

X1 PRO

PROFESSIONAL BALANCE CHARGER/DISCHARGER



HITEC

16 AMP
180 Watt

Li-Po
1-6 ce

Li-Fe
1-6 cell

Li-ION
1-6 cell

Ni-CD
1-15 cell

Ni-MH
1-15 cell

PB
2-20 cell

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INTRODUCTION

We are excited that you have selected the Hitec X1 Pro battery balance charger and discharger. Capable of charging all battery types including Lithium, NiCd/NiMH and Lead-Acid chemistries with a tremendous 230-watt charge amperage rate, this professional charger is innovatively designed and engineered, providing a safe and reliable performance. Take charge of your hobby with Hitec!

Please read this entire operating manual before using the X1 Pro 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.



Warning

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.

- ⚠ 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 WARRANTIED 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.



Note



Caution

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

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 WHEN IT IS CONNECTED TO ITS POWER SOURCE. IF ANY MALFUNCTION IS FOUND, TERMINATE THE PROCESS IMMEDIATELY AND REFER TO THE OPERATION MANUAL.

WARNINGS AND SAFETY NOTES

- ⚠ 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.
- ⚠ Verify 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 before connecting the battery. Reverse the sequence when disconnecting.
- ⚠ Never attempt to charge or discharge the following types of batteries:
 - A battery fitted with an integral charge circuit or a protection circuit

WARNINGS AND SAFETY NOTES (cont.)

- 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
- Any 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.

Standard Battery Parameters

	LiPo	Lilon	LiFe	NiCd	NiMH	Pb
Nominal Voltage	3.7V/cell	3.6V/cell	3.3V/cell	1.2V/cell	1.2V/cell	2.0V/cell
Max. Charge Voltage	4.2V/cell	4.1V/cell	3.6V/cell	1.5V/cell	1.5V/cell	2.46V/cell
Storage Voltage	3.8V/cell	3.7V/cell	3.3V/cell	n/a	n/a	n/a
Min. Discharge Voltage	3.0-3.3V/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 X1 PRO CHARGING PARAMETERS, BE SURE YOU SELECT THE PROPER BATTERY TYPE AND CELL VOLTAGE FOR THE TYPE OF CELL YOU ARE CHARGING. CHARGING BATTERIES UNDER 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 X1 Pro 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 X1 Pro to your battery must be of an acceptable current rating to handle the applied

WARNINGS AND SAFETY NOTES (cont.)

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 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 X1 Pro discharging functions have 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 7 OF THIS MANUAL FOR MINIMUM DISCHARGE VOLTAGES.

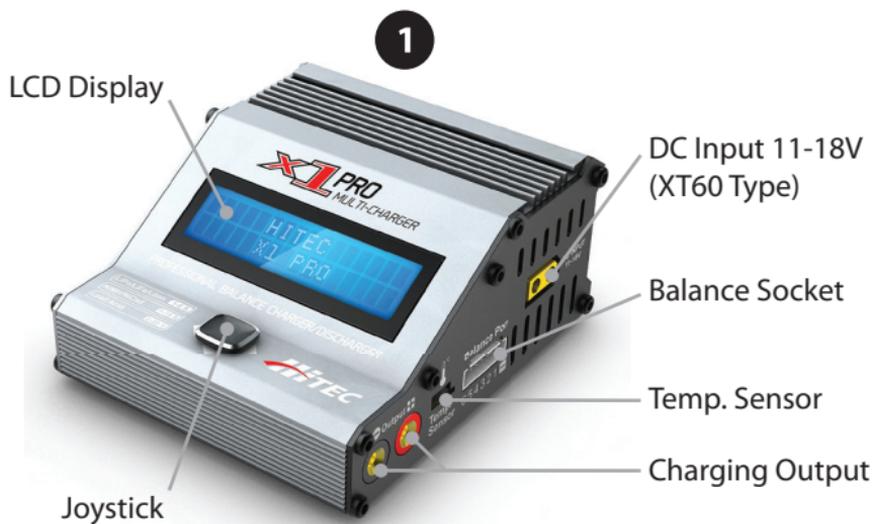
LiPo Charge/Discharge Cycling

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 X1 Pro 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 X1 Pro, 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.

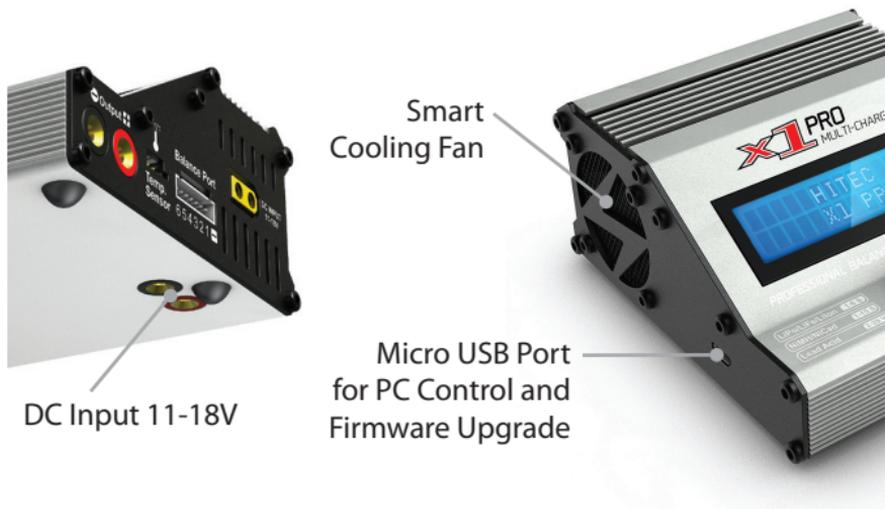
CHARGER LAYOUT



1. X1 Pro Charger
2. Balance Adaptor
3. Balancing Board
4. DC Input Power Cable
5. 18AWG Wire Charging Cable
6. 2S LiPo Hardcase Charging Lead



CHARGER LAYOUT



SPECIFICATIONS

Input Voltage Range	11~18 Volts DC
Charge Circuit Power	180 Watts
Discharge Circuit Power	30 Watts
Charge Current Range	0.1-16.0 Amps
Discharge Current Range	0.1-8.0 Amps
LiPo, LiFe & Lilon Balancing Current Drain	200mA per Cell
LiPo, LiFe & Lilon Cell Count	1 - 6 Cells
Maximum NiCd/NiMh Cell Count	1 - 15 Cells
Lead Acid (Pb) Cells / Voltage	2 - 20 Volts
Dimensions (W x D x H)	3.6 x 4.4 x 2.0 Inches
Weight	14.3 Ounces

Compact and Unique Design

The X1 Pro is a super-compact, portable charging system with a unique design that incorporates a joystick input device for very simple operation.

