PASSPORT™ ULTRALITE 50W Multi-Chemistry AC/DC Charger

INSTRUCTION MANUAL | BEDIENUNGSANLEITUNG | MANUEL D'UTILISATION | MANUALE DI ISTRUZIONI

(DYN4103)

NOTICE

Meaning of Special Language

The following terms are used throughout the product literature to indicate various levels of potential harm when operating this product:

NOTICE: Procedures, which if not properly followed, create a possibility of physical property damage AND a little or no possibility of injury.

CAUTION: Procedures, which if not properly followed, create the probability of physical property damage AND a possibility of serious injury.

WARNING: Procedures, which if not properly followed, create the probability of property damage, collateral damage, and serious injury OR create a high probability of superficial injury.

WARNING: Read the ENTIRE instruction manual to become familiar with the features of the product before operating. Failure to operate the product correctly can result in damage to the product, personal property and cause serious injury.

This is a sophisticated hobby product. It must be operated with caution and common sense and requires some basic mechanical ability. Failure to operate this Product in a safe and responsible manner could result in injury or damage to the product or other property. This product is not intended for use by children without direct adult supervision. Do not attempt disassembly, use with incompatible components or augment product in any way without the approval of Horizon Hobby, Inc. This manual contains instructions for safety, operation and maintenance. It is essential to read and follow all the instructions and warnings in the manual, prior to assembly, setup or use, in order to operate correctly and avoid damage or serious injury.

Age Recommendation: Not for children under 14 years. This is not a toy.

SAFETY PRECAUTIONS AND WARNINGS

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

- Never leave the power supply, charger and battery unattended during use.
- Never attempt to charge dead, damaged or wet battery packs.
- Never attempt to charge a battery pack containing different types of batteries.
- Never allow children under 14 years of age to charge battery packs.
- Never charge batteries in extremely hot or cold places or place in direct sunlight.
- Never charge a battery if the cable has been pinched or shorted.
- Never connect the charger if the power cable has been pinched or shorted.
- Never connect the charger to an automobile 12V battery while the vehicle is running.
- Never attempt to dismantle the charger or use a damaged charger.
- Never attach your charger to both an AC and a DC power source at the same time.
- Never connect the input jack (DC input) to AC power.
- Always use only rechargeable batteries designed for use with this type of charger.
- Always inspect the battery before charging.
- Always keep the battery away from any material that could be affected by heat.
- Always monitor the charging area and have a fire extinguisher available at all times.
- Always end the charging process if the battery becomes hot to the touch or starts to change form (swell) during the charge process.
- Always connect the charge cable to the charger first, then connect the battery to avoid short circuit between the charge leads. Reverse the sequence when disconnecting.
- Always connect the positive red leads (+) and negative black leads (–) correctly.
- Always disconnect the battery after charging, and let the charger cool between charges.
- Always charge in a well-ventilated area.
- Always terminate all processes and contact Horizon Hobby if the product malfunctions.

WARNING: Never leave charger unattended, exceed maximum charge rate, charge with non-approved batteries or charge batteries in the wrong mode. Failure to comply may result in excessive heat, fire and serious injury.

CAUTION: Always ensure the battery you are charging meets the specifications of this charger and that the charger settings are correct. Not doing so can result in excessive heat and other related product malfunctions, which can lead to user injury or property damage. Please contact Horizon Hobby or an authorized retailer with compatibility questions.

✓	Included Items
	JST_XH Balance adapter
	Banana plug to EC3™ battery connector
	AC power cord (one region-US, EU, AU or UK)

OPTIONAL ACCESSORIES

DYN4011 - DC Power Cord: DYN4103
DYN5031 - Insulated Charge Adapter, Banana to EC3 Device
DYN5032 - Balancing Adapter Board
DYN5033 - Temperature Sensor: DYN4103, DYN4300

Minimum computer requirements for use of included software: Microsoft® Windows XP®, Windows 7® or Windows Vista® operating system, Compact disk (CD) reader capable of reading a mini-CD and USB 2.0 port.

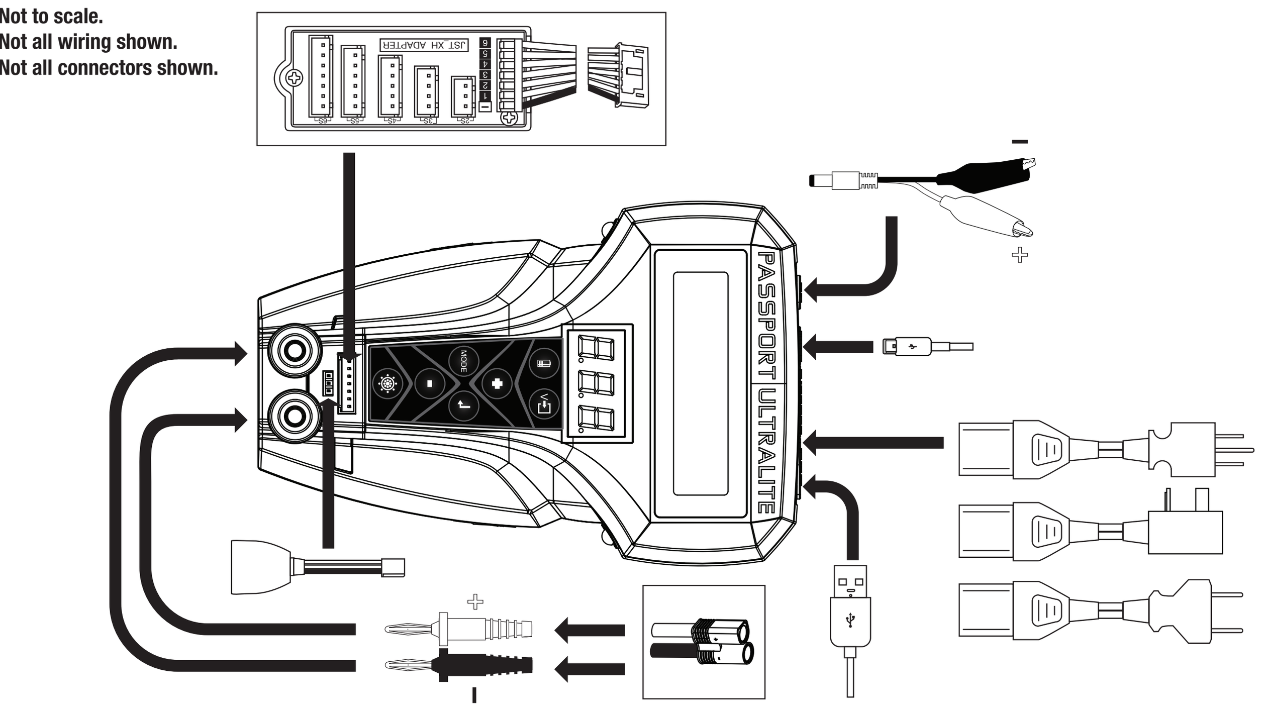
FEATURES

- Built-in Li-Po Voltage Checker
- Four high-intensity LED utility lights
- 1A USB charge port compatible with iPhone®, iPod® or similar products
- Space-saving vertical design with case-mounted stand
- 100–240V AC (50/60Hz) or 11–18V DC input voltage
- Li-Ion/Li-Po/Li-Fe battery cell count of 1 to 6 series cells
- Ni-Cd/Ni-MH battery cell count of 1 to 15 cells
- Pb battery voltage of 2 to 24V
- Built-in 10W discharger
- Built-in balance circuit
- Short-circuit, over-current, reverse polarity, low input voltage and over-temperature protection
- Storage and Fast Charge modes
- User battery data, store and load up to 10 battery profiles
- 2 x 16 backlit, blue LCD
- Insulated, color coded, banana jack, power output terminals (Red = Positive (+), Black = Common or Negative (–))
- Internal cooling fan with grill cover
- Operating temperature range of 0°C to +50°C
- Meets IP33CW, IK07 environmental specs
- Rugged industrial plastic case

SPECIFICATIONS

AC Input Voltage	100–240V AC (50/60Hz), 65W (Max)
DC Input Voltage	11–18V DC 55W (Max)
Output	Max. Voltage 25.2V, Max. Charge Power 50W
Charge Current	0.10 to 6.0A (in 0.1A increments/50W maximum)
Discharge Current	0.10 to 2.0A (in 0.1A increments/10W maximum)
Operating temperature	0°C to +50°C
Balance Current Drain	300mA per cell
Charging Mode	Peak (Ni-Cd/Ni-MH); CC/CV (Li-Po/Li-Ion/Li-Fe/Pb)

Not to scale.
Not all wiring shown.
Not all connectors shown.



GETTING STARTED

CAUTION: Never connect the AC and DC input cords to an active power source at the same time. This will void the warranty, cause product damage and possibly injure the user.

When Using an External DC Power Source:
1. Connect the DC power cord to the charger DC power input port.
2. Connect the DC alligator clips to the DC power source.

NOTICE: Always connect cable polarities correctly.

NOTICE: Always consult 12V battery collateral materials or Horizon Hobby before using with sources other than a standard AC wall outlet.

