# Instruction Manual

## MultiPro™ Intelligent Balance Charger

LOSB9606

## *INTRODUCTION*

Thank you for purchasing the MultiPro™ Intelligent Balance Charger by Losi. This product is a rapid charger with a high performance microprocessor and specialized operating software. Please read this operating manual completely before using this product.

### *Specifications*

| | |
|---|---|
| Operating voltage range: | DC 11.0 - 18.0  V |
| | AC to DC adapter (DC 11.0 - 18.0 V/5 A) |
| Circuit power: | Max. charge power 50 W |
| | Max. discharge power 5 W |
| Charge current range: | 0.1-5.0 A |
| Discharge current range: | 0.1-1.0 A |
| Current drain for balancing LiPo: | 300 mAh/cell |
| NiCd/NiMH battery cell count: | 1-15 cells |
| Li-ion/LiPo cell count: | 1-6 series |
| Pb battery voltage: | 2 - 20 V |
| Weight: | 227 g (net weight) |
| Dimensions: | 133 x 87 x 33 mm) |

## *SPECIAL FEATURES*

### Optimized operating software

The MultiPro™ charger features an automatic charging function that sets the operating current during the process of charging or discharging. This can prevent overcharging of lithium batteries which could lead to a battery fire or explosion. It will disconnect the circuit automatically and alarm the user once a malfunction is detected. All programs on this charger are controlled through two-way communication, achieving maximum safety and ease-of-use. All settings are user configurable.

### Internal independent lithium battery balancer

This charger employs an individual-cell voltage balancer. It isn't necessary to connect an external balancer for balance charging.

### Balancing individual cells while battery is discharging

During the process of discharging, this charger can monitor and balance each cell of the battery individually. If the charger detects that the voltage of any single cell is abnormal, an error message will be displayed and the process will be ended automatically.

### Adaptable to various types of lithium batteries

This charger can charge various types of lithium batteries including Li-ion, LiPo, and the new LiFe batteries.

### Fast and storage mode

The 'fast' mode is used to reduce the charge duration, whereas the 'storage' mode can control the final voltage of the battery. This will allow long-term storage of the battery and protect the useful life of the battery.

## SPECIAL FEATURES

### Maximum safety
Delta-peak sensitivity: The automatic charge termination is based on the principle of delta-peak voltage detection. When the battery's voltage exceeds the threshold, the process will be terminated automatically.

### Automatic charging current limit
You can set the upper limit of the charging current when charging NiCd and NiMH batteries. This is useful for NiMH batteries of low impedance and capacity when using the 'AUTO' charging mode.

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

### Temperature threshold*
The battery's internal chemical reaction will cause the temperatue of the battery to rise. If the temperature limit is reached, the process will be terminated automatically.*
* This function is available by connecting the optional temperature probe, not included.

### Processing time limit
You can also limit the maximum process time to avoid overcharging your battery.
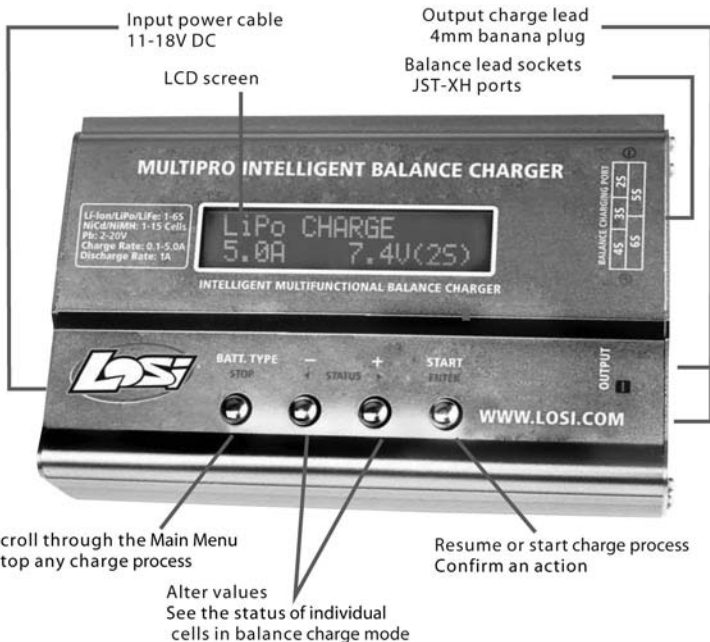
### Input power monitoring
To protect your car's battery from being over discharged when used as the DC power input, the voltage is continuously monitored. If the voltage drops below the lower limit, the process will be ended automatically.

### Data store/load
Data for a maximum of five batteries can be stored for your convenience. You can store data pertaining to program settings of the battery for continuous charging or discharging. Users can recall this data at any time without any special program setting.

**Cyclic charging/discharging**

One to five cycles and continuous process of charge<>discharge to help balance and stimulate the battery's activity.

Input power cable
11-18V DC

LCD screen

Output charge lead
4mm banana plug

Balance lead sockets
JST-XH ports

MULTIPRO INTELLIGENT BALANCE CHARGER

Li-Ion/LiPo/LiFe: 1-6S
NiCd/NiMH: 1-15 Cells
Pb: 2-20V
Charge Rate: 0.1-5.0A
Discharge Rate: 1A

LiPo CHARGE
5.0A        7.4V(2S)

INTELLIGENT MULTIFUNCTIONAL BALANCE CHARGER

BATT. TYPE
STOP

STATUS

START
FILTER

WWW.LOSI.COM

OUTPUT

Scroll through the Main Menu
Stop any charge process

Resume or start charge process
Confirm an action

Alter values
See the status of individual
cells in balance charge mode

## *LITHIUM POLYMER BALANCE CHARGE PROGRAM*
## *CONNECTION DIAGRAM*

This diagram shows the correct way to connect your battery to the MultiPro™ charger while charging in the balance charge program mode.