Two DC Inputs

There are two DC inputs, one located on the right side of the charger and the other on the bottom for docking into the ePowerBox 17A (230W 13.8V Switch DC Power Supply - Part No. 44216).

Optimized Operating Software

The X1 Pro "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 X1 Pro 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.

Internal Independent Lithium Battery Balancer

The X1 Pro features a built-in cell voltage balancer eliminating the fuss of external balancers while charging.

Balancing Individual Cells During Discharging

The X1 Pro also monitors and balances each cell in the pack individually while discharging. If the voltage of any single cell is abnormal, the X1 Pro will display an error message and the process will end automatically.

Adaptable to Various Types of Lithium Batteries

The X1 Pro will charge and discharge a variety of Lithium batteries such as Li-ion, LiPo and the new LiFe series of batteries.

Fast and Storage Mode of Lithium Batteries

The X1 Pro features two styles of charging. "Fast" charge reduces the charge duration while "Store" controls the final voltage of your battery to optimize your packs for long term storage and maximum lifespan.

Cyclic Charging/Discharging

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

Battery Memory

For your convenience, the X1 Pro will store the data pertaining to a specific charge program for up to 10 batteries. The ability to save and load these settings for a specific battery saves the user lots of time.

Terminal Voltage Control (TVC)

The charger allows the user to set the charge/discharge end voltage.



Warning

THIS IS FOR ADVANCED USERS ONLY. NEVER EXCEED THE BATTERY MANUFACTURER'S RECOMMENDATIONS.

LiPo Battery Meter

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

Re-Peak Mode of NiMH/NiCd Battery

In Re-Peak Charge mode, the charger can peak charge the battery 1-3 times consecutively. This is good for making certain the battery is fully charged and for checking how well the battery receives fast charges.

Delta-Peak Sensitivity for NiMH/NiCd

This automatic charge termination program is based on the principle of delta-peak voltage detection. When the battery's voltage exceeds the threshold, the charging process will be terminated automatically.

Automatic Charging Current Limit

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

Capacity Limit

The charging capacity is always calculated as the charging current multiplied by time. The charging process will terminate automatically if the charging capacity exceeds the limit set by the user.

Temperature Threshold

The battery's internal chemical reaction will cause the temperature of the battery to rise. The charging process will terminate automatically if the charger's temperature exceeds the limit set by the user.

Processing Time Limit

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

PC Control Software "Charge Master"

The free "Hitec Charge Master" software gives you unparalleled ability to operate the charger through your PC. You can monitor pack voltage, cell voltage and other data during charging and view charge data in real-time graphs. You can also initiate processes, control charging and update firmware .

POWER SUPPLY CONNECTIONS

This charger is powered by an 11-18V DC power source. There are two pairs of DC input sockets: one is used for the connection of a DC power cord (XT60 type connector) and is located on the right side of the charger, while the other is used for docking into the ePowerBox 17A Power Supply and is located on the bottom of the charger. This socket accepts banana plug type connectors. To utilize the charger's absolute maximum power capabilities, the DC power source must be capable of delivering at least 17 amps while maintaining 12V DC.



XT60 Connector plugged directly into charger



Bullet connectors plugged directly into power supply.



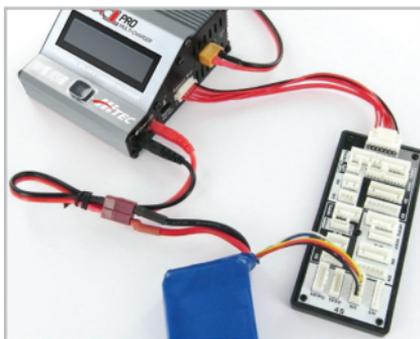
CONNECTING THE BATTERY

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.

BALANCE SOCKET:

The balance wire attached to the battery must be connected to the charger with the black wire aligned with the negative symbol (—). **Take care to always maintain correct polarity!** This image shows the correct way to connect your battery to the X1 Pro while charging with the use of a balance adaptor. This is the recommended method for charging and discharging.



OPERATING THE X1 PRO CHARGER

The joystick feature makes operating the X1 Pro very easy. Simply toggle the joystick up, down, right or left to scroll through the various programs and change program settings. Detailed descriptions of how to locate and edit each program feature is given in the following sections.



Toggle the joystick up or down to scroll through the various programs/modes or to increase/decrease program settings.



Toggle the joystick to the right to select/set a parameter or to start the charging process.



Toggle the joystick to the left to return to the previous screen or to stop the charging process.

LITHIUM CHEMISTRY BATTERIES

This program is only suitable for charging/discharging lithium (LiPo/Lilon/LiFe) batteries.

LITHIUM - CHARGE MODES

The X1 Pro offers the following lithium charge modes: Charge, Balance Charge, Fast Charge, Storage and Discharge.



Warning

BEFORE SELECTING A CHARGE MODE, IT IS CRITICAL THAT YOU SELECT THE CORRECT TYPE OF LITHIUM BATTERY TO BE CHARGED. FAILURE TO DO SO CAN RESULT IN DAMAGE TO THE BATTERY AND POSSIBLE EXPLOSION.

Selecting a Battery Type



PROGRAM SELECT
LiPo BATT

When you power on the X1 Pro, you will automatically be taken to the last used operation "PROGRAM SELECT" screen. If the battery type you wish to use is different than what is displayed, toggle up (▲) or down (▼) until you see the type of Lithium battery you wish to charge.