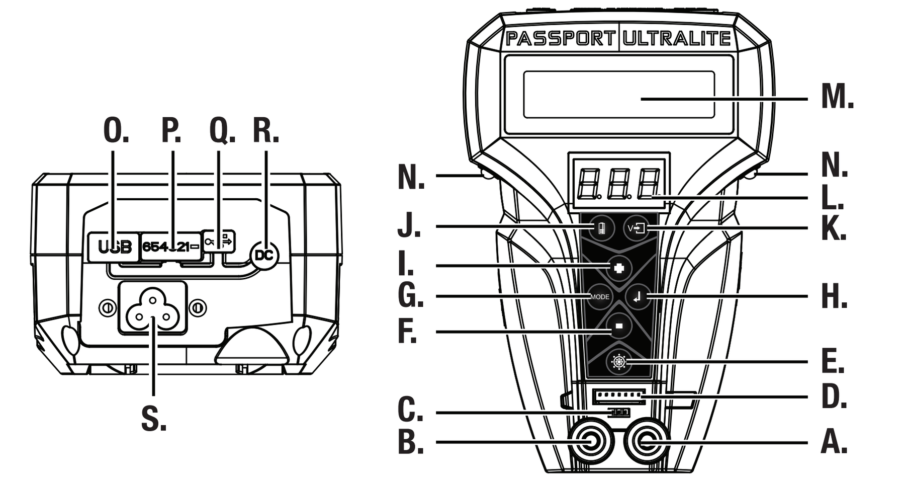
When Using External AC Power Source:
1. Connect the AC power cord to the charger AC power input port.
2. Connect the AC power cord to the AC power source.
3. When the charger is powered ON, a message will appear on the LCD screen.

CAUTION: Always power ON the charger before connecting a battery, or damage to the charger and the battery can result.

1. Connect the charger to the power supply.
2. Make program selections in the charger for battery charging.
3. Connect the charger adapters to the charger.
4. Connect the battery to the charger adapters (connect the main charging connectors before connecting the cell-balancing connectors, where used).
5. Start battery charging.

Power Output
- **A.** Red (+)
- **B.** Black (–)

C. Temperature Probe Connection
D. Balance Circuit Adapter Board Connector
E. Utility Light ON/OFF Key
F. – (Decrease) Key
G. Mode Key
H. Enter Key
I. + (Increase) Key
J. Read Battery Voltage Key
K. Discharge Battery Key
L. Battery Voltage Indicator
M. LCD Screen
N. LED Utility Lights (x2)
O. 1A USB Charge Port
P. 1–6S Li-Po Battery Voltage Checker Port
Q. USB Communications Port
R. DC Power Input Port
S. AC Power Input Port



PROGRAMMING QUICK GUIDE

Press the Mode key (**G**) to get to the 9 main menu screens from any submenu screen.
Press the Enter key (**H**) to get to the submenus for adjusting operating parameters, to save value changes, or to start chosen battery charging actions.
Press the – (**F**) or + (**I**) keys to change between submenu screens or to change screen values.

LITHIUM BATTERIES (Li-Fe)

```
PROGRAM SELECT
      LiFe BATT
```

```
LiFe BALANCE
2.0A    19.8V(6S)
LiFe CHARGE
2.0A    19.8V(6S)
LiFe FAST CHG
2.0A    19.8V(6S)
LiFe STORAGE
2.0A    19.8V(6S)
LiFe DISCHARGE
2.0A    19.8V(6S)
```

LITHIUM BATTERIES (Li-Po)

```
PROGRAM SELECT
      LiPo BATT
```

```
LiPo BALANCE
2.0A    22.2V(6S)
LiPo  CHARGE
2.0A    22.2V(6S)
LiPo FAST CHG
2.0A    22.2V(6S)
LiPo STORAGE
2.0A    22.2V(6S)
LiPo  DISCHARGE
2.0A    22.2V(6S)
```

Ni-MH BATTERIES

```
PROGRAM SELECT
      NiMH BATT
```

```
NiMH CHARGE
CURRENT     2.0A
NiMH Auto CHARGE
CURRENT     2.0A
NiMH DISCHARGE
0.1A    CUT:1.0V
NiMH RE-PEAK
               2
NiMH CYCLE
DCHG>CHG       1
```

Ni-Cd BATTERIES

```
PROGRAM SELECT
      NiCd BATT
```

```
NiCd CHARGE
CURRENT     2.0A
NiCd Auto CHARGE
CURRENT     2.0A
NiCd DISCHARGE
0.1A    CUT: 1.0V
NiCd RE-PEAK
               2
NiCd CYCLE
DCHG>CHG       1
```

Pb BATTERIES

```
PROGRAM SELECT
        Pb BATT
```

```
Pb CHARGE
2.0A    2.0V (1P)
Pb DISCHARGE
2.0A    2.0V (1P)
```

LITHIUM BATTERIES (Li-Ion)

```
PROGRAM SELECT
      LiIo BATT
```

```
LiIo BALANCE
2.0A    21.6V(6S)
LiIo  CHARGE
2.0A    21.6V(6S)
LiIo FAST CHG
2.0A    21.6V(6S)
LiIo STORAGE
2.0A    21.6V(6S)
LiIo  DISCHARGE
2.0A    21.6V(6S)
```

BATTERY MEMORY

```
PROGRAM SELECT
    BATT MEMORY
```

```
[BATT MEMORY 1]
    ENTER SET ->
BATT TYPE
LiPo
BATT VOLTS
        7.4V(2S)
CHARGE CURRENT
            2.2A
DSCH CURRENT
            1.0A
DSCH VOLTAGE
      3.0V/CELL
TVC=YOUR RISK!
           4.20V
TEMPERATURE
CUT-OFF      50C
SAVE PROGRAM
           ENTER
```

SYSTEM SET

```
PROGRAM SELECT
   SYSTEM SET->
```

```
Rest Time
CHG>DCHG   10min
SAFETY TIMER
ON        120min
Capacity Cut-Off
ON       5000mAh
Key Beep      ON
Buzzer        ON
Input Power Low
Cut-Off    11.0V
Ext. Temp     0C
Int. Temp    32C
LOAD FACTORY SET
           ENTER
VERSION
            1.00
```

LITHIUM BATTERY METER

```
PROGRAM SELECT
  LI BATT METER
```

```
0.00 0.00 0.00 V
0.00 0.00 0.00 V
MAIN 00.00V
H0.000V  L0.000V
```

OPERATING YOUR CHARGER

CONTENTS

1 SELF TEST AND PROGRAM SELECT SCREENS

When the charger is powered ON, there is a series of self tests and the screen will show the charger brand name and model number.

```
DYNAMITE
DYN4103
```

After the self tests, the charger will show another screen. The information on this screen will vary but will look smilar to this:

```
LiPo BALANCE
2.0A      7.4V(2S)
```

From any screen, press the **Mode key** to go back to the 9 main menu screens.

2 LI-FE BATTERIES

Press the **Mode key** until you reach the 9 main menu screens, then use the **+** or **– keys** to locate the PROGRAM SELECT LiFe BATT screen. Press the **Enter key** to select LiFe.

Press the **+** or **– keys** to go to one of the control screens (BALANCE, CHARGE, FAST CHG, STORAGE or DISCHARGE) to do what your battery needs.

Correctly connect your lithium battery to the charger (charging connector first and balancing connector second). Press the **Enter key** and adjust the charging parameters as needed. Press and hold the **Enter key** (approximately 3 seconds) until the screen changes to start the battery check/charge sequence.

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

When the charge cycle starts, the charger compares the battery to the charger settings. The screen will show the battery and your settings information. If the information after R: (charger) and S: (settings) **(A)** does not match, press the **Mode key** and change the lithium battery charging parameters as needed. If the R: information matches S:, press the **Enter key** to confirm. After confirmation, charging starts and information will show on the LCD screen (information may vary).

```
LI 3S 2.0A 12.59V
BAL  022:43 01082
```

A. A Li-Fe battery pack is balance charging
B. Battery pack has 3 cells in series
C. Charging rate is 2.0A (2000mAh)
D. Voltage being applied to the battery is currently 12.59V
E. Present charge level of the battery is 1082mAh
F. Time elapsed since the charge process started is 22:43 (22 minutes and 43 seconds)

During charging, the **– key** can be pressed to show several parameter messages on the LCD screen, including: End Voltage, Input Power Voltage, External & Internal Temperature, Temperature Cutoff, Safety Timer Status and Capacity Cutoff.

Press the **+ key** to see charge voltages for each cell and **Enter** to return to the Charge Monitor screen. The charger signals when the charging (or discharging) process is complete (if Buzzer is set to ON).

CAUTION: The Li-Fe program menus are to be used ONLY for the charging and discharging of Li-Fe battery packs. The charging of other battery types using these programs will result in damage to the battery or charger.

CAUTION: Using a charge rate that is not compatible with the battery capacities may result in damage or malfunction of the charger or batteries.

3 LI-FE BALANCE CHARGING

Press the **Mode key** to return to the main menu, then press the **+** or **– key** until you see the PROGRAM SELECT LiFe BATT screen. Press the **Enter key** to go into this menu.