## ⚠ WARNING:

Failure to connect as shown in this diagram will damage the charger.



The main battery leads must be connected along with the balance lead connectors as shown before charging your battery. Pay close attention to the polarity of the main battery leads.

## ⚠ WARNING:

🛈 If using crocodile clips be sure they are unable to touch together!

## ⚠ *WARNING AND SAFETY NOTES*

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

❗ Never leave the charger unattended when it is connected to its power supply. If any malfunction is found, TERMINATE THE PROCESS AT ONCE and refer to the operation manual.

❗ Keep the charger well away from dust, dampness, rain, heat, direct sunshine, and vibration. Never drop it.

❗ The allowable input voltage is 11-18V DC

❗ This charger and the battery should both be placed on a heat-resistant, non-flammable and non-conductive surface. Never place them on a car seat, carpet, or similar surface. Keep all flammable and volatile materials away from the operating area.

❗ Make sure you know the specifications of the battery to be charged or discharged to ensure it meets the requirements of this charger. If the program is set up incorrectly, the battery and charger may be damaged. Improper settings can cause the battery to become overcharged potentially leading to fire or explosion. This warranty is not valid for any damage or subsequent damage arising as a result of misuse or failure to observe the procedures outlined in this manual.

NiCd/NiMH
    Voltage level:   1.2V/cell
    Allowable fast charge current:   1-2C (depending upon the performance of the cell)
    Discharge voltage cutoff level:   0.85V/cell (NiCd), 1.0V/cell (NiMH)

Li-ion
    Voltage level:   3.6V/cell
    Max. charge voltage:   4.1V/cell
    Allowable fast charge current:   1C or less
    Discharge voltage cutoff level:   2.5V/cell or higher

LiPo
    Voltage level:   3.7V/cell
    Max. charge voltage:   4.2V/cell
    Allowable fast charge current:   1C or less
    Discharge voltage cutoff level:   3.0V/cell or higher

LiFe
    Voltage level:   3.3V/cell
    Max. charge voltage:   3.6V/cell
    Allowable fast charge current:   4C or less
    Discharge voltage cutoff level:   2.0 V/cell or higher

Pb
    Voltage level:   2.0V/cell
    Max. charge voltage (lead-acid):   2.46V/cell
    Allowable fast charge current:   0.4C or less
    Discharge voltage cutoff level:   1.75V/cell or higher

## WARNING AND SAFETY NOTES

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

**!** Do not connect more than one battery pack to this charger at any time.

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

> A battery pack which consists of different types of cells (including different manufacturers).
>
> A battery that is already fully charged or just slightly discharged.
>
> Nonrechargeable batteries (explosion hazard).
>
> Batteries that require a different charge technique from NiCd, NiMH, LiPo, or Gel cell (Pb, lead acid).
>
> A faulty or damaged battery.
>
> A battery fitted with an integral charge circuit or a protection circuit.
>
> Batteries installed in a device or which are electrically linked to other components.
>
> Batteries that are not expressly stated by the manufacturer as suitable for the current the charger delivers during the charging process.

WARNING AND SAFETY NOTES

**!** Please keep in mind the following points before charging:

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

**!** Charging

While charging, a specific quantity of electrical energy is fed into the battery. The charge quantity is calculated by multiplying charge current by charge time. The maximum permissible charge current varies depending on the battery type and its performance. Check the manufacturer's specifications for the battery you are using. Only batteries that are expressly stated to be capable of quick-charge should be charged at rates higher than the standard charge current.

Connect the battery to the terminal of the charger (red is positive and black is negative). Use conductors with adequate cross-section and high-quality connectors, normally gold-plated, to meet the charging and discharging current demands.

Always refer to the battery manufacturer's recommendations for charging current and duration. This is especially important for lithium batteries.

Make sure that the polarity is correct when connecting your battery to the charger. This is particularly important for lithium batteries.

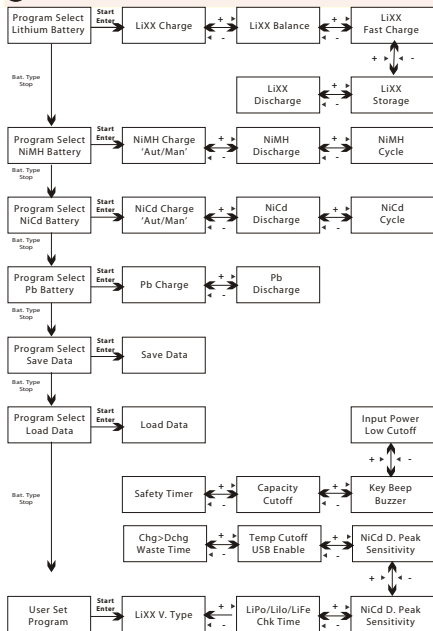Do not attempt to disassemble batteries.

⚠ **Discharging**

The main purpose of discharging is to condition the capacities of the cells and to reduce the battery's voltage to a defined level for storage. The same attention should be paid to the discharging process as charging. The final discharge voltage should be set up correctly to avoid over-discharging the battery. Lithium batteries cannot be discharged to lower than the minimum voltage without rapidly reducing capacity and risking catastrophic failure. Generally, lithium batteries do not need to be discharged. Please pay close attention to the minimum voltage of lithium batteries specified by the battery's manufacturer to protect the battery.