LiPo BALANCE
0.8A 22.2UC6S

Once you have selected the battery, toggle right (▶) once to enter the "LiPo" program screen. The default charge mode will be "BALANCE," toggle up (▲) or down (▼) to cycle through the different charge modes. Toggle right (▶) once to select the desired charge mode.

LITHIUM - CHARGE MODE



Warning

BEFORE YOU BEGIN CHARGING YOUR BATTERY, MAKE SURE YOU HAVE READ AND UNDERSTAND ALL OF THE WARNINGS AND SAFETY INFORMATION CONTAINED ON PAGES 4-9.



Note

IN THE CHARGE MODE, LITHIUM BATTERIES CAN BE CHARGED WITHOUT THE USE OF A BALANCE ADAPTOR. A BALANCE ADAPTER CAN BE USED, BUT IT IS NOT REQUIRED. BALANCE CHARGE MODE IS ALWAYS RECOMMENDED FOR ANY BATTERY WITH A BALANCE LEAD.

See page 16 for the appropriate charging connections setup for this operation.

LiPo CHARGE
0.1A 22.2VC6S

First, select the correct battery type by following the instructions on page 18. Once you have set the correct battery type, toggle up (▲) or down (▼) until you see the “LiPo CHARGE” screen.

LiPo CHARGE
0.8A 22.2VC6S

Toggle right (▶) once and the amp rate value will begin flashing. Toggle up (▲) or down (▼) to adjust the value to the desired rate. Follow the instructions provided with your battery when setting the amp rate.

LiPo CHARGE
0.8A 11.1VC6S

Toggle right (▶) again and the cell count value will begin flashing. Toggle up (▲) or down (▼) to adjust the cell count. This will automatically change the voltage value to the correct setting for the selected cell count. The cell count should match the battery label exactly.

Toggle and hold the joystick to the right (▶) for three seconds and you will see “BATTERY CHECK WAIT...” followed by the “CONFIRM/CANCEL” screen.

R: 3SER S: 3SER
CONFIRM/CENTER

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 toggle right (▶) once to confirm and begin charging. If the

LITHIUM - CHARGE MODE (cont.)

cell count does not match, toggle left (◀) once to return to the previous screen and carefully check the number of cells of the battery pack before proceeding.

Li3s 1.2A 12.69V
CHG 022:48 00682

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



Caution

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

4.08 4.08V 4.08V
0.00 0.00V 0.00V

If you are using a balance adaptor, during charging you may toggle up (▲) once to view the voltage of each individual cell.

Once the battery is fully charged, the screen will read “**END: FINISH**” and the charger will emit a chiming sound. Toggle left (◀) once to stop charging. You may toggle left (◀) at any time during the charging process to stop charging.

LITHIUM - BALANCE CHARGE MODE

This function is for balancing the voltage of individual lithium-polymer battery cells while charging. In order to use the Balance Mode, the battery must have a balance lead. Charging in this mode is different from the normal mode because the built-in processor monitors the voltage of each individual cell and controls the input current fed into each cell in order to equalize the voltage. Use of a balance adaptor with any battery that has a balance lead will improve the performance and lifespan of the battery.



Warning

BEFORE YOU BEGIN CHARGING YOUR BATTERY, MAKE SURE YOU HAVE READ AND UNDERSTAND ALL OF THE WARNINGS AND SAFETY INFORMATION CONTAINED ON PAGES 4-9.

See page 16 for the appropriate charging connections setup for this operation.

LiPo BALANCE
0.8A 22.2VCS>

First, select the correct battery type by following the instructions on page 18. Once you have set the correct battery type, toggle up (▲) or down (▼) until you see the “LiPo BALANCE” screen.

LiPo BALANCE
0.8A 22.2VCS>

Toggle right (▶) once and the amp rate value will begin flashing. Toggle up (▲) or down (▼) to adjust the value to the desired rate. Follow the instructions provided with your battery when setting the amp rate.

LiPo BALANCE
0.8A 11.1VCS>

Toggle right (▶) again and the cell count value will begin flashing. Toggle up (▲) or down (▼) to adjust the cell count. This will automatically change the voltage value to the correct setting for the selected cell count. The cell count should match the battery label exactly.

Toggle and hold the joystick to the right (▶) for three seconds and you will see “BATTERY CHECK WAIT...” followed by the “CONFIRM/CANCEL” screen.

R: 3SER S: 3SER
CONFIRM/CENTER>

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 toggle right (▶) once to confirm and begin charging. If the cell count does not match, toggle left (◀) once to return to the previous screen and carefully check the number of cells of the battery pack before proceeding.

LITHIUM - BALANCE CHARGE MODE (cont.)



Li3s 1.2A 12.69V
BAL 022:43 00682

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



Caution

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



4.09 4.09V 4.09V
0.00 0.00V 0.00V

During charging you may toggle up (▲) once to view the voltage of each individual cell.

Once the battery is fully charged, the screen will read "END: FINISH" and the charger will emit a chiming sound. Toggle left (◀) once to stop charging. You may toggle left (◀) at any time during the charging process to stop charging.

LITHIUM - FAST CHARGE MODE



Warning

BEFORE YOU BEGIN CHARGING YOUR BATTERY, MAKE SURE YOU HAVE READ AND UNDERSTAND ALL OF THE WARNINGS AND SAFETY INFORMATION CONTAINED ON PAGES 4-9.



Note

IN THE FAST CHARGE MODE, LITHIUM BATTERIES CAN BE CHARGED WITHOUT THE USE OF A BALANCE ADAPTOR. A BALANCE ADAPTER CAN BE USED, BUT IT IS NOT REQUIRED. BALANCE CHARGE MODE IS RECOMMENDED FOR ANY BATTERY WITH A BALANCE LEAD.

See page 16 for the appropriate charging connections setup for this operation.

LITHIUM - FAST CHARGE MODE (cont.)