Press the **+** or **– key** to go to the LiFe BALANCE screen and set charging parameters. The charging amperage **(A)** can be set between 0.1 and 6.0A. Voltage **(B)** is dependent on the number of cells in series. For example, with Li-Fe batteries these values can be from 3.3V (for 1S batteries) to 19.8V (for 6S batteries).

```
LiFe BALANCE
5.5A     19.8V(6S)
```

CAUTION: Always ensure you plug your battery's balancing lead into the correct port on your charger.

To select values other than existing parameters:
- Press the **Enter key** so the charge current value **(A)** flashes
- Press the **+** or **– key** to INCREASE or DECREASE the charge current value
- Press the **Enter key** to save the value and the pack voltage value **(B)** flashes
- Press the **+** or **– key** to INCREASE or DECREASE the pack voltage (and # of cells in series **(C)**)
- Press the **Enter key** to save the pack voltage value

If no parameters are flashing, you can press the **+** or **– key** to select another program such as CHARGE, FAST CHG, STORAGE or DISCHARGE.

To start charging, press and hold the **Enter key** for 3 seconds.

4 LI-FE CHARGING

Press the **Mode key** to return to the main menu, then press the **+** or **– key** until you see the PROGRAM SELECT LiFe BATT screen. Press the **Enter key** to go into this menu.

Press the **+** or **– key** to go to the LiFe CHARGE screen and set charging parameters. The charging amperage **(A)** can be set between 0.1 and 6.0A. Voltage **(B)** is dependent on the number of cells in series. For example, with Li-Fe batteries these values can be from 3.3V (for 1S batteries) to 19.8V (for 6S batteries).

```
LiFe CHARGE
4.6A     19.8V(6S)
```

To select values other than existing parameters:
- Press the **Enter key** so the charge current value **(A)** flashes
- Press the **+** or **– key** to INCREASE or DECREASE the charge current value
- Press the **Enter key** to save the value and the pack voltage value **(B)** flashes
- Press the **+** or **– key** to INCREASE or DECREASE the pack voltage (and # of cells in series **(C)**)
- Press the **Enter key** to save the pack voltage value

If no parameters are flashing, you can press the **+** or **– key** to select another program such as BALANCE, FAST CHG, STORAGE or DISCHARGE.

To start charging, press and hold the **Enter key** for 3 seconds.

CAUTION: If at any time during the charge process the battery pack becomes hot or begins to puff, disconnect the battery immediately and discontinue the charge process as batteries can cause fire, collateral damage and injuries.

5 LI-FE FAST CHARGING

Press the **Mode key** to return to the main menu, then press the **+** or **– key** until you see the PROGRAM SELECT LiFe BATT screen. Press the **Enter key** to go into this menu.

Press the **+** or **– key** to go to the LiFe FAST CHG screen and set charging parameters. The charging amperage **(A)** can be set between 0.1 and 6.0A. Voltage **(B)** is dependent on the number of cells in series. For example, with Li-Fe batteries these values can be from 3.3V (for 1S batteries) to 19.8V (for 6S batteries).

Near the end of a standard charging cycle the charger switches from Constant Current (CC) mode to Constant Voltage (CV) mode to slowly "top off" the current in the battery pack as close as possible to the maximum capacity.

In Fast Charge, the CV mode is eliminated in order to greatly shorten the charging time; however, the final capacity of the battery will be less than what you would get using the standard charge method.

```
LiFe FAST CHG
0.1A     19.8V(6S)
```

To select values other than existing parameters:
- Press the **Enter key** so the charge current value **(A)** flashes
- Press the **+** or **– key** to INCREASE or DECREASE the charge current value
- Press the **Enter key** to save the value and the pack voltage value **(B)** flashes
- Press the **+** or **– key** to INCREASE or DECREASE the pack voltage (and # of cells in series **(C)**)
- Press the **Enter key** to save the pack voltage value

If no parameters are flashing, you can press the **+** or **– key** to select another program such as CHARGE, BALANCE, STORAGE or DISCHARGE.

To start charging, press and hold the **Enter key** for 3 seconds.

6 LI-FE STORAGE CHARGING

Press the **Mode key** to return to the main menu, then press the **+ or – ke**y until you see the PROGRAM SELECT LiFe BATT screen. Press the **Enter key** to go into this menu.

Press the **+** or **– key** to go to the LiFe STORAGE screen and set charging parameters. The charging amperage **(A)** can be set between 0.1 and 6.0A. Voltage **(B)** is dependent on the number of cells in series. For example, with Li-Fe batteries these values can be from 3.3V (for 1S batteries) to 19.8V (for 6S batteries).

If you don't plan on using your battery for a long time, it is best to charge (or discharge) the battery to its optimal storage voltage and capacity.

```
LiFe STORAGE
2.5A     19.8V(6S)
```

To select values other than existing parameters:
- Press the **Enter key** so the charge current value **(A)** flashes
- Press the **+** or **– key** to INCREASE or DECREASE the charge current value
- Press the **Enter key** to save the value and the pack voltage value **(B)** flashes
- Press the **+** or **– key** to INCREASE or DECREASE the pack voltage (and # of cells in series **(C)**)
- Press the **Enter key** to save the pack voltage value

If no parameters are flashing, you can press the **+** or **– key** to select another program such as CHARGE, BALANCE, FAST CHG or DISCHARGE.

To start charging, press and hold the **Enter key** for 3 seconds.

7 LI-FE DISCHARGE

Press the **Mode key** to return to the main menu, then press the **+** or **– key** until you see the PROGRAM SELECT LiFe BATT screen. Press the **Enter key** to go into this menu.

Press the **+** or **– key** to go to the LiFe DISCHARGE screen and set discharge parameters. The discharging amperage **(A)** can be set between 0.1 and 2.0A. Voltage **(B)** is dependent on the number of cells in series. For example, with Li-Fe batteries these values can be from 3.3V (for 1S batteries) to 19.8V (for 6S batteries).

A battery pack's capacity can be verified by discharging the pack to its minimum voltage level and measuring the current as the pack is discharged.

```
LiFe DISCHARGE
2.0A     19.8V(6S)
```

To select values other than existing parameters:
- Press the **Enter key** so the discharge current value **(A)** flashes
- Press the **+** or **– key** to INCREASE or DECREASE the discharge current value
- Press the **Enter key** to save the value and the pack voltage value **(B)** flashes
- Press the **+** or **– key** to INCREASE or DECREASE the pack voltage (and # of cells in series **(C)**)
- Press the **Enter key** to save the pack voltage value

If no parameters are flashing, you can press the **+** or **– key** to select another program such as CHARGE, BALANCE, FAST CHG or STORAGE.

To start discharging, press and hold the **Enter key** for 3 seconds.

8 LI-IO BATTERIES

Press the **Mode key** until you reach the 9 main menu screens, then use the **+** or **– keys** to locate the PROGRAM SELECT Lilo BATT screen. Press the **Enter key** to select Lilo.

Press the **+** or **– keys** to go to one of the control screens (BALANCE, CHARGE, FAST CHG, STORAGE or DISCHARGE) to do what your battery needs.

Correctly connect your lithium battery to the charger (charging connector first and balancing connector second). Press the **Enter key** and adjust the charging parameters as needed. Press and hold the **Enter key** (approximately 3 seconds) until the screen changes to start the battery check/charge sequence.

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

When the charge cycle starts, the charger compares the battery to the charger settings. The screen will show the battery and your settings information. If the information after R: (charger) and S: (settings) **(A)** does not match, press the **Mode key** and change the lithium battery charging parameters as needed. If the R: information matches S:, press the **Enter key** to confirm.

After confirmation, charging starts and information will show on the LCD screen (information may vary).

```
LI 3S 2.0A 12.59V
BAL  022:43 01082
```

A. A Li-Io battery pack is balance charging
B. Battery pack has 3 cells in series
C. Charging rate is 2.0A (2000mAh)
D. Voltage being applied to the battery is currently 12.59V
E. Present charge level of the battery is 1082mAh
F. Time elapsed since the charge process started is 22:43

During charging, the **– key** can be pressed to show several parameter messages on the LCD screen, including: End Voltage, Input Power Voltage, External & Internal Temperature, Temperature Cutoff, Safety Timer Status and Capacity Cutoff.
Press the **+ key** to see charge voltages for each cell and **Enter** to return to the Charge Monitor screen. The charger signals when the charging (or discharging) process is complete (if Buzzer is set to ON).

CAUTION: The Li-Io program menus are to be used ONLY for the charging and discharging of Li-Io battery packs. The charging of other battery types using these programs will result in damage to the battery or charger.

CAUTION: Using a charge rate that is not compatible with the battery capacities may result in damage or malfunction of the charger or batteries.

9 LI-IO BALANCE CHARGING

Press the **Mode key** to return to the main menu, then press the **+** or **– key** until you see the PROGRAM SELECT Lilo BATT screen. Press the **Enter key** to go into this menu.

Press the **+** or **– key** to go to the Lilo BALANCE screen and set charging parameters. The charging amperage **(A)** can be set between 0.1 and 6.0A. Voltage **(B)** is dependent on the number of cells in series. For example, with Li-lo batteries these values can be from 3.6V (for 1S batteries) to 21.6V (for 6S batteries).

```
LiIo BALANCE
5.5A     21.6V(6S)
```

CAUTION: Always ensure you plug your battery's balancing lead into the correct port on your charger.