Some rechargeable batteries have a memory effect. If they are partially discharged and then recharged, subsequent charges will be limited to this reduced capacity. This is a 'memory effect'. NiCd and NiMH batteries may be more prone to this memory effect, with NiCd exhibiting a higher sensivitiy to this.

Lithium batteries should only be partially discharged. Frequent full discharging should be avoided. You should either charge more often or use a battery with higher capacity. The charge<>discharge cycling will help to optimize the capacity of the battery pack.

⚠ Program flow chart

```
Program Select        Start    LiXX Charge   +►  LiXX Balance   +►  LiXX
Lithium Battery       Enter                  ◄-                 ◄-  Fast Charge

                                                                   +► ▲ ◄ -

Bat. Type                                     LiXX          +►  LiXX
Stop                                          Discharge     ◄-  Storage

Program Select        Start    NiMH Charge   +►  NiMH        +►  NiMH
NiMH Battery          Enter    'Aut/Man'      ◄-  Discharge   ◄-  Cycle
Bat. Type
Stop

Program Select        Start    NiCd Charge   +►  NiCd        +►  NiCd
NiCd Battery          Enter    'Aut/Man'      ◄-  Discharge   ◄-  Cycle
Bat. Type
Stop

Program Select        Start    Pb Charge     +►  Pb
Pb Battery            Enter                   ◄-  Discharge
Bat. Type
Stop

Program Select        Start    Save Data
Save Data             Enter
Bat. Type
Stop

Program Select        Start    Load Data                        Input Power
Load Data             Enter                                      Low Cutoff

                                                                 +► ▲ ◄ -

                               Safety Timer  +►  Capacity    +►  Key Beep
                                             ◄-  Cutoff      ◄-  Buzzer

                               Chg>Dchg      +►  Temp Cutoff +►  NiCd D. Peak
                               Waste Time    ◄-  USB Enable  ◄-  Sensitivity

                                                                 +► ▲ ◄ -

User Set              Start    LiXX V. Type  +►  LiPo/Lilo/LiFe +►  NiCd D. Peak
Program               Enter                  ◄-  Chk Time       ◄-  Sensitivity
```

## WARNING AND SAFETY NOTES

This charger uses default settings for typical use when it is first connected to a 12V power supply. The screen displays the information on the following pages in sequence and the user can change the parameter on each screen.

If you need to alter the parameter value in the program, press the 'Start/Enter' key to make it blink then change the value with the '+' or '-' keys. The value will be stored by pressing the 'Start/Enter' key once.

LiFe
V. Type    3.3V

◄ - | + ► ◄ | - + ►
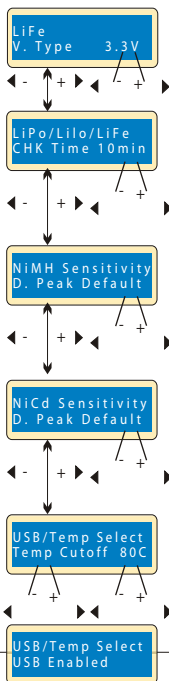
The screen shows nominal voltage of the lithium battery. There are three types of lithium batteries: LiFe (3.3V), Li-ion (3.6V), and LiPo (3.7V). It is critically important that you set up the charger to work with the type of battery that you have. Failure to do so could lead to damage of your battery and possibly even a fire or explosion during the charge process.

LiPo/Lilo/LiFe
CHK Time 10min

◄ - | + ► ◄ | - + ►

This charger automatically detects the cell count of a lithium battery at the beginning of a charge or discharge process. A battery that has been overly discharged may not be properly detected. You may need to set the time term limit to verify the cell count by the processor. Normally, 15 seconds are sufficient to detect the cell count correctly. You may need to extend the time term limit for batteries of large capacity. If the cell count is wrong or you set too long of a time limit the charge or discharge process may come to an end within the time limit. This may cause a fatal error. You have to extend the time term if the processor detects the cell count incorrectly at the beginning of the charge or discharge process. Otherwise, use the default value.

NiMH Sensitivity
D. Peak Default

◄ - | + ► ◄ | - + ►

NiCd Sensitivity
D. Peak Default

◄ - | + ► ◄ | - + ►

This shows the trigger voltage for automatic charge termination of NiCd and NiMH batteries. The valid value range is from 5 to 20mV per cell. Setting the trigger voltage higher may lead to overcharging, whereas setting it lower may cause premature process termination. Please refer to the technical specifications for your battery. Default value for NiCd is 12mV and NiMH is 7mV.