LiPo FAST CHG
0.8A 22.2VCS

First, select the correct battery type by following the instructions on page 18. Once you have set the correct battery type, toggle up (▲) or down (▼) until you see the “LiPo FAST CHG” screen.

LiPo FAST CHG
0.8A 22.2VCS

Toggle right (▶) once and the amp rate value will begin flashing. Toggle up (▲) or down (▼) to adjust the value to the desired rate. Follow the instructions provided with your battery when setting the amp rate.

LiPo FAST CHG
0.8A 11.1VCS

Toggle right (▶) again and the cell count value will begin flashing. Toggle up (▲) or down (▼) to adjust the cell count. This will automatically change the voltage value to the correct setting for the selected cell count. The cell count should match the battery label exactly.

Toggle and hold the joystick to the right (▶) for three seconds and you will see “BATTERY CHECK WAIT...” followed by the “CONFIRM/CANCEL” screen.

R: 3SER S: 3SER
CONFIRM/CENTER

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 toggle right (▶) once to confirm and begin charging. If the cell count does not match, toggle left (◀) once to return to the previous screen and carefully check the number of cells of the battery pack before proceeding.

Li3s 1.2A 12.69V
FAS 022:48 00682

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

LITHIUM - FAST CHARGE MODE (cont.)



Caution

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



If you are using a balance adaptor, during charging you may toggle up (▲) once to view the voltage of each individual cell.

Once the battery is fully charged, the screen will read “**END: FINISH**” and the charger will emit a chiming sound. Toggle left (◀) once to stop charging. You may toggle left (◀) at any time during the charging process to stop charging.

LITHIUM - STORAGE MODE

This function is for charging/discharging batteries that will not be used immediately. The program is designed for charging/discharging batteries up-to or down-to safe storage levels. The program will automatically begin to discharge if the current state of the battery exceeds the voltage level for storage.



Warning

BEFORE YOU BEGIN CHARGING YOUR BATTERY, MAKE SURE YOU HAVE READ AND UNDERSTAND ALL OF THE WARNINGS AND SAFETY INFORMATION CONTAINED ON PAGES 4-9.



Note

IN THE STORAGE MODE, LITHIUM BATTERIES CAN BE CHARGED WITHOUT THE USE OF A BALANCE ADAPTOR. A BALANCE ADAPTOR CAN BE USED, BUT IT IS NOT REQUIRED. BALANCE CHARGE MODE IS RECOMMENDED FOR ANY BATTERY WITH A BALANCE LEAD.

LITHIUM - STORAGE MODE (cont.)

```
LiPo STORAGE  
8.1A 22.2VCS)
```

First, select the correct battery type by following the instructions on page 18. Once you have set the correct battery type, toggle up (▲) or down (▼) until you see the “LiPo STORAGE” screen.

```
LiPo STORAGE  
0.8A 22.2VCS)
```

Toggle right (▶) once and the amp rate value will begin flashing. Toggle up (▲) or down (▼) to adjust the value to the desired rate. Follow the instructions provided with your battery when setting the amp rate.

```
LiPo STORAGE  
0.8A 11.1VCS)
```

Toggle right (▶) again and the cell count value will begin flashing. Toggle up (▲) or down (▼) to adjust the cell count. This will automatically change the voltage value to the correct setting for the selected cell count. The cell count should match the battery label exactly.

Toggle and hold the joystick to the right (▶) for three seconds and you will see “BATTERY CHECK WAIT...” followed by the “CONFIRM/CANCEL” screen.

This screen displays the number of cells you set up as “F” and the number of cells detected by the processor as “S”. If both numbers are identical, you may toggle right (▶) once to confirm and begin charging. If the cell count does not match, toggle left (◀) once to return to the previous screen and carefully check the number of cells of the battery pack before proceeding.

```
R: 3SER S: 3SER  
CONFIRM/CENTER)
```

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

```
Li3s 1.2A 12.69V  
STO 022:48 00682
```

LITHIUM - STORAGE MODE (cont.)



Caution

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



During charging you may toggle up (▲) once to view the voltage of each individual cell.

Once the battery charge has reached storage level, the screen will read “[STORAGE FINISHED]” and the charger will emit a chiming sound. Toggle left (◀) once to stop charging. You may toggle left (◀) at any time during the charging process to stop charging.

LITHIUM - DISCHARGE MODE

If you plan to discharge your battery to reach safe storage levels we strongly recommend that you use Storage Mode. In very few instances should discharging become necessary with LiPo batteries. One such instance may include preparing a battery for disposal, in which case the battery should not be completely discharged. Be sure to follow the discharging instructions provided by the battery manufacturer. **Over-discharging a battery can severely damage the battery and may cause a fire or explosion.**



Warning

DISCHARGING LITHIUM CHEMISTRY BATTERIES CAN CAUSE PERMANENT DAMAGE TO THE BATTERY AND IT IS NOT RECOMMENDED AT ANYTIME OTHER THAN THE DISPOSAL OF THE BATTERY. IF YOU CHOOSE TO DISCHARGE YOUR LITHIUM BATTERIES, MAKE SURE TO PAY CLOSE ATTENTION TO THE MINIMUM VOLTAGE SETTING. IF YOU WANT TO STORE YOUR BATTERY FOR A LONG PERIOD OF TIME, YOU SHOULD UTILIZE THE STORAGE MODE

CHARGE PROGRAM AS THIS IS THE SAFEST METHOD OF STORING YOUR LITHIUM CHEMISTRY BATTERIES.



Note

IN DISCHARGE MODE, LITHIUM BATTERIES CAN BE DISCHARGED WITH OR WITHOUT THE USE OF A BALANCE ADAPTOR. THE USE OF A BALANCE ADAPTOR IS RECOMMENDED FOR DISCHARGING ANY BATTERY THAT HAS A BALANCE LEAD.



Warning

BEFORE YOU BEGIN DISCHARGING YOUR BATTERY, MAKE SURE YOU HAVE READ AND UNDERSTAND ALL OF THE WARNINGS AND SAFETY INFORMATION CONTAINED ON PAGES 4-9.

See page 16 for the appropriate charging connections setup for this operation.