To select values other than existing parameters:
- Press the **Enter key** so the charge current value **(A)** flashes
- Press the **+** or **– key** to INCREASE or DECREASE the charge current value
- Press the **Enter key** to save the value and the pack voltage value **(B)** flashes
- Press the **+** or **– key** to INCREASE or DECREASE the pack voltage (and # of cells in series **(C)**)
- Press the **Enter key** to save the pack voltage value

If no parameters are flashing, you can press the **+** or **– key** to select another program such as CHARGE, FAST CHG, STORAGE or DISCHARGE.

To start charging, press and hold the **Enter key** for 3 seconds.

10 LI-IO CHARGING

Press the **Mode key** to return to the main menu, then press the **+** or **– key** until you see the PROGRAM SELECT Lilo BATT screen. Press the **Enter key** to go into this menu.

Press the **+** or **– key** to go to the Lilo CHARGE screen and set charging parameters. The charging amperage **(A)** can be set between 0.1 and 6.0A. Voltage **(B)** is dependent on the number of cells in series. For example, with Li-lo batteries these values can be from 3.6V (for 1S batteries) to 21.6V (for 6S batteries).

```
LiIo CHARGE
4.6A     21.6V(6S)
```

To select values other than existing parameters:
- Press the **Enter key** so the charge current value **(A)** flashes
- Press the **+** or **– key** to INCREASE or DECREASE the charge current value
- Press the **Enter key** to save the value and the pack voltage value **(B)** flashes
- Press the **+** or **– key** to INCREASE or DECREASE the pack voltage (and # of cells in series **(C)**)
- Press the **Enter key** to save the pack voltage value

If no parameters are flashing, you can press the **+** or **– key** to select another program such as BALANCE, FAST CHG, STORAGE or DISCHARGE.

To start charging, press and hold the **Enter key** for 3 seconds.

CAUTION: If at any time during the charge process the battery pack becomes hot or begins to puff, disconnect the battery immediately and discontinue the charge process as batteries can cause fire, collateral damage and injuries.

11 LI-IO FAST CHARGING

Press the **Mode key** to return to the main menu, then press the **+** or **– key** until you see the PROGRAM SELECT Lilo BATT screen. Press the **Enter key** to go into this menu.

Press the **+** or **– key** to go to the Lilo FAST CHG screen and set charging parameters. The charging amperage **(A)** can be set between 0.1 and 6.0A. Voltage **(B)** is dependent on the number of cells in series. For example, with Li-lo batteries these values can be from 3.6V (for 1S batteries) to 21.6V (for 6S batteries).

Near the end of a standard charging cycle the charger switches from Constant Current (CC) mode to Constant Voltage (CV) mode to slowly "top off" the current in the battery pack as close as possible to the maximum capacity.

In Fast Charge, the CV mode is eliminated in order to greatly shorten the charging time; however, the final capacity of the battery will be less than what you would get using the standard charge method.

```
LiIo FAST CHG
5.0A     21.6V(6S)
```

To select values other than existing parameters:
- Press the **Enter key** so the charge current value **(A)** flashes
- Press the **+** or **– key** to INCREASE or DECREASE the charge current value
- Press the **Enter key** to save the value and the pack voltage value **(B)** flashes
- Press the **+** or **– key** to INCREASE or DECREASE the pack voltage (and # of cells in series **(C)**)
- Press the **Enter key** to save the pack voltage value

If no parameters are flashing, you can press the **+** or **– key** to select another program such as CHARGE, BALANCE, STORAGE or DISCHARGE.

To start charging, press and hold the **Enter key** for 3 seconds.

12 LI-IO STORAGE CHARGING

Press the **Mode key** to return to the main menu, then press the **+** or **– key** until you see the PROGRAM SELECT Lilo BATT screen. Press the **Enter key** to go into this menu.

Press the **+** or **– key** to go to the Lilo STORAGE screen and set charging parameters. The charging amperage **(A)** can be set between 0.1 and 6.0A. Voltage **(B)** is dependent on the number of cells in series. For example, with Li-lo batteries these values can be from 3.6V (for 1S batteries) to 21.6V (for 6S batteries).

If you don't plan on using your battery for a long time, it is best to charge (or discharge) the battery to its optimal storage voltage and capacity.

```
LiIo STORAGE
2.5A     21.6V(6S)
```

To select values other than existing parameters:
- Press the **Enter key** so the charge current value **(A)** flashes
- Press the **+** or **– key** to INCREASE or DECREASE the charge current value
- Press the **Enter key** to save the value and the pack voltage value **(B)** flashes
- Press the **+** or **– key** to INCREASE or DECREASE the pack voltage (and # of cells in series **(C)**)
- Press the **Enter key** to save the pack voltage value

If no parameters are flashing, you can press the **+** or **– key** to select another program such as CHARGE, BALANCE, FAST CHG or DISCHARGE.

To start charging, press and hold the **Enter key** for 3 seconds.

13 LI-IO DISCHARGE

Press the **Mode key** to return to the main menu, then press the **+** or **– key** until you see the PROGRAM SELECT Lilo BATT screen. Press the **Enter key** to go into this menu.

Press the **+** or **– key** to go to the Lilo DISCHARGE screen and set discharge parameters. The discharging amperage **(A)** can be set between 0.1 and 2.0A. Voltage **(B)** is dependent on the number of cells in series. For example, with Li-lo batteries these values can be from 3.6V (for 1S batteries) to 21.6V (for 6S batteries).

A battery pack's capacity can be verified by discharging the pack to its minimum voltage level and measuring the current as the pack is discharged.

```
LiIo DISCHARGE
2.0A     21.6V(6S)
```

To select values other than existing parameters:
- Press the **Enter key** so the discharge current value **(A)** flashes
- Press the **+** or **– key** to INCREASE or DECREASE the discharge current value
- Press the **Enter key** to save the value and the pack voltage value **(B)** flashes
- Press the **+** or **– key** to INCREASE or DECREASE the pack voltage (and # of cells in series **(C)**)
- Press the **Enter key** to save the pack voltage value

If no parameters are flashing, you can press the **+** or **– key** to select another program such as CHARGE, BALANCE, FAST CHG or STORAGE.

To start discharging, press and hold the **Enter key** for 3 seconds.

14 LI-PO BATTERIES

Press the **Mode key** until you reach the 9 main menu screens, then use the **+** or **– keys** to locate the PROGRAM SELECT LiPo BATT screen. Press the **Enter key** to select LiPo.

Press the **+** or **– keys** to go to one of the control screens (BALANCE, CHARGE, FAST CHG, STORAGE or DISCHARGE) to do what your battery needs.

Correctly connect your lithium battery to the charger (charging connector first and balancing connector second). Press the **Enter key** and adjust the charging parameters as needed. Press and hold the **Enter key** (approximately 3 seconds) until the screen changes to start the battery check/charge sequence.

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

When the charge cycle starts, the charger compares the battery to the charger settings. The screen will show the battery and your settings information. If the information after R: (charger) and S: (settings) **(A)** does not match, press the **Mode key** and change the lithium battery charging parameters as needed. If the R: information matches S:, press the **Enter key** to confirm.

After confirmation, charging starts and information will show on the LCD screen (information may vary).

```
LI 3S 2.0A 12.59V
BAL  022:43 01082
```

A. A Li-Po battery pack is balance charging
B. Battery pack has 3 cells in series
C. Charging rate is 2.0A (2000mAh)
D. Voltage being applied to the battery is currently 12.59V
E. Present charge level of the battery is 1082mAh
F. Time elapsed since the charge process started is 22:43

During charging, the **– key** can be pressed to show several parameter messages on the LCD screen, including: End Voltage, Input Power Voltage, External & Internal Temperature, Temperature Cutoff, Safety Timer Status and Capacity Cutoff.

Press the **+ key** to see charge voltages for each cell and **Enter** to return to the Charge Monitor screen. The charger signals when the charging (or discharging) process is complete (if Buzzer is set to ON).

CAUTION: The Li-Po program menus are to be used ONLY for the charging and discharging of Li-Po battery packs. The charging of other battery types using these programs will result in damage to the battery or charger.

CAUTION: Using a charge rate that is not compatible with the battery capacities may result in damage or malfunction of the charger or batteries.

15 LI-PO BALANCE CHARGING

Press the **Mode key** to return to the main menu, then press the **+** or **– key** until you see the PROGRAM SELECT LiPo BATT screen. Press the **Enter key** to go into this menu.

Press the **+** or **– key** to go to the LiPo BALANCE screen and set charging parameters. The charging amperage **(A)** can be set between 0.1 and 6.0A. Voltage **(B)** is dependent on the number of cells in series. For example, with Li-Po batteries these values can be from 3.7V (for 1S batteries) to 22.2V (for 6S batteries).

```
LiPo BALANCE
5.5A     22.2V(6S)
```

CAUTION: Always ensure you plug your battery's balancing lead into the correct port on your charger.