USB/Temp Select
Temp Cutoff 80C

◄ | - + ► ◄ | - + ►

USB/Temp Select
USB Enabled

## WARNING AND SAFETY NOTES

There is a 3-pin port on the left side of the charger used as a USB interface or temperature sensor port. When configured to display temperature, you can display the surface temperature of your battery using the optional temperature probe . You can set the maximum allowable temperature of the battery while charging. The process will be terminated automatically to protect the battery once it reaches this temperature. This feature requires the temperature probe (optional). If the port is configured as a USB port, you can connect and monitor the charger with your PC using the optional USB cable and software.

```
Waste time
CHG/DCHG   5min
```
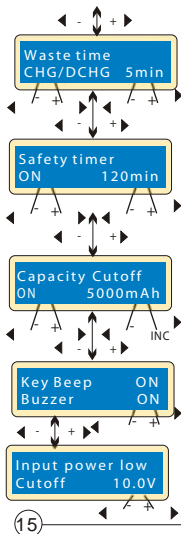
The battery will heat up after cycles of charge and discharge. The program will insert a time delay after each charge/discharge process to allow the battery sufficient time to cool down before starting the next cycle. The valid value ranges are from 0 to 60 minutes.

```
Safety timer
ON         120min
```

When charging begins, the integrated safety timer starts. If an error is detected or the termination circuit cannot detect whether the battery is fully charged or not, the safety timer will help to prevent overcharging. Please see the following page to calculate the appropriate safety timer duration.

```
Capacity Cutoff
ON        5000mAh
```

The capacity cutoff feature protects against overcharging the battery when delta-peak voltage cannot be detected or the safety timer times out. When the battery reaches the maximum capacity that you have set, charging will be automatically terminated.

```
Key Beep      ON
Buzzer        ON
```

The charger beeps each time you press a button to provide feedback of your action. The charger also beeps or plays melody sounds during operation to confirm different mode changes. These functions can be turned on or off.

```
Input power low
Cutoff     10.0V
```

This function monitors the voltage of the input battery used to power the charger. If the voltage is lower than the value you set, the program will be automatically terminated to protect the input battery.

## *Safety Timer Calculation*

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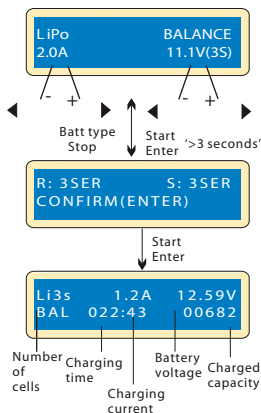
*For example:*

| Capacity | Current | Safety Time |
| --- | --- | --- |
| 2000mAh | 2.0A | (2000/2.0=1000)/11.9=84 minutes |
| 3300mAh | 3.0A | (3300/3.0=1100)/11.9=92 minutes |
| 1000mAh | 1.2A | (1000/1.2=833)/11.9=70 minutes |

## *Lithium (LiIo/LiPo/LiFe) Program*

This program is only suitable for charging/discharging lithium-polymer batteries with a nominal voltage of 3.3/3.6/3.7V/cell. Different batteries have different charge techniques. There are two methods of charging, constant voltage and constant current. The charge current varies according to battery capacity and specification. The final voltage is very important; it should precisely match the voltage of the battery: LiPo is 4.2V, LiIo is 4.1V, and LiFe is 3.6V. The current and voltage of the battery should be correctly set.

When you want to change the values of parameters, press the 'START/ENTER' key to make it blink and then use the '+' or '-' keys to change the value. Then press the 'START/ENTER' key again to store the value.

## Charging a lithium battery

```
LiPo          BALANCE
2.0A          11.1V(3S)
```

◀      -    +        -    +      ▶

Batt type    Start    '>3 seconds'
Stop         Enter

The left side of the first line shows the type of battery you have selected. The value on the left side of the second line is the current you have selected. After setting the current and voltage, press the 'START/ENTER' key for more than three seconds to start the process (charge current: 0.1-5.0A, voltage: 3.7-22.2V)

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

Start
Enter

This screen shows the number of cells in the battery. "R" depicts the number of cell detected by the charger and "S" depicts the number of cells selected by you on the previous screen. If both numbers are identical, you can start charging by pressing the 'START/ENTER' key. If not, press the 'BATT TYPE/STOP' key to go back to the previous screen. Carefully check the number of cells of the battery pack before proceeding.
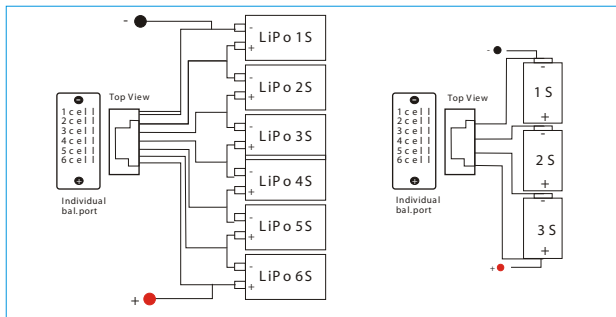
```
Li3s    1.2A    12.59V
BAL    022:43    00682
```

Number    Charging    Battery    Charged
of        time        voltage    capacity
cells
          Charging
          current

This screen shows the real-time status while charging. Press the 'BATT TYPE/STOP' key once to stop charging.

## Charging a lithium battery in balance mode

This function allows voltage balancing of the cells of lithium-polymer batteries while charging. In the balance mode, the battery balance leads must be connected to the appropriate balance port at the right side of the charger. The battery power leads must also be connected to the output leads of the charger.
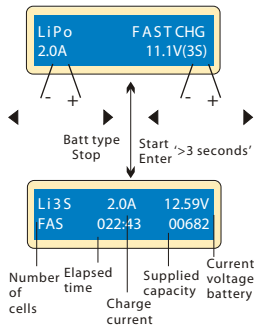
This charge mode utilizes the built-in processor to monitor the voltage of individual cells and control input current fed into each cell to normalize the voltage.