LiPo DISCHARGE
8.1A 22.2VCS

First, select the correct battery type by following the instructions on page 18. Once you have set the correct battery type, toggle up (▲) or down (▼) until you see the “LiPo DISCHARGE” screen.

LiPo DISCHARGE
0.8A 22.2VCS

Toggle right (▶) once and the amp rate value will begin flashing. Toggle up (▲) or down (▼) to adjust the value to the desired rate. Follow the instructions provided with your battery when setting the amp rate.

LiPo DISCHARGE
0.8A 11.1VCS

Toggle right (▶) again and the cell count value will begin flashing. Toggle up (▲) or down (▼) to adjust the cell count. This will automatically change the voltage value to the correct setting for the selected cell count. The cell count should match the battery label exactly.

LITHIUM - DISCHARGE MODE (cont.)

Toggle and hold the joystick to the right (▶) for three seconds and you will see “BATTERY CHECK WAIT...” followed by the “CONFIRM/CANCEL” screen.

R: 3SER S: 3SER
CONFIRM/CENTER

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 toggle right (▶) once to confirm and begin discharging. If the cell count does not match, toggle left (◀) once to return to the previous screen and carefully check the number of cells of the battery pack before proceeding.

Li3s 1.2A 12.69V
DSC 022:48 00682

Once discharging has commenced, the charger will display the following real-time information: battery type/cell count, discharging current, battery voltage, discharging time and discharged capacity.



Caution

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

4.08 4.09V 4.09V
0.00 0.00V 0.00V

During discharging you may toggle up (▲) once to view the voltage of each individual cell.

Once the battery is discharged, the screen will read “[DISCHARGE FINISHED]” and the charger will emit a chiming sound. Toggle left (◀) once to stop discharging. You may toggle left (◀) at any time during the discharging process to stop discharging.

NiCd/NiMH

This program is only suitable for charging/discharging NiCd/NiMH batteries.

NICD/NIMH - CHARGE MODES

The X1Pro offers the following NiCd/NiMH charge modes: Charge, Auto Charge, Discharge, Re-Peak and Cycle.



Warning

BEFORE SELECTING A CHARGE MODE, IT IS CRITICAL THAT YOU SELECT THE CORRECT TYPE OF LITHIUM BATTERY TO BE CHARGED. FAILURE TO DO SO CAN RESULT IN DAMAGE TO THE BATTERY AND POSSIBLE EXPLOSION.

Selecting a Battery Type

PROGRAM SELECT
NIMH BATT

When you power on the X1 Pro you will automatically be taken to the "PROGRAM SELECT" screen. Toggle up (▲) or down (▼) until you see the battery type you wish to charge. Now, toggle right (▶) once to enter the "NiMH" or "NiCd" Program. The default charge mode will be "CHARGE".

NICD/NIMH - CHARGE MODE



Warning

BEFORE YOU BEGIN CHARGING YOUR BATTERY, MAKE SURE YOU HAVE READ AND UNDERSTAND ALL OF THE WARNINGS AND SAFETY INFORMATION CONTAINED ON PAGES 4-9.

NIMH CHARGE
CURRENT 1.6A

Toggle right (▶) once and the amp rate value will begin flashing. Toggle up (▲) or down (▼) to adjust the value to the desired rate. Follow the instructions provided with your battery when setting the amp rate.

NiCd/NiMH - CHARGE MODE (cont.)

Toggle and hold the joystick to the right (▶) for three seconds to begin charging.



NiMH 1.6A 5.96V
CHG 003:43 00090

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

Once the battery is fully charged, the screen will read "END: FINISHED" and the charger will emit a chiming sound. Toggle left (◀) once to stop charging. You may toggle left (◀) at any time during the charging process to stop charging.

NiCd/NiMH - AUTO CHARGE MODE

In this program, the charger detects the condition of the battery connected to the output and automatically charges the battery. In this mode, you should set up the upper limit of the charge current to avoid damage by feeding excessive current. Some batteries of low resistance and capacity can lead to higher current in the Auto Charge mode.



Warning

BEFORE YOU BEGIN CHARGING YOUR BATTERY, MAKE SURE YOU HAVE READ AND UNDERSTAND ALL OF THE WARNINGS AND SAFETY INFORMATION CONTAINED ON PAGES 4-9.

Select the correct battery type by following the instructions on page 29. Once you have set the correct battery type, toggle up (▲) or down (▼) until you see the "NiMH Auto CHARGE" screen.



NiMH Auto CHARGE
CURRENT 5.0A

Toggle right (▶) once and the amp rate value will begin flashing. Toggle up (▲) or down (▼) to adjust the value to the desired rate. Follow the instructions provided with your battery when setting the amp rate.

NiCd/NiMH - AUTO CHARGE MODE (cont.)

Toggle and hold the joystick to the right (▶) for three seconds to begin charging.



NiMH 1.6A 5.96V
AUT 003:43 00090

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

Once the battery is fully charged, the screen will read "END: FINISHED" and the charger will emit a chiming sound.

Toggle left (◀) once to stop charging. You may toggle left (◀) at any time during the charging process to stop charging.

NiCd/NiMH - DISCHARGE MODE



Warning

BEFORE YOU BEGIN DISCHARGING YOUR BATTERY, MAKE SURE YOU HAVE READ AND UNDERSTAND ALL OF THE WARNINGS AND SAFETY INFORMATION CONTAINED ON PAGES 4-9.

Select the correct battery type by following the instructions on page 29. Once you have set the correct battery type, toggle up (▲) or down (▼) until you see the "NiMH DISCHARGE" screen.



NiMH DISCHARGE
0.1A OUT: 1.0V

Toggle right (▶) once and the amp rate value will begin flashing. Toggle up (▲) or down (▼) to adjust the value to the desired rate. Follow the instructions provided with your battery when setting the amp rate.

Toggle right (▶) once again and the final voltage value will begin flashing. Toggle up (▲) or down (▼) to adjust the value to the desired rate. The discharge current ranges from 0.1 to 8.0A and the final voltage ranges from 0.1 to 25.2V.