To select values other than existing parameters:
- Press the **Enter key** so the charge current value **(A)** flashes
- Press the **+** or **– key** to INCREASE or DECREASE the charge current value
- Press the **Enter key** to save the value and the pack voltage value **(B)** flashes
- Press the **+** or **– key** to INCREASE or DECREASE the pack voltage (and # of cells in series **(C)**)
- Press the **Enter key** to save the pack voltage value

If no parameters are flashing, you can press the **+** or **– key** to select another program such as CHARGE, FAST CHG, STORAGE or DISCHARGE.

To start charging, press and hold the **Enter key** for 3 seconds.

16 LI-PO CHARGING

Press the **Mode key** to return to the main menu, then press the **+** or **– key** until you see the PROGRAM SELECT LiPo BATT screen. Press the **Enter key** to go into this menu.

Press the **+** or **– key** to go to the LiPo CHARGE screen and set charging parameters. The charging amperage **(A)** can be set between 0.1 and 6.0A. Voltage **(B)** is dependent on the number of cells in series. For example, with Li-Po batteries these values can be from 3.7V (for 1S batteries) to 22.2V (for 6S batteries).

```
LiPo CHARGE
4.6A     22.2V(6S)
```

To select values other than existing parameters:
- Press the **Enter key** so the charge current value **(A)** flashes
- Press the **+** or **– key** to INCREASE or DECREASE the charge current value
- Press the **Enter key** to save the value and the pack voltage value **(B)** flashes
- Press the **+** or **– key** to INCREASE or DECREASE the pack voltage (and # of cells in series **(C)**)
- Press the **Enter key** to save the pack voltage value

If no parameters are flashing, you can press the **+** or **– key** to select another program such as BALANCE, FAST CHG, STORAGE or DISCHARGE.

To start charging, press and hold the **Enter key** for 3 seconds.

CAUTION: If at any time during the charge process the battery pack becomes hot or begins to puff, disconnect the battery immediately and discontinue the charge process as batteries can cause fire, collateral damage and injuries.

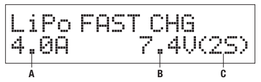
17 LI-PO FAST CHARGING

Press the **Mode key** to return to the main menu, then press the **+** or **– key** until you see the PROGRAM SELECT LiPo BATT screen. Press the **Enter key** to go into this menu.

Press the **+** or **– key** to go to the LiPo FAST CHG screen and set charging parameters. The charging amperage **(A)** can be set between 0.1 and 6.0A. Voltage **(B)** is dependent on the number of cells in series. For example, with Li-Po batteries these values can be from 3.7V (for 1S batteries) to 22.2V (for 6S batteries).

Near the end of a standard charging cycle the charger switches from Constant Current (CC) mode to Constant Voltage (CV) mode to slowly "top off" the current in the battery pack as close as possible to the maximum capacity.

In Fast Charge, the CV mode is eliminated in order to greatly shorten the charging time; however, the final capacity of the battery will be less than what you would get using the standard charge method.



To select values other than existing parameters:

- Press the **Enter key** so the charge current value **(A)** flashes
- Press the **+** or **– key** to INCREASE or DECREASE the charge current value
- Press the **Enter key** to save the value and the pack voltage value **(B)** flashes
- Press the **+** or **– key** to INCREASE or DECREASE the pack voltage (and # of cells in series **(C)**)
- Press the **Enter key** to save the pack voltage value

If no parameters are flashing, you can press the **+** or **– key** to select another program such as CHARGE, BALANCE, STORAGE or DISCHARGE.

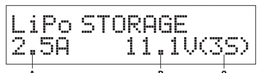
To start charging, press and hold the **Enter key** for 3 seconds.

18 LI-PO STORAGE CHARGING

Press the **Mode key** to return to the main menu, then press the **+** or **– key** until you see the PROGRAM SELECT LiPo BATT screen. Press the **Enter key** to go into this menu.

Press the **+** or **– key** to go to the LiPo STORAGE screen and set charging parameters. The charging amperage **(A)** can be set between 0.1 and 6.0A. Voltage **(B)** is dependent on the number of cells in series. For example, with Li-Po batteries these values can be from 3.7V (for 1S batteries) to 22.2V (for 6S batteries).

If you don't plan on using your battery for a long time, it is best to charge (or discharge) the battery to its optimal storage voltage and capacity.



To select values other than existing parameters:

- Press the **Enter key** so the charge current value **(A)** flashes
- Press the **+** or **– key** to INCREASE or DECREASE the charge current value
- Press the **Enter key** to save the value and the pack voltage value **(B)** flashes
- Press the **+** or **– key** to INCREASE or DECREASE the pack voltage (and # of cells in series **(C)**)
- Press the **Enter key** to save the pack voltage value

If no parameters are flashing, you can press the **+** or **– key** to select another program such as CHARGE, BALANCE, FAST CHG or DISCHARGE.

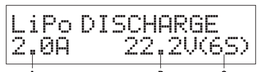
To start charging, press and hold the **Enter key** for 3 seconds.

19 LI-PO DISCHARGE

Press the **Mode key** to return to the main menu, then press the **+** or **– key** until you see the PROGRAM SELECT LiPo BATT screen. Press the **Enter key** to go into this menu.

Press the **+** or **– key** to go to the LiPo DISCHARGE screen and set discharge parameters. The discharging amperage **(A)** can be set between 0.1 and 2.0A. Voltage **(B)** is dependent on the number of cells in series. For example, with Li-Po batteries these values can be from 3.7V (for 1S batteries) to 22.2V (for 6S batteries).

A battery pack's capacity can be verified by discharging the pack to its minimum voltage level and measuring the current as the pack is discharged.



To select values other than existing parameters:

- Press the **Enter key** so the discharge current value **(A)** flashes
- Press the **+** or **– key** to INCREASE or DECREASE the discharge current value
- Press the **Enter key** to save the value and the pack voltage value **(B)** flashes
- Press the **+** or **– key** to INCREASE or DECREASE the pack voltage (and # of cells in series **(C)**)
- Press the **Enter key** to save the pack voltage value

If no parameters are flashing, you can press the **+** or **– key** to select another program such as CHARGE, BALANCE, FAST CHG or STORAGE.

To start discharging, press and hold the **Enter key** for 3 seconds.

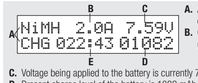
20 NI-MH BATTERIES

Press the **Mode key** until you reach the 9 main menu screens, then use the **+** or **– keys** to locate the PROGRAM SELECT NiMH BATT screen. Press the **Enter key** to select NiMH.

Press the **+** or **– keys** to go to one of the control screens (CHARGE, Auto CHARGE, DISCHARGE, RE-PEAK or CYCLE) to do what your battery needs.

Correctly connect your Ni-MH battery to the charger. Press the **Enter key** and adjust the charging parameters as needed. Press and hold the **Enter key** (approximately 3 seconds) until the screen changes to start the battery check/charge sequence.

After confirmation, charging starts and information will show on the LCD screen (information may vary).



A. A Ni-MH battery pack is charging
B. Charging rate is 2.0A (2000mAh)
C. Voltage being applied to the battery is currently 7.59V
D. Present charge level of the battery is 1082 mAh
E. Time elapsed since the charge process started is 22:43

During charging, the **– key** can be pressed to show several parameter messages on the LCD screen, including: Ni-MH Sensitivity, Input Power Voltage, External & Internal Temperature, Temperature Cutoff, Safety Timer Status and Capacity Cutoff. The charger signals when the charging (or discharging) process is complete (if Buzzer is set to ON).

CAUTION: The Ni-MH program menus are to be used ONLY for the charging and discharging of Ni-MH battery packs. The charging of other battery types using these programs will result in damage to the battery or charger.

CAUTION: Using a charge rate that is not compatible with the battery capacities may result in damage or malfunction of the charger or batteries.

21 NI-MH CHARGING

Press the **Mode key** to return to the main menu, then press the **+** or **– key** until you see the PROGRAM SELECT NiMH BATT screen. Press the **Enter key** to go into this menu.

Press the **+** or **– key** to go to the NiMH CHARGE screen and set charging parameters. The charging amperage **(A)** can be set between 0.1 and 6.0A.

To select values other than existing parameters:

- Press **Enter key** so the charge current value **(A)** flashes
- Press **+** or **– key** to INCREASE or DECREASE the charge current value
- Press **Enter key** to save the value

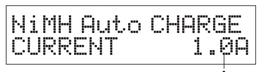
If no parameters are flashing, you can press the **+** or **– key** to select another program such as Auto CHARGE, DISCHARGE, RE-PEAK or CYCLE.

To start charging, press and hold the **Enter key** for 3 seconds.

22 NI-MH AUTO CHARGING

Press the **Mode key** to return to the main menu, then press the **+** or **– key** until you see the PROGRAM SELECT NiMH BATT screen. Press the **Enter key** to go into this menu.

Press the **+** or **– key** to go to the NiMH Auto CHARGE screen and set charging parameters. The charging amperage **(A)** can be set between 0.1 and 6.0A.