## *Individual Cell Connection Diagram (pin assignment of 8-pin)*

## *Fast charging a lithium battery*

```
LiPo          F AST CHG
2.0A          11.1V(3S)
```

◀   − +   ▶   ◀   − +   ▶

Batt type   Start   '>3 seconds'
Stop        Enter

```
Li 3 S      2.0A      12.59V
FAS        022:43     00682
```

Number   Elapsed   Supplied   Current
of       time      capacity   voltage
cells                         battery
       Charge
       current

As the charger reaches the end of the charging cycle, the charging current will drop. A specific CV process will be reduced to end the charging process earlier. In fact, the charging current will drop to 1/5 when the charging process comes to 1/10. Charging capacity will be less than normal charging, but charging time will be shortened accordingly.

You can set up the charging current and voltage of the battery pack. Press the 'START/ENTER' key to display voltage confirmation. Then press the 'START/ENTER' key again to confirm and begin charging.

This screen shows the real-time status of fast charging. Press the 'BATT TYPE/STOP' key once to stop charging.
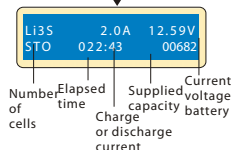
## *Storage preparation of a lithium battery*

This function is for charging/discharging lithium batteries which will not be used immediately. This program is designed for charging or discharging batteries to a state suitable for extended storage. The following voltages are recommended for extended storage: 3.75V Lilo, 3.85V LiPo, and 3.3V LiFe. The program will begin to discharge if the original state of the battery exceeds the storage voltage level or charge if below this voltage level.

```
LiPo  STORAGE
2.0A           11.1V(3S)
```
– + – +

◀ ▶ ◀ ▶

Batt type
Stop

Start
Enter  '>3 seconds'
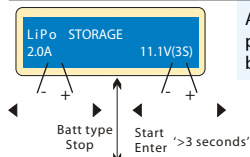
At this screen you can set up the current and voltage of the battery pack. Charging and discharging will adjust the voltage level of the battery to the appropriate storage level.
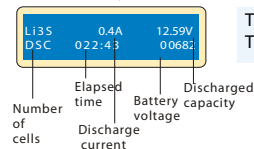
```
Li3S      2.0A   12.59V
STO    022:43     00682
```

Number of cells

Elapsed time

Charge or discharge current

Supplied capacity

Current voltage battery

This screen shows the real-time status of charging/discharging. Press the 'BATT TYPE/STOP' key once to stop charging/discharging.

## *Discharging a lithium battery*

```
LiPo DISCHARGE
1.0A           11.1V (3S)
```
– / + – / +

◀ ▶ ◀ ▶

Batt type
Stop

Start
Enter  '>3 seconds'
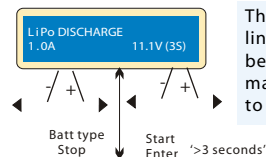
The value of the discharge current shown on the left side of the bottom line cannot exceed 1C and the voltage shown on the right side cannot be less than the minimum voltage recommended by the battery manufacturer. Hold the 'START/ENTER' key for more than three seconds to begin discharging.

```
Li3S      0.4A   12.59V
DSC    022:43     00683
```

Number of cells

Elapsed time

Discharge current

Battery voltage

Discharged capacity

This screen shows the real-time status of discharging. Press the 'BATT TYPE/STOP' key once to stop discharging.

## *Voltage balancing and monitoring while discharging*

The processor monitors voltage of each cell in the battery pack during storage preparation and discharging. To use this feature you must connect the balance leads from your battery to the charger. If the charger detects any abnormalities it will terminate the process automatically. If this occurs, an error message will be displayed. Press the 'INC' key to see which cell is abnormal.

```
BATTERY VOL ERR
CELL LOW VOL
```

This error message is displayed when the processor detects that the voltage of one cell is too low.

INC ▶

```
4.14    4.16    4.09
2.18    0.00    0.00
```

This error message depicts a failure of the fourth cell in the battery. This value could be zero if disconnection occurs.

## *Charging a NiCd/NiMH battery*

```
NIMH    CHARGE   Aut
CUR    LIMIIT   5.0A
```

◀ _ ▶   ◀ _ ▶
＿  ＋       ＿  ＋

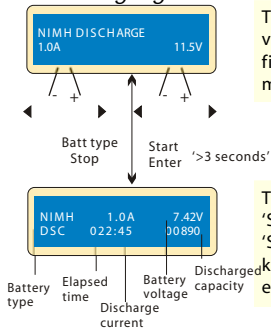Batt type   Start   '>3 seconds
Stop    Enter

This program allows for charging and discharging of NiCd/NiMH batteries. Press the 'START/ENTER' key to make it blink and then press the '+' or '-' keys to change the value. Press the 'START/ENTER' key to store the value.

```
NIMH    2.0A  7.42V
CHG   022:45   00890
```

Elapsed    Battery
Battery time  Charge   voltage
type   current    Charged
capacity

This program charges the battery using the current you've specified. In the "auto" state, ensure that the current limit that you specify is less than the maximum value specified by the battery's manufacturer. Some low resistance and low capacity batteries may pull a higher current in the "auto" state. In the "manual" state, the charger will use the exact current that you set. Press the 'START/ENTER' key to make it blink and then press the '+' and '-' keys at the same time to switch states.

This screen on the previous page shows the real-time status of the battery while charging. Press the 'BATT TYPE/STOP' key to stop charging. The charger will play a chime to alert you to the end of the charge process.