NICD/NIMH - DISCHARGE MODE (cont.)

Toggle and hold the joystick to the right (▶) for three seconds to begin discharging.



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

Once discharging is complete, the screen will read “[DISCHARGE FINISHED]” and the charger will emit a chiming sound. Toggle left (◀) once to stop discharging. You may toggle left (◀) at any time during the discharging process to stop discharging.

NICD/NIMH - RE-PEAK MODE

In Re-Peak Charge mode, the charger can automatically peak charge the battery 1-3 times consecutively. This is good for confirming that the battery is fully charged and for checking how well the battery receives fast charges. A five minute cool-off delay occurs after each re-peak charge.



Warning

BEFORE YOU BEGIN CHARGING YOUR BATTERY, MAKE SURE YOU HAVE READ AND UNDERSTAND ALL OF THE WARNINGS AND SAFETY INFORMATION CONTAINED ON PAGES 4-9.



Select the correct battery type by following the instructions on page 29. Once you have set the correct battery type, toggle up (▲) or down (▼) until you see the “NiMH RE-PEAK” screen.

Toggle right (▶) once and the number of re-peak cycles will begin flashing. Toggle up (▲) or down (▼) to change the number of re-peak cycles you want the X1 Pro to execute. The X1 Pro can re-peak

NiCd/NiMH - RE-PEAK MODE (cont.)

charge the battery a maximum of 3 times consecutively.

The X1 Pro will use the amperage value entered in Charge Mode for this operation.

Toggle and hold the joystick to the right (▶) for three seconds to begin charging.



NiMH 1.6A 5.98V
RPC 002:51 00090

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

Once charging is complete, the screen will read "END: FINISHED" and the charger will emit a chiming sound. Toggle left (◀) once to stop charging. You may toggle left (◀) at any time during the charging process to stop charging.

NiCd/NiMH - CYCLE MODE

The X1 Pro makes cycling of NiCd/NiMH batteries easy. The process of discharging and recharging (cycling) can be achieved automatically with one simple step and will improve the performance of NiCd/NiMH batteries. We strongly recommend cycling any battery that has been discharged and stored for a period of time. This will increase battery life and improve performance.



Warning

BEFORE YOU BEGIN CYCLING YOUR BATTERY, MAKE SURE YOU HAVE READ AND UNDERSTAND ALL OF THE WARNINGS AND SAFETY INFORMATION CONTAINED ON PAGES 4-9.

NiCd/NiMH - CYCLE MODE (cont.)

Select the correct battery type by following the instructions on page 29. Once you have set the correct battery type, toggle up (▲) or down (▼) until you see the “NiMH CYCLE” screen.

 The Cycle Mode gives you two cycling options: “DCHG>CHG” or “CHG>DCHG”. The “DCHG>CHG” option will first discharged the battery and then charge the battery. The “CHG>DCHG” option will first charge the battery and then discharge the battery. If this screen does not currently show the cycling option you desire, toggle right (▶) once and this setting will begin flashing. Toggle up (▲) or down (▼) to change this setting.

 Toggling right (▶) once will cause the number of cycles option to begin flashing. Toggle up (▲) or down (▼) to change this to the number of cycles you want the X1Pro to execute. The X1 Pro can cycle the battery a maximum of 5 times consecutively.

Toggle and hold the joysick to the right (▶) for three seconds to begin cycling.

 Once cycling has commenced, the charger will display the following real-time information: battery type, charging/discharging current, battery voltage, charging time and charged capacity. You will also see “DDC” 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 X1 Pro will display the charge/discharge capacity for each cycle. By toggling up (▲) or down (▼), you can scroll through this data for each cycle.

Pb (LEAD-ACID)

This program is only suitable for charging Pb (lead-acid) batteries with nominal voltages of 2 to 20V. A Pb (lead-acid) battery is significantly different from NiCd/NiMH batteries. Pb batteries can only deliver lower currents than in comparison to their capacity. The same restriction applies to the charging process. Consequently, the optimum charge current can only be 1/10 of the capacity. A Pb battery cannot be used for fast charging. Please follow the instructions provided by the battery manufacturer.

Pb CHARGE MODES

The X1 Pro offers the following NiCd/NiMH charge modes: Charge and Discharge.



Warning

BEFORE SELECTING A CHARGE MODE, IT IS CRITICAL THAT YOU SELECT THE CORRECT TYPE OF BATTERY TO BE CHARGED. FAILURE TO DO SO CAN RESULT IN DAMAGE TO THE BATTERY.

Selecting the Battery Type

When you power on the X1 Pro, you will automatically be taken to the "LiPo BALANCE" screen. Toggle left (◀) once to enter the "PROGRAM SELECT" screen. Toggle up (▲) or down (▼) until you see the battery type you wish to charge. Now, toggle right (▶)

PROGRAM SELECT



once to enter the "Pb" program. The default charge mode will be "CHARGE".

Pb CHARGE MODE



Warning

BEFORE YOU BEGIN CHARGING YOUR BATTERY, MAKE SURE YOU HAVE READ AND UNDERSTAND ALL OF THE WARNINGS AND SAFETY INFORMATION CONTAINED ON PAGES 4-9.

Pb CHARGE MODE (cont.)

Pb CHARGE
0.1A 2.0UC1P>

After selecting the correct battery type, if the screen does not read "CHARGE", toggle up (▲) or down (▼) to select the "CHARGE" mode.

Pb CHARGE
0.7A 2.0UC1P>

Toggle right (▶) once and the amp rate value will begin flashing. Toggle up (▲) or down (▼) to adjust the value to the desired rate. Follow the instructions provided with your battery when setting the amp rate. The amp rate should be set to 1/10 of capacity.

Pb CHARGE
0.7A 12.0UC6P>

Toggle right (▶) once and the voltage rate value will begin flashing. Toggle up (▲) or down (▼) to set the voltage and number of cells.

Toggle and hold the joystick to the right (▶) for three seconds to begin charging.