To select values other than existing parameters:

- Press **Enter key** so the charge current value **(A)** flashes
- Press **+** or **– key** to INCREASE or DECREASE the charge current value
- Press **Enter key** to save the value

If no parameters are flashing, you can press the **+** or **– key** to select another program such as CHARGE, DISCHARGE, RE-PEAK or CYCLE.

To start charging, press and hold the **Enter key** for 3 seconds.

23 NI-MH DISCHARGE

Press the **Mode key** to return to the main menu, then press the **+** or **– key** until you see the PROGRAM SELECT NiMH BATT screen. Press the **Enter key** to go into this menu.

Press the **+** or **– key** to go to the NiMH DISCHARGE screen and set discharge parameters. The discharging amperage **(A)** can be set between 0.1 and 2.0A.

A battery pack's capacity can be verified by discharging the pack to its minimum voltage level and measuring the current as the pack is discharged. The discharge level can be set from 0.1 to 25.2V.

To select values other than existing parameters:

- Press the **Enter key** so the discharge current value **(A)** flashes
- Press the **+** or **– key** to INCREASE or DECREASE the discharge current value
- Press the **Enter key** to save the value and the cutoff voltage value **(B)** flashes
- Press the **+** or **– key** to INCREASE or DECREASE the cutoff voltage
- Press the **Enter key** to save the voltage value

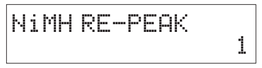
If no parameters are flashing, you can press the **+** or **– key** to select another program such as CHARGE, BALANCE, FAST CHG or STORAGE.

To start discharging, press and hold the **Enter key** for 3 seconds.

24 NI-MH RE-PEAK CHARGING

Press the **Mode key** to return to the main menu, then press the **+** or **– key** until you see the PROGRAM SELECT NiMH BATT screen. Press the **Enter key** to go into this menu.

Press the **+** or **– key** to go to the NiMH RE-PEAK screen and set re-peak parameters to a value of between 1 and 3.



To select values other than existing parameters:

- Press **Enter key** so the re-peak value flashes
- Press **+** or **– key** to INCREASE or DECREASE the value
- Press the **Enter key** to save the value

If no parameters are flashing, you can press the **+** or **– key** to select another program such as CHARGE, Auto CHARGE, DISCHARGE or CYCLE.

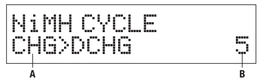
Press the **Enter key** to go to the next menu.

25 NI-MH CYCLE CHARGING

Press the **Mode key** to return to the main menu, then press the **+** or **– key** until you see the PROGRAM SELECT NiMH BATT screen. Press the **Enter key** to go into this menu.

Press the **+** or **– key** to go to the NiMH CYCLE screen and set charge/discharge cycle count parameters.

The battery pack can be put through a series of charge/discharge cycles using this program. Cycling Ni-MH packs can increase capacity and rejuvenate neglected batteries. Discharge capacity and average pack voltage help you compare batteries for the best run time and power.



To select values other than the default parameters:

- Press the **Enter key** so the cycle type **(A)** flashes
- Press the **+** or **– key**s to set the cycle type as CHG>DCHG or DCHG>CHG
- Press the **Enter key** to save your choice and the number of cycles **(B)** flashes
- Press the **+** or **– key** to INCREASE or DECREASE the cycle count between 1–5
- Press the **Enter key** to save the cycle count value

If no parameters are flashing, you can press the **+** or **– key** to select another program such as CHARGE, Auto CHARGE, DISCHARGE or RE-PEAK.

To start cycling, press and hold the **Enter key** for 3 seconds.

26 NI-CD BATTERIES

Press the **Mode key** until you reach the 9 main menu screens, then use the **+** or **– keys** to locate the PROGRAM SELECT NiCd BATT screen. Press the **Enter key** to select NiCD.

Press the **+** or **– keys** to go to one of the control screens (CHARGE, Auto CHARGE, DISCHARGE, RE-PEAK or CYCLE) to do what your battery needs.

Correctly connect your Ni-Cd battery to the charger. Press the **Enter key** and adjust the charging parameters as needed. Press and hold the **Enter key** (approximately 3 seconds) until the screen changes to start the battery check/charge sequence.

After confirmation, charging starts and information will show on the LCD screen (information may vary).

A. A Ni-Cd battery pack is charging
B. Charging rate is 2.0A (2000mAh)
C. Voltage being applied to the battery is currently 7.59V
D. Present charge level of the battery is 1082 mAh
E. Time elapsed since the charge process started is 22:43

During charging, the **– key** can be pressed to show several parameter messages on the LCD screen, including: Ni-CD Sensitivity, Input Power Voltage, External & Internal Temperature, Temperature Cutoff, Safety Timer Status and Capacity Cutoff. The charger signals when the charging (or discharging) process is complete (if Buzzer is set to ON).

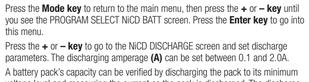
CAUTION: The Ni-CD program menus are to be used ONLY for the charging and discharging of Ni-CD battery packs. The charging of other battery types using these programs will result in damage to the battery or charger.

CAUTION: Using a charge rate that is not compatible with the battery capacities may result in damage or malfunction of the charger or batteries.

27 NI-CD CHARGING

Press the **Mode key** to return to the main menu, then press the **+** or **– key** until you see the PROGRAM SELECT NiCD BATT screen. Press the **Enter key** to go into this menu.

Press the **+** or **– key** to go to the NiCD CHARGE screen and set charging parameters. The charging amperage **(A)** can be set between 0.1 and 6.0A.



To select values other than existing parameters:

- Press the **Enter key** so the charge current value **(A)** flashes
- Press the **+** or **– key** to INCREASE or DECREASE the charge current value
- Press the **Enter key** to save the value

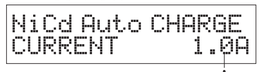
If no parameters are flashing, you can press the **+** or **– key** to select another program such as Auto CHARGE, DISCHARGE, RE-PEAK or CYCLE.

To start charging, press and hold the **Enter key** for 3 seconds.

28 NI-CD AUTO CHARGING

Press the **Mode key** to return to the main menu, then press the **+** or **– key** until you see the PROGRAM SELECT NiCD BATT screen. Press the **Enter key** to go into this menu.

Press the **+** or **– key** to go to the NiCD Auto CHARGE screen and set charging parameters. The charging amperage **(A)** can be set between 0.1 and 6.0A.



To select values other than existing parameters:

- Press the **Enter key** so the charge current value **(A)** flashes
- Press the **+** or **– key** to INCREASE or DECREASE the charge current value
- Press the **Enter key** to save the value

If no parameters are flashing, you can press the **+** or **– key** to select another program such as CHARGE, DISCHARGE, RE-PEAK or CYCLE.

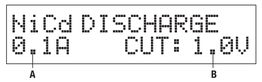
To start charging, press and hold the **Enter key** for 3 seconds.

29 NI-CD DISCHARGE

Press the **Mode key** to return to the main menu, then press the **+** or **– key** until you see the PROGRAM SELECT NiCD BATT screen. Press the **Enter key** to go into this menu.

Press the **+** or **– key** to go to the NiCD DISCHARGE screen and set discharge parameters. The discharging amperage **(A)** can be set between 0.1 and 2.0A.

A battery pack's capacity can be verified by discharging the pack to its minimum voltage level and measuring the current as the pack is discharged. The discharge level can be set from 0.1 to 25.2V.



To select values other than existing parameters:

- Press the **Enter key** so the discharge current value **(A)** flashes
- Press the **+** or **– key** to INCREASE or DECREASE the discharge current value
- Press the **Enter key** to save the value and the cutoff voltage value **(B)** flashes
- Press the **+** or **– key** to INCREASE or DECREASE the cutoff voltage
- Press the **Enter key** to save the voltage value

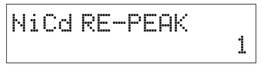
If no parameters are flashing, you can press the **+** or **– key** to select another program such as CHARGE, Auto CHARGE, RE-PEAK or CYCLE.

To start discharging, press and hold the **Enter key** for 3 seconds.

30 NI-CD RE-PEAK CHARGING

Press the **Mode key** to return to the main menu, then press the **+** or **– key** until you see the PROGRAM SELECT NiCD BATT screen. Press the **Enter key** to go into this menu.

Press the **+** or **– key** to go to the NiCD RE-PEAK screen and set re-peak parameters to a value of between 1 and 3.



To select values other than existing parameters:

- Press the **Enter key** so the re-peak value **(A)** flashes
- Press the **+** or **– key** to INCREASE or DECREASE the value
- Press the **Enter key** to save the value

If no parameters are flashing, you can press the **+** or **– key** to select another program such as CHARGE, Auto CHARGE, DISCHARGE or CYCLE.

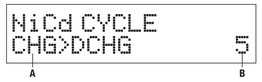
Press the **Enter key** to go to the next menu.

31 NI-CD CYCLE CHARGING

Press the **Mode key** to return to the main menu, then press the **+** or **– key** until you see the PROGRAM SELECT NiCD BATT screen. Press the **Enter key** to go into this menu.

Press the **+** or **– key** to go to the NiCD CYCLE screen and set charge/discharge cycle count parameters.