## Discharging a NiCd/NiMH battery

NIMH DISCHARGE
1.0A                11.5V

◀      −  +      ▶      −  +      ▶

◀                        ▶

Batt type      Start
Stop           Enter   '>3 seconds'

The value on the left side of the lower line shows the set current and the value of the right shows final voltage. Discharge current range: 01.-1.0A; final voltage range: 0.1-25.0V. Press and hold the 'START/ENTER' key for more than three seconds to start discharging.

NIMH        1.0A      7.42V
DSC        022:45     00890

Battery    Elapsed    Battery    Discharged
type       time       voltage    capacity
           Discharge
           current

This screen depicts the discharging state. You can press the 'START/ENTER' key to change the discharge current. Press the 'START/ENTER' key again to store the value. Press the 'BATT TYPE/STOP' key to stop discharging. The charger will play a chime to alert you to the end of the discharge process.

## Charge/discharge and discharge/charge cycle of a NiCd/NiMH battery

```
NIMH  CYCLE
DCHG>CHG        3
```
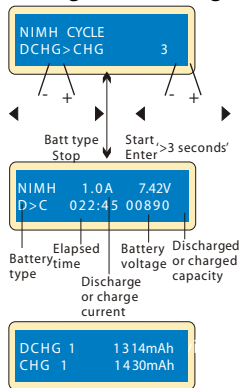
You can select the sequence you want on the left and the number of cycles on the right. You can balance, refresh, and break-in the battery with this function. You can set a temporary cool-off procedure in the user's setting. You can select from 1 to 5 cycles.

Batt type — Stop

Start, Enter '>3 seconds'

```
NIMH   1.0A    7.42V
D>C   022:45  00890
```

Battery type · Elapsed time · Discharge or charge current · Battery voltage · Discharged or charged capacity

Press the 'BATT TYPE/STOP' key to stop the program. Press the 'START/ENTER' key to alter the charge current. The charger will play a chime to alert you to the end of the process.

```
DCHG 1      1314mAh
CHG  1      1430mAh
```

When the process is nearly completed, the screen will display the capacity of the battery being charged or discharged. Press the '+' or '-' keys to display the result of each cycle.

## Pb (lead-sulphuric acid) battery program

This program is only suitable for charging Pb (lead-acid) batteries with a nominal voltage between 2 to 20V. A Pb (lead-acid) battery is completely different from a NiCd/NiMH battery. These batteries deliver much lower current with respect to their capacity. The same limitation applies to charging. Consequently, the optimum charge current can only be 1/10 of the capacity. You cannot fast-charge a Pb (lead-acid) battery. Carefully follow all charging and discharging instructions provided by the battery manufacturer.

Press the 'START/ENTER' key to make it blink and then press the '+' or '-' keys to change the parameter values. Press the 'START/ENTER' key to store the value.
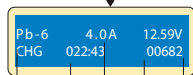
## Charging a Pb battery

```
Pb CHARGE
4.0A            12.0V(6P)
```

◄ /_ + ►    ◄ /_ + ►

Batt type    Start
Stop         Enter    '>3 seconds'
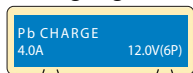
Set up the charge current on the left and nominal voltage on the right. Range of charge current is 0.1-5.0A, the voltage should match the battery being charged. Press and hold the 'START/ENTER' key for more than three seconds to begin charging.

```
Pb-6    4.0A    12.59V
CHG     022:43    00682
```

Battery    Elapsed    Battery    Charged
type       time       voltage    capacity
           Charge
           current

This screen displays the real-time charging status. Press the 'START/ENTER' key to change the discharge current. Press the 'START/ENTER' key again to store the parameter value you set. Press the 'BATT TYPE/STOP' key to end the program.
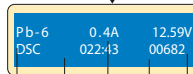
## Discharging a Pb battery

```
Pb DISCHARGE
1.0A            12.0V(6P)
```

◄ /_ + ►    ◄ /_ + ►

Batt type    Start
Stop         Enter    '>3 seconds'
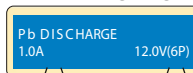
Set up the charge current on the left and nominal voltage on the right. Range of discharge current is 0.1-5.0A, the voltage should match the battery being charged. Press and hold the 'START/ENTER' key for more than three seconds to begin charging.

```
Pb-6    0.4A    12.59V
DSC     022:43    00682
```

Battery    Elapsed    Battery
type       time       voltage    Discharged
           Discharge             capacity
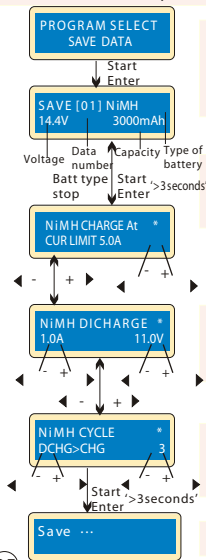           current

This screen displays the real-time discharging status. Press the 'START/ENTER' key to alter discharge current. Press the 'START/ENTER' key again to store the parameter value you set. Press the 'BATT TYPE/STOP' key to end the program.

# Data storage program

For your convenience, this charger has a data storage and load program. It can store five different battery programs to suit the different specifications for your batteries. You can recall program data when charging or discharging without setting up the program again. Press the 'START/ENTER' key to make it blink, then press the '+' or '-' keys to set the parameter.

```
PROGRAM SELECT
   SAVE DATA
```
Start
Enter

Changing the parameter in this screen will not affect the charge or discharge process. This just shows the specifications of the battery. This screen depicts a 12-cell NiMH battery pack with a capacity of 3000mAh.

```
SAVE [01] NiMH
14.4V        3000mAh
```
Voltage | Data number | Capacity | Type of battery
Batt type stop | Start Enter '>3seconds'

Set up the charge current in the manual mode or the current limit in the auto mode. Press the '+' and '-' keys simultaneously to make the current filed blink to switch to charge mode.

```
NiMH CHARGE At      *
CUR LIMIT 5.0A
```
◄ - + ►   ◄ - + ►

```
NiMH DISCHARGE   *
1.0A             11.0V
```
◄ - + ►   ◄ - + ►

Set up the discharge current and final voltage.

