable common courier (UPS, insured parcel post, FedEx, etc.) to:

**Hitec RCD USA, Inc., Customer Service Center, 12115 Paine St., Poway CA 92064**

### Disposal and Proposition 65 Warning



This symbol indicates that when this type of electronic device reaches the end of its service life, it cannot be disposed of with normal household waste and must be recycled. To find a recycling center near you, refer to the internet or your local phone directory for electronic waste recycling centers.

### STATE OF CALIFORNIA PROPOSITION 65 WARNING:

This product contains chemicals known to the State of California to cause cancer. Use caution when handling this product and avoid exposure to any electronic components or internal assemblies.

### Regulatory Compliance

Hitec's RDX1 satisfies all relevant and mandatory CE directives and complies with FCC Part 15 Subpart B: 2010.

**www.hitecrd.com**

MADE IN CHINA