The battery pack can be put through a series of charge/discharge cycles using this program. Cycling Ni-CD packs can increase capacity and rejuvenate neglected batteries. Discharge capacity and average pack voltage help you compare batteries for the best run time and power.



To select values other than the default parameters:

- Press the **Enter key** so the cycle type **(A)** flashes
- Press the **+** or **– key**s to set the cycle type as CHG>DCHG or DCHG>CHG
- Press the **Enter key** to save your choice and the number of cycles **(B)** flashes
- Press the **+** or **– key** to INCREASE or DECREASE the cycle count between 1–5
- Press the **Enter key** to save the cycle count value

If no parameters are flashing, you can press the **+** or **– key** to select another program such as CHARGE, Auto CHARGE, DISCHARGE or RE-PEAK.

To start cycling, press and hold the **Enter key** for 3 seconds.

32 PB BATTERIES

Press the **Mode key** until you reach the 9 main menu screens, then use the **+** or **– keys** to locate the PROGRAM SELECT Pb BATT screen. Press the **Enter key** to select Pb.

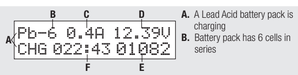
Press the **+** or **– keys** to go to one of the control screens (CHARGE or DISCHARGE) to do what your battery needs.

The nature of a Lead Acid or Sealed Lead Acid battery is very different from that of Lithium, Ni-MH or Ni-CD batteries. The output current of a Pb battery is lower than other batteries relative to their capacities. Furthermore, lead acid batteries can't be charged at a level greater than 1/10 their capacity.

For example, a 5000mAh lead acid battery can't be charged at a rate greater than 0.5A. For more details on the charge and discharge capabilities of your battery please refer to the charging data supplied by the battery manufacturer.

Correctly connect your Pb battery to the charger. Press the **Enter key** and adjust charging parameters as needed. Press and hold the **Enter key** (approximately 3 seconds) until the screen changes to start the battery check/charge sequence.

After confirmation, charging starts and information will show on the LCD screen (information may vary).



A. A Lead Acid battery pack is charging
B. Battery pack has 6 cells in series
C. Charging at a rate of 0.4A (400mAh)
D. Voltage being applied to the battery is currently 12.39V
E. Present charge level of the battery is 1082mAh
F. Time elapsed since the charge process started is 22:43

During charging, the **– key** can be pressed to show several parameter messages on the LCD screen, including: End Voltage, Capacity Cutoff, Safety Timer Status, Temperature Cutoff and Input Power Voltage. The charger signals when the charging (or discharging) process is complete (if Buzzer is set to ON).

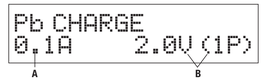
CAUTION: The Pb program menus are to be used ONLY for the charging and discharging of Pb battery packs. The charging of other battery types using these programs will result in damage to the battery or charger.

CAUTION: Using a charge rate that is not compatible with the battery capacities may result in damage or malfunction of the charger or batteries.

33 PB CHARGING

Press the **Mode key** to return to the main menu, then press the **+** or **– key** until you see the PROGRAM SELECT Pb BATT screen. Press the **Enter key** to go into this menu.

Press the **+** or **– key** to go to the Pb CHARGE screen and set charging parameters. The charging amperage **(A)** can be set between 0.1 and 6.0A.



To select values other than existing parameters:

- Press the **Enter key** so the charge current value **(A)** flashes
- Press the **+** or **– key** to INCREASE or DECREASE the charge current value
- Press the **Enter key** to save the value and the pack voltage value **(B)** flashes
- Press the **+** or **– key** to INCREASE or DECREASE the battery voltage/cell count value (Pb batteries are 2.0V per cell, for a 6 cell pack this would be 2.0V x 6 cell = 12.0V)
- Press the **Enter key** to save the voltage value

If no parameters are flashing, you can press the **+** or **– key** to select another program such as DISCHARGE.

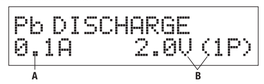
To start charging, press and hold the **Enter key** for 3 seconds.

34 PB DISCHARGE

Press the **Mode key** to return to the main menu, then press the **+** or **– key** until you see the PROGRAM SELECT Pb BATT screen. Press the **Enter key** to go into this menu.

Press the **+** or **– key** to go to the Pb DISCHARGE screen and set discharge parameters. The discharging amperage **(A)** can be set between 0.1 and 2.0A.

A battery pack's capacity can be verified by discharging the pack to its minimum voltage level and measuring the current as the pack is discharged. The discharge level can be set from 2 to 20V.



To select values other than existing parameters:

- Press the **Enter key** so the discharge current value **(A)** flashes
- Press the **+** or **– key** to INCREASE or DECREASE the discharge current value
- Press the **Enter key** to save the value and the cutoff voltage value **(B)** flashes
- Press the **+** or **– key** to INCREASE or DECREASE the cutoff voltage
- Press the **Enter key** to save the voltage value

If no parameters are flashing, you can press the **+** or **– key** to select another program such as CHARGE.

To start discharging, press and hold the **Enter key** for 3 seconds.

35 BATTERY MEMORY

Press the **Mode key** until you reach the 9 main menu screens, then use the **+** or **– keys** to locate the PROGRAM SELECT BATT MEMORY screen. Press the **Enter key** to select BATT MEMORY.

Use this menu to create a battery profile. To reduce the time required to initiate a charging or discharging cycle on a battery you regularly use, this charger has been designed with the capability of storing up to 10 battery profiles that can be quickly accessed and run at a later time.

- Press the **+ key** to identify a battery profile, 1 through 10
- Press the **Enter key** to select battery profile 1
- Press the **Enter key** so battery type flashes
- Press the **+ key** to select a battery type
- Press the **Enter key** to save the battery type

Follow this process using the **+**, **–** and **Enter keys** to select, change, then save each parameter (battery voltage, charge current, discharge current, discharge voltage, Terminal Voltage Control (TVC) cutoff and temperature cutoff). Then save the battery profile.

- Press the **+ key** to select SAVE PROGRAM
- Press the **Enter key** to save the program
- Repeat this process to enter additional battery profiles
- Press the **Mode key** until you reach the 9 main menu screens

CAUTION: Increasing the TVC value beyond the default settings may result in a shorter battery life and/or damage to the battery. Do not change the TVC value unless you fully understand the effects TVC will have on your battery.

To Charge or Discharge a battery using the saved profile:

Press the **Mode key** until you reach the 9 main menu screens, then use the **+** or **– keys** to locate the PROGRAM SELECT BATT MEMORY screen. Press the **Enter key** to select BATT MEMORY.

- Press the **+ key** to identify the battery profile, 1 through 10
- Press and hold the **Enter key** for 3 seconds
- Press the **+ key** to choose the type of charge function you wish to perform
- Press and hold the **Enter key** for 3 seconds to start

36 SYSTEM SET

Press the **Mode key** until you reach the 9 main menu screens and then use the **+** or **– keys** to locate the PROGRAM SELECT SYSTEM SET screen. Press the **Enter key** to select SYSTEM SET.

Use this menu to set the "behind the scenes" operating parameters for this charger such as; Rest Time, SAFETY TIMER, Capacity Cutoff, Key Beep/Buzzer, Input Power Low Cutoff, External and Internal Temperatures, RESET FACTORY SETTINGS and VERSION.

a REST TIME

Use this menu to set the Rest time during each step in a cycle.When a Ni-MH or Ni-CD battery is cycled (charged, discharged and charged again) it will get hot, therefore it is necessary to set a rest time interval during each step of the process to make sure the battery and charger are completely cooled before moving on to the next part of the cycle. Default time is 10 minutes, but this can be set between 1 and 60 minutes.
To select values other than the default parameter:

- Press the **Enter key** to select Rest Time
- Press the **Enter key** so the Rest Time value flashes
- Press the **+** or **– key** to select Rest Time in Minutes
- Press the **Enter key** to save the Rest Time value
- Press the **+ key** to select SAFETY TIMER

b SAFETY TIMER

Use this menu to set a time limit for charging a battery. When a charge cycle is started, a clock inside the charger will begin recording the elapsed charge time. If the SAFETY TIMER function has been turned ON, the charger will stop the charging process once this time limit has been reached to avoid damage caused by over-charging the battery. This time value can be set between 1 and 720 minutes.
To select values other than the default parameters:

- Press the **Enter key** so the ON/OFF value flashes
- Press the **+** or **– key** to select ON or OFF
- Press the **Enter key** to save the value
- Press the **+** or **– key** to select the value for time
- Press the **Enter key** to save the value
- Press the **+ key** to select Capacity Cutoff

c CAPACITY CUTOFF

Use this menu to set a capacity limit at which the charger will stop charging a battery. When a charge cycle starts, the charger records the battery capacity. When the Capacity Cutoff function is set at ON, the charger will stop charging at the capacity limit to prevent battery damage. Capacity can be adjusted between 100 and 50,000mAh.