◄ - + ►

```
NiMH CYCLE        *
DCHG>CHG          3
```
◄ - + ►   ◄ - + ►

Set up the charge/discharge sequence and cycle number.
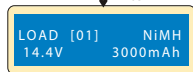
Start Enter '>3seconds'

```
Save  …
```

Saving the data.

## *Load data program*

This program loads the data stored in the 'save data' program. Press the 'START/ENTER' key to make the field blink and press and hold '+' or '-' for more than three seconds to load the data.

```
PROGRAM SELECT
      LOAD DATA
```

Start
Enter

```
LOAD  [01]      NiMH
14.4V        3000mAh
```
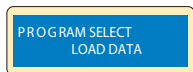
Choose the number of the program that you want to recall. The data for this program will be displayed

Start
Enter   '>3seconds'

```
Load   ···
```

Loading the data.

## *Various information in the program*

You can make various inquiries on the LCD screen during the charging and discharging processes. Press the '-' key to display user settings. Press the '+' key to monitor the voltage of each cell while the battery balance leads are connected to the balance port of the charger. Note that the charger will display individual cell voltage even when not in balance charge mode, but will not balance the battery. You must be in the balance charge mode to balance the battery.

## Various information in the program

| | |
|---|---|
| End Voltage<br>12.6V(3s) | The end voltage is displayed when the program is finished. |
| ◄ - | |
| Capacity Cutoff<br>On            5000mAh | |
| ◄ - | |
| Safety Timer<br>ON            200 min | |
| ◄ - | |
| USB/Temp Select<br>USB          Enabled | The 3-pin connector is configured as a USB port. |
| ◄ - | |
| Ext.Temp        26C | The external temperature is displayed when the temperature probe is used. |
| ◄ - | |
| IN Power Voltage<br>12.56V | Present input voltage. |
| 4.14    4.16    4.09<br>0.00    0.00    0.00 | The voltage of each cell in a battery is displayed. Battery must be connected with its balance leads to the charger's balance port on the right side of the charger. Voltage for up to six cells can be displayed. Balancing only occurs when the charger is in the balance charge mode. |

## *Warning and error information*

This charger incorporates a variety of functions for the system to verify processes and the state of the electronics. In the event of an error, the screen will display the cause of the error and will emit an audible sound.

| | |
|---|---|
| REVERSE POLARITY | Incorrect polarity connected. |
| CONNECTION BREAK | Battery connection has been disrupted. |
| SHORT ERR | Short-circuit of the output termination. |
| INPUT VOLT ERR | Erroneous selection of voltage of lithium battery pack. Please check the voltage of the battery pack. |
| VOL SELECT ERR | The voltage of the battery pack has been incorrectly selected. |
| BREAK DOWN | The charger has malfunctioned. Call Horizon Product Support. |
| BATTERY CHECK LOW VOLTAGE | The voltage is lower that what is set. Please check the number of cells in the battery pack. |

## Warning and error information

| Display | Description |
|---|---|
| BATTERY CHECK HIGH VOLTAGE | The voltage is higher than what is set. Please check the number of cells in the battery pack. |
| BATTERY VOLTAGE CELL LOW VOL | Voltage in one cell of the battery pack is too low. Please check the voltage of each cell. |
| BATTERY VOLTAGE CELL HIGH VOL | Voltage in one cell of the battery pack is too high. Please check the voltage of each cell. |
| BATTERY VOLERR CELL CONNECT | Wrong connection of the connector has been detected. Please check the connector and cable. |
| TEMP OVER ERR | The internal temperature is too high. Please allow it to cool down. |
| CONTROL FAILURE | The processor cannot control the feed current. Please call Horizon Product Support. |

# ⚠ *Warranty and service*

## Warranty Period
Exclusive Warranty - Horizon Hobby, Inc., (Horizon) warranties that the Products purchased (the "Product") will be free from defects in materials and workmanship at the date of purchase by the Purchaser.

## Limited Warranty
(a) This warranty is limited to the original Purchaser ("Purchaser") and is not transferrable. REPAIR OR REPLACE-MENT AS PROVIDED UNDER THIS WARRANTY IS THE EXCLUSIVE REMEDY OF THE PURCHASER. This warranty covers only those Products purchased from an authorized Horizon dealer. Third party transactions are not covered by this warranty. Proof of purchase is required for warranty claims. Further, Horizon reserves the right to change or modify this warranty without notice and disclaims all other warranties, express or implied.

(b) Limitations- HORIZON MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, ABOUT NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OF THE PRODUCT. THE PURCHASER ACKNOWLEDGES THAT THEY ALONE HAVE DETERMINED THAT THE PRODUCT WILL SUITABLY MEET THE REQUIREMENTS OF THE PURCHASER'S INTENDED USE.