Pb-6 0.4A 14.70V
CHG 003:10 00029

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

Once charging is complete, the screen will read "END: FINISHED" and the charger will emit a chiming sound. Toggle left (◀) once to stop charging. You may toggle left (◀) at any time during the charging process to stop charging.

Pb DISCHARGE MODE



Warning

BEFORE YOU BEGIN DISCHARGING YOUR BATTERY, MAKE SURE YOU HAVE READ AND UNDERSTAND ALL OF THE WARNINGS AND SAFETY INFORMATION CONTAINED ON PAGES 4-9.

Pb DISCHARGE
0.1A 2.00C1P>

After selecting the correct battery type, if the screen does not read “DISCHARGE”, toggle up (▲) or down (▼) to select the “DISCHARGE” mode.

Pb DISCHARGE
0.7A 2.00C1P>

Toggle right (▶) once and the amp rate value will begin flashing. Toggle up (▲) or down (▼) to adjust the value to the desired rate. Follow the instructions provided with your battery when setting the amp rate. The amp rate should be set to 1/10 of capacity.

Pb DISCHARGE
0.7A 12.00C6P>

Toggle right (▶) once and the voltage rate value will begin flashing. Toggle up (▲) or down (▼) to set the voltage and number of cells.

Toggle and hold the joystick to the right (▶) for three seconds to begin discharging.

Pb-6 0.4A 14.70V
DSC 003:10 00029

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

Once discharging is complete, the screen will read “END: CUTOFF VOL” and the charger will emit a chiming sound. Toggle left (◀) once to stop charging. You may toggle left (◀) at any time during the charging process to stop charging.

USING THE HITEC CHARGE MASTER SOFTWARE

The free “Hitec 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 charging and discharging. Hitec Charge Master also allows you to graph process data in real-time and you can control charging and update the X1 Pro’s firmware all from the software interface.

In order to connect the X1 Pro to the computer and use the software, you will need a USB-A to USB Mini-B cable that is not included in this package.

You can download your copy of the Hitec Charge Master software from <http://www.hitecrccd.com>. Refer to the help file in the Hitec Charge Master software if you need more assistance to use this software program.



Charge Setup Screen

Allows you to choose battery type and charge mode.



Charge Status Screen

Monitors real time information about your battery and the charging process.

BATTERY MEMORY

The X1 Pro can store up to 10 different battery profiles. This allows you to easily recall stored profiles without having to go through the setup process each time you charge a battery.

When you power on the X1 Pro, toggle down (▼) repeatedly until you see “BATT MEMORY”. Toggle right (▶) once to enter the “BATT MEMOR ” program.

[BATT MEMORY 1]
ENTER SET->

Battery Memory Number

When you enter the “BATT MEMORY” program, the battery profile number will be flashing. Toggle up (▲) or down (▼) to select the battery profile (1-10) you wish to create/edit.

BATT TYPE
LiPo

Battery Type

Toggle right (▶) once to enter the “BATT TYPE” screen. Toggle right (▶) once and the battery type will begin flashing. Toggle up (▲) or down (▼) to select the battery type. Toggle right (▶) once to enter the battery type.

BATT VOLTS
7.4V(2SD)

Battery Voltage/Cell Type

Toggle up (▲) once to enter the “BATT VOLTS” screen. Toggle right (▶) once and the voltage value will begin flashing. Toggle up (▲) or down (▼) to change the voltage value. The cell count will change automatically to correspond to the voltage selected. Toggle right (▶) once to set the voltage.

CHARGE CURRENT
4.9A

Charge Current Setting

Toggle up (▲) once to enter the “CHARGE CURRENT” screen. Toggle right (▶) once and the amperage value will begin flashing. Toggle up (▲) or down (▼) to change the amperage value. Toggle right (▶) once to set the amperage.

DSCH CURRENT
2.2A

Discharge Current Setting

Toggle up (▲) once to enter the "DSCH CURRENT" screen. Toggle right (▶) once and the amperage value will begin flashing. Toggle up (▲) or down (▼) to change the amperage value. Toggle right (▶) once to set the amperage.

DSCH VOLTAGE
3.0V/CELL

Discharge Voltage Setting (3.0-3.3v per cell)

Toggle up (▲) once to enter the "DSCH VOLTAGE" screen. Toggle right (▶) once and the voltage value will begin flashing. Toggle up (▲) or down (▼) to change the voltage value. Toggle right (▶) once to set the voltage. Refer to page 7 for recommended discharge voltages.

TVC=YOUR RISK!
4.20V

Terminal Voltage Setting (Use At Your Own Risk)

Toggle up (▲) once to enter the "TVC=YOUR RISK!" screen. Toggle right (▶) once and the voltage value will begin flashing. Toggle up (▲) or down (▼) to change the voltage value. Toggle right (▶) once to set the voltage.

TEMPERATURE
CUT-OFF 50C

Temperature Cut-Off

(when using optional temp sensor)

SAVE PROGRAM
ENTER

Toggle up (▲) once to enter the "TEMPERATURE CUT-OFF" screen. Toggle right (▶) once and the temperature value will begin flashing. Toggle up (▲) or down (▼) to change the temperature value. Toggle

right (▶) once to set the temperature. The temperature can be set between 20°C and 80°C.

[BATT MEMORY 1]
LiPo 7.4VC2S

Toggle up (▲) once to enter the "SAVE PROGRAM" screen. Toggle right (▶) once to save all of the settings previously entered.

BATTERY MEMORY (cont.)

Once the profile has been saved, the “BATT MEMORY” screen will appear. The second line on this screen will automatically scroll through the various parameters that have been set for this battery profile.

To load a preset battery profile enter the “BATT MEMORY” screen and toggle up (▲) or down (▼) to find the profile number you wish to use. Toggle and hold the joystick to the right (▶) for three seconds and the profile will be loaded.

LITHIUM BATTERY METER

The X1 Pro allows you to check a battery’s total voltage, the highest voltage, the lowest voltage and each cell’s voltage.

Connect the battery in the same manner as you would for charging.



PROGRAM SELECT
LI BATT METER

When you power on the X1 Pro you will be at the “PROGRAM SELECT” screen. Toggle up (▲) until you see “LI BATT METER”.