- Press the **Enter key** so the ON/OFF value flashes
- Press the **+** or **– key** to select ON or OFF
- Press the **Enter key** to save the value
- Press the **+** or **– key** to select the Capacity Cutoff value
- Press the **Enter key** to save the value
- Press the **+ key** to select Key Beep/Buzzer menu

d KEY BEEP/BUZZER

Use this menu to set the key beep and charger alarm buzzer at ON or OFF as needed. We recommend that you keep the alarm ON so the alarm will sound when charging is complete or if there is cause for alarm during charging.
To select values other than the default parameters:

- Press the **Enter key** so the Key Beep ON/OFF value flashes
- Press the **+** or **– key** to select ON or OFF
- Press the **Enter key** to save the value
- Press the **Enter key** so the Buzzer ON/OFF value flashes
- Press the **+** or **– key** to select ON or OFF
- Press the **Enter key** to save the value
- Press the **+ key** to select Input Power Low Cutoff menu

e INPUT POWER LOW CUTOFF

Use this menu to set the input voltage limit so an alarm will sound if the voltage goes below the cutoff value. The voltage alarm value can be set anywhere from 10.0 to 11.0V.
To select values other than the default parameters:

- Press the **Enter key** so the voltage value flashes
- Press the **+** or **– key** to select the voltage value
- Press the **Enter key** to save the value
- Press the **+ key** to select External and Internal Temperatures menu

f EXTERNAL AND INTERNAL TEMPERATURES

By selecting the External and Internal Temperatures Screen you can view the current temperatures of both the battery (external) and the charger (internal). The optional temperature sensor (DYN5033) is required for external temperature measurement.

g RESET FACTORY SETTINGS

- Press the **Enter key** to reset the charger to factory settings
- Press the **+ key** to select VERSION

h VERSION

By selecting the Version Screen you can view the version (revision number) of the software on your charger.

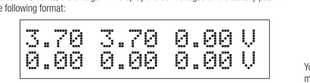
37 LI BATTERY VOLTAGE CHECKER OPERATION - USING THE BALANCE ADAPTER PORT

The Passport UltraLite charger has the capability to read and display the individual cell voltages of a Li-Po, Li-Fe or Li-Io battery via the balance adapter port located just above the banana jack connectors. This voltage checking function can only be used when the UltraLite is powered ON and not charging a battery.

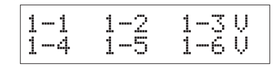
To use the voltage checker, connect the balance port connector of your Li-Po, Li-Fe or Li-Io battery to the balance adapter board connected to the Balance Circuit Adapter Board Connector **(D)**.

Press the **Mode key** until you reach the 9 main menu screens, then use the **+** or **– keys** to locate the PROGRAM SELECT LI BATT METER screen. Press the **Enter key** to select LI BATT METER.

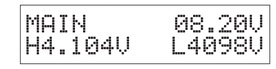
In a few moments, the charger will display the cell voltages of the battery pack in the following format:



This example is for a 2S battery pack, so only the voltages for these two cells are displayed. The data is presented in this format:



At this point, you can use the **+** or **– keys** to see a display of the overall pack voltage, as well as the individual high- and low-cell voltage values.



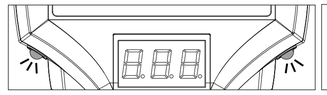
You may exit this menu at any time by pressing the **Mode key** to return to the main menu screens.

38 UTILITY LIGHTS OPERATION

The Passport UltraLite charger has 2 pairs of ultra bright, daylight LEDs positioned on both sides, just under the LCD readout. The purpose of these lights is to illuminate your work area under dim light conditions. The LED pairs can be turned ON independently or together.

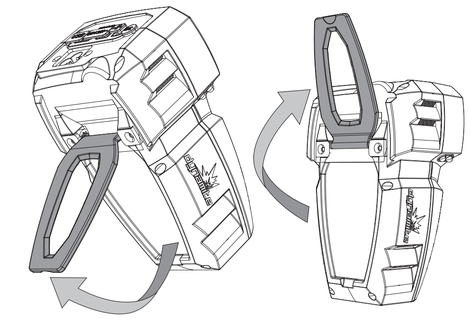
The LEDs are turned ON or OFF using the button located at the bottom center of the front panel **(E)**. You can turn the LEDs ON or OFF using the following sequence:

- Press the **Utility Light ON/OFF key** once to illuminate the left bank of LEDs
- Press the **Utility Light ON/OFF key** to turn OFF the left bank of LEDs and illuminate the right bank of LEDs
- Press the **Utility Light ON/OFF key** to turn both the right and left banks of LEDs ON
- Press the **Utility Light ON/OFF key** to turn both the right and left banks of LEDs OFF



39 REAR STAND OPERATION

The swing out stand on the rear of the unit can be utilized to position the Passport UltraLite charger vertically on your work table, allowing the Utility Lights to illuminate the areas in front of, and slightly to the side of the device. The stand can also be used to hang the Passport UltraLite Charger from a shelf, or hook to illuminate a larger work area.



40 LI-PO VOLTAGE CHECKER OPERATION

The Passport UltraLite charger has the capability to read and display the individual cell voltages of a Li-Po battery. This voltage checking function can be used whether the charger is powered ON or OFF.

To use the Li-Po Voltage Checker, connect the balance port connector of your Li-Po battery into the 1–6S Li-Po Battery Voltage Checker Port **(P)**. If you have many different batteries of varying voltages, it may be convenient for you to connect a standard balance adapter board into the voltage check connector. This would allow you to easily connect any JST-XH or JST-THP balance connectors into the voltage checker.

Connect the balance connector of your battery into the voltage checker connector or balance board adapter. The LEDs will show 8.8.8 for approximately two seconds as the unit powers up. After 2 seconds, the charger will begin to display the cell voltages of this battery pack in the following format:

1–6 (Cell number 1 of 6)	X.XX (Voltage of Cell 1 of 6)
2–6 (Cell number 2 of 6)	X.XX (Voltage of Cell 2 of 6)
3–6 (Cell number 3 of 6)	X.XX (Voltage of Cell 3 of 6)
4–6 (Cell number 4 of 6)	X.XX (Voltage of Cell 4 of 6)
5–6 (Cell number 5 of 6)	X.XX (Voltage of Cell 5 of 6)
6–6 (Cell number 6 of 6)	X.XX (Voltage of Cell 6 of 6)

This example is for a 6S battery pack. In actual use, the LEDs will display only the voltages of cells in the battery–if the pack is 2S only 1–2 and 2–2 will be displayed.

The voltage checker may also be used to discharge the individual cells in the battery pack to achieve a lower overall pack voltage and/or to more accurately balance the pack.

To set the cell voltage level you would like to discharge to:

- Press and hold the **Discharge Battery Key (K)** for 3 seconds until you hear a beep
- All three digits of the display will blink
- Press the **Discharge Battery Key (K)** or **Read Battery Voltage Key (J)** to set the voltage value to the desired level, from a minimum of 3.00V to a maximum of 4.11V
- Press and hold the **Discharge Battery Key (K)** for 3 seconds until you hear a beep; this will save the voltage value
- The battery discharging process will begin and will continue to display the cell voltages until the voltage value you entered has been reached
- When the discharge process is complete, the unit will beep 10 times and then say "END;" It will then display all of the individual cell voltages until the system times out from no use and goes to sleep
- The voltage checker may be restarted at any time by pressing either key

41 USB ACCESSORY CHARGER OPERATION (COMPATIBLE WITH iPhone AND iPod DEVICES)

The Passport UltraLite charger has the capability to charge your iPhone®, iPod® or USB compatible device with the 1A USB charge port **(O)**. To use the charging function, simply connect a compatible charging device or cord into the charge port while the charger is powered ON. The internal USB charge port will provide up to 1A current at 5V DC.

42 TROUBLESHOOTING GUIDE

LCD Screen Warning and Error messages shown below.

During charger operation, circuits monitor battery and charger functions. If the following messages show on the charger's LCD screen, make the recommended responses. If the message continues after you respond as recommended, contact your nearest Horizon Hobby customer service center for assistance.

REVERSE POLARITY	Make sure each connection polarity is correct between the power source and the charger, then between the charger and the battery
CONNECTION BREAK	Make sure the power connections are correct for charging
SHORT ERR	Make sure there are no short circuits between the poles of the battery or the battery and the charger. Replace damaged wires.
INPUT VOL ERR	Input voltage to the charger fell below the default or adjusted input voltage setting. Make sure the power source for the charger provides correct input voltage.
VOL SELECT ERR	Incorrect setting for cell in series count (pack voltage) of a lithium battery. Make charger settings match the battery pack label cell in series count specifications or replace the battery.
BREAK DOWN	Charger electronics require repair.
BATTERY CHECK LOW VOLTAGE	Battery voltage is lower than the value setting in the charger. Adjust settings, then make sure the battery is not damaged or replace the battery.
BATTERY CHECK HIGH VOLTAGE	Battery voltage is higher than the value setting in the charger. Adjust settings, then make sure the battery is not damaged or replace the battery.

Battery Type	Li-Po	Li-Io	Li-Fe	Ni-MH	Ni-Cd	Pb
Standard voltage (Volts per cell)	3.70	3.60	3.30	1.20	1.20	2.00
Max. voltage (Volts per cell)	4.20	4.10	3.60	1.60	1.60	2.45
Min. voltage (Volts per cell)	3.00	3.00	2.00	1.00	0.85	1.75

Created 09/12