(c) Purchaser Remedy- Horizon's sole obligation hereunder shall be that Horizon will, at its option, (i) repair or (ii) replace, any Product determined by Horizon to be defective. In the event of a defect, these are the Purchaser's exclusive remedies. Horizon reserves the right to inspect any and all equipment involved in a warranty claim. Repair or replacement decisions are at the sole discretion of Horizon. This warranty does not cover cosmetic damage or damage due to acts of God, accident, misuse, abuse, negligence, commercial use, or modification of or to any part of the Product. This warranty does not cover damage due to improper installation, operation, maintenance, or attempted repair by anyone other than Horizon. Return of any goods by Purchaser must be approved in writing by Horizon before shipment.

**Damage Limits:**
HORIZON SHALL NOT BE LIABLE FOR SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR PRODUCTION OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCT, WHETHER SUCH CLAIM IS BASED IN CONTRACT, WARRANTY, NEGLIGENCE, OR STRICT LIABILITY. Further, in no event shall the liability of Horizon exceed the individual price of the Product on which liability is asserted. As Horizon has no control over use, setup, final assembly, modification or misuse, no liability shall be assumed nor accepted for any resulting damage or injury. By the act of use, setup or assembly, the user accepts all resulting liability.

If you as the Purchaser or user are not prepared to accept the liability associated with the use of this Product, you are advised to return this Product immediately in new and unused condition to the place of purchase.

Law: These Terms are governed by Illinois law (without regard to conflict of law principals).

**Safety Precautions:**
This is a sophisticated hobby Product and not a toy. 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. The Product 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 injury.

**Questions, Assistance, and Repairs:**
Your local hobby store and/or place of purchase cannot provide warranty support or repair. Once assembly, setup or use of the Product has been started, you must contact Horizon directly. This will enable Horizon to better answer your questions and service you in the event that you may need any assistance. For questions or assistance, please direct your email to **productsupport@horizonhobby.com,** or call **877.504.0233** toll free to speak to a service technician.

**Inspection or Repairs:**
If this Product needs to be inspected or repaired, please call for a Return Merchandise Authorization (RMA). Pack the Product securely using a shipping carton. Please note that original boxes may be included, but are not designed to withstand the rigors of shipping without additional protection. Ship via a carrier that provides tracking and insurance for lost or damaged parcels, as Horizon is not responsible for merchandise until it arrives and is accepted at our facility. A Service Repair Request is available at **www.horizonhobby.com** on the "Support" tab. If you do not have internet access, please include a letter with your complete name, street address, email address and phone number where you can be reached during business days, your RMA number, a list of the included items, method of payment for any non-warranty expenses and a brief summary of the problem. Your original sales receipt must also be included for warranty consideration. Be sure your name, address, and RMA number are clearly written on the outside of the shipping carton.

**Warranty Inspection and Repairs:**
**To receive warranty service, you must include your original sales receipt** verifying the proof-of-purchase date. Provided warranty conditions have been met, your Product will be repaired or replaced free of charge. Repair or replacement decisions are at the sole discretion of Horizon Hobby.

**Non-Warranty Repairs:**
Should your repair not be covered by warranty the repair will be completed and payment will be required without notification or estimate of the expense unless the expense exceeds 50% of the retail purchase cost. By submitting the item for repair you are agreeing to payment of the repair without notification. Repair estimates are available upon request. You must include this request with your repair. Non-warranty repair estimates will be billed a minimum of ½ hour of labor. In addition you will be billed for return freight. Please advise us of your preferred method of payment. Horizon accepts money orders and cashiers checks, as well as Visa, MasterCard, American Express, and Discover cards. If you choose to pay by credit card, please include your credit card number and expiration date. Any repair left unpaid or unclaimed after 90 days will be considered abandoned and will be disposed of accordingly. Please note: non-warranty repair is only available on electronics and model engines.

Electronics and engines requiring inspection or repair should be shipped to the following address:

**Horizon Service Center**
**4105 Fieldstone Road**
**Champaign, Illinois 61822**

All other Products requiring warranty inspection or repair should be shipped to the following address:

**Horizon Product Support**
**4105 Fieldstone Road**
**Champaign, Illinois 61822**

**Please call 877-504-0233 with any questions or concerns regarding this product or warranty.**

United Kingdom:
Electronics and engines requiring inspection or repair should be shipped to the following address:

**Horizon Hobby UK**
**Units 1-4 Ployters Rd**
**Staple Tye**
**Harlow, Essex**
**CM18 7NS**
**United Kingdowm**

**Please call +44 (0) 1279 641 097 or e-mail us at sales@horizonhobby.co.uk with any questions or concerns regarding this product or warranty.**

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Instructions for Disposal of WEEE by Users in the European Union

This product must not be disposed of with other waste. Instead, it is the user's responsibility to dispose of their waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city office, your household waste disposal service or where you purchased the product.

## **Declaration of Conformity** (in accordance with ISO/IEC 17050-1)

No. HH20090618

Product(s):                     Losi MultiPro™ Charger
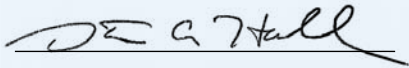Item Number(s):            LOSB9606

Equipment Class:          1

The objects of declration described above are in conformity with the requirements of the specifications listed below, following the provisions of the European R&TTE directive 1999/5/EC:

EN 301 489-1 v.1.6.1        General EMC requirements for Radio equipment
EN 301 489-17 v1.2.1

Signed for and on behalf of:
            Horizon Hobby, Inc.
            Champaign, IL USA
            June 18, 2009

            Steven A. Hall
            Vice President
            International Operations and Risk Management
            Horizon Hobby, Inc.

# GO

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**Log on to WWW.LOSI.COM to complete the Product Registration form.**