4.09 4.09V 4.09V
0.00 0.00V 0.00V

Toggle right (▶) once and the screen will display the voltage of each cell.



MAIN 12.52V
HH.190V LL.160V

Toggle up (▲) or down (▼) once and the screen will display the total voltage, highest voltage and the lowest voltage.

SYSTEM SET UP

When the X1 Pro is powered on for the first time, all system settings will be set to default. Each parameter can be adjusted by the user, allowing for greater control of the charge process for the specific battery being charged.

When you power on the X1 Pro you will be at the “PROGRAM SELECT” screen. Toggle up (▲) until you see “SYSTEM SET->”.

Rest Time

During the charge>discharge or discharge>charge cycle, batteries increase in temperature. The Rest Time program allows the user to specify the time delay between cycles, allowing time for the battery to cool.



Rest Time
CHG>DCHG 8Min

Toggle right (▶) once and you will see the “REST TIME” screen. Toggle right (▶) once and the timer value will begin flashing. Toggle up (▲) or down (▼) to adjust the timer value. The timer can be set at 0 to 60 minutes. Toggle right (▶) once to set the Rest Time.

Safety Timer

When the charge process starts, the integrated safety timer starts to run simultaneously. If an error occurs or the termination circuit cannot detect whether the battery is fully charged, the X1 Pro is programmed to prevent overcharging and will terminate the charging process.

Safety Timer Calculation

When charging NiCd or NiMH batteries, divide the capacity by the current, then divide the result by 11.9. Set this number of minutes as the setting for the safety timer setting. If the charger stops at this time threshold, about 140% of the capacity will have been fed into the battery.

SYSTEM SET UP (cont.)

SAFETY TIMER
ON 120min

Toggle up (▲) until you see the “SAFETY TIMER” screen. Toggle right (▶) once and “ON” or “OFF” will begin flashing. Toggle up (▲) or down (▼) once to change this setting. Toggle right (▶) once and the timer value will begin flashing. Toggle up (▲) or down (▼) to adjust the timer value. Toggle right (▶) once to set the Safety Timer.

Capacity Cut-Off

This program provides a maximum capacity protection function. If the delta-peak voltage cannot be detected or the Safety Timer times out, the charge process will stop automatically when the user-set maximum charge capacity is reached in order to prevent accidental overcharging.

Capacity Cut-Off
ON 5000mAh

Toggle up (▲) once and you will see the “CAPACITY CUT-OFF” screen. Toggle right (▶) once and “ON” or “OFF” will begin flashing. Toggle up (▲) or down (▼) once to change this setting. Toggle right (▶) once and the amperage value will begin flashing. Toggle up (▲) or down (▼) to adjust the amperage value. Toggle right (▶) once to set the the Capacity Cut-Off.

Key Beep & Buzzer

A beep sounds to confirm the user’s operation every time a button is pressed. The buzzer or melody sounds at various times during an operation to confirm a different mode change.

Key Beep ON
Buzzer ON

Toggle up (▲) once and you will see the “KEY BEEP BUZZER” screen. Toggle right (▶) once and (Key Beep) “ON” or “OFF” will begin flashing. Toggle up (▲) or down (▼) once to change this setting. Toggle right (▶) once and (Buzzer) “ON” or “OFF” will begin flashing. Toggle up (▲) or down (▼) once to change this setting. Toggle right (▶) once to set the Key Beep and Buzzer settings.

Input Power Low Cut-Off

This function monitors the voltage of the input source used to power the charger. If the voltage drops below the user setting, the program will end immediately to protect the input source.



Input Power Low
Cut-off 10.00

Toggle up (▲) once and you will see the "INPUT POWER LOW CUT-OFF" screen.

Toggle right (▶) once and the voltage value will begin flashing. Toggle up (▲) or down (▼) to adjust the voltage value. Toggle right (▶) once to set the Input Power Low Cut-Off.

External and Internal Temperature



Ext. Temp 00C
Int. Temp 20C

Toggle up (▲) once and you will see the "Ext. Temp and Int. Temp." screen. This screen shows the

external temperature of the battery and the internal temperature of the charger. The battery temperature reading requires a temperature sensor that is sold separately.

Load Factory Set



LOAD FACTORY SET
ENTER

This screen shows the external temperature of the battery and the internal temperature

of the charger. The battery temperature reading requires a temperature sensor that is sold separately.

Toggle and hold the joystick to the right (▶) for three seconds to load the factory settings.

Version



VERSION
1.00

This screen shows the version number.

WARNINGS AND ERROR MESSAGES

- | | |
|----------------------------------|---|
| REVERSE POLARITY | The battery/charger connections (red/black) are reversed. |
| CONNECTION BREAK | The battery connection has been disconnected. |
| CONNECT ERROR
CHECK MAIN PORT | The battery connection is wrong. |
| BALANCE CONNECT
ERROR | The balance connection is wrong. |
| DC IN TOO LOW | The input voltage is less than 11V. |
| DC IN TOO HIGH | The input voltage is higher than 18V. |
| CELL ERROR
LOW VOLTAGE | The voltage of one cell in the battery pack is too low. |
| CELL ERROR
HIGH VOLTAGE | The voltage of one cell in the battery pack is too high. |
| CELL ERROR
VOLTAGE INVALID | The voltage of one cell in the battery pack is invalid. |
| CELL NUMBER
INCORRECT | The cell count is wrong. |
| INT. TEMP. TOO
HIGH | The internal temperature of the charger is too high. |
| EXT. TEMP. TOO
HIGH | The external temperature of the charger is too high. |

WARNINGS AND ERROR MESSAGES (cont.)

OVER CHARGE CAPACITY LIMIT

The battery capacity is higher than the maximum set by the user.

OVER TIME LIMIT

The charging time is higher than the maximum set by the user.

BATTERY WAS FULL

In balance mode, the battery voltage is higher than the maximum set by the user.

WARRANTY AND SERVICE

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

WARRANTY AND SERVICE (cont.)

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.

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.

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,
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